

# JAPANESE MORPHEMIC VOWELS AND TELICITY: MONO-SYLLABIC VERB CASES\*

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## 1. The Problem

Morphemes are fundamental units of meaning in language. A morpheme can be defined as “[a] word or a meaningful piece of a word that cannot be divided into smaller meaningful parts (Aronoff & Fudeman 2005: 239)”. Japanese mono-syllabic verbs have been taken as mono-morphemic, (i.e. not further decomposable).

(1)	<u>Verbs (in past tense)</u>	<u>Gloss</u>
	ki-tta	‘cut’
	ke-tta	‘kicked’
	ko-tta	‘was stiff’
	ku-tta	‘ate’

However, original data indicate that Yamato-Japanese vowels determine the (a)telicity of mono-syllabic verbs<sup>1</sup>. Telic predicates are defined as describing eventualities with a final point. (A)telicity is commonly tested by using durative adverbials (Dowty 1979). Durative adverbials can co-occur only with atelic predicates, as exemplified in (2).

- (2) a. I cried for an hour.  
b. \* I fixed the bike for an hour.

Japanese mono-syllabic verbs containing [i] or [o], but not [e] or [u], can co-occur with durative adverbials. To the best of my knowledge, it holds over

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<sup>1</sup> According to Ito & Mester (1995), the Japanese lexicon includes two distinctive stratum: Yamato-Japanese, which is native Japanese, and Sino-Japanese borrowed from Chinese. A piece of evidence comes from “Rendaku”, a phonological phenomenon of ‘sequential voicing’, whereby initial consonants of second parts are voiced in compound words.

- (i) *yu* “hot water” + *toofu* “tofu” → *yudoofu* “boiled tofu”  
*de* “leave” + *kuci* “mouth” → *deguci* “exit”

(Cited from Ito & Mester 1995: 819 ex. 2a)

This phenomenon is observed only in Yamato-Japanese. Because of this, it may be that same vowels correspond to different meanings in those stratum. Thus, Sino-Japanese is set aside in this paper.

all mono-syllabic verbs in Yamato-Japanese (See also Appendix for more data<sup>2</sup>). As seen in (3), verbs are systematically collected by combining consonants and vowels, which are the phonemes of Japanese (Shibatani 1990: 159).

$$(3) \left\{ \begin{array}{l} p, t, k, b, d, g, \\ s, h, z, r, m, n, \\ w, j \end{array} \right\} + \left\{ \begin{array}{l} i, u, \\ e, o, \\ a \end{array} \right\}$$

In (4) through (6), [i] is contrasted with [e]. Examples in (a) show that verbs containing [i] can co-occur with durative adverbials, while examples in (b) show that verbs containing [e] cannot<sup>3,4</sup>.

- (4) a. shonen-ga koko-ni (nijikan) i-ta  
 boy-NOM here-DAT for.two.hours be-PAST  
 ‘The boy was here (for two hours).’  
 b. shonen-ga so-no hon-o (\*nijikan) e-ta  
 boy-NOM that-GEN book-ACC for.two.hours get-PAST  
 ‘The boy got that book (\*for two hours).’
- (5) a. Meari-wa kami-o hasami-de (nijikan) ki-tta  
 M.-NOM paper-ACC scissors-at for.two.hours cut-PAST  
 ‘Mary cut paper with scissors (for two hours).’  
 b. Meari-wa kan-o (\*nijikan) ke-tta  
 M.-NOM can-ACC for.two.hours kick-PAST  
 ‘Mary kicked a can (\*for two hours).’
- (6) a. Taro-ga yasai-o (nijikan) ni-ta  
 T.-NOM vegetable-ACC for.two.hours boil-PAST  
 ‘Taro boiled vegetables (for two hours).’  
 b. Taro-ga futon-no ue-ni (\*nijikan) ne-ta  
 T.-NOM futon-GEN top-DAT for.two.hours lie.down-PAST  
 ‘Taro lay down on a futon (\*for two hours).’

Another contrast regarding (a)telicity is found with [o] and [u]. In (7) through

<sup>2</sup> Note that not all verbs are pairwise.

<sup>3</sup> It is reported that telic predicates can co-occur with durative adverbials. In these cases, however, they trigger repetitive readings (Binnick 1969).

