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Syntax/Semantics discrepancy in the grammaticalization of resultatives: Evidence from Karimata-Miyako Ryukyuan

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I present clear evidence from Karimata-Miyako Ryukyuan that semantic change can precede a syntactic change in the process of grammaticalization. In this dialect, the morpheme *ufu* has an aspectual and a conjectural use, and the change proceeds from the former to the latter in accordance with the “scope-increase” (Tabor & Traugott 1998) hypothesis. While the aspectual use of *ufu* only takes accomplishment and activity verbs, carrying their resultative interpretations, the conjectural use is insensitive to the aspectual type of verbs and is also compatible with achievement and state verbs. In addition to evidential/modal meanings, *ufu* develops a tense-like meaning that refers to the past. In spite of those semantic developments, *ufu* occupies the same syntactic position as that of the aspectual use.

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1 Introduction

One of the important issues in recent studies of grammaticalization is the hypothesis that grammaticalization can accompany “scope-increase” (Tabor & Traugott 1998) but cannot accompany “scope-decrease.” This hypothesis is most manifest in the verbal domain, as in the example (1), taken from Roberts (2010: 56).

- (1) Mary might have been being arrested.
 [Modality [Tense [Aspect [Voice Verb]]]]

According to this hypothesis, morphemes in grammatical categories closer to the verbal stem can develop into those far from it, but not vice versa. The scope-increase hypothesis of grammaticalization has been proposed in different frameworks, such as Functional Discourse Grammar (Hengeveld 2011; 2017) and Generative Grammar (Roberts & Roussou 2003; van Gelderen 2004) and its application within Role & Reference Grammar is included in a discussion on scope-increase in Narrog (2012: §3.3.1). Though they have similar results on the path of grammaticalization (Narrog 2012: *ibid.*), different assumptions are maintained on the notion of scope: while it is primarily syntactic in the generative framework, it is semantic in Functional Discourse Grammar built upon such layers as “state-of-affairs,” “episode,” “proposition,” etc.¹ This paper argues that the study of grammaticalization and scope-increase needs to take into consideration both syntactic, close to the surface order, and semantic, particularly lexical, levels by showing a discrepancy in the progress between them.

Given a discrepancy between syntactic and semantic change, a question naturally arises as to which aspect of the change precedes the other. Although a number of grammaticalization studies have assumed that semantics changes ahead of morphosyntax (Haspelmath 1999: §4.4; Heine & Kuteva 2002: 3–4; Hopper & Traugott 2003: §5.1, etc.),² most of them refer to the morpho(phono)logical properties of a relevant form caused by, for example, cliticization, affixation, erosion, fusion, etc. Even the studies explicitly concerned with syntax focus on a change of syntactic category possibly accompanied by a structural reanalysis (cf. Brinton 1988: §3; Francis & Yuasa 2008; Denison 2010: §2.1), and few studies have noted the relative order of the change between the hierarchical position

¹ This notional difference might be smaller than it looks. For example, a fine-grained differentiation of functional categories proposed by Cinque (1999), which is adopted for the explanation of grammaticalization by Roberts (2010), can be considered to heavily rely on semantic categories rather than to be a purely syntactic hierarchy (Narrog 2012: 3.2.5, see also Ernst 2007). The reason behind this semantic reliance, I suppose, is that the scope-increase hypothesis aims to provide a universal directionality of language change, which requires some abstraction of the levels of representation because the surface order of morphemes could slightly differ from language to language. The aim of this paper is to show that, even given the universality of scope-increase, it is necessary to refer to the surface order of a particular language to show the actual process of grammaticalization.

² See footnote 22 for a purported exception.

occupied by a grammatical item and its semantics.³ Still, the above considerations are instructive in that they indicate the initiation of change by semantics. The case study in this paper reveals that their prediction is correct also in the discrepant change of syntax and semantics in the verbal domain, which casts doubt on a purely syntactic explanation of grammaticalization.

The evidence for the change in this paper comes from my own fieldwork on an endangered dialect of Ryukyuan, the details of which will be given in Section 2. After describing the structure of the verb complex of this dialect in Section 3, we will focus in Section 4 on two different uses of the morpheme *ufu*, which primarily expresses a resultative aspect but which can also express a derived conjectural meaning distinct from the original resultative one. Section 5 will be devoted to discussing the grammaticalization of this morpheme, showing the discrepancy of the change between syntax and semantics, and the conclusion will be given in Section 6.

2 On Karimata-Miyako Ryukyuan

Miyako Ryukyuan is a language spoken in the Miyako Islands, located about 300 kilometers southwest of Okinawa Island. It is grouped with the languages spoken in Yaeyama and Yonaguni to constitute Southern Ryukyuan. Southern Ryukyuan and the North Ryukyuan languages together form the single language group of Ryukyuan. Ryukyuan is a sister language of Japanese which is separated from it before the 8th century (Hattori 1959; Pellard 2015), the period in which the oldest documents of Japanese are attested.

Karimata is a variety of Miyako-Ryukyuan, spoken in the north of the Miyako main island (Figure 1). Though the genealogy of dialects in the Miyako main island is not necessarily clear, Karimata shares some innovations with the Oura dialect, thus presumably constituting a northern subgroup of the main island dialects (Pellard 2009: Ch. 9). Like other Ryukyuan languages, Karimata has major typological features of morphosyntax in common with Japanese: head final, SOV word order, dependent marking, accusative case alignment, agglutinative suffixal morphology, etc.⁴ I will present the structure of the verb complex of the Karimata dialect in the next section and show that it also looks very similar to that of Japanese.

³ A note on research relevant to the discrepancy under discussion may be in order. Although the coexistence of auxiliaries and periphrastic constructions for a single meaning, as seen in pairs like *can* and *be able to*, *will* and *be going to*, etc. may imply some syntactic and semantic discrepancies in one language, their discrepancy is not discussed in the context of “scope-increase.” Brinton (1988: §3) considers this discrepancy as indicating the semantic change prior to its syntax, but her syntax refers to the formation of Auxiliary category such as *can* and *will*, and not to the hierarchical structure of the verb complex. Traugott (2003) exceptionally discusses the change of semantics followed by an increase in structural scope, though not in the verbal domain: she notes that the semantic change of *indeed* to “epistemic” meanings in English precedes its appearance in the clause-initial position, which she considers as the default position for that use. Outside Germanic and Romance languages, I have not noticed any pieces of research that mention the discrepancy under discussion.

⁴ See Kinuhata & Hayashi (2014) for a grammatical sketch of the Karimata dialect.

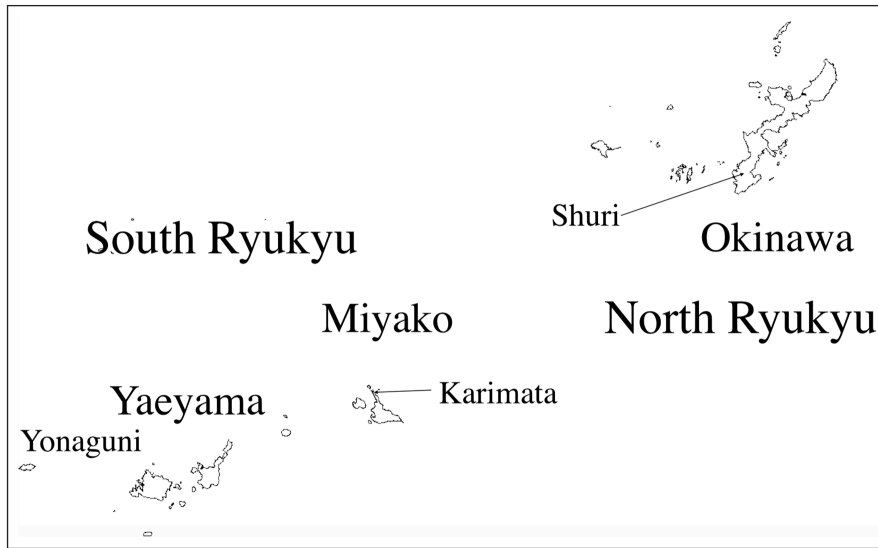


Figure 1: Karima-Miyako Ryukyuan.

Due to the combination of these typological similarities and the blending between Ryukyuan and Japanese cultures, the number of traditional speakers of this dialect is severely declining. The number of speakers can be estimated at around 110, based on the assumption that people over the age of 65 in the year 2020 are fluent speakers of the language.⁵ This means that it is difficult to elicit full-fledged grammatical judgments from many speakers. Therefore, the data of this paper is mainly collected from one speaker of this language through extensive interviews with her, but more simplified elicitations were conducted with two other speakers to confirm the data, and, in addition, I use examples from the texts of spontaneous discourse recorded by myself. A note on consultants from whom the data is collected is given below where ‘M’ and ‘F’ represent their sexes, and the subscripted numbers indicate their years of birth (* indicates the same speaker).

