Lexicalisation in Japanese, Chinese and German: A Focus upon Scalarity[*]

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Abstract—This paper brings the scalarity concept, in an effort to uncover how the lexical, morphological and syntactic resources of the three languages in focus (Japanese, Chinese and German) play essential roles when it comes to lexicalisaing motion events into linguistic forms. The findings bring us to the point that path-prominent languages seem to favour rendering path via verb roots, which gives rise to a restriction: one verb can only incorporate an endpoint in a single clause. This restriction prevents Japanese conflating sequential paths in a single clause. In manner-prominent languages, path is rendered via a path verb or a particle, meaning they exhibit two-faced characteristics of conflation. This two-faced characteristic invites a less restrictive morpho-syntactic environment for incorporating path information. In particular, the option of conveying the path via satellites (outside the verb roots) enables sequential paths. Chinese and German are typical in this respect. Moreover, in German, when path is expressed via a particle, sequential paths are accepted; when path is conveyed via a path verb, or a compound verb, only a single path is allowed. In Chinese, the occurrence of [spatial event + non-spatial event] is possible but conditioned: (a) syntactically, the single clause has to be bounded; (b) semantically, the motion path and resultative path are in a successive relation. In addition, the combination [non-spatial event + spatial event] is ruled out, as it disobeys the semantic condition: two events should be assigned to a successive relation.

Index Terms—Japanese, Chinese, German, lexicalization, scalar structure

I. INTRODUCTION

Lexicalisation pattern has long been an overriding issue in typological linguistics (Talmy 1975, 1985, 1991, 2000; Choi & Bowerman, 1991; Naigles, Eisenberg, Kako, Highter & McGraw, 1998; Papafragou, Massey & Gleitman, 2002; Allen, Kita, Brown, Turanli & Ishizuka, 2007). In Talmian typology, German and Chinese are allegedly satellite-framed languages, as they characteristically map the core schema onto satellites. Japanese, along with other Romance languages, is deemed to be a verb-framed language, as it habitually lexicalises path in the main verb, leaving manner to be encoded in an optional constituent. This view, have been challenged by many scholars from distinct camps. It is argued that lexicalisation patterns across languages are far from being a clear-cut case (e.g. Slobin 1996, 1997, 2000, Melka 2003, Croft 2001, 2003, Ramchand & Folli 2005, Levinson & Wilkins 2006, Asbury et al. 2008, Beavers, Levin & Tham 2010). French, a canonical verb-framed language, has some verbs with directional prefixes, e.g. *ac* in *ac-courir* 'to-run' and *é*in *écouler* 'out-flow', and allows a generic *until* marker to mark a goal with manner-of-motion verbs (see Kopecka 2006, Horn 1996). Italian, another deemed verb-framed language, employs adverbials (e.g. *fuori* 'out', *giu* 'down', and *su* 'on') to express the path with manner-of-motion verbs, which apparently resemble English particles. Russian allows goal-marking prepositions but at the same time requires verbal prefixes specifying the direction of motion.

The limitations in Talmy's typology further extend to East Asian Languages, whereby satellites are conveyed by verbs. Li (2011, 2012) draws an observation that Japanese and Chinese have undeniable similarities in favouring a single verb to convey the core schema but meanwhile the two present distinctions in regard to morphology, i.e. boundary marker, prefixes, etc.

Another remarkable work in this field comes from Slobin (2004, 2006), who proposes a third type of lexicalisation pattern, *equipollent framing*, whereby 'path and manner are expressed by equivalent grammatical forms'. A similar conclusion has been reached by Zlatev and Yangklang (2004) working on Thai, as well as by Ameka and Essegbey with regard to West African serial verb languages. This hypothesis appears to apply to languages that have productive verb compounds or serial verb constructions (SVCs). This view is challenged by Li (2012, 2013), who argues equipollent framing is not valid in relation to Chinese SVCs, as the multi-morphemes in SVCs are not equipollent, i.e. the first constituent describes the manner, the second indicates the path, and the third the deictic. Crucially, the third constituent ranks lower than the second constituent. This is probably down to the different degrees of grammaticalisation they have received.

One other important issue that concerns the typology is the concept of *boundary crossing*, which is introduced by Slobin (1996). Slobin looks at points when a motion event involves a moving entity crossing a boundary instead of

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telic/atelic distinction. Incorporating this, he achieves an intriguing prediction, i.e. that satellite-framed languages may encode manner of motion with manner verbs and particles, whilst verb-framed languages may encode manner of motion in adjuncts such as adverbials (Slobin 1996). Slobin's boundary crossing concept has been welcomed among linguists, with Filipović (2007) being the principal supporter. She compares English and Serbo-Croatian motion constructions from a situation types approach, inspired by the notion of boundary crossing. On the other hand, this concept is challenged by Naigles et al. (1998), who carried out experimental research and argue that speakers of verb-framed languages may also prefer manner verbs to express motion constructions in certain contexts.

Given this, it seems that current research does not have reached an adequate typology that would fit for solving the empirical problems.

This paper brings the scalarity concept, in an effort to uncover how the lexical, morphological and syntactic resources of the three languages in focus (Japanese, Chinese and German) play essential roles when it comes to lexicalisaing motion events into linguistic forms. Moreover, it explores the constraint on the incorporation of a path relation in the three languages with regard to 'boundary-crossing effects'. This paper is mapped out as follows. Section 2 provides an insight into the framework of this study, i.e. the scalar structure. It also introduces the concept of boundary crossing. Section 3 uncovers lexicalisation in Japanese in light of scalar structure. Section 4 turns to Chinese, looking at motion expressions conveyed via a single verb. Furthermore, it searches for the boundary crossing vs. non-boundary crossing that lie in Japanese, Chinese and German. Section 5 highlights the distinction made between single path and sequential path. Finally Section 6 concludes the paper.

