

A comparison of causative-inchoative alternation in *-ise/-ify/-en* in English and *-ka* (化) in Japanese

Patrick P.W. Lam

(Graduate School, Tokyo University of Foreign Studies;
Center for English Language Education, Asia University)

Abstract

This study compares the meaning of verbs formed by *-ise/-ify/-en* in English and *-ka* (化) in Japanese. After establishing the comparability of these forms, we examine the causative-inchoative alternation seen in these forms in both languages. Following Kageyama (1996) and Levin and Rappaport Hovav (1995), we propose that inchoative forms are basically derived from causative forms. This provides the basis for explaining the transitivity of expressions. In addition, we propose two new rules that would further enhance these methods of analysis.

1. For a transitive sentence to occur, the entity undergoing change must be controllable by an agent or by a cause.
2. For an intransitive sentence to occur, there must be a cognitive association between the verb and the entity undergoing change without the need for any other intermediary.

1. Similarities between *-ise/-ify/-en* in English and *-ka* (化) in Japanese

There are many striking similarities between *-ise/-ify/-en* in English and *-ka* in Japanese: *-ise/-ify/-en* are suffixes that derive verbs from nominal and adjectival roots. The suffix *-ka* is also a suffix, and behaves in a similar way.¹

- (1) a. English verbs derived from nominal roots:
magnetise, acidify, strengthen

¹ Japanese verbs formed by *-ka* inflect by attachment of the light verb *-suru* 'to do'. Japanese *-ka* can also derive verbs from verbal roots such as *kotei-ka* 固定化 and *koritsu-ka* 孤立化. This phenomenon is rather rare, and will not be examined here.

- b. Japanese verbs derived from nominal roots:
kasekika 化石化 ‘to fossilise (kaseki=fossil)’, *seidoka* 制度化 ‘to institutionalise (seido=institution, social system)’, *kikaiika* 機械化 ‘to mechanise (kikai=machine)’
- (2) a. English verbs derived from adjectival roots:
formalise, *humidify*, *broaden*
- b. Japanese verbs derived from adjectival roots:
kansoka 簡素化 ‘to simplify (kanso=simple)’, *hizokuka* 卑俗化 ‘to vulgarise (hizoku=vulgar)’, *seijooka* 正常化 ‘to normalise (seijoo=normal)’

X-ise/ X-ify/ X-en and *X-ka* share the core meaning of ‘to (cause to) become X’, where X may have a nominal or adjectival meaning.

- (3) a. English words:
novelise ‘to cause to become a novel’, *localise* ‘to cause to become local’, *gasify* ‘to (cause to) become a gas’, *intensify* ‘to (cause to) become intense’, *harden* ‘to (cause to) become hard’²
- b. Japanese words:
genkinka 現金化 ‘to cause to become cash, to liquidate (genkin=cash)’, *shinkokuka* 深刻化 ‘to become serious/intense (shinkoku=serious, intense)’, *tayooka* 多様化 ‘to diversify (tayoo=diverse)’

The secondary meanings of *-ise/-ify/-en* and *-ka* include ‘to (cause to) become similar to X’, as illustrated in (4):

- (4) a. English words:
idolise, *personify*
- b. Japanese words:
guuzooka 偶像化 ‘to idolise (guuzoo=idol)’, *jinkakuka* 人格化 ‘to personify (jinkaku=personality)’

X-ise/-ify/-en and *X-ka* can also mean ‘to treat something/someone with a substance called X’, as demonstrated in (5):

- (5) a. English words:

² Most *-en* words are derived from adjectives, not nouns. Those that are derived from nouns have rather idiosyncratic meanings: *strengthen* and *lengthen* do not mean ‘to (cause to) become a strength/ a length’ but ‘to (cause to) be stronger/longer’. *Hearten* means ‘to cause to take heart’.

anaesthetise (=to treat a medical patient with an anaesthetic), zincify (=to treat something with zinc in a chemical process), threaten (=to make a threat against someone)

b. Japanese words:

sanka 酸化 ‘to activate the chemical effects of oxygen, i.e. to oxidise (san=oxygen, acid)’,
suisoka 水素化 ‘to cause to combine with hydrogen, i.e. to hydrogenate
(suiso=hydrogen)’