- (2) a. Main consultant: F₁₉₃₃
 b. Other consultants: F₁₉₃₄*, M₁₉₄₂
 c. Speakers in discourses: F₁₉₂₄, M₁₉₂₆, F₁₉₂₆, F₁₉₃₄*

3 The structure of the verb complex

Ryukyuan languages have typological properties strikingly similar to Japanese. The order of suffixes and words appearing in the verb complex is not an exception. The Karimata dialect aligns the elements in this complex roughly as in (3). I assume a hierarchical structure of those elements indicated by brackets but ignore the structures projected from the heads for expository purposes.

⁵ The estimation is based on the demographic research of Miyakojima City in the following web site. Therefore, this does not include the speakers living outside the Karimata village. https://www.city.miyakojima.lg.jp/gyosei/toukei/files/R1_02jinkouroudouryoku.pdf.

(3) [...[...Verb-Voice] Aspect]-Honorifics]-Negation]-Tense] = Modality]

Some notes on the morphological status of these elements might be in order. Voice elements such as passives and causatives are suffixed to the verb root as indicated by the hyphen -; Aspect is usually expressed by an auxiliary or a serial verb construction; Honorifics, Negation and Tense are suffixed to the preceding (auxiliary) verb, with the latter two fused when the tense is past; Modality appears as a clitic attaching to various word classes, indicated by =.⁶

Although it is unrealistic to find an example that loads a single verb complex with all those supplements in spontaneous discourse, the examples in (4) illustrate some parts of the order in (3) and confirm the relevant structure as a whole.

- (4) a. *izz-ari u-tai = juu.* (Verb-Voice Aspect-Tense)
 scold-PASS PROG-PST = SFP
 ‘(I) was being scolded.’ (F₁₉₂₆)
- b. *ai-dai = biran = na.* (Verb-Tense = Modality)
 say-PST = CONJEC = SFP
 ‘It seems that (we) said...’ (M₁₉₂₆)
- c. *kisi ur-ama-an = riba* (Verb Aspect-Honorifics-Negation)
 wear PROG-HON-NEG = CSL
 ‘Because (He) is not wearing (a shirt).’
- d. *(mmida) owara-ddan = padzi.* (Verb-Negation.Tense = Modality)
 (yet) finish-NEG.PST = CONJEC
 ‘(It) was not finished yet.’ (F₁₉₂₆)

The examples in (4) are given only to illustrate the relevant orders and are not intended to fully list the morphemes in each grammatical category. It is necessary for the following section, however, to look at the “Verb Aspect” complex more closely. The aspectual morphemes of the Karimata dialect consist of two classes, which appear separately before and after the auxiliary introducing benefactives in the clause.⁷ Thus, the structure of auxiliaries is comprised of the following three slots.

(5) [...[...Verb] Aspect₁] Benefactive] Aspect₂],...]

⁶ I consider only epistemic modality appearing in the finite clause here. Dynamic and bouletic modalities appear as suffixes to verbs and deontic modalities are expressed using conditional constructions. These are other traits that are shared with Japanese. I exclude them from the schema in (3) because of their irrelevance to the discussion of the current paper.

⁷ Some auxiliary verbs can occupy the same position as benefactives. Directional *ifu* ‘to go’ and *ffu* ‘to come’ and experiential (not necessarily experiential) *mii* ‘to try’ (originating in ‘to see,’) are considered to be among such examples.

Though it is also difficult to attest the co-occurrence of those auxiliaries in natural discourse, speakers have clear judgments about the order of these items. *padzimi* and *tudzimi*, which target the inceptive and terminative aspects respectively, can precede benefactive *fii* as in (6a), but cannot be preceded by it as in (6b), thus occupying the Aspect₁ position.

- (6) a. *panasi* {*padzimi/tudzimi*} *fii*
 speak {start/finish} BEN
- b. **panasi* *fii* {*padzimii/tudzimii*}
 speak BEN {start/finish}

On the other hand, *ui* and *ufu*, the focus of the next section, can follow the benefactive but cannot be followed by it as shown in (7), thus they occupy the Aspect₂ slot. ‘uri’ and ‘uki’ in (7b) are inflected forms of *ui* and *ufu* respectively.

- (7) a. *panasi* *fii* {*ui/ufu*}
 speak BEN {continuous/complete}
- b. **panasi* {*uri/uki*} *fii*
 speak {continuous/complete} BEN

As expected from the above facts, Aspect₁ must precede Aspect₂ as (8) shows.⁸

- (8) a. *panasi* {*padzimi/tudzimi*} {*ui/ufu*}
 speak {start/finish} {continuous/complete}
- b. **panasi* {*ui/ufu*} {*padzimii/tudzimii*}
 speak {continuous/complete} {start/finish}

Occupying the same structural position, i.e., Aspect₂, *ui* and *ufu* cannot appear simultaneously in one single verb complex as in (9), which seems to suggest that their aspectual meanings are in some sense complementary.

- (9) **panasi* {*uri ufu/ uki ui*}
 speak {continuous complete/ complete continuous}

These facts give us good ground to describe the meaning of *ufu* exclusively by way of comparison with that of *ui* in the next section.

⁸ The two different classes Aspect₁ and Aspect₂ are noted in Shimoji (2008: §6.4.2.2-3) (Irabu-Miyako Ryukyuan) as agglutinative SVCs (Serial Verb Constructions) and agglutinative/phrasal AVCs (Auxiliary Verb Constructions) respectively. Their agglutinative and phrasal status may relate to the word order in (5). Shimoji’s (2008) classification of SVC and AVC is based on the fact that the head of the former is lexical, whereas that of the latter is more grammaticalized. This difference suggests that more verbs can be the head of the former than of the latter. The Karimata dialect only uses *ui* and *ufu* frequently and other aspectual morphemes classified as AVCs in Shimoji (2008) such as *mii* (experiential) and *njaa* (perfective?) are scarcely used in discourse.

4 Aspectual and conjectural use of *ufu*

In Section 4.1, we will look at the aspectual use of *ufu*, comparing it with that of *ui*. It was indicated in the previous section that *ui* and *ufu* occupy the same syntactic slot and cannot appear simultaneously. We will see the reason for this from a semantic point of view. Section 4.2 will show that *ufu* has a conjectural use that is different from its aspectual use. The existence of this use is most manifest in the verb types for which aspectual *ufu* is unsuitable, but I argue that the use is not confined to those verb types.

4.1 Aspectual use

The aspectual auxiliaries *ui* and *ufu* are assumed to be derived from main verbs. Aspectual *ui* is grammaticalized from a verb of existence with animate subjects, which is attested in the current Karimata dialect and inflects in the same way as the auxiliary. The source of *ufu* is not attested as it is, but is assumed to be preserved in the verb *utsifu* (< * *utsi* + *ufu* ‘hit? + put’), which means ‘to put’⁹ and whose conjugation is the same as the auxiliary’s as in **Table 1**.¹⁰

		Non-past	Past	Negation	Infinitive	Causal	Imperative
<i>ui</i>	Main	ui	u-tai	ur-an	ur-i	ur-iba	ur-i
	Auxiliary	ui	u-tai	ur-an	ur-i	ur-iba	ur-i
<i>ufu</i>	Main	utsifu	utsifu-tai	utsik-an	utsik-i	utsik-iba	utsik-i
	Auxiliary	ufu	ufu-tai	uk-an	uk-i	—	uk-i

Table 1: Lexical source of *ui* and *ufu*.

The grammaticalization from a verb of existence and a verb of putting into aspectual morphemes is widely attested in Japonic languages and therefore is not surprising.¹¹ We now look at the properties of the relevant aspectual morphemes. **Table 2** summarizes the interpretations of *ui* and *ufu* according to the classification of verbs based on Vendler (1967: Ch. 4).

⁹ One of the reasons for assuming that *ufu* is derived from a verb meaning ‘to put’ is that *ufu* phonologically corresponds to the Japanese verb *oku*, which also means ‘to put.’ Japanese /o/ is usually realized as /u/ in Karimata, as shown in /oto/ vs /utu/ (sound) and /mono/ vs /munu/ (thing) and Japanese /ku/ realized as /fu/, as in /kumo/ vs /fumu/ (cloud) and /kusa/ vs /fusa/ (weed).