II. FRAMEWORK

This paper follows the scalarity as a point of departure and incorporates the boundary-crossing concept to account for how motion events are rendered in the three languages. 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*. The data for Modern Chinese is adopted from the corpus of Modern Chinese constructed by the Center for Chinese Linguistics at Beijing University. The data for Japanese is from the corpus of Balanced Corpus of Modern Written Japanese by National Institute for Japanese language and linguistics. For doing theoretical linguistics sufficiently, this paper also uses hand-made examples. And native speakers check all the hand-made examples.

A. Scale Structure

Scalar structure is relatively a new line of research (Kennedy and Levin 2008, Kennedy 2012). According to Kennedy (2001) and Kennedy and McNally (2005), a scale is constituted by 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. Incorporating this, Levin (2010) 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. Consequently, verbs that lexically specify a scale are called scalar change verbs, as in (1a). Verbs that do not lexicalise a scale are referred to as nonscalar change verbs, as in (1b):

(1) a. scalar change verbs: *warm, cool, freeze, fall, rise…*
   b. nonscalar change verbs: *roll, exercise, scream, laugh, jog…*

It should be noted that verbs such as *roll* and *jog* can be associated with a scale, but the events they represent probably do not lead to a change of state (see also Levin 2010).

There are two types of attributes, which give rise to two types of scalar change verbs:

(2) a. change-of-sate verbs (COS): *warm, cool, freeze, stretch…*
   b. Inherently directed motion verbs (IDM): *arrive, fall, rise, approach…*

In the COS domain, the relation to the standard correlates with the direction of change, i.e. with an increase or decrease in value of the attribute, such as 'We froze the ice cream solid' (Rappaport Hovav & Levin 2010: 29). In the domain of motion, as Rappaport Hovav and Levin (2010) note, a scale can be understood in regard to the dimension of distance, i.e. the distance of the moving object with respect to the reference object (Rappaport Hovav & Levin 2010: 29). For example, the points in the scale of *arrive* are ordered in a direction stretching from the reference object, i.e. the starting point of the departure and the event we are heading towards.

At this stage, it seems necessary to shed more light on the type of IDM verbs.

In the motion domain, verbs can be classified by the nature of their associated scale, namely, path (Levin 2010):

(i) IDM verbs with unbounded path: *rise, advance, recede*
(ii) IDM verbs bounded at the lower end: *leave, depart*
(iii) IDM verbs bounded at the upper end: *approach, reach*
(iv) IDM verbs with completely closed-scale: *exit, enter*

Levin (2010) points out that the points on the path lexicalised by IDM verbs are inherently ordered, i.e. towards or away from the source of gravity. For example, *approach* involves a movement toward the reference object, lexicalising an unbounded path. On the other hand, *reach* involves movement away from the reference object, lexicalising a

bounded path.

Scale structure is applicable to adpositions as well. To take two expressions that Talmy (2000) gives: 'I walk across the pier' is not acceptable, whereas 'I walk along the pier' is okay. The acceptability of ground NPs (noun phrase) varies based on the prepositions they follow. *Across* is a closed-scale preposition and is only suitable in expressions of motion in which the figure's path begins at one edge and ends at the other edge of the ground (Talmy 2000: 324-326). On the other hand, *along* has an open-scale aspect and thus is compatible with cases where the path is longer than the perpendicular axis.

B. Boundary Crossing vs. Non-boundary Crossing

The term *boundary crossing,* was initially put forward by Aske (1989) regarding the importance of telicity. Slobin and Hoiting (1994) and Slobin (1997) developed it further in their work on Spanish motion events. Slobin (1997) refers to boundary-crossing events as those kinds of events where there is a boundary to be crossed in the way of the moving figure. For non-boundary-crossing situations, the types can encompass both the directional and locational meanings of particles, as in 'He ran towards the park' vs. 'He ran in the park' (see Filipovic 2007). The 'boundary-crossing' can be tackled as a reflection of the constraint on the incorporation of a path relation in the three languages in focus.

III. LEXICALISATION IN JAPANESE

With the scalar structure as well as boundary crossing highlighted, this section proceeds by looking at the Japanese lexicalisation patterning. It is observed that motion constructions can be rendered via five grammatical elements: (a) postposition phrases: *ni, e, e-to,* involving a single path verb that entails or selects for the goal PP, as in (3a); (b) boundary markers, which head an adjunct PP and thus involves the boundary/goal inference, as in (3b); (c) verb compounding, whereby path is potentially conveyed via the main verb, as in (3c); and (d) participial complex predicates, whereby manner is expressed via a participial form, as in (3d) and (3e):

(3) a. Taroo ga eki **ni itta**.
       Taroo NOM station to go PAST
       'Taroo went to the station.'
   b. Taroo ga   eki **made aruita**.
       Taroo NOM   station till   walk PAST
       'Taroo walked to the station.'
   c. Taroo ga kaidan kara **koroge-ochita**.
       Taroo NOM stairs from roll-fall PAST
       'Taroo rolled down the stairs.'
   d. Taroo ga   eki **ni hasshitte-itta**.
       Taroo NOM station DAT run-go PAST
       'Taroo ran to the station.'
   e. Taroo ga **aruite** eki ni **itta**.
       Taroo NOM walk station DAT go PAST
       'Taroo went to the station on foot.'

