Rethinking the *-s suffix in Old Chinese: with new evidence from Situ Rgyalrong

Zhang Shuya

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Rethinking the **-s* suffix in Old Chinese: with new evidence from Situ Rgyalrong†

Abstract: This paper re-examines previous hypotheses claiming the primacy of a perfect(ive) value in certain *qusheng* (**-s*) derivations (in particular nominalization) in Old Chinese. First, it revisits examples previously cited as having been derived from the *perfect(ive)*, and proposes to re-classify them as resulting from three different derivational processes, nominalization, verb argument demotion, and adverbialization. Second, it focuses on Sino-Tibetan comparative data, in particular from Situ Rgyalrong, a language with severe isomorphism across four *-s* suffixes. Then, on the basis of morphological (especially stem changes) and syntactic criteria, it sorts out the relationship between the different *-s* suffixes in Situ, while suggesting multiple sources to account for the diverse functions of *qusheng* (**-s*) in Old Chinese.

Keywords: adverbialization; argument demotion; nominalization; Old Chinese; perfect(ive); Situ Rgyalrong

1 Introduction

Although *qusheng* alternation is the least controversial piece of evidence for Old Chinese morphology,[3] its highly polyfunctional character has been a source of consternation.

There have been many attempts to explain the polyfunctionality of *qusheng* in Old Chinese. Early scholars (Downer 1959; Huang 1997b; Zhou 1962: 53-87) tried to establish a comprehensive classification of the attested functions of *qusheng* alternations. But Downer (1959: 162) considered that, "It is better to regard *chuihsheng* derivation(...)simply as a system of deriva-

*Corresponding author: Zhang, Shuya, Japan Society for the Promotion of Science / Research Institute for Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies, Tokyo, Japan, Email: bragbarskad@gmail.com.

†Glosses follow the Leipzig rules, to which the following abbreviations are added: I = stem I, II = stem II, I' = stem I', II' = stem II', ADVZ = adverbializer, AUTOBEN = autobenefactive, CM = comparative marker, DEEX = de-experiencer, DEG = degree noun, DENOM = denominal, DIS = distal, DIR = directional prefix, DOWN = downward direction, FAC = factual, EGO = egophoric, GENR = generic person, IFR = inferential, LNK = linker, NS = non-singular, NSPC = unspecified SENS = sensory, PRO = proximal, TAME = tense-aspect-modality-evidentiality, TRANSL = translocative, UP = upward direction, V_c = central grade, V_{nc} = non-central grade. Chinese texts are transcribed according to Baxter's (1992) Middle Chinese with an IPA adaptation. Reconstructed forms for Old Chinese are given when necessary for the sake of discussion.

[3]The Qing philologists (Duan Yucai 段玉裁, Gu Yanwu 顧炎武, Qian Daxin 錢大昕 etc.) considered *qusheng* alternations to have been created by the teachers of classics at the time of the Six Dynasties. Zhou (1981[1945]: 81–85) proved this hypothesis wrong, pointing out that *qusheng* alternations had already appeared in commentaries in the Eastern Han Dynasty.

tion and nothing more. When new words were needed, they were created by pronouncing the basic word in the *chuihsheng*".

Later scholars (Mei 1980; Schuessler 1985, etc.) turned to categorial simplification, and tried to classify the intricacies of *qusheng* into one or two primary functions. Among these efforts, the *perfect(ive)* hypothesis (Bi 2014; Jin 2006; Mei 2012; Wang 2007) emerged influential, claiming the primacy of a *perfect(ive)*[4] value for several functions (in particular, nominalization) of *qusheng* alternations.

If this hypothesis were correct, it would be of crucial importance to Old Chinese grammar, as it would represent the language's only case of inflectional morphology. However, the phenomenon is still in need of systematic evaluation on the basis of Old Chinese texts, since the supposed *perfect(ive)* value marked by *qusheng* alternation is not systematically indicated in *Jingdian shiwen* 經典釋文.[5] Moreover, the label *word formation by perfect(ive)* (完成體構詞 *wánchéngtǐ gòucí*) used by some authors (Bi 2014; Wang 2007) is closer to a semantic category, as it brings together different morphological processes expressing semantic values such as the completion or result of an action, and includes not only pairs with *qusheng* alternations (e.g., 張 *ʈjaŋX* 'to stretch' → 脹 *ʈjaŋH* 'be stretched'), coming from an **-s* suffix (Haudricourt 1954; Sagart 1999: 133; Schuessler 1985; 2007: 41–45), but also those presenting initial voicing alternations (e.g., 長 *ʈjaŋX* 'to grow; elder' → 長 *ɖjaŋ* 'be long') originating from a prenasalized anticausative verb-deriving prefix **N-* (Sagart 1999: 74–78; 2006).

The present paper aims to show that the *qusheng* (**-s*) derived forms considered to have a primary *perfect(ive)* value or to have been derived from the *perfect(ive)* can be better accounted for by the multi-origin hypothesis, first proposed by Jacques (2016a). It is divided into three sections.

Following this introductory section, Section 2 revisits the examples previously cited as having been derived from the *perfect(ive)*, and proposes to categorize them into three distinct derivational processes, nominalization, verb argument demotion, and adverbialization. Sections 3 and 4 examine comparative data from other Sino-Tibetan languages. Section 3 re-evaluates Sino-Tibetan languages previously considered to present isomorphism between the perfective and a nominalizer. Section 4 focuses on comparative data from Situ Rgyalrong, a morphologically conservative Sino-Tibetan language that has no fewer than four *-s* suffixes – a nominalizer, past tense marker, adverbializer, and locative marker – which are potentially com-

[4]Mei (2012) used the English term *perfective*, and considered it to be equivalent to Zhou's (1962) term 既事式 *jìshìshì*. The adaptation of the term 完成體 *wánchéngtǐ* used by Bi (2014), Jin (2006), and Wang (2007) is difficult since the description seems to be closer to the semantic value of *perfect* aspect. Wang (2018) later used the term *completion* 完成義 *wánchéngyì*.

[5]A commentary of selected classical texts compiled by Lu Deming 陸德明 dating to c. 583 (Nienhauser 1998: 168).

parable to the Chinese qusheng (**-s*). On the basis of morphological (in particular stem changes) and syntactic criteria, this study then sorts out the relationship between the different *-s* suffixes in Situ, as these can serve as a model for understanding the isomorphism of sibilant suffixes in Chinese, as well as other Sino-Tibetan languages.

2 Alternative analysis of the *perfect(ive)* hypothesis in Old Chinese

This section proposes a re-categorization of the examples labeled as derived from the *perfect(ive)* in previous literature (Bi 2014; Jin 2006; Wang 2007) as having resulted from three different derivational processes, namely, (i) nominalization (Section 2.1), (ii) verbal argument demotion (Section 2.2), and (iii) adverbialization (Section 2.3).

The word pairs cited below have all been mentioned in previous studies (Bi 2014; Downer 1959; Wang 2007; Zhou 1962). Example sentences are selected from *Zuozhuan*, the English translations for which follow Durrant et al. (2016). Phonetic notations for characters with different pronunciations are based on *fanqie* 反切,[6] as indicated in *Jingdian Shiwen* 經典釋文, and *ChunqiuZuozhuan Zhengyi* 春秋左傳正義.[7]

2.1 Nominalization

Nominalization is undoubtedly the most frequent function of *qusheng* derivation in Old Chinese, accounting for the largest number of examples proposed in previous studies (Downer 1959: 271–277; Zhou 1962: 59–71).

What have been previously analyzed as nouns derived from *perfect(ive)* verbs can be divided into two types. Examples like those listed in (1) can be considered to be nouns denoting the result of an action, as proposed by Downer (1959: 267). Other examples, like those in (2), are location nouns, for which one can see hardly any the connection with the *perfect(ive)* value of the base verb.

(1) 傳 *djwen* 'to transmit' → 傳 *djwenH* 'a record'(Bi 2014: 120–121)
縫 *bjowŋ* 'to sew' → 縫 *bjowŋH* 'a seam' (Bi 2014: 122; Wang 2007: 169)

[6] *Fanqie* is a traditional convention for showing the pronunciation of Chinese characters. It combines the initial of the first character with the rhyme of the second character to represent the pronunciation of a separate character (Sun & Wu 2016). In the following paragraphs, *Fanqie* readings will be transcribed with an IPA adaptation of Middle Chinese provided in the footnotes.

[7] [Correct meanings of the Zuo tradition on the "Annals"], commentaries by Du Yu 杜預 (Jin) and Kong Yingda 孔穎達 (Tang) (Durrant et al. 2016: LVIII).

(2) 處 *tɕʰoX* 'to live at, dwell' → 處 *tɕʰoH* 'place' (Bi 2014: 136–137; Jin 2006: 324)

The *perfect(ive)* hypothesis runs into at least two difficulties. First, nouns expressing the result of a base verb represent only some of the nominals derived via *qusheng*. I will propose a new analysis for this interpretation in Section 2.1.1.

Second, the *perfec(tive)* value cannot account for cases where derived *qusheng* nominals are associated with multiple meanings (see Section 2.1.1, e.g., 3). For instance, the *qusheng* pronunciation of the character 縫 is also found in the compound 縫人 *bjowŋH-ɲin* 'the one who does sewing', a meaning incompatible with a perfect(ive) interpretation.[8]

2.1.1 New analysis

Cases of *qusheng* nominalization fall into two categories according to the typological framework of nominalization: participant nominalization and event nominalization (Koptjevskaja-Tamm 1993; Yap et al. 2011: 2).[9]

In participant nominalization, a derived nominal functions as an argument of the verb and has referential status within a clause (Yap et al. 2011: 2). A derived nominal can refer to a subject, (an intransitive subject S, or a transitive subject A), object, or oblique or circumstantial argument (e.g., instrument, location, etc.) of the base verb.

In event nominalization, a derived nominal refers to the action denoted by a dynamic verb, or state denoted by a stative verb.

According to this framework, the present paper proposes to further divide *qusheng* nominalization into the following semantic sub-types:

- Participant nominalization

    1. Agent nouns, which can be understood as *the one who does X* (X refers to the semantics of the base verb), equal to what are classified as 'nouns of agency' by Downer (1959: 267).
        - 監 *kæm* 'to oversee' → 監 *kæmH* 'overseer'
        - 騎 *gje* 'to ride' → 騎 *gjeH* 'rider'
        - 率 *ʂwit* 'to lead' → 帥 *ʂwijH* 'leader, marshal'

[8] In Bi (2014: 121–123, 159), 縫 *bjowŋH* 'a seam' is categorized as noun derived from *perfective* of 縫 *bjowŋ* 'to sew', whereas 縫 *bjowŋH* in the compound 縫人 is considered to be a case of a *self-designation noun* 自指名詞 (*zìzhǐ míngcí*).

[9] Bi (2014: 156) proposed a similar classification of *self-designation* 自指名詞 (*zìzhǐ míngcí*) and *transferred designation* 轉指名詞 (*zhuǎnzhǐ míngcí*). Both are distinct from *perfective as noun* 完整體表名詞 (*wánzhěngtǐ biǎo míngcí*) in his classification.