¹⁰ The causal form of the auxiliary *ufu* is realized as the sequence of the non-past form of *ufu* followed by a causal particle =*riba*, i.e., ‘ufu = riba.’

¹¹ It might be surprising that most Miyako Ryukyuan dialects do not grammaticalize the existential verb of inanimate subjects. Ikema and Nagahama dialects are exceptions in that they grammaticalize the existential verb with inanimate subjects (Shimoji 2008: §10.5.2, Hayashi 2013: §4.1.4), like the Japanese (-*te*) *aru* form. What is caused by these differences of lexical sources is beyond the scope of this paper and will be investigated on another occasion.

	Accomplishment	Activity		Achievement	State
		+ Agentive	-Agentive		
<i>ui</i>	Progressive	Progressive	Progressive	Resultative	(Progressive?)
<i>ufu</i>	Resultative	Resultative	(Resultative)	—	—

Table 2: Aspectual usage of *ui* and *ufu*.

As **Table 2** shows, the primary aspectual interpretation of the verb (phrase) to which *ui* attaches is progressive, whereas that of the verb (phrase) with *ufu* is resultative.

When *ui* takes achievement verbs, however, it bears a resultative interpretation like the Japanese (*-te*) *iru* form, which is also grammaticalized from an existential verb with animate subjects. Let us examine the details of the above interpretations in turn.

Accomplishment verbs, which have both agentive subjects and thematic objects, make clear the distinction between *ui*-attached and *ufu*-attached patterns. While the sentence with *ui* receives an ongoing state interpretation of the predicate as in (10a), that with *ufu* entails the completion of the event as in (10b). Since the thematic object marks the telicity of this verb class, these patterns give rise to different connotations as to the existence of the object: While the latter entails the existence of the doughnut, the former does not when the tense is present because the event time of the former extends beyond the utterance time (Bennett & Partee 1972; Dowty 1979).

- (10) a. *ba=a nnama=du satapanbin=nu agi ui.*
 1SG=TOP now=FOC doughnut=ACC fry PROG
 ‘I am now frying doughnuts.’
- b. *ba=a nnama=du satapanbin=nu agi ufu.*
 1SG=TOP now=FOC doughnut=ACC fry RES
 ‘I have now fried doughnuts.’

The existence of the thematic object is entailed even if the action is itself done in the remote past. For example, sentence (11) is interpreted as the speaker having the relevant house at the time of speech.

- (11) *ba=a itsiti mai-n=du jaa=ju fuki ufu.*
 1SG=TOP five.years before-ADV=FOC house=ACC build RES
 ‘I built a house five years ago.’

To cancel this entailment, it is required to add a past tense marker *-dai* (here devoiced) as in (12a) or an explicit experiential marker *mii* as in (12b).

- (12) a. *ba = a itsiti mai-n = du jaa = ju fuki ufu-tai = suga = du*
 1SG = TOP five.years before-ADV = FOC house = ACC build RES-PST = CONC = FOC
nnama = a toori ui.
 now = TOP fall.over RES
 ‘I had built a house five years ago, but it has fallen over now.’
- b. *ba = a nnama = taasja = a mii-n = du satapanbin = nu agi mii ufu.*
 1SG = TOP now = by = TOP three.times-ADV = FOC doughnut = ACC fry EXPR RES
 ‘I have fried doughnuts three times so far.’

(12a) cancels the existence of the product by shifting the reference time to the past. Without the past tense marker, *ufu* refers to the utterance time and relates the past event to the present as a resultative perfect as in (11) or as an experiential perfect as in (12b) (in the terminology of Comrie 1976: Ch. 3). Thus, *ufu* indicates the relevance of a preceding event denoted by the proposition to a situation at the reference time.

Activity verbs, without thematic objects which would exhibit the telicity of events, make it less clear than accomplishment verbs what the target state is. Still, the progressive and resultative contrast is obtained by whether the aspectual slot is filled by *ui* or *ufu*. When *ui* saturates it, the sentence obtains an ongoing interpretation as with accomplishment verbs, whereas the completion of an event is entailed when it is filled by *ufu*. In the latter case, the resultative state indicates that the agent acquired ability by doing the relevant activity, that is, the speaker’s ability to dance well at today’s dance competition in (13b).

- (13) a. *nnama = a budui = nu rensjuu asi ui.*
 now = TOP dance = GEN practice do PROG
 ‘I am now practicing dancing.’
- b. *nnama = a budui = nu rensjuu asi ufu.*
 now = TOP dance = GEN practice do RES
 ‘I have practiced dancing now.’

Some activity verbs do not have an agent as a subject. While the lack of an agentive subject does not affect the use of *ui* as in (14a), it hinders the use of *ufu* because no subject can be attributed the “ability” evoked by the predicated event. In order for *ufu* to be used with non-agentive activity verbs, there must be some effect caused by the event denoted by the proposition.

- (14) a. *ami = nu = du ffi ui.*
 rain = NOM = FOC fall PROG
 ‘It is raining.’

- b. (The speaker is asked whether they can plant sugar canes today:)

ami = nu = du ffi **ufu.**

rain = NOM = FOC fall RES

'It has rained. (So we can plant it.)'

In (14b), raining leaves the ground wet, which licenses the use of *ufu*. When it is not possible for the event to leave some effect, however, the sentence cannot have an interpretation that makes it appropriate.

- (15) a. kjuu = ja tida = nu = du pikari **ui.**
 today = TOP sun = NOM = FOC shine PROG
 'The sun is shining today.'

- b. *kjuu = ja tida = nu = du pikari **ufu.**
 today = TOP sun = NOM = FOC shine RES
 'The sun has shined today.'

The sentence (15b) is anomalous even after daytime.

Due to the absence of the thematic object, the use of *ufu* seems to extend to an experiential perfect. It is not clear in (16a) whether the agentive subject acquired any ability by reading the book three times and (16b) is appropriate even when the ground is not wet.

- (16) a. unu hon = nubaa mii-n = du jumi **ufu.**
 DEM book = ACC.TOP three-ADV = FOC read RES
 'I have read this book three times.'

- b. unu tsiki-n = na ami = nu = du mii-n ffi **ufu.**
 DEM month-ADV = TOP rain = NOM = FOC three-ADV fall RES
 'It has rained three times this month.'

The use of *ui* in these examples is acceptable for some speakers, but *ufu* is always preferred.

Achievement verbs are exceptional in that they receive a resultative interpretation by combining with *ui* rather than *ufu*.

- (17) a. nnama = a kii = nu = du toori **ui.**
 now = TOP tree = NOM = FOC fall.over RES
 'The tree is fallen over now.'

- b. *nnama = a kii = nu = du toori **ufu.**
 now = TOP tree = NOM = FOC fall.over RES
 'The tree is fallen over now.'

This seems to mean that *ui* is ambiguous between a progressive and resultative interpretation, but some attempts have been made to derive these ambiguous readings from a unified semantics of one aspectual morpheme in the case of Japanese (*-te*) *iru* (Shirai 2000; Ogihara 2020, etc.). Despite some differences in their approaches, it has been agreed among researchers since Okuda (1978a;b) that verbs with (*-te*) *iru* describe the situation of the subject. Therefore, the verb that describes the action of the subject receives a progressive interpretation whereas the verb that describes the change of state of the subject receives a resultative interpretation. I simply assume here that the same kind of idea can be applied to the case of *ui* in the Karimata dialect.

“Perfect” interpretations of achievement verbs are also obtained by attaching *ui* to the predicate, which can be considered an extension of the resultative use in (17a).

- (18) unu kii=ja mai-n=du toori **ui**.
 DEM tree=TOP before-ADV=FOC fall.over RES
 ‘This tree has been fallen over before.’

State verbs (predicates) have no state change and thus no completable event in the internal temporal structure of the lexical entry so that *ufu* is not allowed to apply to it. On the other hand, state predicates with *ui* bear an interpretation that the relevant state holds temporarily like some sentences of English progressives: the details of this use are discussed extensively in Kinuhata (2018).

- (19) nnama=a juu=ja atsi-kari=du **ui**.
 now=TOP hot.water=TOP hot-ACOP=FOC PROG
 ‘The water is currently hot./ *lit.* The water is now being hot.’

Ui in (19) seems to take the whole state as the argument and make the duration short, which would suggest that *ufu* should be able to take the whole state as its argument and make it complete. But this evokes a modal, not simply aspectual, meaning that is treated separately in this paper and will be addressed in the next section.