Other meanings of *-ise/-ify/-en* and *-ka* fall under the broad meaning of ‘to cause to be associated with X’:

(6) a. English words:

hospitalise ‘to cause to be associated with a hospital, i.e. to cause to go into hospital’,
cheapen ‘to cause to be associated with being cheap, i.e. to decrease the value (often non-monetary) of something’,
pasteurise (‘to cause to be associated with Pasteur, i.e. to treat a substance with the method of sterilisation invented by Pasteur’)

b. Japanese words:

taishuuka 大衆化 ‘to cause to be associated with the populace (taishuu=populace), i.e. to popularise’,
kikakuka 規格化 ‘to cause to be associated with a standard (kikaku=standard); i.e. to cause to conform to a standard’.

This free association with the concept denoted by X can lead to quite unexpected meanings. *Alphabetise* does not mean ‘to cause to become like the alphabet’ or even ‘to cause to become similar to the alphabet’. It means ‘to cause to become similar to the *order* of the alphabet’.

Another similarity between the English and Japanese suffixes is their productivity. Although there are restrictions on the formation of *-en* words³, the *-ise/-ify* and *-ka* suffixes are remarkably productive in creating new words. There are English neologisms such as *subject-ise*, *nerdify* and *spa-ify*, as well as Japanese examples such as *konpyuutaa-ka* コンピューター化 ‘to computerise (konpyuutaa=computer)’ and *OA-ka* OA化 ‘to automate office equipment (OA=office automation).

Both the English *-ise/-ify* suffixes and the Japanese *-ka* suffix attach themselves to free morphemes as well as bound ones⁴.

(7) a. English free morphemes:

specialise, objectify

³ The *-en* suffix is not as productive as the other suffixes, and there appear to be phonological restrictions: *-en* can only occur after non-nasal obstruents (Dowty 1979): *bluen, *narrowen.

⁴ Most roots combining with the *-en* suffix are free morphemes.

- b. Japanese free morphemes:
shoogyooka 商業化 ‘commercialise (shoogyoo=commerce)’,
gaimenka 外面化 ‘externalise (gaimen=external surface)’
- (8) a. English bound morphemes:
evangelise, unify
- b. Japanese bound morphemes:
kyooka 強化 ‘strengthen (kyoo=strong)’, jooka 浄化 ‘purify (joo=pure)’

The similarities do not end here. The vast majority of English *-ise/-ify* words are formed from Romance words; *-ise/-ify* words with native Germanic roots (such as *womanise*) are extremely rare⁵. This phenomenon finds a parallel in the Japanese *-ka*: most *-ka* words are formed with Sino-Japanese words (Western loanword roots are also occasionally found). Native Japanese (or *wago* 和語 roots) receive a poor representation. In other words, *-ise/-ify* and *-ka* appear most prominently with newer or imported items in the lexicon. The reasons for this are unclear, however one may surmise that native words have their own mechanism for deriving verbs from nouns/adjectives; newer words, which are not party to this mechanism, must resort to highly productive suffixes such as *-ise/-ify* and *-ka*.

We have sufficiently demonstrated that English words formed with *-ise/-ify/-en* are semantically similar to Japanese words made with *-ka*. This fact is significant, as it allows us to use these words to examine the phenomenon of causative-inchoative alternation, which we examine in the next section.

2. Causative-inchoative alternation

The phenomenon we will examine here is causative-inchoative alternation. Some *-ise/-ify/-en* words and *-ka* words are only used as transitives:

- (9) a. The U.S. Federal Reserve Bank justified a significant increase in interest rates.
 b. *A significant increase in interest rates justified.
- (10) a. 米連邦準備理事会が大幅な利上げを正当化した。
 Bei-rempoo jumbi rijikai-ga oohaba-na riage-o seitooka-shita
 U.S. Federal Reserve Bank-NOM significant rate increase-ACC justified
- b. *大幅な利上げが正当化した。
 *Oohaba-na riage-ga seitooka-shita.
 *significant rate increase-NOM justified

⁵ The *-en* suffix, on the other hand, seems quite compatible with Germanic roots: brighten, dampen, thicken etc.