2. A group of derived nouns named 'abstract nouns' by Downer (1959: 267)[10] can be understood as an extended interpretation of subject nouns derived from intransitive verbs.
   - 難 *nan* 'be difficult' → 難 *nanH* 'difficulty (something that is difficult)'
   - 善 *dʑenX* 'be good' → 膳 *dʑenH* 'food (something that is good)'
3. Patient nouns refer to the object of transitive base verbs.
   - 畜 *xjuwk* 'to rear, raise' → 畜 *xjuwH* 'farmyard animal (that is raised)'
   - 擔 *tam* 'to carry' → 擔 *tamH* 'load, burden (that is carried)'
   - 含 *ɣom* 'to hold in the mouth' → 唅/琀 *ɣomH* 'pearl put in mouth of corpse'
4. Result nouns can be understood as a particular type of patient noun wherein the patient is also the result of the action denoted by the base verb.
   - 結 *ket* 'to tie' → 髻 *kejH* 'knot in hair (hair that has been tied)'
   - 織 *tɕik* 'to weave' → 織 *tɕiH* 'patterned cloth (what has been woven)'
   - 論 *lwon* 'to discuss' → 論 *lwonH* 'theory (what has been discussed)'
5. Circumstantial nouns that refer to the instrument with which an action is undertaken, *with which people do X*.
   - 研 *ŋen* 'to grind' → 硯 *ŋenH* 'inkstone'
   - 磨 *ma* 'to grind' → 磨 *maH* 'grindstone'
6. Circumstantial nouns referring to the location where an action is undertaken, *where people do X*.
   - 坐 *dzwaX* 'to sit' → 座 *dzwaH* 'seat'
   - 處 *tɕʰoX* 'to live, dwell' → 處 *tɕʰoH* 'place'
   - 藏 *dzaŋ* 'to hide, store' → 藏 *dzaŋH* 'storehouse'

- Event nominalization

7. Degree or quality nouns, which are generally derived from stative verbs,[11] refer to qualities or characteristics described by the basic verbs.
   - 高 *kaw* 'be high' → 高 *kawH* 'height'

[10] The other two examples of abstract nouns 思 *si* 'to think' → 思 *siH* 'thought' and 欲 *jowk* 'to want, desire' → 慾 *juH* 'lust', cited by Downer (1959) are closer to patient nouns.

[11] Bi (2014: 168–175), Wang (2007) and Zhou (1962: 71–75) used the term 'adjectives'.

- 深 *ɕim* 'be deep' → 深 *ɕimH* 'depth'
- 厚 *ɣuwX* 'be thick' → 厚 *ɣuwH* 'thickness'

8. Action nouns refers to the actions designated by dynamic verbs. They are in fact very rare in the word lists provided in the previous studies of Downer (1959: 271–277) and Zhou (1962: 59–71). Below is an unambiguous example of an action noun:
   - 守 *ɕuwX* 'to guard, maintain' → 守 *ɕuwH* 'defense'

A noteworthy phenomenon is that *qusheng* derived nominals may have several different meanings. For example, the derived nominal 守 *ɕuwH* is associated with at least three different interpretations in the *Zuozhuan*, as an action noun in (3a), as a location noun in (3b), and as an agent noun as in (3c).

(3) a. Action noun
小 國 忘 守手又反, 一音如字[12] 則
sjewX *kowk* *mjaŋH* ***ɕuwH*** *tsok*
be.small country to.forget defending(oneself) LNK
危
ŋjwe
be.in.danger
'When a small domain forgets to defend itself, it is in danger.'
(*Zuozhuan*, Zhao 18, Durrant et al. 2016: 1557)

b. Circumstantial noun (location)
王 巡 虢 守音狩[13]
ɦjwaŋ *zwin* *kwæk* ***ɕuwH***
king to.inspect domain.of.Guo holdings
'The king went on an inspection tour of the holdings of the domain of Guo.'
(*Zuozhuan*, Zhuang 21, Durrant et al. 2016: 191)

c. Agent noun
謝息 為 孟孫 守手又反
zjæH.sik *ɦjwe* *mæŋH.swon* ***ɕuwH***
Xie.xi be.in.capacity.of Zhongsun sheriff
'Xie Xi, in his capacity as sheriff of Cheng for the Zhongsun line.'
(*Zuozhuan*, Zhao 7, Durrant et al. 2016: 1420)

[12] The phonetic notation here is based on the first *fanqie* provided in *Zhengyi*, 手又反, 手 *ɕuwX* + 又 *ɦjuwH* = *ɕuwH*. The controversy of multiple notations, indicated by 一音.., 又音... or 又...切 in *Jingdian Shiwen* and *Chunqiu Zhengyi* is beyond the scope of the present paper. See Yue & Zhang (2016) for more on this issue.

[13] 狩, *ɕuwH*

2.2 Argument demotion

Verb valency-changing derivations also make up a considerable number of *qusheng* alternations, for which Downer (1959: 281–286, 287–288) distinguishes three situations. These include two argument-promoting derivations: (i) causative (e.g., 飲 *ʔimX* 'to drink' → 飲 *ʔimH* 'to give to drink'), and (ii) applicative ('effective'), which either derives a transitive verb out of an intransitive base (e.g., 渴 *kʰat* 'be thirsty' → 愒 *kʰajH* 'to long for'), or rearranges the argument structure of a transitive base (e.g., 取 *tsʰjuX* 'to take' → 娶 *tsʰjuH* 'to marry (a woman)'), and one argument-demoting derivation: (iii) passive or neuter, which derives an intransitive verb out of a transitive base (e.g., 知 *ʈje* 'to know' → 智 *ʈjeH* 'be wise').

The examples that were previously considered to be 'perfect(ive) verbs' or 'adjectives derived from perfect(ive) verbs', such as the two verbs listed in (4),[14] can be straightforwardly analyzed as intransitive stative verbs derived from transitive verbs, as in Downer (1959: 287).

(4) 治 *ɖi* 'to govern' → 治 *ɖiH* 'be well-governed' (Bi 2014: 146–147)
張 *ʈjaŋ* 'to stretch' → 張(脹) *ʈjaŋH* 'be stretched' (Mei 2012: 23)

There is no necessity to differentiate the two examples in (4) as perfect(ive) verbs from other passive verbs derived by *qusheng*, such as 散 *sanX* 'to scatter, release' → 散 *sanH* 'be loose', 聞 *mjun* 'to hear, to smell' → 聞 *mjunH* 'be heard, be smelt'.[15] They belong to a same morphological process of argument deletion, and share a similar semantic value of a resultative state.

2.2.1 New analysis

Passive is not the only function of the intransitivizing *qusheng*. The phenomenon was first noticed by Schuessler (1985: 346), who compared *qusheng*

[14] Some pairs previously cited as examples of the *perfective* marked by *qusheng*, such as 清 *tsʰjeŋ* 'to wash' → 淨 *dzjeŋH* 'be clean' (Bi 2014: 145–146) and 過 *kwa* 'to pass by' → 過 *kwaH* 'to surpass, exceed' (Mei 2012: 23; Sun 2007: 291–299) require extensive discussion and are not treated here for reasons of space. For 清 *tsʰjeŋ* 'to wash' → 淨 *dzjeŋH* 'be clean', the initial voicing/aspiration alternation should also be explained. The *qusheng* alternation in the second pair with the character 過 has complicated uses in Old Chinese texts, and the opposition between 'to pass by' and 'to exceed, surpass' only represents some of the attested uses of this character. A better understanding of this pair must await a future systematic study on the available sources.

[15] Wang (2007: 180) also admitted that *passive* verbs, such as 聞 *mjun* 'to hear, to smell' → 聞 *mjunH* 'be heard, be smelt' (p. 178–179) are both semantically and syntactically identical to 治 *ɖi* 'to govern' → 治 *ɖiH* 'be well-governed', analyzed as intransitive verbs derived from the perfect(ive). However, she said "we believe that formation of passive verbs should be classified as word formation by perfect(ive)" (p. 180, originally "我們認為被動構詞應歸入完成體構詞一類 *Wǒmen rènwéi bèidòng gòu cí yīng guī rù wánchéng tǐ gòu cí yílèi*", my translation).

forms to the Middle Voice in Greek, since they contrast with the basic *non-qusheng* (transitive) verbs by a range of meanings, like passive, antipassive, and reflexive. Jacques (2016a: 207) also divided Downer's (1959) *passive/neuter* group into two situations, passive (e.g., 散 *sanX* 'to scatter, release' → 散 *sanH* 'be loose') and antipassive (e.g., 射 *ʑek* 'to shoot at' → 射 *ʑæH* 'to practice archery') derivations.

Multiple interpretations of the intransitivizing function are also found with the a single derived *qusheng* form.

The *qusheng* verb 治 *ɖiH*, derived from the transitive *pingsheng* verb 治 *ɖi* 'to govern', has at least two possible interpretations, passive and antipassive.

In (5b), the *qusheng* form is used as a passive verb. The intransitive subject, *Song*, corresponds to the underlying object of the basic transitive verb.

In (5c), 治 *ɖiH* expresses the meaning 'have talent for governing' or 'be capable of governing', which can be regarded as a propensity stative verb originating from an antipassive derivation. In this sentence, the intransitive subject, *Guan Yiwu*, corresponds to the underlying transitive subject of the basic verb 治 *ɖi* 'to govern'.

(5) a. Transitive
春， 治 兵 于 廟
tɕʰwin ɖi pjæŋ hju mjewH
spring to.drill soldiers at Ancestral.Temple
'In spring, we drilled the soldiers at the Ancestral Temple.'
(*Zuozhuan*, Zhuang 8, Durrant et al. 2016: 152)

b. Passive
於 是 宋 治直吏反[16]
*ʔjo dʑeX sowŋH **ɖiH***
because.of 3SG Song be.ruled.well
'With that, Song was ruled well'
(*Zuozhuan*, Xi 9, Durrant et al. 2016: 299)

c. Antipassive
管夷吾 治直吏反 於 高傒
*kwanX.jij.ŋu **ɖiH*** *ʔjo kaw.ɣej*
Guan.yiwu having.the.talent.for.governing CM Gao.xi
'Guan Zhong's talent for governing surpasses that of Gao Xi.'
(*Zuozhuan*, Zhuang 9, Durrant et al. 2016: 159)

The second example 張 *ʈjaŋH* in (4) may also have two different interpretations. In (6b), the *qusheng* form 張 *ʈjaŋH* is used as a passive verb, describing a resultative state.

In (6c), the same *qusheng* form is associated with a reflexive use, in which the intransitive subject, *the domain of Sui*, corresponds to both the

[16] 直 *ɖik* + 吏 *liH* = *ɖiH*

underlying A and the underlying P of the basic transitive verb. Note that *Chunqiu Zhengyi* also interpreted 張 in (6c) as 'be self-swollen' (张，自侈大也).

