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A Scale Structure View of Resultatives in Japanese, Chinese and German[1]

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Abstract

This paper provides a scale-based semantics for resultatives in Japanese, Chinese and German, in an effort to arrive at: how adjectival complements and verbs in resultative constructions show sensitivity to the scalar structure. The findings reveal that Japanese accepts both open and closed-scale adjectives but disallows atelic verbs in resultatives. It appears that both telic and atelic verbs are welcome by Chinese resultatives. Adjectival complements in German resultatives are of no diverse distribution, i.e. both open and closed-scale APs are allowed to indicate a result in inherent resultatives and derived resultatives. However, German verbs show sensitivity to the scalar property. The conclusion that one can draw here is that Japanese tends to be a 'BECOME-focused' language, with the encoding of resutlatives arriving at morph-syntactic level. German, on the other hand, is likely to be a 'BE AT-focused' language. There is no restriction towards adjectives, but verbs show sensitivity to the scalar structure. Chinese is also a 'BE AT-focused' language, with resultatives mainly facilitated via syntax. Moreover, neither verbs nor adjectives are sensitive to the scalar structure.

Keywords: scalar structure, resultatives, Japanese, Chinese, German

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1. Introduction

In English resultative constructions of the form NP_1 V NP_2 XP[2], the XP can be an adjectival complement predicate (AP) (1a) or a prepositional phrase (PP) predicated on NP_2 (1b), denoting a change of state. An illustration is given in (1):

(1) a. Mary wiped the table clean. (Adjectival complement)

b. Mary stabbed Bill to death. (Prepositional phrase)

Regarding the sub-event of the resultative construction that denotes change of state, i.e. [NP_1 V NP_2 AP], it appears that only closed-scale adjective predicates (APs) are licensed as resultative complements, with open-scale APs ruled out, as illustrated in (2).

(2) a. Bill pounded the metal flat.

b. Bill pounded the metal *long.

This piece of data inspires us to ponder how adjectival complements in resultative constructions are sensitive to the scalar structure of adjective predicates.

The study of resultatives in Chinese, Japanese and German is of particular interest because these languages fall into three different language families, i.e. Chinese is deemed a branch of the Sino-Tibetan language family. Japanese is considered an Altaic language and German is alleged a Germanic language. Moreover, following Talmy's dichotomous typology (1985, 2000) on lexicalisation, the three belong to two opposing types. Japanese habitually frames the Path of motion/result in the verb, and hence is allegedly a *verb-framed* language. Chinese and German, on the other hand, fall into the *satellite-framed* group because the Path is typically expressed in 'satellites' while Manner is expressed in verbs. However, as many scholars from different camps have concerned, lexicalisation patterns across languages are not a black and white case. Languages may present two or three conflation behaviours (c.f. Slobin 1996, 1997, 2000; Melka 2003; Croft 2001; Ramchand & Folli 2005; Levinson & Wilkins 2006; Asbury et al. 2008; Beavers, Levin & Tham 2010). This paper revisits resultatives by incorporating the *Scale Structure* concept. It explores the scalar properties of APs as well as their distributions in resultatives, in an effort to uncover intra-linguistic and cross-linguistic variations.

As a starting point in our comparison of the three languages, we touch upon some general issues regarding resultative constructions.

In Japanese, it is observed that in the resultative construction of the form NP_1 V NP_2 XP, the XP can be rendered via three grammatical elements, namely, (I) a PP, c.f. (3); (II) a verb compound, whereby the change of state is potentially conflated in the main verb, as in (4); (III) an AP: (a) *i*-adjectival complement, c.f. (5); (b) *na*-adjectival complement, c.f. (6):

(3) Madogarasu o **konagona ni** watta. (Prepositional phrase)

Window ACC pieces into break PAST

[2] XP is a sub event that describes the coming about of a change of state (c.f. Levin 2013).

'Break the window into pieces.'

(4) Ken wa Hanako o **uchikoroshita**. (Compound verb)

Ken TOP Hanako ACC beat-kill PAST

'Ken beat Hanako to death.'

(5) Ken wa gomu o **nagaku** nobashita. (*i*-adjectival complement)

Ken TOP rubber ACC long stretch PAST

'Ken stretched the rubber long.'