In the following sections, discussion focuses upon two parts, i.e. (i) motion expression conveyed by a single verb; (ii) motion expression conveyed by complex predicates.

A. Motion Expressions Conveyed via a Single Verb

Below are partial lists of path and manner of motion verbs in Japanese:

(4) **Manner verbs**

aruku 'walk', *ayumu* 'walk', *oyogu* 'swim', *hashiru* 'run', *haseru* 'run', *kakeru* 'run', *hau* 'crawl', *suberu* 'slide', *odoru* 'dance', *korogaru* 'tumble', *haneru* 'jump', *mau* 'dance', *moguru* 'dive', *samayou* 'wander', *tobu* 'fly'

(5) **Path verbs**

agaru 'ascend', *kudaru* 'descend', *deru* 'exit', *hairu* 'entre', *noboru* 'climb', *sagaru* 'descend', *yokogiru* 'cross', *chikazuku* 'approach', *oriru* 'descend', *tooru* 'through', *sugiru* 'past', *koeru* 'transcend', *sou* 'go along', *yoru* 'approach', *saru* 'go away', *hanareru* 'leave', *noku* 'move backward', *tsuku* 'arrive', *itaru* 'get to', *todoku* 'reach', *wataru* 'cross', *mawaru* 'around', *modoru* 'return', *kaeru* 'return', *heru* 'pass', *kasumeru* 'flit', *kuguru* 'pass through', *yokeru* 'ward off', *mukau* 'go toward', *sakarau* 'go against', *zureru* 'slip out', *utsuru* 'shift', *kayou* 'ply', *narabu* 'queue up', *noru* 'get on', *meguru* 'move around'

(6) **Pure motion verbs**

kuru 'come', *iku* 'go'

It seems that Japanese does not have a large set of manner of motion verbs. As a result, the English expressions *leap up*, *fly away* are rendered in Japanese via the same verb compound: *tobi-tatu* 'fly-leave'. When a manner verb and a satellite are used in English or Chinese, Japanese tends to express the path in the main verb and the manner in an ideophone or a compound.

Moreover, the path verbs listed in (6) are mostly paired with transitive verbs, as in (7):

(7) *agaru-ageru, deru-dasu, hairu-ireru, oriru-orosu, tooru-toosu, sugiru-sugosu, sou-soeru, yoru-yoseru, hanareru-hanasu, noku-nokeru, tsuku-tsukeru, todoku-todokeru, wataru-tawasu, mawaru-mawasu, modoru-modosu, kaeru-kaesu, sagaru-sageru, kuguru-kugurasu, mukau-mukaeru, zureru-zurasu, utsuru-utsusu, kayou-kayowasu, narabu-naraberu, noru-noseru, susumu-susumeru, chikazuku-chikazukeru*

In light of scalar structure, this paper tentatively divides the morphemes of (4) – (6) into three classes: (a) non-scalar change morphemes; (b) open-scale morphemes; and (c) closed-scale morphemes. The classification is demonstrated in (8):

(8) a. **Non-scalar change morpheme**

mawaru 'move around', *meguru* 'move around', *zureru* 'slip out', *narabu* queue up', *kuguru* 'pass through', *yokeru* 'ward off', *sakarau* 'go against'

b. **Open-scale change morpheme**

agaru 'ascend', *kudaru* 'descend', *noboru* 'climb', *oriru* 'descend', *sagaru* descend', *mukau* 'go toward', *noku* 'withdraw', *kasumeru* 'flit', *saru* 'go away', *hanareru* 'leave', *susumu* 'go forward', *chikazuku* 'approach'

c. **Closed-scale change morpheme**

deru 'exit', *hairu* 'entre', *tooru* 'through', *sugiru* 'past', *heru* 'pass', *wataru* 'across', *koeru* 'transcend', *yoru* 'approach', *tsuku* 'arrive', *itaru* 'get to', *todoku* 'reach', *modoru* 'return', *kaeru* 'return', *kayou* 'ply', *utsuru* 'shift', *noru* 'get on', *yokogiru* 'cross'

Closed-scale change morphemes inherently have specific goals as part of their meanings. On the other hand, non-scalar and open-scale change morphemes do not entail such inherent endpoints. However, the endpoint of the motion can be supplied by a goal phrase, denoted by *made* 'until', as in (9):

(9) Taroo wa eki **made** aruita.
    Taroo TOP station till walk PAST
    'Taroo went to the station.'

The addition of the goal phrase to non-scalar change morphemes makes the aspectual properties of those morphemes available for an endpoint reading (see also Aske 1989; Beavers et al. 2010); meanwhile, the goal phrase functions as an accomplishment. Consequently, the motion path is conveyed outside of the head verb, with the result that the motion constructions conveyed by the non-scalar change morpheme.

The distinction between scale and non-scale change morpheme is further linked to the selections of ground NPs. Recall Nikitina's (2008) classification of grounds, i.e. container grounds and area grounds. We assume that closed-scale morphemes, since they denote punctual transitions, are likely to occur with container ground NPs. On the other hand, non-scale and open-scale morphemes, since they entail durative processes, are likely to occur with area ground NPs. It turns out, then, that it is the motion verb that determines the selection of ground NPs. The following examples (taken from Kageyama 2009, but partially changed) illustrate how sometimes the difference in the ground NP is drawn in expressions based on which verb comes after it:

(10) [Non scalar change M + area Ground NP: duration transition]

Taroo wa **toori** o aruiteiru.
Taroo TOP road ACC walk PROG
'Taroo is walking in the street.'