4.2 Conjectural use

In the last section, we saw that aspectual *ufu* selects accomplishment and activity verbs as its main verb and rejects achievement and state verbs. This does not mean, however, that *ufu* is never used with the latter. For example, while the sentence in (20), which contains the state predicate *maa* ‘tasty,’ is ungrammatical if the speaker has personally tasted the water of Miyako in former days, it becomes appropriate if the speaker does not know (or has forgotten) the taste and conjectures it.

- (20) ikjaan = nu Mjaaku = nu mit = tsa maa-ri = du **ufu**.
 old.days = GEN Miyako = GEN water = TOP tasty-ACOP = FOC CONJEC
 ‘I guess the water of old Miyako was tasty.’

The same contrast is observed with achievement verbs. While the sentence in (17b), repeated here as (21a), is ungrammatical if uttered when the speaker sees the fallen tree, (21b) is acceptable when she has not seen any fallen trees directly and conjectures the situation.

- (21) a. *nnama = a kii = nu = du toori **ufu**.
 now = TOP tree = NOM = FOC fall.over RES
 ‘The tree is fallen over now.’
- b. kinu = nu taifuu = basi kii = nu = du toori **ufu**(= padzi).
 yesterday = GEN typhoon = INS tree = NOM = FOC fall.over CONJEC = CONJEC
 ‘I guess trees are fallen due to yesterday’s typhoon.’

In (21b), an epistemic modal marker *padzi* makes the context clearer and my consultants prefer that it be added, but the sentence is still acceptable without it. I reserve the term “conjectural use” to refer to this use descriptively.

Given that there is a conjectural use of *ufu* in Karimata, a question now arises as to whether the conjectural use of *ufu* is compatible with verbs other than those denoting achievements and states. If *ufu* is grammaticalized to mark the proposition as conjectured, which would make it fall into the category of modality, then there is no reason for it to select verb types classified based on their aspectual properties. It is, however, difficult to ask speakers whether the use of *ufu* with accomplishment and activity verbs is conjectural or not. The reason for this difficulty stems from their preference to use other modal clitics such as *padzi* to make the context clear. To illustrate this point, let’s look at the examples in (22). The use of *ufu* in (22a) is aspectual as we saw in the previous section. What we expect as an example of conjectural *ufu* is something like the sentence in (22b), possibly without the modal clitic *padzi*. However, if it lacks *padzi*, the sentence sounds like the speaker knows that the subject has read the book, with *ufu* being interpreted as aspectual. Then, my consultants reported preferring to add *padzi* at the end.

- (22) a. (Why do you know the story of the movie?)
 hon = nu = du jumi **ufu**.
 book = ACC = FOC read RES
 ‘I have read the (original) book.’
- b. (Why does she know the story of the movie?)
 karja = a hon = nu = du jumi **ufu** = padzi.
 3.SG = TOP book = ACC = FOC read ???-CONJEC
 ‘I guess she has read the (original) book.’

But if we have *padzi* as in (22b), it cannot be decided whether the conjectural meaning of this sentence comes from *ufu* itself or the conjectural marker *padzi*, which leaves the possibility that *ufu* is an aspectual marker indicating the result of the event while the conjectural meaning is conveyed exclusively by *padzi*. (So, we glossed *ufu* as ??? here.)

A key to determining whether a particular use of *ufu* is conjectural or not is whether it is able to inflect for tense: while aspectual *ufu* inflects for tense, the conjectural use does not. (23) and (24) are examples of aspectual *ufu* used with accomplishment and activity verbs respectively. Depending on the reference time of each sentence, *ufu* inflects as ‘*ufu-tai*’ (past), ‘*ufu*’ (present), and ‘*uka-di*’ (volitional future).

- (23) a. kinu jaa=i ngii-daraa=du satapanbin=nu agi **ufu-tai**.
 Yesterday home=ALL back-COND=FOC doughnut=ACC fry RES-PST.
 ‘When I went home yesterday, (someone) had fried doughnuts.’ **Past**
- b. nnama=du satapanbin=nu agi **ufu**.
 now=FOC doughnut=ACC fry RES
 ‘(I) have now fried doughnuts.’ **Present**
- c. jusarabi=gami satapanbin=nu agi **uka-di**.
 evening=by doughnut=ACC fry RES-VOL
 ‘I will have fried doughnuts by the evening.’ **Future**
- (24) a. kinu=taasi=du ifu-n=mai budui=nu rensjuu asi **ufu-tai**.
 yesterday=until=FOC how.many-ADV=also dance=GEN practice do RES-PST
 ‘I had practiced dancing many times until yesterday.’ **Past**
- b. nnama=taasja=a ifu-n=mai=du budui=nu rensjuu asi **ufu**.
 now=until=TOP how.many-ADV=also=FOC dance=GEN practice do RES
 ‘I have practiced dancing many times up until now.’ **Present**
- c. raisjuu=taasi ifu-n=mai budui=nu rensjuu asi **uka-di**.
 next.week=until many.times-ADV=also dance=GEN practice do RES-VOL
 ‘I will have practiced dancing many times until next week.’ **Future**

In (24), we asked the consultants to utter the sentences with the reference time set to the time of a dance competition and the event denoted by the predicate completed before it.

On the other hand, conjectural *ufu* never inflects for tense.¹² First of all, it has a strong past-orientedness: consultants have a firm intuition that the event situated by conjectural *ufu* has already finished. Thus, sentences referring to the future are always judged as deviant as in (25a)

¹² The defect in the tense inflection of conjectural use is also pointed out by Karimata (2013) for the corresponding form in the Nobaru dialect in Miyako-Ryukyuan.

and (26a): note that (25) and (26) have achievement and state verbs respectively, with which only the conjectural use is compatible. As for the present, it takes the form of ‘ufu’ as in (25b) when the verb is an achievement. On the other hand, state predicates do not allow a present-tense interpretation corresponding to (25b) because of the aspectual-temporal interpretation retained in conjectural *ufu* (see the discussion on the interpretation of (32) in Section 5.2). What is crucial are examples (25c) and (26b), which obtain their evidence in the past but are incompatible with the past tense marker *-dai*.

- (25) a. *atsa = a taifuu = riba = du dentoo = ja kjaari **ufu** = padzi.
 tomorrow = TOP typhoon = CSL = FOC light = TOP go.out CONJEC = CONJEC
 ‘I guess lights will have gone out tomorrow because of the typhoon.’ **future**
- b. (The speaker hears that someone is lost now and conjectures the reason:)
 gaitoo = nu = du kjaari **ufu** = padzi.
 street.lamp = NOM = FOC go.out CONJEC = CONJEC
 ‘I guess the street lamp has gone out.’ **present**
- c. (The speaker hears that someone got lost yesterday and conjectures the reason:)
 gaitoo = nu = du kjaari {**ufu**/*ufu-tai}(= padzi).
 street.lamp = NOM = FOC go.out {CONJEC/CONJEC-PST}(= CONJEC).
 ‘I guess the street lamp had gone out.’ **past**
- (26) a. (The speaker sees someone trimming a road into a grove:)
 *jaanja = a unu ntsi = nu kama = n = du paa = nu ari
 next.year = TOP DEM road = GEN over.there = LOC = FOC grave = NOM exist
ufu(= padzi).
 CONJEC(= CONJEC)
 ‘I guess there will be a grave behind this road next year.’ **future**
- b. (The speaker recalls that a road into a grove was trimmed:)
 kanu ntsi = nu kama = n = du paa = nu ari {**ufu**/*ufu-tai}.
 DEM road = GEN over.there = LOC = FOC grave = NOM exist {CONJEC/CONJEC-PST}
 ‘I guess there were graves behind that road.’ **past**

(25c) is about an event that occurred yesterday, i.e., that someone got lost, and the sentence says that the street lamp might have gone out beforehand. Also, (26b) is about a past event, which is recalled by the speaker, and the speaker conjectures the existence of graves at that time. In such a case, we may expect the verb to take a past tense morpheme *-dai*, but this is in fact ungrammatical. This means that, though the reference time and, as a result, the time of the event are situated in the past semantically, the modal auxiliary is fixed as a “non-past” form.

Given the fact that conjectural *ufu* is frozen as a “non-past” form, let’s now look at the examples in (27), which have activity verbs, as with (22), but differ from it in the reference time, i.e., (27) is the past tense version of (22).

- (27) a. (Why did you know the story of the movie?)
 mai-n = du hon = nu jumi {*ufu/ ufu-tai}.
 before-ADV = FOC book = ACC read {RES/ RES-PST}
 ‘I had read the (original) book before (having watched the movie.)’
- b. (Why did she know the story of the movie?)
 mai-n = du hon = nu jumi {ufu/ufu-tai} = padzi.
 before-ADV = FOC book = ACC read {CONJEC/RES-PST} = CONJEC
 ‘I guess she had read the (original) book before (having watched the movie.)’