(i) The sheriff of Nottingham jailed Robin Hood for four years.

(Adopted from Dowty 1979: 58 ex 36a)

Repetitive readings are not considered in this paper. Otherwise, the (a)telicity distinction cannot be tested.

<sup>4</sup> Note that examples are given approximate English translations and Japanese verbs may not exactly correspond to English counterparts.

(9), examples in (a) show that verbs containing [o] can co-occur with durative adverbials, while examples in (b) show that verbs containing [u] cannot.

- (7) a. Jon-ga soko-ni (nijikan) o-tta  
 J.-NOM there-DAT for.two.hours be-PAST  
 ‘John was there (for two hours).’
- b. Jon-ga so-no hon-o Meari-ni (\*nijikan) u-tta  
 J.-NOM that-GEN book-ACC M.-DAT for.two.hours sell-PAST  
 ‘John sold that book to Mary (\*for two hours).’
- (8) a. Taro-ga hige-o (gofunkan) so-tta  
 T.-NOM beard-ACC for.five.minutes shave-PAST  
 ‘Taro shaved (for five minutes).’
- b. Taro-ga matchi-o (\*gofunkan) su-tta  
 T.-NOM match-ACC for.five.minutes strike-PAST  
 ‘John struck a match (\*for five minutes).’
- (9) a. Taro-ga sono basu-ni (nijikan) no-tta  
 T.-NOM that bus-DAT for.two.hours ride-PAST  
 ‘Taro rode on that bus (for two hours).’
- b. Taro-ga sono penki-o kabe-ni (\*nijikan) nu-tta  
 T.-NOM that paint-ACC wall-DAT for.two.hours rub-PAST  
 ‘Taro rubbed the paint on the wall (\*for two hours).’

To sum up, verbs containing [i] or [o] yield atelic interpretations, while verbs containing [e] or [u] yield telic interpretations, as in table 1.

Table 1: The results of the (a)telicity test with durative adverbials

Vowel	Co-occurrence of durative adverbials
[i]	✓
[o]	✓
[e]	*
[u]	*

The question naturally arises as to whether or not it is coincidental that verbs containing these particular vowels behave like atelic and telic predicates, respectively.

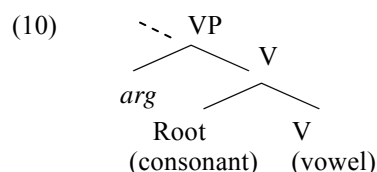
## 2. The Proposal

This paper claims that Yamato-Japanese verbs are further decomposable into segments. In monosyllabic verbs, in particular, vowels function as morphemes determining the (a)telicity of mono-syllabic verbs, as shown in table 2.

Table 2: Vowels and (a)telicity

Vowel	Predicate type
[i] and [o]	Atelic
[e] and [u]	Telic

In syntactic terms, I propose that vowels occupy the Head position of V, which is modified by a root in the sense of Déchaine (2002). According to Déchaine, a root is defined as “[a] semantic constant which restricts the denotation of eventuality (Déchaine 2002: 1)”. Thus, I assume the following representation for morphologically-complex, mono-syllabic verbs.



The remainder of this paper is organized as follows: section 3 shows how the problem mentioned in section 1 can be treated under the present analysis. Sections 4 and 5 provide independent evidence that the (a)telicity of mono-syllabic verbs is determined by the type of vowel. Section 4 tests the (a)telicity in the TE IRU (‘~ing’) form. Section 5 tests the (a)telicity with punctual adverbials. Section 6 concludes this paper.

### 3. Solving the Problem

This section shows that the present analysis can account for the problem in section 1. In section 1, it was observed that there is a correlation between the type of vowel used in a mono-syllabic verb and the (a)telic interpretation of the predicate. In the present analysis, [i] and [o] are atelic predicates and they describe continuous eventualities during certain intervals. Hence, verbs containing these predicates can be associated with durative adverbials, as exemplified in (11).

- (11) a. shonen-ga so- no kami-o (gofunkan) k<sub>i</sub>-tta  
 boy-NOM that-GEN paper for.five.minutes cut-PAST  
 ‘The boy cut the paper (for five minutes).’
- b. Taro-wa kata-ga (shibarakunoaida)k<sub>o</sub>-tta  
 T.-TOP shoulder-NOM for.a.while be.stiff-PAST  
 ‘Speaking of Taro, his shoulders were stiff (for a while).’