(6) Kabe o masshiro **ni** nutta. (*na*-adjectival complement)

Wall ACC white into paint PAST

'Paint the wall white.'

This paper explores the distribution of APs in resultative constructions; therefore, (5) and (6) will be the primary focus; (3) and (4) will not be tackled.

Chinese adjectives have three variations, namely, (i) one-syllable adjectives, e.g. 好 *hao* 'good'; (ii) two-syllable adjectives, e.g. 干净 *ganjing* 'clean'; (iii) overlapping of two-syllable adjectives, e.g. 干干净净 *ganganjingjing* 'clean'. This study shall only tackle one-syllable adjectives. Resultatives rendered by one-syllable adjectives can have the following variations[3].

(7) [Transitive verb + AP; Object-orientated; inherent resultative]

他拉**长**了绳子.

(8) [Unergative verb + AP; Object-orientated]

他走**平**了路.

'He walked the road even.'

(9) [Transitive verb + AP; Subject-oriented]

他干活 干[4] **累**了.

'He got tired from the work.'

(10) [Unaccusative verb + AP; Location-oriented]

屋子里坐**满**了上访者.

'The room is full of petitioners.'

Moving on to German. In German resultatives NP_1 V NP_2 XP, the XP can be an AP, a PP, or a compound verb, as in (11):

[3] Illustrations (8)-(10) are based upon Ma and Lu (1997a).

[4] 干 hereby can be viewed as 'do support'.

(11) a. Er trank die Kneipe **leer**. (Adjectival complement)

He drank PAST the pub empty

'He drank the pub empty.'

b. Die Tasse zerbrach **in Stücke**. (Prepositional phrase)

The cup break PAST into pieces

'The cup broke into pieces.'

c. Der Zimmerer **sägte** den Ast ***ab***. (Compound verb)

The carpenter saw PAST the branch off

'The carpenter sawed the branch off.'

German resultative constructions differ from English ones in two respects:

(i) First, German disallows nominal predicates, whilst English does, as in (12).

(12) a. He sprayed his new car a brilliant shade of green.

b. Er sprühte sein Auto einen schönen leuchtenden Grünton.

(Rothstein 1985)

(ii) Second, both open-scale and closed-scale APs appear to be licensed in German, while in the English resultative construction, only closed-scale APs are licensed as resultative complements, specifically,

(I) In the resultative construction denoted by a closed-scale AP, the equivalent construction to the English well-formed sentence '*Mary pounded the metal flat*' in German can be:

(13) Mary hämmerte das Eisen **flach**.

Mary hammer PAST the metal flat

'Mary pounded the metal flat.'

(II) In the resultative constructions by an open-scale AP, the equivalent construction to the English ill-formed sentence '**Bill pounded the metal long*' in German can be:

(14) Bill hämmerte das Eisen **lang**.

Bill hammer PAST the metal long

'Bill pounded the metal long.'

The purpose of this paper is two-fold. First, the scalar property of adjective predicates is discussed, followed by the distributions of APs in resultatives of the languages in focus. Second, a further study is made to the scalar property of verbs, examining their co-occurrence with different types of APs. The scope of this paper is confined to the resultatives of the form NP_1 V NP_2 XP, where the verb may be a transitive or an unergative intransitive and the XP is

an adjective predicated of NP_2.

This paper is mapped out as follows: section 2 draws on previous work that has tackled the same issue in the past and provides an insight into the framework, i.e. scalar structure. Section 3 discusses Japanese resultative constructions, posing the question of how adjectival complements show sensitivity to the scalar structure of APs. Section 4 explores the scalar property of adjectives and verbs, as well as their distributions in resultative constructions. Section 5 is devoted to adjectival resultative complements in German. It first investigates the scalar properties of German APs and then moves on to how adjectival complements are sensitive to the scalar structure of APs in resultative constructions. Section 6 highlights the typological distinctions of the three languages and concludes the paper.

The data for Japanese is from the corpus of *Balanced Corpus of Modern Written Japanese* by National Institute for Japanese language and linguistics. The data for Modern Chinese is adopted from the corpus of Modern Chinese constructed by the Center for Chinese Linguistics at Beijing University. See http://ccl.pku.edu.cn/. The data for German are predominantly drawn from *taz*, which is a newspaper that appears nation-wide in Germany. This paper also uses the COSMAS corpus that is provided by the *Institut für Deutsche Sprache Mannheim*. Apart from electronic corpora, this paper additionally uses hand-made examples. Native speakers checked all the hand-made examples. Due to the various dialects of German, native speakers from the northern and the southern parts of Germany have both been asked to provide their judgements.