Now that we set the reference time to the past in (27), the past tense morpheme *-dai* is expected to be suffixed to aspectual *ufu*, which is born out in (27a) with the present form unacceptable. This predicts that if the morpheme *ufu* is only an aspectual even in the context where the relevant proposition is conjectured, e.g., (27b), then the past tense morpheme *-dai* must also be attached. In this context, however, the sentence is accepted irrespective of the attachment of the past tense marker. This shows that *ufu* can appear not only with its aspectual use but also with a conjectural use, frozen as the “non-past” form in the latter. This further indicates that conjectural *ufu* can combine with verb types other than achievement and state verbs (in this case, activity verbs).

The above consideration leads us to assume that if *ufu* is used in a non-past tense form even in a context that refers to the past, it is not aspectual but conjectural *ufu*. This further enables us to extract examples of conjectural *ufu* from spontaneous discourses. In spontaneous discourse, it is not easy to detect the use of *ufu* when it is used with accomplishment and activity verbs as indicated in (22), but when it does not inflect for past tense in a past context, we can identify it as conjectural. Some of those examples are given in (28) below.

- (28) a. (After WW2, an American soldier came to Karimata village and chased a woman of the village:)
 asitaraa “uma = ai = du midun = nu kisi = saga” = tsi azzi **ufu** = padzi = sai,
 then here = ALL = FOC woman = NOM come.PST = SFP = QUOT say CONJEC = CONJEC = SFP
 eigo = si. “kama = ai iki kama = ai iki” = tsi mmja azzi = djaa.
 english = INS over.there = ALL go.PST over.there = ALL go.PST = QUOT DM say.PST = RPT
 ‘Then I guess (the American soldier) had said in English “a woman came here, didn’t she?”
 The old man said, I hear, “she went over there, she went over there,” (telling him the
 wrong direction).’ (F₁₉₂₆)

- b. (After WW2, a boy died playing with a grenade:)
 A: (in Japanese) *nakunat-ta. terjuudan. owat-te = kara are = o izit-te*
die-PST grenade finish-GER = after DEM = ACC play-GER
bakuhatsusi-te
explode-GER
 ‘He died. Grenade. After (the war) finished, he played with it, and it exploded.’
- B: *urju = u = du nezju = u panasi ufu = sai.*
DEM = ACC = FOC screw = ACC remove CONJEC = SFP
 ‘I guess he had removed the screw.’ (F₁₉₂₆)
- c. (During WW2, a boy died at his parental home:)
kii = nu sitaara = n kidzjuu = n jar-ari sini = saga. Mijagunijaa = nu
tree = GEN bottom = LOC machine.gun = DAT do-PASS die.PST = SFP name.of.house = GEN
sigu nisi = nu kata = nu ra. Mijagunijaa = ja jaamutu = sai.
right west = GEN side = GEN DM name.of.house = TOP parental.home = SFP
jaamutu = riba = du kama = ngi asubi ufu = sai.
parental.home = CSL = FOC there = LOC play CONJEC = SFP
 ‘He died, shot by a machine gun, under the tree. It was right next to the west side of Miyaguniyaa. Miyaguniyaa is the parental home of his family. I guess he had been playing there because it is his parental home.’ (F₁₉₂₆)

In (28a), the speaker tells a story occurring after WW2, which refers to the past, as indicated by the past tense form at end of this example, i.e., ‘*azzi = djaa*.’¹³ Since the American soldier is assumed to have talked before the old man did, the tense of the first sentence should be the past. Nevertheless, the non-past tense form ‘*ufu*’ is used. (28b) also refers to an episode after WW2. The utterance of A, which is spoken in Japanese, indicates the tense to be the past as shown by the past tense form of ‘to die,’ i.e., ‘*nakunat-ta*.’ In spite of the fact that the boy had removed the screw before he died, the non-past tense form ‘*ufu*’ is used in B’s utterance. The same pattern is observed in (28c). A boy had been playing at ‘Miyaguniyaa’ before he died. The time he died is expressed by the past tense form in the first sentence, i.e., ‘*sini*,’ but the sentence describing his playing at ‘Miyaguniyaa,’ which occurred prior to his death, is marked by *ufu* and is lacking the past tense morpheme *-dai*. This reasoning leads us to conclude that the relevant occurrences of *ufu* are conjectural uses.¹⁴

¹³ The past tense form ‘*azzi*’ (*say.PST*) comes from an infinitive form through de-subordination (Pellard 2012). So, it is identical to the verbal form before *ufu*, i.e., ‘*azzi ufu*’ (*say CONJEC*). This may lead one to wonder whether the infinitive form before *ufu* involves a past tense meaning. But since *ufu* cannot take scope over tense as we will see in Section 5.3, the infinitive form ‘*azzi*’ before *ufu* does not encode a past tense meaning. As a piece of evidence to support this assumption, it can be pointed out that the infinitive form of state verbs, e.g., ‘*ari*’ (exist), does not have the past tense use in the first place though it can precede *ufu* as in ‘*ari ufu*’ (exist CONJEC).

¹⁴ Apart from the examples obtained from the elicitation, the conjectural uses of *ufu* in (28b) and (28c) appear without a modality following it. There are at least two reasons that might account for this difference: i) the difference of the age between speakers and ii) the qualitative difference between elicitation and discourse. As for i), the participants in the conversation are older than the consultants in the elicitation as noted in (2). As for ii), it might be the case

Based on the considerations so far, let us lastly refer to the results gained from the survey of *ufu* in spontaneous discourse. My recordings consist of four independent dialogues, annotated with ELAN (2020), and the sum of the utterance durations of the speakers in (2) amounts to 110.20 minutes. I collected 34 instances of *ufu* that are pronounced clearly. 6 out of 34 examples are used in subordinate clauses, in which tense marking is not obligatorily synchronized with that of the matrix clause. The remaining 28 examples are broken down as in **Table 3**.

	Accomplishment	Activity	Achievement	State
Aspectual	7	3	—	—
Conjectural	7	3	1	7

Table 3: *ufu* in spontaneous discourses.

The instances of *ufu* used with achievement and state verbs are classified as conjectural *ufu* as we have discussed. The remaining examples (accomplishments and activities) are judged by the lack of the past tense morpheme (despite its clear past time reference) as we saw in the examples of (28).

4.3 Summary

As an aspectual auxiliary, *ufu* takes accomplishment and activity verbs and conveys the resultative interpretation. It cannot be used with achievement and state verbs because another auxiliary *ui* gives the resultative interpretation of the former,¹⁵ and state verbs do not lexically encode a change of state and thus no “result.” The conjectural use of *ufu* is thus more explicitly manifest in the latter verb types: *ufu* used with achievement and state verbs must involve conjectural meanings. Despite its superficial appearance, however, the conjectural use of *ufu* is concluded to be prevalent across verb types if we pay attention to its incompatibility with tense inflection.

5 Discussion on grammaticalization

This section discusses the grammaticalization from the aspectual to the conjectural use of *ufu*. We will look at the semantic aspects of the change in Section 5.1 and 5.2, paying attention to the evidential/modal and temporal aspects of the meaning, respectively. While *ufu* develops modal-like and tense-like meanings, it will be shown in Section 5.3 that it stays in the Aspect slot syntactically. Section 5.4 briefly discusses what this discrepancy in the change means theoretically.

that the speakers add a modality marker such as *padzi* in the elicitation just to make the context clear but use *ufu* without it unconsciously in natural production. These are issues beyond the scope of the current study and left for future research.

¹⁵ One might wonder why *ufu* loses the competition with *ui* in contexts following achievement verbs. One hypothesis could be that the duration involved in the verb semantics are relevant. I have not, unfortunately, been able to assess this hypothesis in my field research and thus have to leave it for another occasion.

5.1 Development of evidential/modal meaning

It is a widely acknowledged fact that resultative aspect markers grammaticalize to inferential evidential markers across languages (Comrie 1976: §5.2.2.1, Bybee et al. 1994 §3.15, Aikhenvald 2004: §9.1.3, etc). The development of the conjectural use of *ufu* relates to this grammaticalization. Bybee et al. (1994) make the following remark on the similarity between resultatives and inferential evidentials.