Vowel predicates [e] and [u] are telic with a final point, a particular point in time. Hence, verbs containing these predicates cannot be associated with durative adverbials, as in (12)<sup>5</sup>.

<sup>5</sup> There are ‘exceptional-like’ cases for [u]; verbs containing [u] can co-occur with

- (12) a. Meari-ga kan-o (\*gofunkan) ke-tta  
 M.-NOM can-ACC for.five.minutes kick-PAST  
 ‘Mary kicked a can (\*for five minutes).’
- b. Taro-ga mochi-o (\*shibarakunoaida) ku-tta  
 T.-NOM rice.cake-ACC for.a.while eat-PAST  
 ‘John ate a rice cake (\*for a while).’

Thus, I am claiming that mono-syllabic verbs are morphologically complex; the vowels are analyzed as verbal predicates.

#### 4. TE IRU Form

This section provides evidence that the (a)telicity of verbs is correlated to the type of vowel contained in the verbs. In English, *-ing* form provides a test for (a)telicity. In the *-ing* form, atelic predicates can entail that the entire eventuality took place while telic predicates cannot (Vendler 1967 and Dowty 1979).

- (13) a. A baby is walking. (= A baby walked.)  
 b. Mary is drawing a picture. (× → Mary drew a picture.)

The entailment test can be executed with the Japanese equivalent to *-ing*, which is the TE IRU form. This form can describe on-going processes of eventualities (Kindaichi 1950 and Ogihara 1998, and Shirai 2000, among others)<sup>6</sup>. This paper argues that [i] and [o] are atelic predicates, while [e] and [u] are telic predicates. Then, it is predicted that predicate [i] and [o] can entail that the entire eventuality took place in the TE IRU form while predicate [e] and [u] cannot. The prediction is born out by the following data. In (14) through (16), examples in (a) show that verbs containing [i] can have this entailment, while examples in (b) show that verbs containing [e] cannot have this entailment.

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durative adverbials, as exemplified below (See also Appendix.):

- (i) Takashi-no karada-ga tyuu-ni gofunkan u-i-ta  
 T.-GEN body-NOM air-DAT for.five.minutes float-atelic-PAST  
 ‘Takashi’s body floated in the air for five minutes.’

In these cases, however, atelic predicate [i] systematically follows [u], which yields resultative readings. They could be evidence that linearly following morphemes occupy hierarchically higher positions in Japanese complex predicates, compared with preceding morphemes.

- (ii) [V<sup>2</sup>[V<sup>1</sup> u] -i]-ta

Atelic predicate [i] can only be associated with durative adverbials as a case of locality effects, assuming that adverbials are adjunct to the matrix V’.

<sup>6</sup> Note that TE IRU form can also trigger resultative readings, which is not a concern in this paper. See Ogihara (1998) for resultative readings.

- (14) a. shonen-ga kami-o hasami-de ki-tte ir-u  
 boy-NOM paper-ACC scissors-with cut-and be-PRES  
 ‘The boy is cutting paper with scissors.’  
 → ‘The boy cut paper with scissors.’
- b. shonen-ga boru-o asi-de ke-tte ir-u  
 boy-NOM ball-ACC foot-with kick-and be-PPRES  
 ‘The boy is on the way to kicking a ball.’  
 ×→ ‘The boy kicked a ball.’
- (15) a. Meari-ga yasai-o nabe-de ni-te ir-u  
 M.-NOM vegetable-ACC pot-with boil-and be-PRES  
 ‘Mary is boiling vegetables in a pot.’  
 → ‘Mary boiled vegetables in a pot.’
- b. Meari-ga futon-ni ne-te ir-u  
 M.-NOM futon-DAT lie.down-and be-PPRES  
 ‘The boy is on the way to lying down on a futon.’  
 ×→ ‘The boy lay down on a futon.’
- (16) a. watasi-wa mori-no koto-o si-tte ir-u  
 I-TOP forest-GEN thing-ACC know-and-be-PRES  
 ‘I am knowing about the forest.’  
 → ‘I knew about the forest.’
- b. watasi-taci-wa seikakusa-o se-tte ir-u  
 I-PL-TOP accuracy-ACC compete-PRES  
 ‘We are on the way to contesting for accuracy.’  
 ×→ ‘We contested for accuracy.’