2. Framework

2.1 Previous Studies

Resultatives have long been an important issue in linguistic typological work. In earlier times, the study departs from a syntactic perspective, representative work include Chomsky's (1965) 'Aspects Model', Levin and Rappaport Hovav's (1995) 'Projection Approach'. However, the generative perspective appears unable to explain why the unergative verb *laugh* can appear in both 'Mary laughed herself sick' and 'The audience laughed the actors off the stage'. A different view was provided by Goldberg (1995), who proposed the 'Construction Grammar Approach'. This pioneering attempt has had a significant influence on resultatives and is welcomed among linguists, with Jackendoff's (1997) 'Adjunct Analysis', Rappaport Hovav & Levin's (1998) 'Event Structure Template', and Boas's (2003) 'Dynamic Usage-Based Model' being the principal examples. In the late 1990s, the locus of cross-linguistic diversity changed from syntactic representation to resultative predicates (Vanden Wyngaerd 2001, Boas 2000, Wechsler 2005, etc). Among them, the Japanese linguiss Kageyama's (1996, 1999) work is particularly noteworthy. According to Kageyama, the resultatives can be categorised into two types, i.e. inherent resultatives vs. derived resultatives[5]. He gives the

[5] The terminology used to describe the two types of resultative constructions varies: Kageyama (1996) labels them as 'inherent resultatives' vs. 'derived resultatives'; Washio (1997) refers to them as 'strong resultatives' vs. 'weak resultatives'; Iwata (2006) uses the terms 'argument resultatives' vs. 'adjunct resultatives'; and in Levin & Rappaport Hovav (1995) and Kennedy's (1999) works, 'control resultatives' vs. 'exceptional case-marking

Lexical conceptual structure (LCS) of each type as follows.

(15) a. [x ACT-ON y] CAUSE [y BECOME [BE-AT z]] (inherent resultatives)
b. [x ACT-ON y] (derived resultatives)

A clear illustration of inherent resultatives and derived resultatives is given below.

(16) *Inherent resultatives*

a. Bill wiped the table clean.

c.f. Bill wa teeburu o kirei ni fita.

(17) *Derived resultatives*

a. Sam kicked Bill black and blue.

c.f. *Sam wa Bill o aza darake ni ketta.

Essentially, in inherent resultatives, the result of the theme is implied by the verb. For instance, '*wipe*' would possibly give rise to a result of '*clean*'.

2.2 Framework: Scalar Structure

This paper takes the scalar structure theory as a point of departure and moves towards a more unified account of resultative constructions in German and Japanese.

The term *scale* was initially put forward by Sapir (1944). During the 1970s, it was mainly adopted in formal semantics (Bolinger 1972). In the 1990s, *scale* was introduced to the study of syntax (Hay et al. 1999). More recently, Kennedy and McNally (2005) and Kennedy and Levin (2008) developed its use in the study of lexical semantics. Accordingly, a *scale* is constituted of a set of degrees (points or intervals indicating measurement values) on a particular dimension (e.g. cost, depth, height, temperature), with an ordering relation. The dimension represents an attribute of an entity, with the degrees indicating the possible values of this attribute (Kennedy and McNally 2005). Building on this, Levin (2010) further notes that a scalar change in an entity involves a change in the value of one of its scalar-valued attributes in a particular direction on the relevant scale.

In accordance with the theme of the present research, Wechsler (2000) classifies adjectives into two groups based upon the telicity: gradable and non-gradable. Gradable adjectives are those, which allow gradable interpretations of the properties, e.g. *deep* and *dirty*, whereas non-gradable adjectives are defined as not allowing gradable interpretations, e.g. *empty*. Moreover, Gradable adjectives can be subcategorised into 'open-scale adjectives' and 'closed-scale adjectives'. Open-scale adjectives have no endpoint (*deep, big*), whist closed-scale adjectives have. Furthermore, closed-scale adjectives entail two subtypes: those with a minimal endpoint, e.g. *dirty*, *wet*; and those with a maximal endpoint, e.g. *clean*, *smooth* (Wechsler 2000). Closed-scale adjectives involve properties that can have maximal

resultatives' is used. Moreover, Dimitrova-Vulchanova (2002) employs 'connected resultatives' vs. 'disconnected resultatives' to describe resultatives. All these terms differ slightly but ultimately refer to the same thing. The current paper follows Kageyama (1996).

and minimal values, as illustrated in (18a); while open-scale adjectives do not, c.f. (18b).