(6) a. Transitive

我	張	吾	三軍	而	被	吾
ŋaX	***ʈjaŋ***	*ŋu*	*sam.kjun*	*ɲi*	*bjeH*	*ŋu*
1PL	to.swell	1PL.POSS	armies	LNK	to.put.on	1PL.POSS

甲兵
kæp.pjæŋ
armor.and.weapons

'Having swollen the ranks of our three armies and having put on our armor and weapons (we approach Sui in martial display).'
(*Zuozuan*, Huan 6, Durrant et al. 2016: 95)

b. Passive

將	食	張[中亮反][17]	如	廁
tsjaŋ	*ʑik*	***ʈjaŋH***	*ɲo*	*ʈʂʰiH*

be.about.to to.eat be.bloated to.head.to privy
'When he was about to eat, he became bloated, went to the privy.'
(*Zuozuan*, Cheng 10, Durrant et al. 2016: 787)

c. Reflexive

隨	張[豬亮反][18]	必	棄	小	國
zjwe	***ʈjaŋH***	*pjit*	*kʰjijH*	*sjewX*	*kwok*

Sui be.swollen(with.pride) must to.disregard be.small domain
'If Sui becomes swollen with pride, it must disregard the interests of the smaller domains.'
(*Zuozhuan*, Huan 6, Durrant et al. 2016: 95)

The fact that there may be multiple interpretations of a single *qusheng* verb, as illustrated in (5) and (6), also supports Jacques' (2016a) comparison of the intransitivizing *qusheng* in Old Chinese to the sibilant reflexive/middle suffix ****-si*** preserved in various Sino-Tibetan languages such as Kiranti, West-Himalayish, and Dulong/Rawang. For instance, the detransitivizing suffix ***-s*** of Bunan (West-Himalayish) is associated with four functions: anticausative, passive, reciprocal, experiencer and recipient backgrounding (Widmer 2014: 404–420). A similar case is also found in Khaling (Kiranti), where the suffix ***-si*** is associated with four different functions: reflexive, autobenefactive, impersonal subject and antipassive (Jacques 2016a: 210–211).

[17] 中 *ʈjuwŋ* + 亮 *ljaŋH* = *ʈjaŋH*
[18] 豬 *ʈjo* + 亮 *ljaŋH* = *ʈjaŋH*

2.3 Adverbialization

Some authors (Bi 2014: 148–151; Jin 2006: 90–94) have argued that adverbs in *qusheng* in Old Chinese are derived from *perfect(ive)* verbs.

Jin (2006: 94) pointed out a potential semantic connection between the *perfect(ive)* and adverbs, emphasizing that "perfect(ive) is often associated with a result or state, and the most common function of the adverb is also to express the manner of an action", and argued that it is common for "perfect(ive) verbs to be converted into adverbs in languages with inflectional systems".[19] However, this semantic argument is weak, and is not applicable to the attested examples.

There are only a few examples of *qusheng* adverbialization mentioned in previous studies. While some of these examples are subject to further investigations, there are indeed others which show opaque semantic connections between the *qusheng* adverbs and the basic *non-qusheng* forms.

One of the rare transparent cases of an adverb derived by *qusheng* is the pair 復 ***bjuwk*** 'to return, reinstate' → 復 ***bjuwH*** 'again (adv.)'. The semantic value of the derived adverb is related to the manner of the action denoted by the basic *rusheng* verb.[20]

(7) a. 更 ***kæŋ*** 'to change (v.)' → 更 ***kæŋH*** 'again (adv.)' (Bi 2014: 150–151; Downer 1959: 289; Zhou 1962: 87)
有 ***ɦjuwX*** 'to have, exist (v.)' → 又 ***ɦjuwH*** 'more over, also (adv.)' (Bi 2014: 149–150; Downer 1959: 289)
復 ***bjuwk*** 'to return, reinstate (v.)' → 復 ***bjuwH*** 'again (adv.)' (Downer 1959: 289; Zhou 1962: 87)

b. 三 ***sam*** 'three (num.)' → 三 ***samH*** 'thrice (adv.)' (Downer 1959: 289; Zhou 1962: 87)

Second, the *perfect(ive)* hypothesis leaves non-deverbal adverbializations like (7b) unaccounted for.

Therefore, it is more appropriate to see adverbialization as a distinct derivational function of *qusheng*, as in Downer (1959: 289), Jacques (2016a: 213) and Zhou (1962: 87).

[19] originally "動作完成或已經變化已經發生則必然產生一種結果或狀態, 而副詞最常見的功能是說明動詞的行為方式. 因而在有形態的語言中, 完成體動詞常常轉化為副詞 *Dòngzuò wánchéng huò yǐjīng biànhuà yǐjīng fāshēng zé bìrán chǎnshēng yīzhǒng jiéguǒ huò zhuàngtài, ér fùcí zuì chángjiàn de gōngnéng shì shuōmíng dòngcí de xíngwéi fāngshì. Yīn'ér zài yǒu xíngtài de yǔyán zhōng, wánchéng tǐ dòngcí chángcháng zhuǎnhuà wéi fùcí*", my translation.

[20] Sun (2007: 42–43) also proposed the pair 早 ***tsawX*** 'morning (n.)' → 早 ***tsawH*** 'long ago (adv.)', but clarified that this pair is attested very late in phonetic notations of poets in the Song Dynasty. This pair is not included in (7).

3 Previous comparisons of perfective/nominalizer homophony in Sino-Tibetan

One of Mei's (2012) arguments in favor of the *perfect(ive)* hypothesis for the *qusheng* (**-s*) in Old Chinese is the isomorphism between a sibilant perfective suffix and a nominalizing suffix found in various branches of Tibeto-Burman, such as Classical Tibetan, Balti, Muya, Jingpho, and Stau.

However, this comparison is based on the underlying hypothesis that all these sibilant suffixes are cognate and inherited from Proto-Sino-Tibetan. In fact, the source(s) of the sibilant nominalizing and perfective suffix(es) in Tibeto-Burman languages may be very complex. In this section I will briefly comment on three different cases, in order to show that the relation between the two sibilant suffixes in these languages remains unclear and needs to be examined more carefully in future studies.

3.1 Jingpho, Muya, and Stau

For some languages like Jingpho and Stau (also see Section 3.3) which have undergone different degrees of coda erosion, it is necessary to first demonstrate that the sibilant suffixes are inherited from the proto-language and are not innovations within each branch.[21]

Second, the nominalizing function which Huang (1997a) (cited by Mei 2012) considered to have developed from the sibilant aspectual marker in these languages is also questionable. Confusion arises from the appearance of the sibilant aspectual marker in subordinated clauses.

For example, in Jingpho, the change-of-state marker *sə-* can occur in nominalized subordinated clauses, and merge with the clausal nominalizer *-ʔay* (> *-say*) (Kurabe 2016: 350), but the aspectual marker *sə-* itself is not the nominalizer.

The nominalizing function of the sibilant suffix in Muya (Bai 2019; Gao 2015) and modern West Rgyalrongic languages, like Stau (Gates 2021) and Geshiza (Honkasalo 2019), is highly ambiguous, which can be attributed to the complex relationship between subordination, nominalization, and the finiteness of the verb in subordinated clauses.

For example, in Mazur Stau, verbs in subordinated nominalized clauses can be finite, with the presence of TAME markers including the inferential perfective suffix *-sə*, as in (8b). However, in (8c), the absence of an obvious nominalizer makes the status of the suffix *-sə* ambiguous. It seems to allow

[21] For example, Huang (1997a), citing data from Dai & Cui (1985), mentioned that sibilant nominalizing suffix $sɿ^{31}$ in Achang could possibly be derived from the Proto-Tibeto-Burman past tense/perfective **-s(V)* suffix. Although Dai & Cui (1985) did not comment on the etymology of the nominalizing suffix $sɿ^{31}$ in Achang, in Zaiwa, a close relative of Achang, the singular nominalizer se^{5}- ∼ su^{31} is related to the similative se^{5}- ∼ su^{55} ∼ se^{55} 'like' (Lustig 2010: 351–352).

for two analyses: one of it as a nominalizer functioning at the clausal level, and one of it simply as a TAME marker suffixed to a finite verb.

(8) Mazur Stau (West Rgyalrongic)

a. *mtsʰomo=ɣə zama nə-ngə-sə*
Mtshomo=ERG food PFV-eat-IFR
'Mtshomo ate food (I arrived at this knowledge through inference, I did not see Mtshomo eating the food).'
(Gates 2021: 377)

b. *pəsɲi zama nə-mæ-ngə-sə=kʰæ ŋə-rə ŋæ*
today food PFV-NEG-eat-IFR=NMLZ.INS COP-SENS 1
rku-rə
cold-SENS
'Because today I haven't eaten, I'm cold.'
(Gates 2021: 424)

c. *tɕʰəgɛ ɾji=tɕʰæ tə-v-cʰi-sə ŋə-rə*
then horse=on PFV-INV-mount-PFV.NMLZ COP-SENS
'He rode on the horse.'
(Gates 2021: 337)

The structure in (8c) is ubiquitous in modern West Rgyalrongic languages. As ambiguity makes it very difficult to determine the source and basic functions of the sibilant suffix, using these languages to support the perfective/nominalization isomorphism in Proto-Sino-Tibetan is unconvincing.

3.2 Tibetan

Classical Tibetan, and Balti, a Tibetic language, are phonologically conservative and preserve the **-s* coda of Proto-Sino-Tibetan. Their *-s* suffix(es) can be compared to *qusheng* in Old Chinese, and the *-s* suffix(es) attested in some phonologically conservative groups like Rgyalrongic and West Himalayish (Hill 2014: 624–625; Jacques 2003, 2016a; Widmer 2014).

Mei (2012: 22) cited a number of Tibetan examples of perfective and nominalized verbs which share a common stem. Among these are རྩི་ *rtsi* 'to count' → བརྩིས་ *b-rtsi-s* 'count, PFV', རྩིས་ *rtsi-s* 'counting, NMLZ', ཟ་ *za* 'to eat' → བཟས་ *b-za-s* 'eat, PFV', ཟས་ *za-s* 'food, NMLZ'. Yet these pairs might be the result of limited stem alternations in Tibetan, as well as analogy within the verbal conjugations.[22]

[22]This hypothesis should also take into account verbs presenting an archaic perfective form with the vowel *o*, i.e. ཟ་ *za* 'to eat' → ཟོས་ *zo-s*, ལྟ་ *lta* 'to look' → ལྟོས་ *ltos*. The phenomenon remains controversial, for details see Hill (2015); Jacques (2010); Zeisler (2015, 2017).

As Hill (2014: 625) summarized, the number of *-s* suffixes in Tibetan and their functions remains controversial. In addition to the nominalizing *-s* suffix (e.g., *za-s* 'food') and the perfective suffix *-s* (e.g., *b-za-s* or *zo-s* 'eat PFV') discussed in the present paper, Denwood (1986) also suggested the existence of a collective suffix *-s* occurring after nominals, e.g., the collective particle རྣམས་ *rnam-s* with the collective suffix, opposed to རྣམ་ *rnam* 'section, component'. Extremely ambiguous cases are found with compounds, the three suffixes could all be added to the second component (Bialek 2018: 228–231; Uebach & Zeisler 2008).[23]

3.3 Tangut

Tangut was not mentioned by Mei (2012). In this language, the same character 𗼻[3916] *sji*[2] is used both as the inferential suffix[24] and as the nominalizing suffix (Arakawa 2014: 133; Beaudouin Accepted; Jacques 2014b: 160, 237–238; Nie 2013).[25]

Cognacy between the inferential suffix 𗼻[3916] *sji*[2] in Tangut (e.g., 9) and the Proto-Tibeto-Burman **-s* suffx of tense/aspctual value is unclear. Jacques (2016a: 238) has expressed uncertainty that the coda **-s* of Pre-Tangut would have disappeared and left only an indirect influence on the vowels in Tangut. Jacques' remark can also account for the sibilant inferential suffixes in modern West Rgyalrongic languages (Stau, Geshiza, Khroskyabs, cf. Lai et al. 2020), which have all undergone some degree of coda erosion. Most of these languages do not preserve the coda **-s* (Gates 2021; Honkasalo 2019; Lai 2017).[26]

[23] Uebach & Zeisler (2008: 324) analyzes the *-s* suffix in noun-adjective compounds like ལག་རིངས་ *lag.rings* 'long-arms' as a resultative suffix, related to the perfective suffix *-s*. Jacques (2016a) holds a different view, and considers the *-s* suffix in such compounds to be a particular use of the *-s* nominalizer. Comparisons between *qusheng* in Old Chinese compounds and *-s* suffix(es) in Old Tibetan compounds are not easy. The *-s* suffix(es) normally occur(s) after the second component of a compound in Old Tibetan, whereas in Old Chinese, *qusheng* can occur either with the first (燒石 *ɕewH dʑek* 'cooking-stones') or with the second component (淫巧 *jim kʰæwH* 'extravagant toys'). This topic deserves additional attention, but for reasons of space, I defer it to future research.