In (17) through (19), [o] is contrasted with [u]. Examples in (a) show that verbs containing [o] can entail that the entire eventuality took place in the TE IRU form, while examples in (b) show that verbs containing [u] cannot.

- (17) a. kare-ga hige -o so-tte ir-u  
 he-NOM beard-ACC shave-and be-PRES  
 ‘He is shaving his beard.’  
 → ‘He shaved his beard.’
- b. kare-ga momi-o su-tte ir-u  
 snow-NOM unhulked.rice scrape-and be-PPRES  
 ‘He is on the way to scraping unhulked rice.’  
 ×→ ‘He scraped unhulked rice.’
- (18) a. kare-ga so no hon-o te-ni to-tte ir-u  
 he-NOM that-GEN book-ACC hand-DAT take-and be-PRES  
 ‘He is taking the book to his hand.’  
 → ‘He took the book to his hand.’

- b. kare-ga kubi-o tsu-tte ir-u  
 he-NOM neck-ACC hang-and be-PPRES  
 'He is on the way to hanging his neck.'  
 ×→ 'He hung his neck.'
- (19) a. kare-wa sake-ni yo-tte ir-u  
 he-TOP alcohol-DAT be.drunken-and be-PRES  
 'He is being drunken with sake.'  
 → 'He got drunk with sake.'
- b. kanojyo-wa Meari-no kami-o yu-tte ir-u  
 she-TOP M.-GEN hair-ACC do.up-and be-PPRES  
 'She is on the way to doing up Mary's hair.'  
 ×→ 'She did up Mary's hair.'

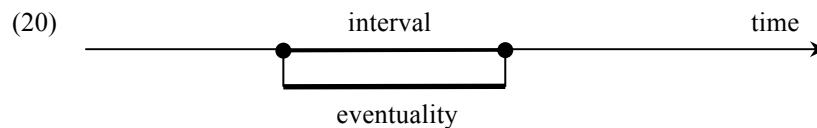
To sum up, this section utilized the TE IRU form to test the correlation between the (a)telicity of verbs and the type of vowel predicates included in the verbs. Atelic predicates [i] and [o] can entail that the entire eventuality took place, while telic predicates [e] and [u] cannot.

Table 3: Results of the (a)telicity test in -TE IRU form

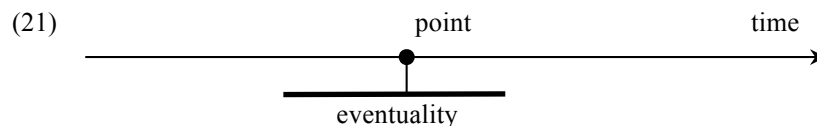
Vowel	Predicate type	Entailment in TE IRU '-ing'
[i] and [o]	Atelic	✓
[e] and [u]	Telic	✗

## 5. Punctual Adverbials

The last section provided a piece of evidence that the (a)telicity of verbs is determined by the type of vowels included in the verbs. Another piece of evidence is given in this section by using punctual adverbials. As seen in section 3, durative adverbials describe intervals during which the entire eventuality of atelic predicates is held.

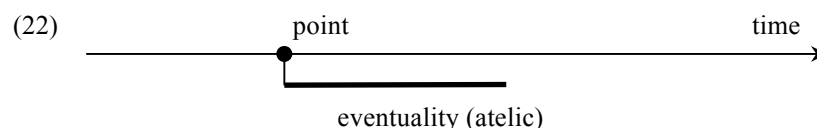


Meanwhile, punctual adverbials pick up a particular point in time which is associated with a point in an eventuality.



However, which point in the eventuality is targeted by the adverbial is determined by the (a)telicity of the predicate. Punctual adverbials can be

associated with initial points only in atelic predicates (Bar-el 2004), as illustrated in (22).



In other words, punctual adverbials trigger inchoative readings only in atelic predicates. Then, it is predicted that atelic predicates [i] and [o] yield inchoative readings with punctual adverbials in Japanese, while telic predicates [e] and [u] cannot. This is born out by the following examples. In the contrast between [i] and [e], punctual adverbials can trigger inchoative readings only with the predicate [i], as shown in (23) through (25).