(18) a. empty, full, open, closed

b. long, short, interesting, inexpensive

Kennedy and McNally (2005)

The distinction between closed-scale and open-scale adjectives, as Kennedy and McNally (2005) put it, lies in that closed-scale adjectives can be modified by proportional modifiers, such as *completely*, *partially* and *half*. Incorporating this, four variations of scalarity are proposed:

(a) Totally open-scale: a scale may have neither a minimal nor maximal element

(b) Lower closed-scale: a scale may have a minimal but no maximal element

(c) Upper closed-scale: a scale may have a maximal but no minimal element

(d) Totally closed-scale: a scale may have both maximal and minimal elements

3. Adjective Sensitivity in Japanese Resultatives

With the classifications of resultative constructions as well as adjective types in general highlighted, the following sections discusses Japanese resultatives, posing the questions of (i) how adjectival complements show sensitivity to the scalar structure of APs; (ii) encoding strategies of lexicalisation with regard to resultatives.

3.1 Scalar Properties of Japanese Adjective Predicates

As touched upon in section 1, adjective predicates are extensively employed to convey resultative expressions in Japanese. Traditional Japanese linguists consider Japanese adjectives as falling into two groups, i.e. *i*-adjectives (c.f. 19) and *na*-adjectives (c.f. 20).

(19) Hanako wa kabe o **shiroku** nutta. (*i*-adjective)

Hanako TOP wall ACC waite paint PAST

'Hanako painted the wall white.'

(20) Hanako wa kabe o masshiro **ni** nutta. (*na*-adjective)

Hanako TOP wall ACC completely-white COP stretch PAST

'Hanako painted the wall completely white.'

Essentially, both *i*-adjective and *na*-adjective are allowed to indicate a result.

An important distinction touched on earlier, but which it is necessary to come back to at this point, is that in English resultative constructions only closed-scale APs are licensed to be resultative complements; open-scale APs are ruled out, as in (21)[6].

[6] Example (21) is taken from Tsujimura (2001).

(21) a. *Taroo stretched the rubber **long**. (English: ruled out)

c.f. b. Taroo wa gomu o **nagaku** nobashita. (Japanese: acceptable)

Further illustration comes from Uegaki (2009).

(22) a.*John brought up his son tough. (English: ruled out)

c.f. b. John ga musuko o **joobu ni** sodateta. (Japanese: acceptable)

The reason for the failure of (21a) and (22a) is, as Beavers (2008), Wechsler (2005) and Wyngaerd (2001) showed, open-scale APs do not indicate resultative endpoints whilst closed-scale APs describe certain culmination points. However, this view is called into question if the following data is taken into consideration. The adjectives *deep* and *wide* have the same scalar property as *long* does, yet they are accepted in the following resultatives.

(23) a. The workers dug the tunnel deep.

b. The workers dug the tunnel wide.

A possible explanation for this can be established from a semantic point of view. *Deep/wide* offer a dimensional reading and are usually applied to tunnels with respect to how far they are underground. When there is a semantic implication, indicating the design of the tunnel itself is limited, *deep/wide* appear to be an upper closed-scale AP and therefore is accepted. (21a) 'Taroo stretched the rubber **long**.' lacks such a semantic implication and therefore is ruled out. This might suffice to amend Beavers et al's (2008) hypothesis: in English resultatives, when there is a semantic implication indicating a spatial endpoint or a culmination point of an action, then both open-scale APs and closed-scale APs are accepted as resultative complements.