[24] 𗼻[3916] *sji*[2] was previously described as a perfective suffix in Tangut. Beaudouin (Accepted) shows that the suffix is associated with inferential and mirative evidential values, like its cognates in modern West Rgyalrongic languages.

[25] It is not uncommon to see that in Tangut the same character represents morphemes from unrelated sources. A typical example is the character 𗖵[1326], which can be a directional prefix, first-person dual indexation suffix, and an indefinite article occurring after an interrogative pronoun (Arakawa 2018; Jacques 2014b: 269–270).

[26] One reviewer also pointed out the possibility that the original form of the sibilant suffix associated with TAME function(s) in Proto-Tibeto-Burman (or Proto-Sino-Tibetan if further works prove the presence of a perfective function of *qusheng* in Old Chinese) may have been syllabic (**-sV*). The answer to this question remains unclear and is one that will need to be addressed in future studies. Additionally, if both the sibilant syllabic inferential suffixes *-sV* in West Rgyalrongic (Tangut, Stau, Geshiza and Khroskyabs) and the non-

The nominalizer ^{3916} *sji*^{2} can be found with instrument nouns, such as ^{5754} ^{3916} *lju*^{2}*-sji*^{2} 'tools used to capture' (Arakawa 2014: 133; Shi 2020: 181), and also in nominalized complement clauses, as in (10) (Jacques 2007: 70).

The relationship between the sibilant nominalizer and the inferential suffix in Tangut is also unclear. Jacques (2016a: 237) has previously pointed out that they have different distributions: the inferential perfective suffix occurs with verbs marked by directional prefixes (e.g., 9), whereas the nominalizer occurs with verbs without directional prefixes (e.g., 10).

(9) Tangut (West Rgyalrongic)
^{5479}^{2857} ^{2778} ^{2801} ^{5993} ^{1326} ^{1616} ^{3916}
rjar^1*.ŋo*^{2} *rjir*^{1} *lhjuu*^{2} *kha*^{1} *kji*^{1}- *.o*^{2} ***-sji***^{2}
disease bone marrow inside DIR1.PFV- enter -IFR
'The disease already entered his bones and marrow.'
(Leilin 06.08A.7, cited by Jacques 2014b: 53)

(10) Tangut (West Rgyalrongic)
^{0092} ^{1139} ^{0187} ^{3042} ^{3916} ^{0795} ^{3621}
mja^1 *-jij*^{1} [*nar*^{2} *jur*^{1}] ***-sji***^{2} *rjir*^{2}- *wjo*^{1}
mother -POST old elevate -NMLZ DIR1.PFV- do$_{II}$
'(With the money) you will provide for your mother's needs in her old age.'
(Cixiaozhuan 22.5-6, Jacques 2007: 70)

4 Comparative data from Situ Rgyalrong

This section mainly focuses on comparative data from Situ (Eastern Rgyalrong), a language which has four superficially homophonous *-s* suffixes, a nominalizer *-s* (Section 4.2), a non-inferential past suffix *-s* (Section 4.3), an adverbializer *-s* and a locative suffix *-s* (Section 4.4). All four of these suffixes are of considerable antiquity, with well-attested cognates in other Sino-Tibetan languages (Hill 2014; Huang 1997a; Jacques 2003, 2016a; Otter 2021; Widmer 2014). Therefore, they are of great value for answering the question of whether the **-s* suffixes of Sino-Tibetan come from a single or multiple sources.

inferential past suffixes *-s* in Situ (Eastern Rgyalrong) (see Section 4.3) were inherited from one proto-form, then the differentiation in functions between the two branches is worth pondering. Moreover, Brag-steng, an under-described Southern Situ dialect, has both the non-inferential past suffix *-s* cognate with those found in other Situ dialects, and the inferential/sensory enclitic *=sɐj*, corresponding to the inferential *-sV* suffixes in West Rgyalrongic. Unless it can be proven that *=sɐj* in Brag-steng is borrowed from West Rgyalrongic, Brag-steng data would strongly suggest that the two suffixes have different origins.

The objective of this section is twofold. First, based on morphological evidence (in particular verb stem alternations) in Situ, it evaluates whether the nominalizing *-s* suffix and the past tense *-s* suffix have a common source. Since Situ has unusually rich verb stem alternations, I will first briefly comment on this issue in Section 4.1.2.

Second, since the locative function is not found within the *qusheng* of Old Chinese, Situ data can also serve to test the probability of Jacques' (2016a) hypothesis that the adverbializing *qusheng* in Old Chinese might come from the locative suffix **-s* in Sino-Tibetan.

4.1 Morpho-phonological background

4.1.1 Phonotactic constraints on the *-s* suffixes in Situ

In Situ, all four of the *-s* suffixes mentioned above are subject to a common morpho-phonological constraint; they cannot appear after verb stems ending with a closed syllable.

(11) **CVC-s > CVC*

However, we will see in Section 4.2.2 that in several cases of nominalization, the suffixation of the nominalizer *-s* absorbs the preceding *-t* coda of the verb stem. The suffixation of *-s* in these cases belongs to an older layer.

(12) **CVt-s > CVs*

4.1.2 Stem alternations in Situ

Most of the data cited in this section comes from Brag-bar, a Situ dialect with unusually rich stem changes, observed in both inflectional and derivational morphology.

Inflectional stem alternations in Brag-bar occur in different TAME or argument indexation categories. Alternations between Stem I and Stem II generally mark the contrast between Non-past (except Egophoric) and Past (except Inferential). Stem II is derived from Stem I, by **tonal inversion** between high and falling tones, sometimes with alternations between central grade (*V_c: ə, ɐ, a*) and non-central grade (*V_{nc}: i/u, e/o, iɛ*) vowels, as exemplified by *ka-siét* 'to kill' (I *sát*, II *siêt*) and *ka-viê* 'to do' (I *viê*, II *vá*).

Verbs of particular syllable structures distinguish an additional Stem I' or Stem II' in non-suffixing person indexation categories. These two stems originate from phonologically driven unidirectional vowel change to the central grade (I/II *$CV́_c(C_{stop})$*-SUF → I'/II' *$CV́_{nc}(C_{stop})$*): (i) Verbs with an open syllable and a high tone, as well as those with a closed syllable ending in a stop, distinguish Stem I' from Stem I when occurring in non-suffixing Non-Past and Inferential forms (e.g., I *sát*-SUF, I' *siét* 'to kill'); (ii) Verbs with an open syllable and a falling tone may distinguish stem II' from stem II

in non-suffixing, Non-Inferential Past forms (e.g., II *vá*-SUF, II' *vié* 'to do'). For a detailed account for inflectional stem alternations see Zhang (2018).

Derivational alternations are governed by a primary unidirectional tone attribution rule, either to high (e.g., autobenefactive *nə-*, applicative *-t*, etc.) or to falling tone (e.g., oblique participles *sa-*, reduplication etc.) (Zhang 2020). Tonal attributions often occur concomitantly with vowel alternations, the directionality of which is correlated with a verb stem's syllable structure. The clearest rules are found with open syllable verb stems. Alternations to high tone happen with vowel shift to the non-central grade ($\rightarrow$ $C\acute{V}_{nc}$), as evidenced by the autobenfactive verb *ka-nə-vié* 'to do for oneself', derived from the basic verb *ka-viê* 'to do'. For the derivational process attributing a falling tone, the vowel shifts to the central grade ($\rightarrow$ $C\hat{V}_{c}$), as exemplified by the oblique participle *sa-vâ* 'place to do...', also derived from *ka-viê* 'to do'.

4.2 Nominalization

Nominalization in modern Rgyalrong languages mainly relies on prefixation (Sun & Lin 2007; Zhang 2020: 220–257). In Situ, although the *-s* nominalizer appears in a considerable number of deverbal nouns, it rarely appears alone as a primary nominalizer.

In Brag-bar, the *-s* nominalizer appears in three types of nominalization. Derived nominals found with the *-s* nominalizer cover a wide range of semantic fields, ranging from participant to event nominalization, as is summarized in Table 1.

Table 1: Three derivational nominalizing patterns with the *-s* nominalizer in Brag-bar (Situ).

Derivational patterns		Stem alternations	Semantic sub-types	Syntactic properties
(i)	Σ-*s*	$C\acute{V}_{C}$-*s*	Patient noun	Noun
(ii)	*kə*-Σ-*s*	$\rightarrow$ $C\acute{V}_{C}$-*s*	Agent noun	Deverbal noun; Purposive complement
	sa-Σ-*s* (*z*-Σ-*s*)	$\rightarrow$ $C\acute{V}_{C}$-*s*	Oblique noun (loc, ins, etc.)	Deverbal noun
(iii)	*tə*-Σ*(s)*	Multi-directional, unclear	Action noun	Deverbal noun
			Result noun	Deverbal noun
			Patient noun	Deverbal noun
			Oblique (ins.) noun	Deverbal noun
			Degree or quality noun	Deverbal noun; Adverbial

Pattern (i) Σ-*s* is only found in one derverbal noun *səmtsé-s* 'notice', (derived from *səmtsó* 'to notify'), in which *-s* can be regarded as the primary nominalizing element.

In patterns (ii) and (iii), the *-s* suffix occurs in nominalizing circumfixes. In the two lexicalized participle circumfixes, *kə*-Σ-*s* and *sa*-Σ-*s*, the *-s* nominalizer co-occurs with two synchronically productive nominalizing prefixes, i.e. the velar agent participle prefix *kə-* and the sigmatic oblique partici-

ple prefix *sa-*. The event nominalizing circumfix *tə-Σ(s)* co-occurs with the dental event nominalizer *tə-*.

4.2.1 Lexicalized agent and oblique nouns

Participles in Situ, like in other Rgyalrong languages (Jacques 2016b; Prins 2016: 159–160; Sun 2006b; Sun & Lin 2007), are very productive nominalizing constructions. They are built upon three nominalizing prefixes, two velar nominalizers, *kə-* for subject (S/A) participles, *ka-* for object participles, and a sigmatic nominalizing prefix *sa-* for oblique arguments (i.e. place, instrument, time, etc.).

The *-s* nominalizer is only found with agent and oblique participles (*kə-*Σ*-s*, *sa-*Σ*-s*) in Situ. Since *-s* suffixing participles demonstrate distinct morphology and specific semantic values, they are called 'lexicalized agent/oblique nouns' in this paper in order to distinguish them from regular participles.

Table 2: Lexicalized agent participles in Brag-bar (Situ).