Other *-ise/-ify/-en* words and *-ka* words are exclusively intransitive:

- (11) a. The child apologised to her mother.
b. *The father apologised the child to her mother.
- (12) a. 議会が多党化した。
Gikai-ga tatooka-shita.
Diet-NOM many-party-ised
'The National Diet has become multi-partied.'
- b. *国民が議会を多党化した。
*Kokumin-ga gikai-o tatooka-shita.
citizens-NOM Diet-ACC many-party-ised
'The people have made the National Diet multi-partied.'

Many *-ise/-ify/-en* words and *-ka* words alternate between the two, undergoing causative-inchoative alternation:

- (13) a. Japan rapidly modernised in the latter half of the nineteenth century.
b. The Meiji Restoration modernised Japan.
- (14) a. 19世紀後半に日本は急速に近代化した。
Juukyuu-seiki koohan-ni Nihon-wa kyusokuni kindai-ka-shita.
nineteen-century latter half-in Japan-NOM rapidly modernised
- b. 明治維新が日本を近代化した。
Meiji Ishin-ga Nihon-o kindai-ka-shita.
Meiji Restoration-NOM Japan-ACC modernised

In the next section, we will examine the mechanism of this alternation.

3. Causative-inchoative alternation in Japanese

Kageyama (1996:145) proposes that processes at the lexical conceptual structure to account for much of the alternation phenomena in Japanese. The process, called anti-causativisation 反使役化, is illustrated by the following example:

- (14) a. 花瓶を壊した。
Kabin-o kowashita.
vase-ACC broke (vt.)
'(Someone) broke the vase.'

[x CONTROL [y BECOME [y BE AT-z]]

b. 花瓶が壊れた。

Kabin-ga kowareta.

vase-NOM broke (vi.)

‘The vase broke.’

[x=y CONTROL [y BECOME [y BE AT-z]]

Kageyama proposes that for verbs that have corresponding transitive and intransitive pairs, the underlying meaning is causative, as shown in (14a). When an intransitive sentence occurs, the causer (x) is regarded as identical to the entity undergoing change (y). As a result, the causer is bound semantically and does not appear in the syntactic structure. Kageyama further argues that the same process applies to English words that undergo causative-inchoative alternation without morphological change (ergative verbs). Applying this analysis to *-ise/-ify/-en* verbs, we have the following:

(15) a. The workers broadened the road.

[x CONTROL [y BECOME [y BE AT-z]]

b. The road broadened.

[x=y CONTROL [y BECOME [y BE AT-z]]

In (15a), x represents the causer (the workers); y represents the entity undergoing change (road). z represents the state to which the event is heading (broadened). This is a transitive structure. In (15b), the causer is identified with the entity undergoing change. The causer is suppressed in the linking process to syntactic structure, so that only the entity undergoing change is linked. In other words, the road is seen as its own causer, as somehow being responsible for the broadening process. There is, however, a condition attached to this anti-causativisation process: ‘the entity undergoing change must have the qualification or quality to act as a causer (変化対象そのものが使役主として働く資格ないし性質…を持っていないといけない。1996:160)’. Kageyama calls this the entity’s ‘internal control (内在的コントロール)’.

The transitive form is regarded as more basic, from which intransitive form is derived. The following example shows that there is more restriction on the intransitive use (Kageyama 1996:203).

(16) a. ナポレオンがフランス領土を拡大した。

Napoleon-ga Furansu ryoodo-o kakudai-shita.

Napoleon-NOM France territory-ACC enlarged

‘Napoleon enlarged the territory of France.’

- b. フランス領土が拡大した。
 Furansu ryodo-ga kakudai-shita.
 France territory-NOM enlarged
 ‘The territory of France expanded/enlarged.’
- c. コピー機を使って、図面を拡大した。
 Kopiiki-o tsukatte, zumen-o kakudai-shita.
 Photocopier-ACC using, plans-ACC enlarged
 ‘Using a photocopier, (I) enlarged the plans.’
- d. ? (コピー機で) 図面が拡大した。
 ?(Kopiiki-de) zumen-ga kakudai-shita.
 (Photocopier-INST) plans-NOM enlarged
 ‘The plans enlarged with a photocopier.’