3.2 Event Argument in Adjectival Resultative Complement in Japanese

The differentiation on scalar property is further tied to the encoding strategy distinction. Earlier, it appeared that two types of adjectival predicates seem possible in Japanese inherent resultatives. For convenience, open-scale and closed-scale APs denoting resultatives are relisted in (24)-(25):

(24) Hanako wa kabe o shiroku nitta. (Open-scale AP: *i*-AP)

(25) Hanako wa kabe o masshiro ni nutta. (Closed-scale AP: *na*-AP)

In (24), the verb *nuru* 'paint' carries the implication that results in the change of colour, e.g. 'white', 'red'. The result, *shiroi* ('white'), is an open-scale AP. The resultative path denoted by this AP is lexicalised into the verb root.

The resultative construction in (25) is rendered by a closed-scale AP, i.e. *masshiro*. It involves a change of state that does not directly result from the verb *nuru* ('paint'). Moreover, it is essential to identify *ni*: Kageyama (1996) views *ni* an adverbial. Kitahara (2009) indicates that it functions as a postposition. This paper argues that *ni* is actually a copula. The

resultative path is thus rendered via a copula phrase rather than the main verb, which thereby comes to resemble Germanic language. Table 1 summarises the encoding strategies of open-scale AP and closed-AP.

Table 1. Scalar property of APs along with encoding strategies of resultatives

Scalar Property of AP	**Encoding Strategy of Resultatives**[7]
Open-scale AP	AP V_{path}
Closed-scale AP	CP_{path} V_{manner}

3.3 Derived Resultatives in Japanese

Perhaps a further look at derived resultatives is necessary. Derived resultatives in German can be denoted by a closed-scale AP, c.f. (26); in English is conveyed via prepositional phrase, c.f. (27). In Japanese, the derived resultative is missing, i.e. either an adjective or postpositional phrase is possible to form a derived resultative (28).

(26) Derived resultative construction in German

Bill trank die Kneipe leer. (Closed-scale AP)

Bill drink PAST the pub empty

'Bill drank the pub empty.'

(27) Derived resultative construction in English

She pounded the fish to a jelly. (Prepositional phrase)

(28) Derived resultative construction in Japanese

*Kanojo wa sakana o zerii joo ni tataita. (Postpositional phrase)

She TOP fish ACC jelly to pound PAST

'She pounded the fish to a jelly.'

At this stage, the question arises as to what prevents the Japanese language from derived resultatives? It has been explicated in Section 3.1 that Japanese prefers to lexicalising resultative paths into the verb roots and form main predicates. Crucially, resultatives denoted by open and closed-scale APs involve a constraint, namely *disposition to change* (cf. Ono 2010), which requires the main verb imply the result that an AP denotes. In derived resultatives, there is no such predication nor implicated of results from the verb. Thus, a gap between action and result arises. However, if we wanted to say that Japanese absolutely missing derived resultatives, we can see immediately that is not the case. Compound verb (V-V), another extensively used grammatical item, could fill the gap and express derived resultatives. In V-Vs, the result is conflated by verbs. For instance, in Predicate-Complement

[7] CP: copula phrase

type of V-V, the cause verb V1 denotes an action and the stative verb V2 expresses a state or a result, c.f. (29).

(29) *Derived resultatives by a compound verb*

Hanako wa sakana o zerii joo ni tatakitubushita.

Hanako TOP fish ACC jelly to pound-smash PAST

'Hanako pounded the fish to a jelly.'

4. Event Argument in Adjectival Resultative Complements in Chinese

Having drawn a picture of the sensitivity of APs in Japanese resultatives, we are in a better position to engage in the analysis of Chinese data. Our starting point is the scalar property of adjectives as well as verbs. Then, we will move on to the distribution of APs in resultative constructions and their co-occurrence with different types of verbs.

To provide an adequate account of how adjectives are sensitive to the scalar property, we give a partial list of mostly used one-syllable adjectives. Tests are conducted via the modifiers 很 *hen* 'very' and 完全 *wan-quan* 'completely'.

(30) a. Totally open-scale: 累 *lei* 'tired, 深 *shen* 'deep', 长 *chang* 'long', 湿 *shi* 'wet', 穷 *qiong* 'poor'

b. Lower closed-scale: 苦 *kǔ* 'bitter', 破 *po* 'broken'

c. Upper closed-scale: 硬 *ying* 'hard', 密 *mi* 'close', 平 *ping* 'flat'

d. Totally closed-scale: 死 *si* 'dead', 光 *guang* 'completely', 空 *kong* 'empty', 满 *man* 'full'

In light of the classification, we return to the resultatives. Earlier, it appeared that in Chinese resultative constructions of the form NP_1 V NP_2 XP, whereby an AP conveys XP, there are four variations, as in (31) - (35).