(11) [Closed-scale M + container Ground NP: punctual reading]

a. *Taroo wa **kiri** ni haitta.
   Taroo TOP mist DAT lose PROG
   'Taroo is lost in the mist.'

b. Taroo wa **kiri no naka** ni haitta.
   Taroo TOP mist GEN naka DAT walk PROG
   'Taroo is lost in the mist.'

The ungrammaticality of (11a) is down to the noun *kiri* 'mist' being an area ground NP, which a manner of motion verb denoting a duration transition cannot co-occur with. Only when supplemented with a particle that denotes a specific container of a spatial (i.e. *kiri no naka* 'inside of the mist') can the expression be possible.

B. Motion Expressions Rendered by PPs

Japanese does not have a large inventory of postpositions as Chinese and German do. If we go beyond the verb complex, we face a new set of issues to be taken into consideration, revolving around split intransitivity.

Motion expressions exhibit split intransitivity: (a) unergative verbs of manner of motion, i.e. *aruku* 'walk', *hashiru* 'run'; and (b) unaccusative verbs of directed motion, i.e. *iku* 'go', *tsuku* 'arrive'. The split relates to the selection of PPs, i.e. unergative verbs of manner of motion seem unable to appear with a directional PP as the path is conflated in a verb. This can be seen in (12) below:

(12) *Taroo ga kooen **ni aruita**.
     Taroo NOM park DAT walk PAST
     'Taroo walked to the park.'

The failure of Japanese *-ni* to conflate manner is down to the nature of the adposition, which is inherently locative (see Dini & Di Tomaso 1995; Cummins 1996; 1998; Song & Levin 1998). When occurring with a path verb, the

directional interpretation is attributed to the verb; when occurring with a manner verb, the postposition is unable to predicate a result location.

The ungrammaticality of (12) can be improved by replacing *ni* with *e,* changing the aspect from telic to atelic[1]. Thus, (12) is developed into (13):

(13) ?Taroo ga   kooen   **e   aruita**.
    Taroo NOM   park   toward walk PAST
    'Taroo walked to the park.'

e-to appears perfectly compatible with unergative verbs of manner of motion, as in (14):

(14) Taroo ga   kooen   **e-to   aruita**.
    Taroo NOM   park   to   walk PAST
    'Taroo walked to the park.'

With regard to unaccusative verbs of directed motion, the three postpositions *e, e-to*, and *ni* are compatible, as in (15):

(15) Taroo ga   nikai   **e/ni/e-to   agatta**.
    Taroo NOM   upstairs to   go up PAST
    'Taroo went up to the second floor.'

The allative case marker *made* 'until' can appear with unaccusative verbs of directed motion, i.e. the path verb, as in (16a); with unergative verbs of manner of motion, i.e. manner verbs, as in (16b); and both unaccusative and unergative verbs, as in (16c):

(16) a. [*made* + Path V]
      Tama ga kaidan no   shita **made** ochita.
      Ball   NOM   stairs GEN bottom   till fall PAST
      'The coin fell down to the bottom of stairs.'
   b. [*made* + Manner V]
      Taroo wa eki   **made   aruita**.
      Taroo TOP station   till   walk PAST
      'Taroo walked to the station.'
   c. [*made* + Manner V + Path V]
      Taroo wa kaidan   no   shita **made   korogeochita**.
      Taroo TOP stairs GEN bottom   until fall-down PAST
      'Taroo fell down to the bottom of the stairs.'

With this in place, perhaps we can give a rough classification of PPs, on the basis of Jackendoff's (1983: 165) insights. First, there is a class of source markers that impose a locative condition on the initial part of the path, e.g. *kara* 'from', *yori* 'from'. Second, there is a class of goal-markers, e.g. *ni* 'to'. These two types fall into the closed-scale group. Third, there is a class of markers involving route with or without an endpoint, e.g. *made* 'till'. A fourth class is the route without an endpoint, e.g. *ni sotte* 'along'. Fifth is the class of markers that involves a spatial ordering of the extremes of the path, e.g. *e* 'toward'*, e-to* 'towards'. The last two types are open-scale. A summary of the classification of postpositions is given in Table 1:

TABLE 1.
A CLASSIFICATION OF JAPANESE POSTPOSITIONS

Type	Postposition	Scalar property
Source	*kara, yori*	closed-scale
Goal	*ni*	closed-scale
Route (±endpoint)	*made*	closed/open-scale
Route (-endpoint)	*ni sotte*[2]	open-scale
Direction	*e, e-to*	open-scale

Perhaps we can pause and draw a preliminary conclusion here: the postposition *e* is more likely to be understood as English *towards*, with locations that can be viewed as 'area ground NPs'. On the contrary, *made* is more likely to be understood as English *until*, with locations (or results) that can be viewed as delimited – that is, as being 'containers' rather than simply 'areas' in the sense of motion events. Moreover, *e-to* is composed by a directional postposition *e* with an indeterminate aspectual head *-to* (see Ayano 2009). As a result, *e-to* is compatible with a telic (see 13) as well as an atelic expression (see 14), meaning the ground NP that *e-to* denotes is more like something between direction *e* and delimitation *made*.