However, Kageyama does not offer any explanation as to why ‘the territory of France’ has more internal control than ‘the plans’. It is also hard to see how the road in (15) has internal control. We also note that some people find (16d) acceptable if they have seen enlargement of copies many times, or if a causation phrase such as ボタンを押すと (botan-o osu to ‘when I pressed the button’) is added.

Apart from this reservation, Kageyama’s analysis seems to work well with English *-ise/-ify/-en* verbs, since transitive is the norm with most of these verbs. Verbs that only have transitive use lack internal control, and have an LCS like that in (17) and (18). The first *y* is missing, thus preventing the occurrence of the causal chain which would lead to identification (同定) between the causer and the entity undergoing change:

- (17) a. The cook tenderised the meat. [x CONTROL [BECOME [y BE AT-z]]
 b. *The meat tenderised.

The same analysis would work with a transitive Japanese *-ka* verb like *seitooka* 正当化.

- (18) a. [x CONTROL[BECOME [y BE AT-z]]
 暴力を正当化した。
 Booryoku-o seitooka-shita.
 violence-ACC justified
 ‘(Someone) justified the violence.’
- b. *暴力が正当化した。
 *Booryoku-ga seitooka-shita.
 violence-NOM justified
 ‘The violence justified. (intransitive use)’

An ergative verb like *honkakuka* 本格化 ‘to (cause to) step up/become full-fledged’ should have the two structures (example from Kobayashi 2004:189):

- (19) a. [x CONTROL [y BECOME [y BE AT-z]]
 主要国が為替市場への協調介入を本格化した。
Shuyookoku-ga kawase shijoo-eno kyoochookainyuu-o honkakuka-shita.
 Main nations-NOM exchange market-on coordinated intervention-ACC stepped up
 ‘The key nations have stepped up their coordinated intervention in the exchange markets.’
- b. [x=y CONTROL [y BECOME [y BE AT-z]]
 主要国による為替市場への協調介入が本格化した。
Shuyookoku-niyoru kawase shijoo-eno kyoochookainyuu-ga honkakuka-shita.
 Main nations-by exchange market-on coordinated intervention-NOM stepped up
 ‘Coordinated intervention on the exchange markets by key nations have stepped up.’

A verb like *hyoomenka* 表面化 ‘to come to the surface (hyoomen=surface)’, with only an intransitive use, would have the state part of the lexical conceptual structure:

- (20) a. [BECOME [y BE AT-z]]
 疑惑が表面化した。
Giwaku-ga hyoomenka-shita.
 suspicions-NOM came to the surface
 Suspicious (about something) are coming to the surface.’
- b. *疑惑を表面化した。
 **Giwaku-o hyoomenka-shita*
 suspicions-ACC cause to come to the surface
 ‘(Someone) caused the suspicions to come to the surface.’

However, as Kobayashi (2004:189) notes, Kageyama’s analysis is difficult to apply when a seemingly ergative verb sometimes only has an intransitive use:

- (21) a. 行楽シーズンが本格化した。
Kooraku shiizun-ga honkakuka-shita.
 Outdoor leisure season-NOM became full-fledged
 ‘The outdoor leisure season has well and truly begun.’
- b. *桜前線の北上が行楽シーズンを本格化した。
 **Sakura zensen-no hokujoo-ga kooraku shiizun-o honkakuka-shita.*
 Cherry blossom frontline-GEN moving north-NOM outdoor leisure season-ACC stepped up

‘The cherry blossoms blooming further north have stepped up the outdoor leisure season.’

What is the LCS for (21a)? It cannot be the one given in (19b) because that structure presupposes the existence of a causer, which does not exist-- as evidenced by the ungrammaticality of (21b). The only other choice left as an LCS for (21a) is [BECOME [y BE AT-z]. As Kobayashi points out, this is problematic, as we would end up with two structures for the same verb 本格化:

- (22) a. 主要国による為替市場への協調介入が本格化した。
‘Coordinated intervention on the exchange markets by key nations have stepped up.’
[x=y CONTROL [y BECOME [y BE AT-z]]
x=y : Coordinated intervention on the exchange markets/為替市場への協調介入
- b. 行楽シーズンが本格化した。
‘The outdoor leisure season has well and truly begun.’
[BECOME [y BE AT-z]

According to Kobayashi given no appreciable difference between the meanings of the word *honkakuka* in (22a) and (22b) (to become full-fledged, to step up), it does not make sense to have two LCS’s. Yet this is the logical conclusion we reach with Kageyama’s analysis. We are forced to recognise two words, and hence two entries in the lexicon.