(T)he resultative indicates that a state exists due to a past action. This meaning is very close to the evidential meaning of an inference from results, which indicates that a past action is known or inferred on the basis of a current state. (p. 96)

To infer the past action from the current state, there needs to be a reasonable connection from the former to the latter. For example, if you infer the proposition that grandma fried doughnuts from the fact that there are doughnuts, you presuppose that if grandma fries doughnuts there are fried doughnuts.¹⁶

In most instances of conjectural *ufu*, a causal relation of this kind can be reconstructed as confirmed by the examples from (25) through (28), which have explicit contexts under which the sentences are uttered. There are, however, examples that are not characterized by such causal relations. Let us look at the examples taken from spontaneous discourse, i.e., (28).

We can find causal connections behind the use of *ufu* in (28b): the fact that the boy removed the grenade's screw caused it to explode. The speaker infers the former from the fact that the boy died.

On the other hand, it is not straightforward to retrieve a causal relation in (28a) and (28c). The speaker surmises the background of the incident where the boy was shot under the tree in (28c), particularly, the reason why he was where an air raid took place. But it seems rather odd to consider his playing at *Miyaguniyaa* then as the cause of his being shot, i.e., it is far from possible to infer the former from the latter by the "causality" between the two. Rather, the speaker concludes the former from the habit of children playing at their parental home. This is a typical case of "assumed" evidentiality in the sense of Aikhenvald (2004), who considers it as mainly involving general knowledge or common sense to infer the proposition as the following quote shows.

The difference between the 'assumed' evidential ... and the 'inferred' ... lies in access to visual evidence of something happening and to degree of 'reasoning' involved. The less obvious the evidence and the more the speaker has to rely on reasoning based on knowledge or on common sense, the more chance there is that the assumed evidential will be used. (pp. 2–3)

¹⁶ The fact that a causal relation is indispensable for the analysis of Japanese evidential *yoo-da* is discussed in Davis & Hara (2014). See also Takubo (2009) for a similar proposal for the meaning of *yoo-da*.

The use of *ufu* in (28a) also relies on the general knowledge about conversational exchange to a great extent. Based on this knowledge, the speaker assumes that the American soldier said something before the old man spoke. It is also easily imaginable what the American soldier said from the situation where he was chasing a woman. Therefore, the proposition to which *ufu* attaches is not recovered by the evidence at hand, but by general knowledge about conversation and the relevant situation, which allows us to regard *ufu* in (28a) as an assumed evidential use rather than an inferential one.

The same point can be made with state verbs, which restrict the use of *ufu* to the conjectural. A causal relation can be retrieved from the examples in (29). In (29a), since the relevant woman was inherently ill-natured, she did terrible things to her daughter: the speaker infers her nature from what she did. In (29b), speaker B concludes the nature of the pig as foolish from the fact that it cannot wait for food: obviously it is the pig's nature that triggers its action.

- (29) a. (About a woman now dead who gave a terrible punishment to her child:)
 nootsi = nu andzi = nu ssaf-fu uda = a patarafu = ka = tsi jana
 how = GEN such = GEN terrible.thing = ACC REFL = TOP work = Q = QUOT bad
 kimutsi obaa = du ari **ufu** = padzi.
 heart old.woman = FOC COP CONJEC = CONJEC
 'The reason why she did such a terrible thing is that, I guess, she was bad-minded.'
 (F₁₉₂₆)
- b. (When a Japanese veteran defecated in a pigpen, which was used as a toilet, a pig approached him to eat his feces:)
 A: mara-daara nara-n = riba mmi putu-n mara-di = tsi
 poop-NEG.COND become-NEG = CSL more once-ADV poop-VOL = QUOT
 asi-taraa = du mmja atu-n = na tsintsin = nu ...
 do-COND = FOC DM after-ADV = TOP penis = ACC
 'Because he had to poop, he tried to poop again. Then, the pig was about to lick his crotch.'
- B: urja = a waa = mai = du damina waa ari **ufu** ra.
 DEM = TOP pig = also = FOC no.good pig COP CONJEC DM
 'I guess that pig was also foolish.'
 (F₁₉₂₄)

On the other hand, it is not obvious what causality or general knowledge is assumed behind the use of *ufu* in (30). Speaker B of (30a) states that the dialect card had been used before the time when speaker A thinks it to have been. The conjectural meaning contributed by *ufu* plus a question marker targets the exact year when this card started to be used, but this is neither an inference based on evidence nor general knowledge but merely a search based on her memory. The speaker in (30b) also tries to recall the year, and, if *ufu* is used as the result of this recalling, then it involves neither causally established reasoning nor general knowledge.

- (30) a. (Talking about “dialect card” that was used to prohibit the use of dialect in school:)
- A: hoogenfuda = tsi ee ba = a mata mmipii atu = biran = tsi = du.
 dialect.card = QUOT DM 1.SG = TOP DM bit.more after = CONJEC = QUOT = FOC
 ‘We called it “dialect card.” I thought (that it appeared) a bit after (you were in school).’
- B: ara-n. baaga = a go roku-nen-baai = gara = du ari **ufu** = rjaa?
 COP-NEG 1.PL = TOP fifth sixth-grade-about = ABL = FOC exist RES.CONJEC = Q
 ‘No. I guess it existed when I was a fifth or sixth-grade student.’ (F₁₉₂₆)
- b. kari = ga = du kisi = nu tusi-n = du ari **ufu** = rjaa? am = mu
 DEM = NOM = FOC come.PST = GEN year-ADV = FOC COP CONJEC = Q net = ACC
 futaa-tsi kai = juu.
 two-CLF buy.PST = SFP
 ‘Was it, I guess, the year when my daughter came back home? I bought two fishing nets.’ (M₁₉₂₆)

The examples in (30) show that the semantic change of *ufu* proceeds beyond inferential and assumed evidentials defined above. According to Aikhenvald (2004: §4.2, 5.1), inferential evidentials change to assumed evidentials with the loss of obvious evidence and further extend to epistemic modals gaining the meaning of probability and doubt. Since the speakers in (30) do not commit to the truth of the proposition, conjectural *ufu* is shown to have arrived in the domain of epistemic modality in the sense discussed here.¹⁷

5.2 Development of temporal meanings

As we saw in Section 4.2, conjectural *ufu* has a past-orientedness and is incompatible with a past tense marker despite its interpretation. This can be regarded as a “de-categorialization” from verbs, one of the typical processes observed in grammaticalization (Hopper & Traugott 2003: §5.3). This subsection closely looks at the temporal properties of the conjectural use, comparing it with that of the aspectual use.

In the aspectual use of *ufu*, the resultative state follows the event which triggers that state in time. This temporal relation is expected to hold even in the conjectural use if the inference is based on the result of an event (cf. the quote from Bybee et al. (1994) in the previous section). For example, a boy had removed the screw before the grenade exploded in (28b), where *ufu* marks the preceding event.

¹⁷ Relevant to the conjectural but not discussed here is the use of *ufu* in the consequent of counterfactual conditionals (see Karimata (2013) for the Nobaru-Miyako dialect). Also in this use, *ufu* can take achievement and state verbs and creates a context that is epistemically modalized. In spite of those resemblances, a different morpheme from resultatives is used for counterfactuals in the Nagahama dialect of Miyako Ryukyuan (Shimoji 2018: §9.3.2.1). Therefore, I tentatively exclude it from the current discussion.

It is, however, logically possible for the event causing the result not to be completed before the utterance time. This is what is observed in inferential evidential forms in other languages. The following is an example of an inferential evidential in Bulgarian developed from “present perfect” of this language.

- (31) *Bulgarian* (Izvorski 1997: 232)
 Toj pišel pismo točno sega.
 He written.EVID letter right now
 ‘He is apparently writing a letter.’

Since the evidential form in (31) is compatible with adverbials like *right now*, it loses the original aspectual meaning characterized as “perfect,” as argued by Izvorski (1997), and, as a consequence, the letter-writing event is understood to be taking place at the time of utterance. On the other hand, the interpretation in question is precisely the one that is excluded from the interpretation of conjunctural *ufu*. The following example, whose context resembles (26b), is a case in point.

- (32) (The speaker sees that a road into a grove is trimmed:)
 unu ntsi = nu kama = n = du paa = nu ari **ufu**.
 DEM road = GEN over.there = LOC = FOC grave = NOM exist CONJEC
 ‘I guess there were (#are) graves behind this road.’