The differentiation on PPs is further tied to the durative/punctual distinction. In directional motion constructions, manner of motion verbs, such as *aruku* 'walk' and *hashiru* 'run', tend to describe processes with a duration and thus are

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[1] The notion of 'telicity' has often been invoked to refer to an aspectual concept inherent to unaccusative verbs (cf. Tenny 1994; Van Valin 1990; Zaenen 1988, 1993). When an event includes an endpoint, it is said to be 'telic'. When it represents a homogeneous event without an endpoint, it is said to be 'atelic'.
[2] *sotte* is the gerundive form of the verb *sou* 'go along'. It has been lexicalised and habitually occurs with *ni. Ni sotte* is regarded as a complex particle.

seldom found with locative adpositions (e.g. *ni* 'to') but are often found with indeterminate directional PPs (e.g. *e-to*, *e*; or a route with an endpoint, e.g. *made* 'till'). Path verbs, such as *tsuku* 'reach' or *hairu* 'enter', are likely to indicate a punctual reading and thus can occur with goal-markers as well as locative adpositions. Incorporating Vendler's (1957) verb classification[3], we assume activity verbs (e.g. run, jump, *aruku* 'walk', *hashiru* 'run') and accomplishment verbs (e.g. hatch, *kaesu*) are likely to occur with open-scale markers, since they entail durative readings. Achievement verbs (e.g. arrive, fall, *tsuku* 'reach', *hairu* 'enter') tend to occur with closed-scale markers since they have punctual readings. The distinctions are illustrated in Figure 1:

P	Nature	Verbs it pairs	Ground NP it pairs
ni	locative	Path V	Container Ground NP
e, e-to	direction		
made	delimitation	Manner V	Area Ground NP

Figure 1. Differences between *e*, *e-to*, *ni* and *made*

An important distinction we have pointed out earlier, but which it is necessary to come back to at this point, is the scope of *made* vs. *ni*. *Ni* denotes a scope limited to the goal, as furnished by its appearance in locational motion events. The scope of *made* includes the route and the endpoint. It is necessary to bear in mind that *made* clauses do not always have to be bounded (e.g. *yama no ue made noboroo toshiteiru* 'try to climb up to the top of the mountain (but haven't reached it yet)'). Consequently, *made* is likely to occur with manner of motion verbs, such as *aruku* 'walk', (e.g. *eki made aruita*) or verbs like *oufuku suru* 'go and return', as well as path verbs. On the other hand, *ni* tends to be integrated with path verbs solely, such as *tsuku* 'arrive' and *chakuriku suru* 'land' (e.g. *eki ni *aruita/tsuita*).

C.   Boundary Crossing vs. Non-boundary Crossing in Japanese

In Japanese, for constructions with a single ground NP, the use of a manner verb as a main verb in a non-boundary crossing expression is not as ill formed as the case in which an expression where a boundary crossing is predicated, as in (17):

(17) a. ?Taroo ga kooen **e**   **aruita**.   (non-boundary crossing)
         Taroo NOM   park   toward walk PAST
         'Taroo walked to the park.'

     b. *Taroo ga kooen **ni** **aruita**.   (boundary crossing)
         Taroo NOM   park   to walk PAST
         'Taroo walked to the park.'

(18) Taroo ga kooen **ni** **tsuita**.   (boundary crossing)
      Taroo NOM   park   to walk PAST
      'Taroo walked to the park.'

It appears that boundary crossing is more likely to occur in conjunction with achievement verbs (e.g. *tsuku* 'reach') than activity verbs (*aruku* 'walk'). This is because, as Slobin (2006) points out, boundary crossing indicates a reading of a 'change of state'. Since manner verbs are generally activity verbs, they can hardly be accepted in boundary-crossing expressions.

Regarding constructions with multiple ground NPs, when a non-boundary-crossing situation is to be expressed, Japanese tends to employ the combination of [manner verb + directional particle] and accumulate ground elements in relation to a single verb, as in (19):

(19) Taroo wa ie o dete eki no hoo e **hassitta**.
      Taroo TOP house ACC   exit   station GEN direction toward run PAST
      'Taroo ran out of the house and ran to the station.'
      (1 Manner verb; 2 Grounds)

As we can see, (19) above describes a non-boundary crossing motion with a manner verb *hashiru* 'run' and entails an atelic path phrase: *eki no hoo e* 'towards the station'. As such, there seems to be no segment assigning a particular end-state.

When boundary crossing is to be expressed, Japanese cannot offer [manner verbs + directional particles] but has to go for one ground element per path verb, as in (20):

(20) Taroo wa   hashi o **watari**, fumikiri   o   **koe**,
      Taroo TOP   bridge ACC cross INF   level crossing ACC cross INF
      ie   ni   **tsuita**.
      house DAT reach PAST
      'Taroo crossed the bridge, crossed the level crossing and reached the house.'
      $[G_1+V_1+G_2+V_2+G_3+V_3]$

As far as (20) is concerned, Japanese gives three path verbs, all of which encode path, and the manner segment is absent. Each ground NP indicates the endpoint of the motion, despite semantically appearing to be the source or the

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[3] Vendler's (1957) verb classification: (a) states love, know; (b) activities: run; (c) achievements: notice, die; (d) accomplishments: build, paint.

route.

Regarding COS constructions, satellite-framed languages can render COS with a satellite, as in (21) and (22), while verb-framed languages have a restriction against resultative nonverbal predicates, as in (23).

(21) Bill kicked the door **open**.

(22) Bill   tī   **kaī**   le   mén.
    Bill kick open PAST door

(23) *Bill wa   doa   o   **kaihooteki** ni   **ketta**.
    Bill TOP door ACC   open   COP kick-PAST

A possible explanation for this is offered by Aske (1989) and (Talmy 1991), where a verb-framed language has to predicate the COS in the main verb and express the manner in subordination. The constraint is further related to what Washio (1997) calls strong/weak resultatives, in that Japanese is simply missing strong resultatives. Establishing how boundary crossing vs. non-boundary crossing is manifested in Chinese will be discussed at length shortly.