Kobayashi suggests that the controllability of the entity undergoing change is an important factor here. If an entity undergoing change can be controlled, it can be part of a transitive sentence. Thus in (21) 行楽シーズン *kooraku shiizun* ‘outdoor leisure season’ is non-controllable, and does not form part of an transitive sentence. In (19) 為替市場への協調介入 *kawase shijoo-eno kyoochookainyuu* ‘coordinated intervention on the exchange markets’ is controllable, and it forms part of the transitive sentence. We noted the same phenomenon in (16) above. In that sentence, if a causal phrase such as ボタンを押すと *botan-o osu* to ‘when I pressed the button’ is added, the acceptability is greatly enhanced.

A search on Yahoo! News Japan on 24 March 2005 yielded 126 intransitive uses of *honkakuka*, but only seven transitive uses. This would indicate that *honkakuka* is not predominantly transitive. Transitive uses are only allowed if there is a perception of controllability.

We summarise the above discussion in the form of a condition:

(23) *Condition for externally caused events*

For a transitive sentence to occur, the entity undergoing change must be controllable by an agent or by a cause.

4. Causative-inchoative alternation in English

We now turn to the analysis of Levin and Rappaport Hovav (1994, 1995), who use the concept of internally/externally caused verbs to explain the phenomenon of transitivity.

Many *-ise/-ify/-en* verbs in English form only transitives. Some can be used as both transitives and intransitives; very few are exclusively intransitive.

As evidence for the transitive bias in English, Levin and Rappaport Hovav (1995:95) note that none of the recently coined *-ise* verbs are exclusively intransitive:

- (24) a. They will window*ise* the computer. They will securit*ise* the planes.
b. *The computers will window*ise*. *The planes will securit*ise*.

Pasteurise is an example of an established verb that cannot detransitivise:

- (25) a. The farmers pasteurised the milk.
b. *The milk pasteurised. (Levin and Rappaport Hovav 1995:104)

As Levin and Rappaport Hovav (1995:104; henceforth L&RH) explain, these verbs cannot detransitivise because they denote events that cannot happen without the external intervention of an agent. They are *externally caused verbs* (L&RH 1994). Other verbs describe events that can happen without an external cause. These are called *internally caused verbs* and they can detransitivise:

- (26) a. I solidified the mixture./ The mixture solidified. (L&RH1995:104)
b. The cook caramelised the sugar./ The sugar caramelised (L&RH1995:104)

Some externally caused verbs have further restrictions on the kind of subjects with which they can appear:

- (27) a. Carla humidified her apartment. (L&RH1995:104)
[Agent, Theme]
b. *The weather humidified her apartment. (L&RH1995:104)
*[Cause, Theme]

Natural force subjects are excluded, as (27b) shows (L&RH 1995:104). However, we note that agentivity is not the issue here:

- (28) The humidifier humidified her apartment. (L&RH 1995:104)
[Instrument, Theme]

What is important here is not whether the subject is agentive or not, but whether it can be seen as a normal external cause for the event, based on our knowledge of the world. The humidifier is an instrument, but mention of the instrument implies there is an agent behind the scenes. This greatly increases the acceptability of the sentence. The following examples with other verbs illustrate this:

- (29) a. The waiter cleared the table. [Agent, Theme]
 b. *The table cleared. [Theme] (L&RH 1995:104)
- (30) a. The wind cleared the sky. [Cause, Theme]
 b. The sky cleared. [Theme] (L&RH 1995:104)

The same verb, *clear*, shows different behaviour under different circumstances. In (29), we know tables are usually cleared by an external animate force, therefore it cannot be expressed intransitively. According to L&RH, this is an externally caused verb. We can also rephrase this slightly differently: there is no natural association between the verb *clear* and *table*, the entity undergoing change. *clear* and *table* are only associated via an intermediary: *the waiter* or some other animate force.