- (23) a. Taro-ga ichiji-ni kami-o ki-tta  
 T.-NOM one.o'clock-DAT paper-ACC cut-PAST  
 = 'Taro started cutting paper at 1pm.'
- b. Taro-ga ichiji-ni Meari-o ke-tta  
 T.-NOM one.o'clock-DAT Mary-ACC kick-PAST  
 # 'Taro started kicking Mary at 1pm.'
- (24) a. Taro-ga ichiji-ni yasai-o ni-ta  
 T.-NOM one.o'clock-DAT vegetable-ACC boil-PAST  
 = 'Taro started boiling vegetables at 1pm.'
- b. Taro-ga ichiji-ni futon-de ne-ta  
 T.-NOM one.o'clock-DAT futon-at lie.down-PAST  
 # 'Taro started lying down on the futon at 1pm.'
- (25) a. Taro-ga ichiji-ni eki-ni i-ta  
 T.-NOM one.o'clock-DAT station-DAT be-PAST  
 = 'Taro started being at the station at 1pm.'
- b. Taro-ga ichiji-ni kyoka-o e-ta  
 T.-NOM one.o'clock-DAT permission-ACC get-PAST  
 # 'Taro started getting the permission at 1pm.'

In the contrast between [o] and [u], punctual adverbials can trigger inchoative readings only in predicate [o], as shown in (26) through (28).

- (26) a. Taro-ga ichiji-ni dzimen-o ho-tta  
 T.-NOM one.o'clock-DAT ground-ACC dig-PAST  
 = 'Taro started digging the ground at 1pm.'
- b. ame-ga ichiji-ni fu-tta  
 Rain-NOM one.o'clock-DAT fall-PAST  
 # 'Rain drops started falling at 1pm.'



- (27) a. Taro-ga ichiji-ni densha-ni no-tta  
 T.-NOM one.o'clock-DAT train-DAT ride-PAST  
 = 'Taro started riding on a train at 1pm.'
- b. Taro-ga ichiji-ni baketsu-no sikkui-o  
 T.-NOM one.o'clock-DAT bucket-GEN plaster-ACC  
 kabe-ni nu-tta  
 wall-DAT rub-PAST  
 # 'Taro started rubbing the plaster in a bucket at 1pm.'
- (28) a. Taro-ga ichiji-ni ago-no hige-o so-tta  
 T.-NOM one.o'clock-DAT jaw-GEN beard-ACC shave-PAST  
 = 'Taro started shaving his beard at 1pm.'
- b. Taro-ga ichiji-ni momi-o su-tta  
 T.-NOM one.o'clock-DAT unhulked.rice-ACC scrape-PAST  
 # 'Taro started scraping unhulked rice at 1pm.'

To summarize, this section utilized punctual adverbials to test that the (a)telicity of verbs is determined by the type of vowels included in the verbs. Punctual adverbials can be associated with initial points in verbs containing [i] and [o], but not in verbs containing [e] and [u].

Table 4: Vowel predicates with punctual adverbials

Vowel	Predicate type	Punctual adverbials Associated with <u>initial point</u>
[i] and [o]	Atelic	✓
[e] and [u]	Telic	✗

## 6. Concluding Remarks

This paper claimed that Yamato-Japanese mono-syllabic verbs are further decomposable. In particular, vowels function as morphemes determining the (a)telicity of mono-syllabic verbs; [i] and [o] are atelic predicates, while [e] and [u] are telic predicates. The telicity of those predicates was attested with TE IRU forms and punctual adverbials, as summarized in table 5.

Table 5: Results of the (a)telicity tests in vowel predicates

Vowel	Predicate type	Entailment in TE IRU form	Punctual adverbs associated with initial point
[i] and [o]	Atelic	✓	✓
[e] and [u]	Telic	✗	✗

Having established that the (a)telicity of mono-syllabic verbs is determined by the type of morphemic vowels, the question arises as to what distinguishes between [i] and [o], and between [e] and [u], since a morpheme

is required to have a meaning distinctive from others. This issue is going to be dealt with in the future research.