(31) [Transitive verb + AP; Inherent resultative]

a. 他拉长了绳子. (Totally open-scale AP)

'He stretched the rubber long.'

b. 他打死了那条狗. (Totally closed-scale AP)

'He beat the dog to death.'

c. 他打破了花瓶. (Lower closed-scale AP)

'He broke the vase.'

(32) [Transitive verb + AP; Derived resultatives]

他吃穷了这个家. (Totally open-scale AP)

'He spent too much money on food and finally the family went broke.'

(33) [Unergative verb + AP; Derived resultatives]

他走平了路. (Upper closed-scale AP)

'He walked the road even.'

(34) [Transitive verb + AP; Derived resultatives]

他干活干累了. (Totally open-scale AP)

'He got tired from the work.'

(35) [Unaccusative verb + AP; Derived resultatives]

屋子里坐满了上访者. (Totally closed-scale AP)

'The room is full of petitioners.'

The above data might surface the idea that adjectival complements in Chinese resultatives are of no diverse distribution, i.e. four variations of APs are allowed to indicate a result in inherent resultatives and derived resultatives.

Moving on to the scalar property of verbs. Modern Chinese is known to contain a good number of disyllabic. However, this study only considers monosyllabic verbs. Tests on mostly-used monosyllabic Chinese verbs in terms of '*in/for an hour*' are carried out. As a result, the above verbs can be classified into two groups.

(36) a. telic verbs

剪 *jian* 'cut'; 杀 *sha* 'kill'; 打 *da* 'break'

b. atelic verbs

拉 *la* 'stretch'; 打 *da* 'beat'; 吃 *chi* 'eat'; 走 *zou* 'walk'

As far as illustrations of (31) - (35) are concerned, it appears that both telic and atelic verbs are accepted in Chinese resultatives. This distinguishes Japanese, which disallows atelic verbs, c.f. (37).

(37) Atelic verbs in Japanese (ill-formed)

a. *Taroo wa kinzoku wo hira ni utta.

Taroo TOP metal ACC flat COP pound-PAST

'Taroo pounded the metal flat.'

b. *Kare wa taisen aite wo iki taedae ni nagutta.

He TOP opponent ACC breaths shallowly COP beat-PAST

'He beat the opponent until he (the opponent) breaths shallowly.'

Mihara (2009:164)

(37) inspires us to ponder why Chinese and Japanese show distinct treatments of (a)telic verbs in resultatives. Perhaps it can be explained from language typology viewpoint. Chinese is a language that focuses upon the result of an action. Essentially, it is the core verb that conflates the manner of action; and the resultative path is conveyed via other elements, e.g. a PP, or an AP ('satellites' in Talmy's sense). Given this, perhaps it is proper to consider Chinese as 'BE AT-focused' language. On the other hand, in Japanese, the main verb and the adjectival complements, together, denote the result. The verb of resultatives contains or indicates a disposition that is in accordance with the theme's change of state. That is, the action, together with the result is incorporated into the core verb. Incorporating this, we may regard Japanese as 'BECOME-focused' language. This result supports Mihara (2009)[8]'s position on Japanese resultative construction.

5. Event Argument in Adjectival Resultative Complements in German

This section proceeds by looking into: (a) the scalar property of German APs and their distributions in resultatives; (b) co-occurrence with different types of verbs.

5.1 Scalar Properties of Adjectival Predicates in German

Before attempting to explain how adjectival resultative complements are sensitive to the scalar structure of APs, it is necessary to clarify the scalar property of APs. An examination in terms of the modifiers *halb* 'half' and *sehr* 'very' is carried out.

(38) a. sehr *müde/tief/lang/hart/*naß*/flach/krank/*wach*tot/*leer*

very tired/deep/long/hard/wet/flat/sick/*awake/*dead/*empty

b. *halb *müde/*tief/*lang/?hart/?naß/?flach/?krank/awake/tot/?leer*

half *tired/*deep/*long/?hard/?wet/?flat/?sick/awake/dead/?empty

With this in place, perhaps we can give a rough classification of German adjectives, on the basis of scalarity.