(32) differs from (26b) in the time when the road is trimmed: the speaker sees the evidence at present in (32). This would enable the speaker to conjecture the background presently held as with (31). However, the only interpretation allowed with sentence (32) is, according to the speakers, the one where the graves existed in the past and no longer exist at the utterance time. This fact convincingly shows that conjunctural *ufu* preserves the aspectual-temporal relation of resultatives, which situates the causing event precisely before its result.¹⁸

While *ufu* is more conservative than the Bulgarian “perfect of evidential” in (31) with respect to the above aspectual property, the former develops a tense-like meaning that is not attested in the latter. Izvorski (1997) connects the evidential in (31) to its source, i.e., present perfect, arguing that the evidence must hold at the utterance time contributed by the “present” tense. Karimata *ufu*, on the other hand, loses this property, freely recruiting past events as evidence for inference, as witnessed in (25c) and (26b), which is repeated here as (33).

¹⁸ The cause and result seem to be able to overlap when one obtained evidence in the past. In both examples in (29), the natures of the woman and the pig are put forward at a time when one did ridiculous things to her daughter and the other to a veteran, though it is apparent that they had been equipped with their natural temperaments since before their relevant actions. This overlapping is partly due to the fact that the conjunctural use of *ufu* can take state predicates, but since it has not been clear why this occurs only in the past, I would like to leave it for future research.

- (33) (The speaker recalls that a road into a grove **was** trimmed:)
 kanu ntsi = nu kama = n = du paa = nu ari {ufu/*ufu-tai}.
 DEM road = GEN over.there = LOC = FOC grave = NOM exist {CONJEC/CONJEC-PST}
 ‘I guess there were graves behind that road.’

Considering the time of evidence as the reference time of the sentence (Izvorski 1997: §4), we can conclude that *ufu* in (33) has a tense-like meaning that shifts the reference time to the past and thus prevents the attachment of the past tense marker *-dai*.

Comparing the case of *ufu* with that of the Bulgarian evidential, thus, reveals two different ways to change the temporal meaning in the transition from the resultative/perfect to evidentials. It is also in this transition that one can naturally account for the acquisition of the past tense meaning by *ufu*. According to Izvorski (1997), in using evidentials, the speaker can access the possible worlds where indirect evidence, e.g., a road into a grove being trimmed in (33), is true. Acquiring a past tense orientation means, according to this view, to come to establish the speaker’s epistemically accessible worlds based on the available evidence in the past. This process is easily realized because indirect evidence available in the past is also available in the present. It is, on the other hand, not determined what evidence is available in the future. So, the shift to the past is more likely to occur than the shift to the future in the transition to evidentials. This is indirectly supported by the fact that more distinctions of evidentials are made in the past, or in non-future, than in the future typologically (See Aikhenvald 2004: §8.4).

It should be lastly noted that the emergence of the past tense meaning in *ufu* is epiphenomenal as the ongoing discussion indicates. While the past tense meaning can be suitably placed in the rise of evidential meanings, it is not straightforward to induce the evidential/modal meanings in *ufu* if its primary change is to come to designate the past. This is evident in the typological fact that the change from the resultative/perfect is more readily attested than that from the simple past in the development of inferential/assumed evidentials.¹⁹

5.3 Discrepancy of syntax and semantics

Given the development of modal and temporal meanings discussed above and the structure of the verb complex of this dialect, repeated here as (34), it is expected for conjectural *ufu* to appear not in the Aspect slot but in the Tense or Modality slot.

- (34) [...[...Verb-Voice] Aspect]-Honorifics]-Negation]-Tense] = Modality]

¹⁹ See Aikhenvald (2004: §4.2, 9.1.3) for abundant instances of non-firsthand, i.e., inferential, assumed, etc., evidential meanings developed from the resultative/perfect meaning. It is worth noting here that if evidential systems develop a firsthand vs. non-firsthand opposition, the former stems from a simple past whereas the latter from a resultative or a perfect (see p. 280 for Balkan Slavic languages and p. 114 for the Spanish of La Paz in the above citation).

This is not, however, true of *ufu* in the Karimata dialect: *ufu* stays in the Aspect slot even after acquiring those non-aspectual meanings.

Before proceeding to show this syntactic property, it is in order here to mention the evidential meanings discussed in Section 5.1 again, since they have no place in (34). Some authors consider inferential/assumed evidentials basically as an epistemic modal (Izvorski 1997; McCready & Ogata 2007; Matthewson et al. 2007 etc.), and others don't (de Haan 1999; Aikhenvald 2004; Davis & Hara 2014, etc.). If they are a kind of epistemic modality, it occupies the position outside of Tense and this is exactly where the reported evidential in Karimata appears as shown in (35).

- (35) nihon = nu heetai = ja ati = du jana-munu a-tai = **djaa**.
 Japan = GEN soldier = TOP very = FOC bad-NMLZ COP-PST = RPT
 'I heard that Japanese soldiers were pretty bad.' (F₁₉₃₄)

However, it is frequently observed that reported evidentials behave differently from inferential/assumed evidentials. Moreover, heterogeneous morphosyntactic characteristics of evidentials in one single language have been reported cross-linguistically (Aikhenvald 2004: §3.3-4), which makes it difficult to predict the exact syntactic position of evidentials in Karimata's verb complex. Therefore, I will avoid specifying the syntactic position through language-internal evidence and demonstrate the underdevelopment of syntax by comparing Karimata with another Ryukyuan language: Okinawan.

The development from a resultative to an inferential evidential marker is more abundantly observed in North Ryukyuan than in South Ryukyuan. Arakaki (2010: 82) gives the following example to show that Shuri Okinawan (see **Figure 1**) has three homonyms originating in the resultative marker *tee*: the number subscriptions are added by the current author.

- (36) Kimiko ja juubaN nic-ee₁-tee₂-N tee₃.
 Kimiko TOP dinner cook-RES-M-DIR INF
 'Kimiko must have cooked dinner.'

The first *-tee₁*, with the consonant /t/ deleted due to the preceding consonant, is the resultative. The second *-tee₂*, glossed here as 'M,' is analyzed as a 'mood' marker conveying 'irrealis' meaning by Arakaki (2010), but has been viewed as an inferential evidential by other researchers (Shinzato 1991; Kudo et al. 2007; Davis 2017). The third *tee₃* is the one claimed by Arakaki (2010) to be the inferential (INF) evidential marker in this dialect. Irrespective of the analysis adopted, sentence (36) is enough to show the development from a resultative morpheme to other grammatical categories, each occupying different syntactic positions. We can consider the syntactic slot occupied by *-tee₁* as Aspect in a structure analogous to (34) because of its function. In spite of different analyses above, researchers agree that *-tee₂* has a past tense function occurring in the same position as the simple past tense morpheme *-ta*. Since *tee₃* appears outside the Tense slot,

it resides in the Modality slot if we apply the structure (34). Those syntactic manifestations are considered as a natural consequence of the meaning extension of *tee*.

Karimata exhibits a striking difference from the pattern in Okinawan. Since the syntactic position of the relevant morpheme would proceed in the order Aspect > Tense > Modality, I focus on the difference between the Aspect and Tense slot here. If it occupies the position outside Aspect, it should be able to coexist with aspectual morphemes in a single verb complex, like Okinawan *tee*. However, *ufu* never appears with aspectual morphemes such as *ui* and *ufu*, as the following ungrammatical example shows:

- (37) *Yooko = ga = du juui = zu nii {uri/uki} **ufu**(= padzi).
 Yoko = NOM = FOC dinner = ACC cook {PROG/RES} CONJEC(= CONJEC)
 'I guess Yoko {is cooking/has cooked} the dinner.'

This is most naturally accounted for by the assumption that conjunctural *ufu* stays in the Aspect slot.

Another piece of evidence for *ufu* remaining in the Aspect slot can be given by its relative order with honorifics. According to Davis (2017), honorifics in Okinawan sit in the boundary between Aspect and Tense and differentiates the inferential *-tee₂* from the aspectual *-tee₁*, with only the former appearing after honorific morphemes. On the other hand, conjunctural *ufu*, as well as aspectual, must precede the honorific morpheme. Note that the following has a state predicate so that *ufu* is conjunctural.

- (38) kanu obaa = ja kimu kagi obaa = du
 DEM old.woman = TOP heart beautiful old.woman = FOC
 {ar-ama-dai /ari **uk-amai** /*ar-amai **ufu**} = padzi.
 {COP-HON-PST /COP CONJEC-HON /COP-HON CONJEC} = CONJEC
 'I guess the old woman had a beautiful mind.'

The first and the second options in (38) convey almost the same meaning with the addition of a conjunctural marker =*padzi*. The first pattern shows that a past tense morpheme, *-dai*, appears after the honorific *-ama*. The second and third contrast shows that conjunctural *ufu* occupies the position before the honorifics, the position occupied not by the tense morpheme but by the aspect morpheme in the structure (34). The second option is less preferred to the first but still acceptable according to the consultant.