Verb stems	Lexicalized agent nouns Unidirectional → $C\acute{V}_C$-*s*	Regular subject participles No stem alternations
ka-na-ɾɲé 'to shear'	*kə-na-ɾɲɛ́-s* 'sheep-shearer'	*kə-na-ɾɲé*
ka-rərô 'to guard'	*kə-rərɛ́-s* 'guard'	*kə-rərô*
ka-nô 'to chase'	*kə-nɛ́-s* 'the chaser (when hunting)'	*kə-nô*
ka-najê 'to wait'	*kə-najɛ́-s* 'people in ambush (when hunting)'	*kə-najê*
ka-narɐrê 'to find'	*kə-narɐrɛ́-s* 'seeker (of hide-and-seek)'	*kə-narɐrê*
ka-ntɕhiê 'kill (animals)'	*kə-ntɕhá-s* 'butcher'	*kə-ntɕhiê*

Table 3: Lexicalized oblique participles in Brag-bar (Situ).

Verb stems	Lexicalized oblique nouns Unidirectional → $C\acute{V}_C$-*s*	Regular oblique participles Unidirectional → $C\hat{V}_C$
ka-natsó 'to watch'	*sa-natsɛ́-s* 'viewing deck'	*sa-natsê* 'place to watch'
ka-najê 'to wait'	*z-najɛ́-s* 'ambush place (of hunting)'	*sa-najê* 'place to wait'
ka-nənɪê 'to rest'	*sa-nənɐ́-s*, *z-nənɐ́-s* 'resting place (of the traditional Rgyalrong house)'	*sa-nənɐ̂* 'place to rest'

Morphology Stem alternations for lexicalized agent (cf. Table 2) and oblique (cf. Table 3) participles are governed by a transparent unidirectonal rule: derived agent and oblique nouns shift to a **high** tone, and **central** grade vowel with the presence of the *-s* nominalizer (→ $C\acute{V}_C$-*s*).

The *-s* suffixing lexicalized participles are formally distinguished from the regular subject and oblique participles, as regular subject participles do not show stem modifications. Oblique participles with open syllable stems

are subject to a different rule, and uniformly shift to the falling tone and the central grade (→ $CV\hat{V}_C$) vowel.[27]

In several lexicalized oblique nouns, the oblique participle prefix *sa-* appears in a variant form *z-*; the residue of an ancient allormophy of the sigmatic participle prefix.[28]

Semantics Unlike regular subject and oblique participles, lexicalized agent and oblique nouns have very specific meanings. This difference can be illustrated with the verb ***najê*** 'to wait', which has the restricted interpretation of 'ambush' in derived lexicalized participles, as in ***z-najé-s*** 'ambush site' and ***kə-najé-s*** 'people in ambush'. This interpretation is constantly attested in traditional hunting texts in Brag-bar.

(13) Brag-bar (Situ)
ɕamdú kə-ndʐê jo tə ka-thê tɕɐnə, ɕɐ-tiɛ=nî
gun PTCP:S/A-to.hold PL DET INF-to.go.upward LNK DIS-up=downstream
z-najé-s *ka-tsô tɕɐ, má=ni ka-nə-kriɛ́*
PTCP:OBL-ambush-NMLZ INF-to.say LOC DEM.DIS=downstream INF-to.stand.in.a.row
*ɕɐ-ka-nî ŋês. majnə **kə-najé-s** ɲo*
TRANSL-INF-to.stay be$_{I}$.FAC LNK PTCP:S/A-to.ambush-NMLZ PL
tə rɛ́-tɕhe-ɲ tɕɐnə...
DET PFV-to.go$_{I}$-3PL LNK
'Those with guns go up to the mountain, and on the top, they line up (towards the downstream direction) at the ambush site and wait over there. After the people in ambush go up...'

Regular oblique participles may be interpreted as instrument, time, location, or recipient, depending on the context (Jacques 2016b: 14–15; Sun 2006b: 911; Zhang 2020: 240). In contrast, lexicalized oblique nouns have rather precise and fixed meanings. Those found in Brag-bar are all location nouns (cf. Table 3).

In Cogtse (Situ), the pattern *sa-*Σ*-s* is also found in an instrument noun ***sɐ-zə́-s*** 'criticism' (Lin 2016), derived from the hypothetic verb root ****ka-zu*** 'to criticize', as suggested by cognates in other Rgyalrong languages such as ***ka-ndzú*** 'to criticize' in Brag-bar, ***ndzɯ*** 'to criticize' in Japhug.[29] This

[27] Closed-syllable verb stems are exempt from this alternation rule (Zhang 2020: 234–236).

[28] Like the sigmatic causative prefix *sə-* (Jacques 2015; Lai 2017), the oblique participle prefix *sa-* in Situ might originally have had three to four phonologically conditioned variants. For example, in Japhug (Northern Rgyalrong), the oblique participle prefix has four variant forms *sʁ-*, *sʁɣ-*, *z-* *sʁz-* (Jacques 2021: 819). Situ dialects might have lost this allomorphy due to paradigmatic analogy.

[29] As a deprenasalizing dialect (Gong 2017; Zhang 2020: 10–11), Cogtse *z-* regularly corresponds to Brag-bar *ndz-*, as demonstrated by the verb 'to eat', Cogtse *zá*, Brag-bar *ndziê*, Japhug *ndza*.

suggests that the pattern *sa-*Σ*-s* might originally have been able to derive circumstantial nouns of other semantic types.

Syntactic properties In Brag-bar (Situ), lexicalized agent nouns are unexpectedly found in clausal nominalizations.

As in (14b), the *-s* suffixing agent noun serves as the purposive complement of motion verbs (for details on purposive clause in Rgyalrong languages, see Gong 2018: 208–209; Jacques 2021: 725–726; Sun & Lin 2007), which contrasts with the regular subject participle (e.g., 14a) in terms of its restricted semantic value. Note that this purposive clause retains clause-like syntax, as with the transitive subject *mənɟê* marked by the ergative *kə*.

(14) Brag-bar (Situ), *ka-najê* 'to wait'

a. Regular subject participle
[*tʂaɕî wo-kə-najê*]$^{\text{NMLZ.PURP}}$ *thê-ŋ*
Bkra.shis 3SG.POSS-PTCP:S/A-to.wait to.go.upward$_{\text{I}}$
'I go up to wait Bkra.shis.'

b. Lexicalized agent noun
[*mənɟê tə kə a-wu=nô* ***kə-najé-s***]$^{\text{NMLZ.PURP}}$
3DU DET ERG PRO-upstream.direction=downward PTCP:S/A-to.wait-NMLZ
na-ká-thar
PFV:DOWN-3NS.INTR.PST-to.go$_{\text{II}}$
'They (two) went down (towards the upstream direction) to wait (for the prey)'

4.2.2 *tə-* prefixing event nominalization

The *tə-* prefixing event nominalization[30] is a nominalizing process shared by Northern Rgyalrong languages (i.e. Japhug, Tshobdun, and Zbu) and Situ.

The *-s* nominalizer is only found in a few isolated cases in Northern Rgyalrong languages (Jacques 2004: 460; Sun 2014: 644),[31] but is present in a considerable number of *tə-* prefixing nominals in Situ.

Opaque morphology The *tə-* prefixing nominals are one of the most opaque aspects of Situ derivational morphology. There are two reasons.

First, the presence of the *-s* nominalizer is synchronically unpredictable. Second, unlike lexicalized agent and oblique nouns (see Section 4.2.1), stem

[30] This nominalizing process has also been called 'lexicalized action nominals' (Sun & Lin 2007) or 'action nominals' (Jacques 2008: 98–100; Zhang 2020: 249–255) in previous publications on Rgyalrongic languages.

[31] As in *mərkə* 'to steal' → *tə-mə́rkə-t* 'theft' in Tshobdun (Sun 2014: 644), and *rku* 'to put (in)' → *tɤ-rku-z* 'parting gift' in Japhug (Jacques 2021: 797).

alternation patterns among the *tə-* prefixing nominals are unclear.[32]

Table 4: *tə-* prefixing nominals with open syllable verb stems in Brag-bar (Situ).

Verb	Derived nominals	Semantics	Stem alternations
ka-mbí 'to give'	*tə-mbə̂-s* 'material awards'	Theme	
ka-ʑú 'to accuse'	*tə-ʑə̂-*s 'accusing'	Act.	
ka-rtɕhé 'to attach'	*tə-rtɕhê-s* 'attaching'	Act.	
ka-klê 'to knead'	*tə-klê-s* 'kneading'	Act.	→ $C\hat{V}_C$-*s*
ka-krô 'to distribute'	*tə-krê-s* 'action of distributing; parting present'	Pat.	
ka-pê 'to stew'	*tə-pê-s* 'stew'	Act.	
ka-skiê 'to poach'	*tə-skâ-s* 'poaching'	Act.	
ka-ndziê 'to eat'	*tə-ndzâ* 'food'	Pat.	→ $C\hat{V}_C$
ka-rtsə́ 'to count'	*tə-rtsə́-s* 'counting'	Act.	
ka-nî 'to sit, stay'	*tə-nə́-s* 'siting, staying'	Act.	
ka-plə́ 'to burn'	*tə-plə́-s* 'burning'	Act.	
ka-ndû 'to pick'	*tə-ndə́-s* 'picking'	Act.	→ $C\acute{V}_C$-*s*
ka-nô 'to chase (animals)'	*tə-né-s* 'chasing (animals)'	Act.	
ka-rdzwiê 'to dig'	*tə-rdzwá-s* 'digging'	Act.	
ko-okrú 'to cry'	*ta-krú* 'cry'[33]	Act.	
ka-ndzú 'to criticize'	*tə-ndzú* 'criticism'	Act. Instr.	
ka-pó 'to spin'	*tə-pó-(s?)* 'spinning (of wool)'	Act.	
ka-mcê 'to beg'	*tə-mcé* 'begging'	Act.	→ $C\acute{V}_{NC}$
ka-jê 'to plant'	*tə-jé* 'planting'	Act.	
ka-ɕmô 'to steal'	*tə-ɕmó* 'stealing'	Act.	

Table 4 illustrates stem alternations in *tə-* prefixing nominals with open-syllable verb stems, which happen in one of the two directions – either to the falling tone, or to the high tone. Within each direction, the *-s* nominalizer is only present in some of the derived nominals. Those with the *-s* suffix all have central grade vowels.

Multidirectional tonal alternations within the *tə-* prefixing nominals should not be confused with the *tonal inversion* happening in Stem I/Stem II alternations (see Section 4.1.2, Zhang 2018: 313). In Stem II formation, the high-level tone in Stem I shifts to falling tone in Stem II, e.g., *mbə́* 'to give$_{\text{I}}$', *mbə̂* 'to give$_{\text{II}}$', and vice versa, e.g., *pê* 'to stew$_{\text{I}}$', *pé* 'to stew$_{\text{II}}$'. However, among the examples presented in Table 4, verb stems with either high or falling tones can produce a derived nominal with a falling tone.

It is possible that the multidirectional alternations in *tə-* prefixing nominals in Brag-bar might result from an accumulation of rules belonging to distinct historical layers.

[32]The only predictable cases are verb stems with reduplicated syllables. Derived *tə-* prefixing nominals shift to having penultimate accent, and the *-s* nominalizer is absent in this case, e.g., *kə-ovo∼vô* 'to cry (baby, animal)' → *ta-vó∼vo* '(animal or baby) cry', *kə-o-lat∼lát* 'to fight with each other' → *ta-liɛ́t∼liɛt* 'war'.