It showed that the distinction of boundary crossing vs. non-boundary-crossing with regard to multiple ground NPs in Japanese is achieved by [manner verb + directional particle] vs. [one ground element per verb]. In the next section, we turn to Chinese, to see whether the two languages are different in terms of their manifestations of this distinction.

IV. LEXICALISATION IN CHINESE

Motion constructions in Chinese are rendered via two groups of grammatical elements: (a) lexical resources, including single verbs and reduplicative adverbials; and (b) syntactic resources, e.g. verb compounds. This paper primarily focuses upon the expressions conveyed by a single verb.

A. Motion Expressions Conveyed via a Single Verb

To start with, a partial list of path verbs is given below:

(24) (24) **Chinese path verbs**
    jìn, 'enter'; *chū,* 'exit'; *shàng,* 'ascend'; *qǐ,* 'ascend'; *xià,* 'descend';
    guò, 'cross'; *huí* 'return'; *dào,* 'reach'; *lái,* 'come'; *qù,* 'go'

These morphemes can be divided into two groups in light of scalar structure: (a) open-scale morphemes; (b) closed-scale morphemes. The classification is demonstrated in (25):

(25) a. Open-scale change morpheme: *shàng* 'ascend', *xià* 'descend', *qǐ* 'ascend', *huí* 'return'
    b. Closed-scale change morpheme: *jìn* 'enter', *chū* 'exit', *guò* 'cross', *dào* 'reach', *lái* 'come', *qù* 'go'

Some morphemes are fully grammaticalised and hence are considered to be directional complements (satellites), whereas others may still be capable to take a ground NP as object, making the whole structure like a VP, only with no causativity, as in (26) and (27):

(26) a. [Closed-scale change morpheme]
    dào rìběn 'arrive at Japan'
    b. [Open-scale change morpheme]
    huí rìběn 'go back to Japan'

(27) [Closed-scale change morpheme]
    a. *xià haǐ* 'go into business'
    b. *chū guó* 'go abroad'

The combinations of each closed-scale change morpheme and ground noun phrase are strictly fixed. The morphemes *dào* and *huí* are not fully grammaticalised, as they can take an argument structure. Furthermore, when describing a telic motion event, some speakers admitted that it would have been natural if the manner segment were omitted (see 28), which, apparently, is a characteristic of verb framing.

(28) a. *qù xuéxiào* 'go to school' (cf. Japanese: gakko ni **iku**)
    b. *huí rì běn* 'go back to Japan' (cf. Japanese: Nihon ni **kaeru**)

Like path verbs, prepositions can introduce ground NPs. They form PPs, together with ground NPs. Two ways of formation are observed: (a) prepositions that habitually occur before manner verbs (Prep + Ground NP + V) are likely to express a source, as in (29):

(29) **cóng**   jiā lǐ   pǎo chū laí.
    from   house   run-exit-come
    'come out of the house.'

Cóng 'from' bears an ablative reading. This group of prepositions further includes *wǎng* 'towards', which functions as an allative, and *yánzhe* 'along'.

(30) **wǎng**   jiā lǐ   pǎo.
    towards house   run
    'run towards the house.'

(31) **yánzhe**   hébiān   pǎo.
    along   bank   run
    'run along the river.'

(b) PPs that appear after manner verbs are likely to express a goal (V + Ground NP).

(32) cóng jiā lǐ **pǎo dào** xuéxiào.
  from home run arrive school
  'run from home to school.'

Bear in mind that, in (32), the non-deictic path verb *dào* pairs with an ablative PP *cóng* 'from'. Thus, its substantive reading has to be weakened. As a result, in this case it is more like an allative PP, indicating the endpoint of a motion.

There is another type of preposition, *zài* 'at', as observed by (Tai 1975), which can appear preverbally (V + *zài* + Ground NP) or postverbally (*zài* + Ground NP + V), as in (33):

(33) a. *zǒu zài jiē shàng* 'walk in the street'
  b. *zài jiē shàng zǒu* 'walk in the street'

Having all this in mind, perhaps we can classify the prepositions on the basis of Jackendoff's (1983:165) insight:

(a) A class of source P that imposes a locative condition on the initial part of the path, e.g. *cóng* 'from'.

(b) A class of P that involves a spatial ordering of the extremes of the path, e.g. *yánzhe* 'along', *wǎng* 'toward'

(c) A class of goal P that involves a route with an endpoint, e.g. *dào* 'reach'

(d) A class of goal P that involves direction, e.g. *xiàng* 'towards'

A summary of the classification is given in Table 2:

TABLE 2.
A CLASSIFICATION OF CHINESE PREPOSITIONS

Types	Prepositions	Scalar property	Position
Source	*cóng* 'from'	closed-scale	preverbally
Route (-endpoint)	*yánzhe* 'along'	open-scale	preverbally
	wǎng 'toward'	open-scale	preverbally
Route (+endpoint)	*dào* 'reach'	closed-scale	postverbally
Direction	*xiàng* 'towards'	open-scale	post/preverbally

B. Boundary Crossing vs. Non-boundary Crossing in Chinese

We first look at expressions with one ground NP. It is noticed that both non-boundary-crossing and boundary crossing situations can be achieved via the combination of [manner verb + directional complement], as in (34):

(34) a. Wǒ **zǒu xiàng** wòshì (non-boundary crossing)
  I walk toward bedroom
  'I walk toward the bedroom.'

  b. Wǒ **zǒu jìn** le wòshì (boundary crossing)
  I walk enter PAST bedroom
  'I walk toward the bedroom.'