(39) a. Totally open-scale: *müde* 'tired, *tief* 'deep', *lang* 'long', naß 'wet'

b. Lower closed-scale: *krank* 'sick', *flach* 'flat'

c. Upper closed-scale: *hart* 'hard', *wach* 'awake'

d. Totally closed-scale*: tot* 'dead', *leer* 'empty'

[8] Mihara (2009) employs the term 'BE AT language' to describe English and 'BECOME language' to describe Japanese.

5.2 Adjective Sensitivity of Adjective Predicates in German Resultatives

In light of the classification of German adjectives, we are now in a position to find out the distribution of APs in resultative constructions. Tests along with the four various scalar structures of APs are provided in (40) to (43). Native speakers, chosen from both the southern and northern parts of Germany, assessed the examples.

(40) *Totally open-scale AP*

a. Bill hämmerte das Eisen *lang*.

'Bill pounded the metal long.'

b. Mary tanzte sich *müde*.

'Mary danced herself tired.'

c. ?Bill wässerte den Garten *naß*.

'Bill watered the garden wet.'

(41) *Lower closed-scale AP*

Mary lachte sich *krank*.

'Mary laughed herself sick.'

(42) *Upper-closed scale AP*

a. Bill fror das Wasser *hart*.

'Bill froze the water hard.'

b. Mary rüttelte Bill *wach*.

'Mary shook Bill awake.'

(43) *Totally closed-scale AP*

a. Mary hämmerte das Eisen *flach*.

'Mary pounded the metal flat.'

b. Bill trank die Kneipe *leer*.

'Bill drank the pub empty.'

It appears that four types of German APs are capable of indicating a result. A German from the North considers (40c) *Bill wässerte den Garten naß* unnatural. However, if it is supplemented by an addition of syntactic context (an adverb *sehr*), it can be improved, as shown in (44):

(44) Bill wässerte den Garten sehr naß.

'Bill watered the garden very wet.'

The failure of (40c) is down to the nature of the verb *wässern*, which bears an implication of 'the garden gets wet'. As a result, the AP *naß* (totally open-scale) seems redundant. When supplied with the adverb *sehr* (c.f. '*wässerte den Garten*'), a syntactic environment is supplemented (c.f. 'Bill watered the garden a lot'). Thus *naß* appears to indicate a derived result, i.e. *The garden became very wet* (derived resultative).

Having demonstrated the sensitivity of APs in resultatives, this section moves on to see whether all German APs can co-occur with different types of verbs. The findings suggest that totally open-scale APs and totally closed-scale APs cannot form a resultative expression with an unaccusative verb, as in (45).

(45) a. *Mary *rekelte* komfortabel in einem Lehnstuhl. (Unaccusative Verb + Totally open-scale AP)

b. *Mary *rutschte* tot. (Unaccusative Verb + Totally closed-scale AP)

The ungrammaticality of (45), if added with a reflexive pronoun *sich*, the unaccusative verb *rekelte* may occur with the totally open-scale AP *komfortabel*; the unaccusative verb *rutschte* may occur with the totally closed-scale AP *tot*.

(46) a. Mary *rekelte* sich komfortabel in einem Lehnstuhl.

b. Mary *rutschte* sich tot.

It should be noted that (46) is middle construction. A thorough analysis on the middle construction of German would be necessary. However, in this paper, this issue shall not be delved into any further.

The combination of a lower closed-scale AP and an unaccusative verb seems impossible.

(47) *Mary *rutschte* krank. (Unaccusative Verb + Lower closed-scale AP)

Upper closed-scale AP occurs capable to occur with an unaccusative verb.

(48) Bill fror das Wasser hart. (Unaccusative Verb + Upper closed-scale AP)

The following data present a further picture, illustrating that totally open-scale AP, lower closed-scale AP and upper closed-scale AP can form a resultative construction with an unergative verb:

(49) a. Mary tanzte sich *müde*. (Unergative Verb ＋Totally open-scale AP)

b. Mary lachte sich *krank*. (Unergative Verb ＋Lower closed-scale AP)

c. Das Hunt *bellte* das Kleinkind wach. (Unergative Verb ＋Upper closed-scale AP)

Totally closed-scale AP fails to appear with an unergative verb.