[33]The variant form *ta-* results from the merger between the prefix *tə-*, and an *o-* (< **(ŋ)a-*) initial verb stem (Zhang 2020: 249–250).

Table 5: *tə-* prefixing nominals with closed syllable verb stems in Brag-bar (Situ).

Verb	Derived nominals	Semantics	stem alternations
ka-phét 'to chop (trees)'	*tə-phôs* 'chopping (of trees)'	Act.	*CVt* → *CV̂s*
ka-khrət 'to scrape'	*tə-khrâs* 'scraping'	Act.	
ka-ndzi̱k 'to chase'	*tə-ndzî̱k* 'chasing'?*tə-ndzî̱k*	Act.	
ka-ɟúp 'to sleep'	*tə-ɟûp* 'sleeping'	Act.	
ka-tʂóp 'to seam'	*tə-tʂôp* 'seam'	Act.	
ka-lɛ́k 'to herd'	*tə-lêk* 'herding'	Act.	→ *CV̂C*
ka-khás 'be angry'	*tə-khâs* 'anger'	Act.	
ka-siɛ̂r 'to search'	*tə-sâr* 'searching for'	Act.	
ko-ondét 'dispute (with each other)'	*ta-ndɛ́t* 'dispute'	Act.	
ko-ondzót 'to bark'	*ta-ndzót* 'barking'	Act.	
ka-ndzí̱k 'to swim'	*tə-ndzí̱k* 'swimming'	Act.	→ *CV́C*
ka-tiák 'to weave'	*tə-tiák* 'woven fabric'	Act. Res.	
ka-rkɛ́s 'to carve'	*ta-rkɛ́s* 'carving'	Act. Res.	
ka-pkɛ̂r 'to carry on shoulder'	*tə-pkór* 'burden (what is carried on shoulder)'	Pat.	

Multidirectional alternations are also observed with closed syllable verb stems, as shown in Table 5. In these cases, derived nominals can shift either to the high tone or the falling tone. However vowel alternations for closed syllable verb stems are more ambiguous than those found with open syllable verb stems.

There are two exceptional cases where the *-s* nominalizer absorbs the coda *-t* of the verb stem,[34] both of which are found with alternations to the falling tone. Since we know that the forms in which the *-s* suffix assimilates the *-t* coda are archaic, we may presume that alternations to the falling tone do not represent the most recent layer of this derivational process.

Semantics Attested examples of *tə-* prefixing nominals in Brag-bar (Situ) can be classified into the following sub-types on the basis of meaning:[35]

(i) **Action nouns** are the most common type. The derived nominal expresses the action, activity, or processes that the basic verb refers to, for instance, *ka-lɛ́k* 'to herd' → *tə-lêk* 'the action or activity of herding', *ka-mphój* 'to patch' → *tə-mphôj* 'action or activity of patching', etc.

(ii) **Result nouns** are those referring to the result of the action denoted by the basic verb, as evidenced by *ka-tiák* 'to weave' → *tə-tiák* 'woven fabrics', *ka-rŋô* 'to fry' → *tə-rŋó* 'the fried food, snacks (result)', etc.

[34] A similar case is also reported in Japhug, where the **-s* > *-z* nominalizer in the nominal *tɯ-ʁjiz* 'desire' absorbs the *-t* coda of the verb stem *ʁjit* 'to think' (Jacques 2003; 2004: 460).

[35] Sub-type (v) degree nous will be presented separately in section 4.2.3.

(iii) **Patient nouns** refer to the patient of the basic verb, for example *ka-ndziê* 'to eat' → *tə-ndzâ* 'food', *ka-pkêr* 'to carry on the back' → *tə-pkór* 'stuff carried on the back', etc.

(iv) **Oblique nouns** are very rare in Brag-bar, with only two examples: *ka-ndzú* 'to criticize' → *tə-ndzú* 'criticism', *ka-mbí* 'give' → *tə-mbô-s* 'material awards'.

Note that these two examples cannot be regarded as patient nouns. The verb *ka-ndzú* 'to criticize' indexes a human patient, and the derived nominal *tə-ndzú* 'criticism' can be understood as an instrument noun (i.e. that with which we criticize).[36] The derived nominal *tə-mbô-s* corresponds to the underlying theme of the verb *ka-mbí* 'to give', which indexes the recipient as the direct object.[37]

Some *tə-* prefixing nominals are found with irregular, highly specific meanings, as in (15).

(15) a. *ka-rkô* 'to put' → *tə-rkê-s* 'parting present (pat.)'
(cf. Japhug *kʏ-rku* 'to put' → *tʏ-rku-z* 'parting present')
b. *ka-mbí* 'to give' → *tə-mbô-s* 'material awards (theme.)'
c. *ka-ndziê* 'to eat' → *tə-ndzá-s* 'bribe materials (pat.)'
(cf. Cogtse *ka-zá* 'to eat' → *tə-zás* 'bribe materials')

There are also some *tə-* prefixing nominals, which are interpretable either as an action noun or as a result noun. This is the case with *tə-tiák* (derived from *ka-tiák* 'to weave'), which can refer to both the action of weaving and to the fabric, as the result of the action. The same goes for the Japhug cognate *tʏ-taʁ* 'action of weaving, woven fabric' (derived from *taʁ* 'to weave') (Jacques 2008: 99; 2014a).

A handful of verbs have two derived *tə-* prefixing nominals (cf. Table **??**). One is often associated with a more predictable meaning, while the other is associated with an irregular, specific meaning.

Table 6: Verbs that have two derived *tə-* prefixing nominals.

Verb	Derived nominals	
ka-rŋô 'to fry'	*tə-rŋê-s* 'frying (act.)'	*tə-rŋó* 'the fried food, snacks (res.)'
ka-ndziê 'to eat'	*tə-ndzâ* 'food (pat.)'	*tə-ndzá-s* 'bribe materials (pat.)'
ka-ɕtɕî 'to wash'	*tə-ɕtɕə̂-s* 'washing (act.)'	*tə-ɕtɕə́-s* 'irrigation (act.)'

[36] Note that in Cogtse (Situ), 'criticism' is expressed by the lexicalized oblique participle *sɐ-zə́-s*, see Section 4.2.1.

[37] For a detailed account of verb classes in Rgyalrongic languages, see Lai (2021).

Syntactic properties The *tə-* prefixing nominals in Situ are non-finite forms. They are incompatible with verbal inflections, such as directional prefixes marking TAME, person indexation affixes, and associated motion prefixes.

The nominalizing prefix *tə-* can be replaced by the personal possessive prefix,[38] which is co-referential with the object of the transitive base verb. In (16), the *tə-* nominalizing prefix in the instrument nominal ***tə-ndzú*** 'criticism' (derived from ***ka-ndzú*** 'to criticize') is replaced by the third person singular possessive prefix ***wo-***, co-referential with the third person singular patient.

(16) Brag-bar (Situ) ***ka-ndzú*** 'to criticize', ***tə-ndzú*** 'criticism'
chərə̂ wo-ndzú ***ɲo ma-ná-viɛ-u***
at.all 3SG.POSS-criticism PL NEG-SENS-to.do$_{I}$-3SG
'He does not criticize him at all. '

4.2.3 Degree nouns

Degree nouns can be regarded as a special semantic sub-type of ***tə-Σ(s)*** derived nominals. They are derived from stative (intransitive) verbs, and express the quality denoted by the base verb (Gong 2018: 211–212; Jacques 2008: 102–105; Zhang 2020: 255–257), and are similar to degree or quality nouns in Old Chinese, such as 高 *kaw* 'be high' → 高 *kawH* 'height' (see Section 2.1).

Morphology Degree nouns in Brag-bar also exhibit opaque morphology, the inconstant presence of the *-s* nominalizer, and unclear stem alternation rules.

As shown in Table 7, nearly half of the attested examples of degree nouns in Brag-bar have no stem alternations with regard to the basic verb stems. Those exhibiting stem alternations involve multiple rules. The *-s* nominalizer is only found in a few examples, often as a hesitating element, indicated by brackets.

[38] Situ differs from the Northern Rgyalrong languages on this point. In Northern Rgyalrong, the personal possessive prefixes precede the *tə-* nominalizing prefix (Jacques 2008: 103–104).

Table 7: Degree nouns in Brag-bar (Situ).

Stative verbs	Derived degree noun	Stem alternations
kə-tsêj 'be small'	*tə-ktsêj* 'smallness'	×
kə-jâm 'be large'	*tə-jâm* 'width'	×
kə-rɟôm 'be wide'	*tə-rɟôm* 'width'	×
kə-ɕpiâk 'be thirsty'	*tə-ɕpiâk* 'thirst'	×
kə-mó 'be hungry'	*tə-mó* 'hunger'	×
kə-samó 'be terrifying'	*tə-samó* 'terror'	×
kə-ɕa-ɕkêj 'be hot'	*tə-ɕa-ɕkêj* 'heat'	×
kə-tí 'be big'	*tə-ktə́-**s*** 'size'[39]	→ *CV́$_C$(-s)*
kə-dî 'be heavy'	*tə-dô(?**s**)* 'weight'	→ *CV̂$_C$(-s)*
kə-mənê 'be little'	*tə-mənê-**s*** 'scarcity'	
kə-mbrô 'be tall'	*tə-mbrê(?**s**)* 'height'	
kə-nəké 'be difficult'	*tə-nəkê* 'difficulty'	
kə-skrén 'be long'	*tə-skrên* 'length'	→ *CV̂$_C$C*
kə-pkâ 'be full'	*tə-pkiê* 'greediness'	→ *CV̂$_{NC}$*

Syntactic properties The nominalizer *tə-* can be replaced by the possessive prefix. In (17), the nominalizer *tə-* is replaced by the prefix *wo-* '3SG.POSS', co-referential with the object measured, the house.

(17) Brag-bar (Situ)
*wo-**mbrê*** *tə* *kənâs* *táɕtɕək* *kəsâm* *táɕtɕək* *tsɐr*
3SG.POSS-height DET two CLF:floor three CLF:floor approximately
ná-ndo
SENS-exist$_I$,
'(The house) is about two or three stories high.'

Degree nouns differ from other *tə-* prefixing nominals in their particular syntactic function as adverbials. In (18), the degree nouns *tə-ɕpiâk* and *tə-mó* are followed by the cause linker *kə*, and express the meaning 'due to such a degree of ...'. The same construction also exists in the Northern Rgyalrong languages (Gong 2018: 212; Jacques 2008: 105; Sun 2006a).

(18) Brag-bar (Situ)
tə-ɟí *ré-me* *tɕɐnə* ***tə-ɕpiâk*** *kə*
POSS.INDF-water PFV-do.not.exist$_I$, LNK NMLZ.DEG-thirsty LNK:cause

[39] The *k-* preinitial in the derived degree noun *tə-ktə́-s* comes from a compressed velar nominalizer fossilized into the verb stem 'be big', as in Cogtse (Situ) *kə-ktê* and Japhug *wxti*. The velar preinitial *k-* can also explain the irregular presence of an additional *kə-* prefix in the first and second person forms of the verb *kə-tí* 'be big' in Brag-bar (Situ), eg. *ro-tə́-kə-ti-n* (PFV.IFR-2-?-be.big$_I$-2SG) 'You've grown up'.

sa-ɕî *tə-ndzâ* *ré-me* *tɕɐnə* ***tə-mó***
DEEX.GENR-to.die$_{I}$ POSS.INDF-food PFV-do.not.exist$_{I'}$ LNK NMLZ.DEG-hunger
kə *sa-ɕî*
LNK:cause DEEX.GENR-to.die$_{I}$
'If there is no water, we die of thirst. If there is no food, we starve.'