For multiple ground NPs, when a non-boundary-crossing situation is to be expressed, there can be two ways: go for one ground element per manner verb, per satellite, as in (35a), or to employ the combination of [manner verb + directional particle] and accumulate ground elements onto a single manner verb, as in (35b):

(35) a. wǒ **zǒu** chū jiā, **pǎo** xiàng chēzhàn.
  I walk out house run toward station
  'I walked out of the house and ran toward the station.'
  $[MV_1 + Sat_1 + G_1 + MV_2 + Sat_1 + G_2]^4$

  b. wǒ cóng jiālǐ chū lái, xiàng chēzhàn **pǎo** qù
  I from house exit-come toward station run go
  'I walked out of the house and ran toward the station.'
  $[G_1 + Sat_1 + G_2 + MV + Sat_2]$

In (35a), there are two manner verbs: *zǒu* 'walk' and *pǎo* 'run'. In (35b), the whole motion entails only one, i.e. *zǒu* 'walk'. The strategy exhibited in (35b) comes to resemble English, as shown in (36):

(36) Bill walked through the streets, from the jail to the marshy point.

When it comes to a boundary-crossing situation, like Japanese, Chinese cannot amass all the directional phrases onto one manner verb. But Chinese is different to Japanese in that the manner segment cannot be omitted. Thus, in (37), there will be three manner verbs and three directional complements:

(37) Tā **zǒu xià** shān, **dù guò** he, **chuān guò** xiǎojìng, **lái dào** le jiàotáng.
  3SG walk-down hill cross-over river cross-over path come-arrive PAST chapel
  'He walked down the hill **across** the bridge and **through** the pasture **to** the chapel.'
  $[MV_1 + Sat_1 + G_1 + MV_2 + Sat_2 + G_2 + MV_3 + Sat_3 + G_3 + Sat_4 + G_4]$

Each ground NP in (37) indicates an endpoint of a motion despite the semantic indication that they might be the source or the route.

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[4] MV: motion verb; Sat: satellite; G: ground;

C. Boundary Crossing vs. Non-boundary Crossing in German

To confirm our findings, we will briefly draw a parallel with a related situation in German, a language generally conceived of as satellite framing. In German, path can be indicated by case on a nominal argument. There is no doubt that the interpretations of the following two expressions are distinct: when a boundary-crossing situation is to be expressed, an accusative case *über die* 'over the' is used, giving rise to a directional reading (see 38a); when the non-boundary crossing situation is to be expressed, a dative case *über der* 'over the' is used, inviting a locational reading (see 38b):

(38) a. Directional motion
   Das Fleugzeug flog über die Stadt.
   The airplane flew over the-ACC town
  b. Locational motion
   Das Flugzeug flog über der Stadt.
   The airplane flew over the-DAT town
   (Wienold 1995)

With regard to multiple ground NPs, when it comes to a non-boundary crossing situation, German can amass all the directional phrases onto one manner verb, as in (39):

(39) **Multiple ground NPs (non-boundary crossing)**
   Ich ging durch die Küchentür und an der Sitzecke
   I walk-PAST through the kitchen door and the sitting room vorbei zum Garten des Nachbarn.
   past towards garden of neighbor
   'I walked out the kitchen door, past the sitting room, towards the neighbour's garden.'
   $[MV_1+Sat_1+G_1+G_2+Sat_2+Sat_3+G_3]$

When it comes to a boundary-crossing situation, there are two possibilities, i.e. go for one ground element per manner verb and per particle, as in (40a), or amass all the directional phrases onto one manner verb, as in (40b):

(40) **Multiple ground NPs (boundary crossing)**
  a. Bill **schlenderte** langsam **durch** die Straßen und
   Bill walk slowly through the streets and
   ging **vom** Marktplatz **bis zum** Museum.
   walked from the square till the museum
   'Bill walked slowly through the streets, from the square to the museum.'
   $[MV_1+Sat_1+G_1+MV_2+Sat_2+G_2+Sat_3+G_3]$
  b. Bill **ging** langsam **durch** die Strassen, **vom** Marktplatz
   Bill walk-PAST slowly through the streets from the square
   bis zum Museum.
   till the museum
   'Bill walked slowly through the streets, from the square to the museum.'
   $[MV_1+Sat_1+G_1+Sat_2+G_2+Sat_3+G_3]$

V. SINGLE/SEQUENTIAL PATHS IN JAPANESE, CHINESE AND GERMAN

There is another important aspect that has relevance to the comparison of the languages, i.e. the distinction made between single path and sequential path. In this section, this phenomenon is to be discussed in depth.

To begin with, compare the following two expressions:

(41) a. Taroo ga ie no naka kara niwa ni **deta**.
   Taroo NOM house GEN inside allative garden DAT enter
   'Taroo walked out of the house into the garden.'
  b. *Taroo ga ie no naka kara toshokan ni **deta**.
   Taroo NOM house GEN inside allative library DAT enter
   'Taroo walked out of the house and into the library.'

The distinct treatments of (41) probably have to do with the property of the path. In (41a), the two ground elements, *ie no naka* 'house' and *niwa* 'garden', are assigned in a contiguity relation, thus the path in (41a) is single. However, in (41b), the two ground elements (*ie no naka* 'house' and *toshokan* 'library') are not on the same level: *ie no naka* is a closed space whilst *toshokan* is a building. Therefore, (41b) shows sequential paths. Thus, employing a biclausal conveys a range of head verbs in a coordinate position, as in (42):

(42) Taroo ga ie no naka kara **dete** toshokan ni **itta**.
   Taroo NOM house GEN inside allative exit GER library DAT go PAST
   'Taroo walked out of the house and went to the library.'