(50) *Die Pferde *arbeiten* tot. (*Unergative V + Totally closed-scale AP)

As for the transitive verb, the four types of APs all seem welcome:

(51) a. Bill hämmerte das Eisen *lang*. (Transitive Verb + Totally open-scale AP)

b. Mary hämmerte das Eisen *flach*. (Transitive Verb + Lower closed-scale AP)

c. Der Prinz *küsste* die Prinzessin wach. (Transitive Verb + Upper-closed scale AP)

d. Bill trank die Kneipe *leer*. (Transitive Verb + Totally closed-scale AP)

A closer look at the combination of transitive verb with a totally closed-scale AP reveals that *Kneipe* in (51d) is not the argument of the verb *trinken* 'drink', as evidenced by the ill-formed expression: '*Bill trank die Kneipe'. If, supplied with the totally closed-scale AP *leer*, the unaccusative verb *trinken* gets transitivised and thus may take an object: *Kneipe*.

There are further issues related to German resultatives. First, the above verbs can be classified into telic and atelic verbs.

(52) *Verb classification of German with regard to scale structure*

a. Atelic verbs: hämmern, tanzen, wässern, lachen, rütteln, trinken, rutschen, bellen, arbeiten

b. Telic verbs: frieren, rekeln, küssen

The generosity of scale structure towards to APs and verbs in German might surface the idea that German, like Chinese, is a 'BE AT-focused' language, i.e. a language that focuses upon the result of an action. To be specific, the core verb conflates the manner of an action; and other elements, e.g. an AP or a PP conveys the resultative path.

Second, (49a) *Mary tanzte sich müde* is a derived resultative, formed by unergative verb *arbeiten* and a totally open-scale AP *warm*. (48) *Bill fror das Wasser hart* is an inherent resultative, equal to the prepositional phrase *Die Tasse zerbrach in Stücke*. This leads us to the assumption that all types of APs are accepted in inherent and derived resultatives.

Perhaps we can pause and draw a preliminary conclusion here: adjectival complements in German resultative constructions are of no diverse distribution, i.e. both open and closed-scale APs are allowed to indicate a result in inherent resultatives and derived resultatives. However, the co-occurrence with verbs is sensitive to the scalar property of APs and presents the following variations: (i) upper-closed APs are likely to occur with unaccusative verbs whilst totally open-scale APs, totally closed-scale APs and lower closed-scale APs are ruled out; (ii) totally closed-APs appear impossible to match with

unergative verbs, while totally open-scale APs, lower closed-scale APs and upper closed-scale APs can combine with unergative verbs; and (iii) all types of APs appear capable of forming a resultative with a transitive verb. The foregoing discussion is summarised in Table 2.

Table 2. Scalar property of German APs and the co-occurrence with different verbs

Scalarity of AP	Transitive V	Unergative V	Unaccusative V
Totally open-scale AP	√	√	×
Lower closed-scale AP	√	√	×
Upper closed-scale AP	√	√	√
Totally closed-scale AP	√	×	×

6. Conclusions

This paper has shed light on adjective as well as verb sensitivities to the scalar structure with regard to resultative constructions in Japanese, Chinese and German. The findings reveal that Chinese conveys resultatives via syntactic device, with no restriction to the scalarity of verbs or to adjectives. Japanese disallows atelic verbs but accepts both open and closed-scale adjectives in resultatives. Adjectival complements in German resultatives are of no diverse distribution, i.e. both open and closed-scale APs are allowed to indicate a result in inherent resultatives and derived resultatives. However, German verbs show sensitivity to their scalar properties. The conclusion that one can draw here is that Japanese tends to be 'BECOME-focused' language and the encoding of resutlatives arrives at morph-syntactic level. German is likely to be a 'BE AT-focused' language, with no restriction towards adjectives. On the contrary, verbs show sensitivity to the scalar structure. Chinese is also a 'BE AT-focused' language. Resultatives are mainly facilitated via syntax and neither verbs nor adjectives are sensitive to the scalar structure.

This paper has highlighted resultative constructions of the form NP_1 V NP_2 XP, whereby XP is AP. A further study on resultatives conveyed by prepositional/postpositional phrase from scale structure viewpoint might be necessary.

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