4.2.4 Comparison and discussion

The fact that the *-s* nominalizer in Situ rarely occurs as the only exponent of nominalization constitutes the most significant difference with the nominalizing *qusheng* (**-s*) in Old Chinese. Moreover, in Situ, with the nominalizing prefixes that co-occur, there is almost no ambiguity in terms of interpretation for derived nominals with *-s*.

In Old Chinese, there are sporadic cases of nominalizing circumfixes in which the **-s* appears with other nominalizing prefixes.

The dental prefix **t-* is recognized as a prefix for inanienable nouns in Old Chinese (e.g., 肘 *ʈjuwX* < **t-[k]<r>u?* 'elbow') (Baxter & Sagart 2014: 57; Jacques 2014c; Sagart 1999: 95–97), and has even been attested in a potential case of nominalization. As illustrated in (19), if we consider 臭 *tɕʰuwH* to be derived from the verb 朽 *xjuwX*, then the pattern **t-*Σ*-s* seems to be comparable to the event nominalizing circumfix *tə-*Σ*-s* in Situ.

(19) Dental nominalizing circumfix in Old Chinese
朽 *xjuwX* < **qh(r)u?* 'rot, decay' → 臭 *tɕʰuwH* < ****t-qhu(?)-s*** 'foul, smell' (Baxter & Sagart 2014: 57)

The nominalizing suffix **-s* also co-occurs sporadically with the **s-* prefix for circumstantial nouns, thus forming a circumfix **s-*Σ*-s* deriving circumstantial nouns. The pattern is possibly comparable to the circumfix *sa-*Σ*-s* for lexicalized oblique nouns in Situ.

(20) Sigmatic nominalizing circumfix in Old Chinese
蒸 *tɕiŋ* < **təŋ* 'to steam' → 甑 *tsiŋH* < ****s-təŋ-s*** 'earthenware pot for steaming rice' (Sagart 1999: 73, cited by Jacques 2019: 22)
圓 *hjwen* < **ɢ^{w}<r>en* 'round' → 旋 *zjwenH* < ****s-ɢ^{w}en-s*** 'whorl of hair on the head' (Sagart 1999: 73, cited by Jacques 2019: 23)

In Tibetan, the *-s* nominalizer is more frequently found in two circumfixes *g/d-*Σ*-s* and *s-*Σ*-s* (Jacques 2019), comparable to the three nominalizing circumfixes with *-s* found in Situ.

The pattern *g/d-*Σ*-s* in Tibetan is possibly cognate with both the lexicalized agent noun circumfix *kə-*Σ*-s* and event nominalizer *tə-*Σ*(s)* in Situ. Since *d-* and *g-* are in quasi-complementary distribution in Tibetan (Hill 2011: 443–444; Li 1933), as evidenced by (21a).

The pattern *s-*Σ*-s*, comprised of the sigmatic circumstantial noun prefix *s-* and the nominalizer *-s*, is found with location nouns, as in (21b).

(21) a. Velar/dental nominalizing circumfix in Tibetan (Jacques 2019: 19)
འཛིན་ *ⁿdzin* 'to seize, hold' → གཟུངས་ ***g-zuŋ-s*** 'dhāraṇī'
མང་ *maŋ* 'many' → དམངས་ ***d-maŋ-s*** 'people'.

b. Sigmatic nominalizing circumfix in Tibetan (Jacques 2019: 20)
འདིང་ *ⁿding* 'lay out' → སྡིངས་ ***s-diŋ-s*** 'flat surface'

The question that arises here is whether the multiple interpretations of one single *qusheng* nominalization in Old Chinese, as illustrated by examples like 守 ***ɕuH*** (e.g., [3], Section 2.1), might be ascribed to the loss of a nominalizing prefix. Despite the lack of an immediate response to this question, comparative data can at least bring our attention to the presence of circumfixing morphology in Sino-Tibetan nominalization.

4.3 Non-inferential past

Huang (1997a) first identified the past tense ***-s*** suffix in Situ as inherited from the Proto-Tibeto-Burman ****-s*** of tense-aspect values, cognate, for instance, with the perfective suffix ***-s*** in Tibetan (see Section 3.2).

In Situ, the past tense suffix ***-s*** has a very restricted distribution. Its use is limited to the following conditions:

- Intransitive verbs;
- Non-inferential past, i.e. past perfective[40] and imperfective, with Stem II(II').
- Open syllable environment; i.e. an open syllable verb stem without person indexation suffix (cf. Table 8).[41]

For example, in (22a), the 3SG form of the intransitive verb ***ka-nî*** 'to stay, sit' (I ***nî***, II ***nə́***, II' ***nî***) has no person indexation suffix, and the ***-s*** suffix is added directly after the open syllable verb stem ***ní***.

However, the non-inferential past suffix ***-s*** can neither occur after a closed syllable created by the person indexation suffix, as in (22b), nor in the inferential past, as in (22c).

(22) Brag-bar (Situ) ***ka-nî*** 'to sit, stay'

[40] In some Situ dialects, such as Cogtse, the ***-s*** suffix can also occur in relative tense in non-past contexts (Lin 2003: 262).

[41] Forms where the past suffix ***-s*** occurs may vary in different Situ dialects. Generally, it appears in the 3SG form of the open syllable intransitive verb, since it is not marked by person suffixes. However, in some dialects, such as Brag-bar, due to an innovative replacement of the person suffixes ***-ntɕ*** '3DU' and ***-ɲ*** '3PL' by prefixes ***kə-*** '3NS.PST.INTR' and ***o-*** '3NS.PST.TR', the ***-s*** suffix in this dialect can also appear in non-inferential past 3NS forms. For details of person indexation in Brag-bar, see Zhang (2019).

a. Past imperfective, 3SG
ɟaspâ *na-ní-s*
a.while IPFV.PST-to.stay$_{\text{II'}}$-PST
'He stayed for a while.'

b. Past imperfective, 1SG
ŋá *prawâr=j* *rə-ɟák* *na-nə́-ŋ*
1SG Brag.bar-LOC one-night IPFV.PST-to.stay$_{\text{II}}$-1SG
'I stayed one night at Brag-bar'.

c. Inferential past imperfective, 3SG
kəsəm-piɛ̂ *nǒ-ni*
three-year IFR.IPFV.PST-to.stay$_{\text{I}}$
'He stayed (there) for three years.'

Table 8: Non-inferential past paradigms for open syllable verbs in Brag-bar (Situ).

	Intransitive		Transitive (direct)
1SG	DIR-Σ_{II}-*ŋ*	1SG→3	DIR-Σ_{II}-*ŋ*
1DU	DIR-Σ_{II}-*tɕ*	1DU→3	DIR-Σ_{II}-*tɕ*
1PL	DIR-Σ_{II}-*j*	1PL→3	DIR-Σ_{II}-*j*
2SG	DIR-*tə*-Σ_{II}-*n*	2SG→3	DIR-*tə*-Σ_{II}-*n*
2DU	DIR-*tə*-Σ_{II}-*ntɕ*	2DU→3	DIR-*tə*-Σ_{II}-*ntɕ*
2PL	DIR-*tə*-Σ_{II}-*ɲ*	2PL→3	DIR-*tə*-Σ_{II}-*ɲ*
3SG	DIR-$\Sigma_{\text{II/II'}}$-*s*	3SG→3	DIR-Σ_{II}-*u*
3NS	DIR-*kə*-$\Sigma_{\text{II/II'}}$-*s*	3NS→3	DIR-*o*-$\Sigma_{\text{II/II'}}$

The non-inferential past suffix *-s* in Situ is clearly involved in the language's inflectional morphology. The verb to which the past tense suffix *-s* attaches is a finite form, taking both TAME marking (with directional prefixes and inflectional stem alternations) (Zhang 2020: 258) and person indexation (∅ for 3SG, and *kə-* for 3NS) (Zhang 2019). This environment is distinct from cases where the *-s* nominalizer occurs, which are non-finite verb forms incompatible with verbal inflections.

It is worth mentioning that an inflectional verb suffixed with the past tense *-s* in Situ can also appear in clausal nominalizations with the clausal nominalizer *kə-* (Sun & Lin 2007; Zhang 2020: 223–232). In (23), the nominalized clause in square brackets serves to relativize the intransitive subject of the existential verb *kə-ndó* 'to exist', *the lion*. In such cases, the past tense suffix *-s* should not be confused with the nominalizer *-s*.

(23) Brag-bar (Situ)
[*səŋgê rə* *na-kə-ndô-s*]$^{\text{NMLZ.REL}}$ *tə* *kə* *səŋgê kə* *mənaŋorɛnə*
lion one IPFV.PST-NMLZ-exist$_{\text{II}}$-PST DET ERG lion ERG TOP

mátə *bala-pú* *tə* *na-kə́-bʑa-u* *tɕɐnə kə-tsə́m*
DEM.DIS cattle-DIM DET PFV-NMLZ-to.seize$_{II}$-3SG LNK NMLZ-to.take.away.NSPC[42]
nŏ-ŋɐs
IFR-be$_{I}$
'The lion that existed (there), the lion, caught the calf and took him away.'

Due to the limited possibilities for tonal alternation (between high and falling tones) and vowel gradation (between central and non-central grades), derivational stems may occasionally coincide with inflectional stems. For instance, the derivational stem *-nə́-* (24b) occurring with the action noun *tə-nə́-s* 'sit, stay (action)' coincides with the verb's Stem II *nə́*. But the non-inferential past suffix *-s* is attached to the Stem II' *ní* (e.g., 22a), and is thus distinct from the derivational verb stem *-nə́-* in the action noun.

(24) Brag-bar (Situ) *ka-nî* 'to sit, stay'
  a. Inflectional stems: I *nî*, II *nə́*, II' *ní*
  b. Derived *tə-* prefixing nominal: *tə-nə́-s* 'sit, stay (action)'
  c. Regular oblique participle: *sa-nə̂* 'sitting place, dwelling place'
  d. Autobenefactive verb: *ka-nə-ní* 'to sit, stay (for oneself)'

Although Stem II' might be an innovation within Brag-bar (Zhang 2018), the difference in forms at least indicates that the past tense *-s* suffix and nominalizing *-s* suffix appear in distinct environments in the proto-language. Therefore, the Situ data do not support a grammaticalization pathway from past tense marker to nominalizer for the *-s* suffix. On the contrary, the data strongly suggest that the two *-s* suffixes come from different sources.

4.4 Adverbialization and locative

Jacques (2016a: 213) argues that the adverbializing suffix **-s* in Old Chinese may come from the locative suffix **-s* in Sino-Tibetan, comparable to the *-s* element in the *supercases of Source* in Tibetan (i.e. *∅-s/kyi-s* ergative, *la-s* ablative, *na-s* elative, *pa/ba-s* comparative) (Hill 2012; Tournadre 2010: 100), the locative case *-s* in Newar (Otter 2021: 18), as well as the *-s* locative suffix found in Rgyalrongic languages as well.