An interesting mismatch between syntax and semantics is manifest in the use of *ufu* with negation. The structure (34) predicts *ufu* to appear before negation if it occupies the Aspect slot and to appear after negation if it occupies the Tense slot. The result illustrated in (39) shows that the former hypothesis is correct (*adaari* includes the infinitive form of *ai*, i.e., 'ari').

- (39) jaama = nu mit = tsa dzjootoo = nu midzi = du {ari uk-an
 Yaeyama = GEN water = TOP tasty = GEN water = FOC {COP CONJEC-NEG
 /*ar-adaari ufu} = padzi.
 /COP-NEG CONJEC} = CONJEC
 ‘I guess the water of Yaeyama was not good.’

Though occupying the position internal to negation, *ufu* is interpreted externally to it: (39) does not mean that the speaker is not inferring *p* but means that the speaker infers not *p*. Thus, the scope of *ufu* is wider than the negation semantically, but not in syntax.²⁰

The above syntactic evidence indicates that conjectural *ufu* does not leave the Aspect slot despite its semantics. Due to this syntactic property, it might be argued that the conjectural use of *ufu* does not constitute a distinct morpheme from aspectual *ufu*, but is just a “strategy” or “overtone” accompanying it (cf. Aikhenvald 2004: §4.2). However, as argued in previous sections, conjectural *ufu* differs from the aspectual one in its 1) property of unrestricted selection of preceding verbs, 2) deficiency of inflection for tense morphemes (Section 4.2), and 3) different temporal interpretation from resultatives (Section 5.2). These semantic properties, particularly 1) and 3), cannot be viewed as imposed by an “overtone” on the semantics of resultative aspects. Therefore, it is natural to consider conjectural *ufu* as a distinct morpheme diverging from aspectual *ufu*, but one that has not made any progress in its syntactic properties.

5.4 Summary and discussion

In the same way as other cross-linguistically attested cases, the resultative marker *ufu* has developed to carry an inferential evidential meaning. But, beyond this, it also gains assumed evidential and epistemic modal meanings, which leads us to use the label “conjectural” in this paper. Not only in the modal but also in the temporal domain does the meaning of *ufu* proceed: conjectural *ufu* can refer to evidence in the past as with the reference time of the past

²⁰ An editor of *Glossa* pointed out the possibility that the morphology and syntax of conjectural *ufu* would be different, and the examples in this section would only show that *ufu* occupies the Aspect slot morphologically, which leaves a possibility that *ufu* would be in a higher syntactic position. The editor’s apprehension stems from the Pan-Bantu suffixal template called CARP, where a syntactically higher constituent could appear in an inner position of this morphological template (Hyman 2003). However, the structure of (34) is different from the purely morphological template in Bantu since the Aspect slot in (34) is expressed as a serial verb construction and constitutes an independent word from the preceding verb: for example, the attachment of a clitic = *du* to the preceding verb in (20) shows that *ufu* does not operate in the word-formation together with it. Therefore, the morphological process cannot predict *ufu*’s ungrammaticalities in (37) through (39): in these cases, *ufu* adequately follows verbal infinitive forms. As a result, they should be attributed to *ufu*’s syntactic property.

tense morpheme. Despite its progress in semantics, conjectural *ufu* still sits in the Aspect slot, as shown by the comparison with Okinawan *-tee*.²¹

Given this syntax/semantics discrepancy in the grammaticalization, why does semantics change before syntax in the verbal domain? Among many factors related to the difference between syntax and semantics, I suspect the fine-grained nature of meaning to be most relevant to answering this question: arguably, that the syntactic structure is highly restricted compared to the gradience of meaning in this domain. Let me conceptualize this as a “one-to-many” relation between syntax and semantics in the sense that many semantic features could share one syntactic node of the verb complex, e.g., past, present, and future in the Tense slot. If a morpheme changes its meaning, this relation enables us to predict its syntactic node by mapping the former to a unique node, which I would like to call *semantic predictability of syntax*. However, it is not the other way around from syntax to semantics because a single syntactic node corresponds to multiple semantic candidates. Thus, the emergent meaning cannot be predicted only by its syntactic position, i.e., *syntactic non-predictability of semantics*. This (non)predictability is significant, particularly in language change. Imagine a situation where some semantic change occurs in the verb complex and gets stabilized in a language community. The speakers in the next generation can predict its syntax, making it possible for the change to go smoothly. But even if a community were to accept a syntactic change without any semantic one, what would come next as its verbal meaning could not be predicted and might vary from speaker to speaker, which would prevent a fluent transition of language change. This is the reason, I propose, why semantic change can precede syntactic change in this domain but not vice versa.²²

The theoretical and empirical priority of semantics to syntax in the order of language change casts doubt on a purely syntactic explanation for grammaticalization (see also Vincent & Börjars 2010: §4). Roberts & Roussou (2003), for example, propose “structural simplification” as the reason for why grammaticalization is so common; van Gelderen (2004) considers the syntactic operation “Late Merge” as an explanation for “up the tree” grammaticalization. But at the stage where only semantic change occurs as seen in our case study, no syntactic factor is responsible

²¹ One may wonder whether there are any dialects in Ryukyuan family where the semantic, as well as syntactic, change has not taken place. One possible candidate is *-ee* in Miyara Yaeyaman. According to Davis & Lau (2015: §3.2), though *-ee* has an inferential evidential overtone, it is not a semantic but a pragmatic phenomena. If so, Ryukyuan languages illustrate the three distinct stages of the change: no progress in Miyara Yaeyaman, only semantic change in Karimata Miyakoan, and syntactic as well as semantic development in Shuri Okinawan.

²² Whether this idea can be extended to other syntax/semantics co-evolutions than that of the verbal domain remains to be seen. If the many-to-one relation between semantics and a syntactic node is not held, syntactic change could precede semantic change. Newmeyer (1998: §4.3.3), for example, citing Kroch et al. (1982), refers to the formation of marking yes/no interrogatives by *do* support in English as such a case. According to Kroch et al. (1982), *do* came to be preposed to keep the strict SVO order. If the syntactic (or surface order) position before S in SVO order is unambiguously associated with the function of forming interrogatives at that period, the syntax could change independently of the lexical meaning of an item and initiate subsequent changes.

for the change. This implies that the change could proceed in both directions, i.e., to the semantic category higher or lower in the structure (34). But given that changes such as an epistemic modal to a tense category, a tense to an aspectual category, etc. are not attested even semantically, let alone syntactically, grammaticalization is highly constrained by semantics. Thus, though beyond the scope of this paper, the account for the pervasive nature of grammaticalization should be sought not in syntax but in semantics (cf. Haspelmath 1999).

6 Conclusion

I have shown in this paper that semantic change precedes syntactic change in the process of grammaticalization. In Karimata-Miyako Ryukyuan, the morpheme *ufu* has an aspectual and a conjectural use and the change proceeds from the former to the latter under the assumption of the “scope-increase” (Tabor & Traugott 1998) hypothesis. While the aspectual use of *ufu* only takes accomplishment and activity verbs, bearing their resultative interpretations, the conjectural use is unselective with respect to the aspectual type of the verb and is also compatible with achievement and state verbs. In addition to evidential/modal meanings described here as “conjectural,” it develops a tense-like meaning that refers to the past, which makes it unable to take tense morphemes. In spite of these semantic evolutions, *ufu* syntactically remains in the Aspect slot of this dialect, appearing before honorific markers and negation, and rejecting the co-occurrence with aspectual *ufu*.

Let us lastly mention the future of this development. If the dialect continuously changes, the syntactic status of *ufu* will likely change to occupy the Tense or Modality slot, as seen in Okinawan *-tee* (Section 5.3). It will be difficult to see the result of this change, however, because of the lack of transmission of this dialect. Even if the dialect were revitalized and inherited by the next generation, there is little hope of observing the succeeding change of *ufu*: due to the blending with Standard Japanese, it is highly possible that grammatical and phonological properties peculiar to the dialect are simply lost. So, research into endangered languages such as Karimata-Miyako Ryukyuan is urgent, and another purpose of this paper is to show this urgency because such studies can undoubtedly reveal properties of language change, or language itself, formerly unknown.

Abbreviations

ACOP:	adjectival copula
ADV:	adverbializer
CONC:	concessive
CONJEC:	conjecture
CSL:	causal
DM:	discourse marker
EVID:	evidential
EXPR:	experiential
GER:	gerundive
HON:	honorifics
REP:	reportative
SFP:	sentence final particle
VOL:	volitional

Other abbreviations follow the Leipzig Glossing Rules.

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Competing interests

The author has no competing interests to declare.

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