Another issue to be considered regards the vowel [a], which was mentioned in this paper. This vowel is also in the Japanese phoneme inventory. It is interesting to see whether or not the vowel affects the (a)telicity of verbs, like the other vowels. If so, then, it has to be considered what the exact meaning of the vowel is.

## Appendix

### Japanese Mono-Syllabic Verbs

[i]

Past tense	Gloss	Durative adverbs	Entailment in -TE IRU (on going process)	Punctual adverbs associated with initial point
ci-tta	scatter	✓	✓ ci-tte iru	✓
ki-ta	wear	✓	✓ ki-te iru	✓
ki-ta <sup>7</sup>	come	✓	✓ ki-te iru	✓
ki-tta	cut	✓	✓ ki-tte iru	✓
si-tta	know	✓	✓ si-tte iru	✓
hi-tta	dry	✓	✓ hi-tte iru	✓
mi-ta	see	✓	✓ mi-te iru	✓
ni-ta	boil	✓	✓ ni-te iru	✓
i-ta	be	✓	–	✓
í-tta	fry	✓	✓ í-tte iru	✓
i-tta	go	✓	✓ i-tte iru	✓
si-ta	do	✓	✓ si-te iru	✓
hi-ita	pull	✓	✓ hi-ite iru	✓
ki-ita	listen	✓	✓ ki-ite iru	✓
si-ita	spread	✓	✓ si-ite iru	✓

[e]

Past tense	Gloss	Durative adverbs	Entailment in -TE IRU (on going process)	Punctual adverbs associated with initial point
he-ta	pass	*	✗ he-te iru	✗
ke-tta	kick	*	✗ ke-tte iru	✗
ne-ta	sleep	*	✗ ne-te iru	✗
ne-tta	knead	*	✗ ne-tte iru	✗
te-tta	shine	*	✗ te-tte iru	✗
e-ta	get	*	✗ e-te iru	✗

<sup>7</sup> The vowel with a high pitch-accent is distinguished in meaning from the one with a low pitch-accent.

## [o]

Past tense	Gloss	Durative adverbs	Entailment in -TE IRU (on going process)	Punctual adverbs associated with initial point
ho-tta	carve	✓	✓ ho-tte iru	✓
no-tta	ride	✓	✓ no-tte iru	✓
mo-tta	heap	✓	✓ mo-tte iru	✓
mó-tta	carry	✓	✓ mó-tte iru	✓
to-tta	take	✓	✓ to-tte iru	✓
so-tta	shave	✓	✓ so-tte iru	✓
ko-tta	be stiff	✓	✓ ko-tte iru	✓
yo-tta	drop in	✓	✓ yo-tte iru	✓
o-tta	exist, be	✓	-	✓
ko-nda	be crowded	✓	✓ ko-nde iru	✓
mo-nda	massage	✓	✓ mo-nde iru	✓
to-ita	dissolve	✓	✓ to-ite iru	✓
do-ita	step aside	✓	✓ do-ite iru	✓
no-ita	recede	✓	✓ no-ite iru	✓
o-ita	put	✓	✓ o-ite iru	✓

## [u]

Past tense	Gloss	Durative adverbs	Entailment in TE IRU (on-going process)	Punctual adverbs associated with initial point
fu-tta	fall	*	✗ fu-tte iru	✗
su-tta	scrape	*	✗ su-tte iru	✗
nu-tta	rub	*	✗ nu-tte iru	✗
tsu-tta	hang	*	✗ tsu-tte iru	✗
u-tta	sell	*	✗ u-tte iru	✗
ú-tta	hit	*	✗ ú-tte iru	✗
su-tta	suck	*	✗ su-tte iru	✗
ku-tta	eat	*	✗ ku-tte iru	✗
yu-tta	do up one's hair	*	✗ yu-tte iru	✗
fú-ita	blow	✓	✗ fú-ite iru	✗
fu-ita	clean up	✓	✗ fu-ite iru	✗
mu-ita	peel	✓	✗ mu-ite iru	✗
nu-ita	pull out	✓	✗ nu-ite iru	✗
nu-ida	take off	✓	✗ nu-ite iru	✗
tsu-ita	stick	✓	✗ tsu-ite iru	✗
su-ita	be empty	✓	✗ su-ite iru	✗
u-ita	float	✓	✗ u-ite iru	✗

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