In (30), we know from experience that the sky can be cleared (apparently) spontaneously. Thus *clear* in (30) is an internally caused verb, and exhibits detransitivisation. It should be clear by now that L&RH's definitions of internally caused verbs and externally caused verbs are based not so much on objective scientific observation of the causes as on our *perception* of them. In (30), there is in fact an external cause for the clearing sky: wind. Nevertheless, as wind is not normally visible, we perceive the event as spontaneous, and categorise this verb as internally caused. On another level, we can also say that there is a natural association between the verb *clear* and *sky*; there is no need for an intermediary.

Similarly, in (26a), our experience with cooking tells us that substances often appear to solidify spontaneously over time, although a scientific analysis would reveal that factors in the environment actually solidify the substances. We can then say there is a natural association between *solidify* and *mixture*, with no need for an intermediary. Perception of spontaneity seems to depend on this natural association. In (26b), the intransitive sentence seems to describe a scenario many of us have experienced when making caramel: suddenly, without warning, a sugar solution turns brown and thickens. We naturally associate *caramelise* with *sugar*, because sugar is the very substance we use to caramelize.

Building on Kageyama and L&RH's analysis, we propose an extra rule that would more accurately predict the appearance of intransitives:

- (31) *Condition for internally caused events*

In order to produce an intransitive sentence, the speaker must have a perception of spontaneity about the event. This perception is based on experience. There must be a cognitive association between the verb and the entity undergoing change.

We can use the above condition to explain one of the more enigmatic examples cited so far. Recall that in (16), the concept of ‘internal control’ proposed by Kageyama (1996:160) could not explain why the territory of France would have more internal control than a drawn plan:

- (32=16) a. ナポレオンがフランス領土を拡大した。
‘Napoleon enlarged the territory of France.’
b. フランス領土が拡大した。
‘The territory of France expanded/enlarged.’
c. コピー機を使って、図面を拡大した。
‘Using a photocopier, (I) enlarged the plans.’
d. * (コピー機で) 図面が拡大した。
‘The plans enlarged with a photocopier.’

(Kageyama 1996:203)

We understand that, from our knowledge of the world, national boundaries tend to expand indefinitely unless checked by natural or human forces. Thus China expanded to the Himalayas to the west and to the Amur River to the east. The United States expanded to the Pacific. The expansion of Japan and Australia was eventually stopped only by the ocean surrounding these countries. We thus possess a natural association between *expand* and *territory*. We do not, however, naturally hold a natural association between *enlarge* and *plans*. A drawn plan can only be enlarged via an intermediary, namely a photocopier or some other printing device. Hence, the mention of a button greatly improves the sentence, and a person who has seen the process many times is more likely to approve of the intransitive version of the sentence.

5. Conclusion

We have examined the theoretical framework of L & RH and Kageyama, and found these to be essentially correct, albeit with certain reservations. Where the use of a transitive or intransitive sentence is marked, certain conditions need to be applied. Specifically, we have argued that two extra rules would greatly enhance the analysis (repeated here):

(33) *Condition for externally caused events*

For a transitive sentence to occur, the entity undergoing change must be controllable.

(34) *Condition for internally caused events*

In order to produce an intransitive sentence, the speaker must have a perception of spontaneity about the event. This perception is based on experience. There must be a cognitive association between the verb and the entity undergoing change.

LIST OF ABBREVIATIONS USED IN GLOSSES

NOM	nominative	GEN	genitive
ACC	accusative	vt.	transitive verb
INST	instrumental	vi.	intransitive verb

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A comparison of causative-inchoative alternation in *-ise/-ify/-en* in English and *-ka* (化) in Japanese

Patrick P.W. Lam

本研究の目的は、英語の *-ise/-ify/-en* 動詞と日本語「～化」動詞の意味を比較することにある。これらの動詞の類似性を調査した上で、日英語における使役始動交替について考察を行う。影山（1996）と Levin and Rappaport Hovav（1995）の研究を踏まえ、日英両語ともに始動形は使役形から派生すると予測し、両語の使役始動交替の分析を行う。分析をより精密なものにするために、本研究では以下の二つのルールを提案する。

1. ある事象を他動詞文にするためには、事象の変化対象はコントロールできるものでなければならない。
2. ある事象を自動詞文にするためには、話者が事象の自発性をみとめなければならない。この自発性に対する判断は経験に基づいたもので、多くの場合、話者が背後の動作主の存在をみとめることが関わっていると思われる。