In Tibetan, possible traces of an adverbializing suffix **-s* are only found in adverbs such as གཡས *yas* 'from above', as an unanalyzable part of the root at the synchronic level (Jacques 2016a: 213). In Japhug (Northern Rgyalrong), the adverbializing suffix **-s* can only be reconstructed from the degrammaticalized clause linker *zɯ* (Jacques 2016a, 2021: 325). Situ Rgyalrong is

[42] Absence of directional prefix on the verb marks an unspecified orientation (Zhang 2020: 553–554).

the only Sino-Tibetan language retaining clear evidence of the adverbializing suffix *-s*. Moreover, the syntactic distribution of the adverbializing and locative *-s* suffixes suggests a potential grammaticalization pathway from locative to adverbialization in Situ.

4.4.1 Adverbialization

The adverbializing suffix *-s* has lost its productivity in modern Situ dialects (Nagano 2018: 180–181; Zhang 2020: 344). In Table 9, the attested *-s* suffixing adverbs in Situ are compared with cognate forms in Northern Rgyalrong languages, in which the *-s* adverbializer is absent.

In Situ dialects like Brag-bar, suffixation of the adverbializing *-s* does not involve word class conversion or stem modifications. In some cases, and especially in reduplicated adverbs, the occurrence of the adverbializing suffix *-s* after an adverbial root is optional. But in other examples, such as *toŋbê-s* 'early', the base element no longer exists independently, and the adverbializer *-s* has lexicalized as part of the stem.

The *-s* adverbializer in Situ can thus be regarded as a remnant of an earlier productive morphology. It is also found in early Tibetan loanwords, as in *raŋpa-s* 'intentionally' in Bhola (Situ). This form, borrowed from རང་བཞིན་ *rang.ba.yed* 'do intentionally' in Amdo,[43] is shared by all Rgyalrongic languages, including the form *roŋpǽʁ* in Siyuewu Khroskyabs (West Rgyalrongic).[44]

The semantic input of the adverbializer is limited, with the *-s* suffixing adverbs usually serving to express the manner of an action. For example, in (25), the adverbializer *-s* is attached to the reduplicated adverb *ɲɐɲe∼ɲɐɲé-s*, expressing that the sound became quieter and then gradually disappeared.

(25) Brag-bar (Situ)
ɲi-ndɐrə̂ *wo-zgrâ* *ɲo ɲɐɲe∼ɲɐɲé-s* *kə-tsə̂j*
3PL.POSS-human.skin.rattle 3SG.POSS-voice PL slowly.RED-ADVZ INF-be.small
ná-viɛ-u, *wo-ŋkhú* *tɕɐnə ma-ná-sa-məsam*.
SENS-become$_{I}$-3SG 3SG.POSS-after LOC NEG-SENS-DEEX-to.hear$_{I}$
'The sound of their rattle drums became smaller and smaller, and later couldn't be heard any more.'

[43] This form is found in a variety of Amdo in Rnga.ba County. The data was proposed by Suzuki Hiroyuki, on March 15, 2021.

[44] Data provided by Lai Yunfan, on March 15, 2021

Table 9: *-s* adverbializer in Situ.

Glose	Situ			Northern Rgyalrong		Basic or related forms
	Brag-bar	Cogtse	Bhola	Japhug	Tshobdun	
'early'	*toŋbês*					**toŋbê*, *toŋbɐ∼bê* 'early'
'immediately'	*romtâ(-s)*					*romtâ* 'immediately'
'together'	*chiɛ́-s*	*cha-s*		*cho* 'COM'		
'upwards'	*tó-s*					**to* 'upwards'[45]
'downwards'	*nó-s*					**no* 'downwards'
'specially, intentionally'			*raŋpa-s*		*raŋpaʔ*	རངས་ 'intentionally' (Amdo)
'gradually downwards'	*nó∼no(-s)*					**no* 'downwards'
'gradually downstream'	*ní∼ni(-s)*					**ni* 'downstream'
'slowly'	*lalá(-s)*, *lala∼lalá(-s)*	*lalâ-s*	*lela-s*			
'gradually'	*ɲeɲé(-s)*, *ɲeɲe∼ɲeɲé(-s)*					

[45]Situ dialects have a paradigm of four to six orientation adverbs including **to* 'upwards' and **no* 'downwards' (Lin 2002, 2017; Prins 2016; Zhang 2020), which normally occur after a noun phrase suffixed by the *-s* locative. In some Situ dialects, such as Brag-bar, the locative suffix *-s*, originally following the preceding noun phrase, is reanalyzed as the preinitial of the following orientation adverbs, *=sto* 'upwards' and *=(z)no* 'downwards'. For a detailed discussion, see Zhang (2020: 356–357, 472–474).

4.4.2 Locative *-s*

The *-s* locative suffix is found in both Situ (Lin 1993: 330–335; Lin 2017: 643; Nagano 2018: 164; Zhang 2020: 343–344) and some Northern Rgyalrong languages like Tshobdun (Sun 1998: 134). In Japhug, this suffix was degrammaticalized to a clause linker *zɯ* (Jacques 2016a: 213, 2021: 325).

The locative suffix *-s* has a vague meaning, allowing three possible interpretations: static location, destination of motion, and source of motion.[46] These interpretations can be illustrated by the following three examples in Brag-bar.

The *-s* suffix indicates the goal of the upward motion denoted by the motion verb *ka-thê* 'to move upwards' in (26a), but static location with the stative verb *kə-ŋês* 'be' in (26b).

Expressions of sources of movement with the locative *-s* are marginal in Brag-bar. In (26c), the locative *-s* suffix is found with the interrogative adverb *kətɕé* 'where', and an ablative reading is triggered by the cislocative motion verb *və́* 'to come$_{\text{II}}$'. Similar structures are also found Tshobdun (Sun 1998: 134, e.g., 77b).

(26) Locative suffix *-s* in Brag-bar (Situ)

a. Direction of motion
tʂha-sa-tâ *ɲo ka-nə-ndzɻ́* *tɕɐnə ɕɐkhiê-s*
tea-PTCP.OBL-to.put PL INF-AUTOBEN-to.take LNK forest-ALL
ka-thê
INF-to.move.upwards
'Taking the teapot, we go up to the forest...'

b. Static location
nəɟə̂ kətɕé-s *tə-ŋês ná-tsə*
2SG where-LOC 2-be$_{\text{I}}$ SENS-to.say$_{\text{I}}$
'Where are you? he said.'

c. Source of motion
a-rgépso *nəɟə̂ tə* *kətɕé-s* *tə́-və-n* *gɐ*
VOC-friend 2SG DET where-LOC 2-to.come$_{\text{II}}$.NSPC-2SG PART.Q
'My friend, where did you come from?'

Note that the form *kətɕé-s* in (26c) is syntactically distinguished from a typical locative phrase marked by *=j*, which indicates the goal of motion, even with verbs denoting cislocative motion (Zhang 2020: 339–340).

Ambiguities are also found with the comitative case marker in Situ dialects.

The comitative marker *wo-spié-s* in Brag-bar grammaticalized from a

[46] The only exception is found in some varieties of Kyom-kyo Situ, where source of movement is the only possible interpretation of the *-s* locative suffix (Prins 2016: 274).

relator-noun construction composed of the 3SG possessive prefix *wo-*,[47] the noun stem **spa*, and the locative suffix *-s*. This structure is further explained by other relator-noun constructions, such as the comitative *wo-psô=j*, the dative *wo-phá=j*, etc., with the locative marker *=j*.

The comitative argument, marked by *wo-spié-s*, is often followed by the adverb *chié-s* 'together', suffixed by the adverbializer *-s*, as in (27).

(27) Brag-bar (Situ)
kəscâ tɕɐ tə-za-tá-pu rə nə, [*wo-mô*
before LOC POSS.INDF-boy-POSS.INDF-child one TOP 3SG.POSS-mother
wo-spié-s] [*chié-s na-kə-ná-ntɕ*]
3SG.POSS-COM-LOC together-ADVZ IPFV.PST-NMLZ-stay$_{II}$-3DU
nŏ-ŋɐs
IFR-be$_{I}$
'Once there was a little boy, he lived with his mother.'

Though appearing adjacently, *wo-spié-s* and *chié-s* have different syntactic statuses. The comitative marker *wo-spié-s* has a postpositional function and always follows the noun phrase. On the contrary, it is more appropriate to analyze the *-s* suffix in *chié-s* an adverbializer, since it always occurs with the verb.

Such distinction seems to be absent in other Situ dialects. In Cogtse, *chas*[48] can occur either as the comitative marker following the preceding noun phrase, or as the adverb preceding the predicate. Although it is unclear whether or not Cogtse represents an archaic use of *chas*, the data at least suggest that grammaticalization of the *-s* suffix from locative to adverbializer is possible.

The use of a locative for forming adverbs is a rather frequent phenomenon. The Tibetan purposive marker (*tu, du, su, -r*) can offer an example. In addition to its basic function marking the purposive case, it can also convert other word classes into adverbs (e.g., གསལ་པོ *gsal po* 'clear (adj.)' → གསལ་པོར *gsal.po-r* 'clearly (adv.)', and optionally occur after words like དང་པོ *dang.po* 'first'. There are also parallel cases in Indo-European languages. For instance, in Greek, there is a group of adverbs which come from nominal or pronominal stems with locative endings (e.g., οἴκοι 'at home' fossilized locative form of οἶκος 'house') (Smyth 1920: 99).

[47] In other non-grammaticalized, or semi-grammaticalized relator-noun constructions, like the dative marker *wo-phá=j*, the possessive prefixes can be changed according to the person and number of the preceding element. For details on relator-noun constructions in Situ, see Lin (2017: 64) and Zhang (2020: 344–348).

[48] The form is cognate with *chié-s* in Brag-bar. The correspondence between *a* in Cogtse and *iɛ* in Brag-bar is regular.

5 Conclusion

While leaving the question open as to whether or not perfective aspect was indeed one of the functions of *qusheng* derivation in Old Chinese, this paper has demonstrated that examples previously considered to have a primary perfect(ive) value may be better explained by three different derivational processes: (i) nominalization, (ii) verb argument demotion, and (iii) adverbialization. These processes should not be grouped together under a simplistic label of *perfect(ive)* based on semantic values, but need to be examined with strict morphological and syntactic criteria.

Meanwhile, this paper also reveals that research on Old Chinese morphology cannot be carried out in isolation. Toward this end, other Sino-Tibetan languages, and especially those morphologically conservative branches, like Rgyalrongic, are of great value. In particular, the circumfixing nominalizations in Situ Rgyalrong, Tibetan and Old Chinese listed in this paper are not coincidences. These could be evidence for circumfix morphological formations in Old Chinese, and are worthy of careful consideration in future studies.

The functions of Old Chinese *qusheng*, or the ****-s*** suffixes in Sino-Tibetan, need further investigation. The paper's approach, which combines studies in Old Chinese texts and first-hand field data from modern related languages, holds methodological significance for future Sino-Tibetan comparisons.

Acknowledgments: I would like to thank Guillaume Jacques, Lai Yunfan, Nathan Hill, Jesse Gates, Gao Yang, Zev Handel, Suzuki Hiroyuki, and the anonymous reviewers for their valuable comments and suggestions. This research was funded by the Grant-in-Aid for JSPS Research Fellow (21F20303).

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