This distinction of single/sequential path further extends to German. The following illustrations are taken from Bellavia (1996):

(43) **Sequential path in German**
  a. Sie wanderten durch die Alpen nach Berlin/Füssen.

> She wander-PAST through the Alpen towards Berlin/Füssen
> 'She wandered through the Alps to Berlin-Füssen.'
> b. Sie durchwanderten   die Alpen   nach *Berlin/Füssen.
> She through-wander-PAST the Alpen towards Berlin/Füssen
> 'She wandered through the Alps to Berlin-Füssen.'

The path in (43a) is conveyed by particle *durch* which is outside the verb root. Such conflation enables sequential paths. When path is rendered via a verb compound, *durchwanderten*, as in (43b), it turns out that the path is incorporated in the verb root, which blocks sequential paths. Thus, only *Füssen* is allowed owing to Füssen being on the adge of Alpen, whilst *Berlin* is blocked as *Berlin* is not on the edge of the Alps (see also Bellavia 1996).

Returning to Chinese, sequential paths are well accepted, as in (44):

(44) a. **Single path**
> Taroo cóng chúfáng dào le   wòshì
> Taroo from kitchen enter PAST bedroom
> 'Taroo walked out of the kitchen and entered the bedroom.'

b. **Sequential path**
> Taroo cóng jiàoshì qù le túshūguǎn.   (non-boundary crossing)
> Taroo from classroom go PAST library
> 'Taroo walked out of the classroom and headed off to the library.'

c. ?Taroo cóng jiàoshì dào le túshūguǎn.   (boundary crossing)
> Taroo from classroom reach PAST library
> 'Taroo walked out of the classroom and reached the library.'

The slight oddness observed in (44c) suggests that sequential path works better in a non-boundary-crossed expression. Moreover, as seen in (44b), the manner segment in a sequential-path expression can be omitted.

The distinction of single/sequential path noticed in Japanese, Chinese and German shed light on a striking typological difference between verb and satellite-framed languages. The reason, perhaps, has to do with the characteristics of their conflation means. Path-prominent languages seem to favour rendering path via verb roots, which gives rise to a restriction: one verb can only incorporate an endpoint in a single clause. This restriction prevents Japanese conflating sequential paths in a single clause. Sequential paths in Japanese will have to be drawn explicitly on the syntactic level, i.e. by using a participle complex predicate, thus giving rise to a range of head verbs being in the coordinate position. In this regard, Japanese appears to be a verb-framed language.

In manner-prominent languages, path is rendered via a path verb or a particle, meaning they exhibit two-faced characteristics of conflation. This two-faced characteristic invites a less restrictive morpho-syntactic environment for incorporating path information. In particular, the option of conveying the path via satellites (outside the verb roots) enables sequential paths. Chinese and German are typical in this respect. In further support of this position, more German data are provided. The following illustrations involve a single path, but receive different treatments:

(45) a. Mutter ging   **aus** dem Haus   in den Garten.
> Mother walk-PAST out of the house into the garden
> 'Mother walked out of the house into the garden.'

*b. Mutter **verlieβ** das Haus in den Garten.
> 'Mother left the house into the garden.'

cf. Mutter **verlieβ** das Haus und *ging* in den Garten.
> 'Mother left the house and went into the garden.'

The ungrammaticality of (45b) is due to its path being conveyed in the main verb, *verlieβ* 'exit'. In (45a), path is expressed via the particle *aus*.

The finding embodies the following picture of German single/sequential path: (a). when path is expressed via a particle, sequential paths are accepted; (b) when path is conveyed via a path verb, or a compound verb, only a single path is allowed. This applies to Chinese, as it also exhibits such two-faced characteristics of conflation.

Another concept that serves the purpose of highlighting our central claims concerns the compatibility of a spatial PP and a non-spatial PP within a single clause. Goldberg (1991b, 1995) and Ueno (2007) demonstrate that the following expressions are impossible in English:

(46) a. *Sam kicked Bill black and blue out of the room.
b. *Sam kicked Bill out of the room black and blue.
Goldberg (1995:81)

The unacceptability of (46), as noted by Ueno (2007), lies in that the spatial PP and non-spatial AP are parallel, which means the single manner verb cannot hold these two arguments at one time.

It turns out, however, that in Chinese, non-spatial and spatial path verbs denoting the change of state or location can coexist in a single clause:

(47) **[Spatial path + non-spatial path]**
> Zhāngsān **dào** le Dōngjīng **chéng** le qīngjiégōng.
> Zhāngsān reach PAST Tokyo become PAST cleaner

'Zhangsan reached Tokyo and became a cleaner.'

There are two factors connected to the distinct treatments in (46) and (47). First, from a syntactic point of view, the spatial and non-spatial in (46) are rendered via the same manner verb, whilst in (47) the two events are independently conveyed. The spatial event *dào le Dōngjīng* 'reached Tokyo' is not expressed via a PP, but via a non-deictic path verb *dào* 'reach'. Perhaps it is not unsound to reiterate that *dào* has not fully been grammaticalised. Syntactically, it takes the NP *Dōngjīng* as its argument structure. The non-spatial event *chéng le qīngjiégōng* 'become a cleaner' is tackled via the path verb *chéng* 'become'. Moreover, semantically speaking, the two events are in a successive relation or, to put it in another term, a contiguity relation. That is, the spatial event, which occurs before the non-spatial event, somehow gives rise to the result of the non-spatial event. On the other hand, in (32), the result AP *black and blue* cannot be the reason of the PP *out of the room* and nor can the spatial PP *out of the room* be the reason for the result AP *black and blue*.

Given this, perhaps we can arrive at a first conclusion: in Chinese, the occurrence of [spatial event + non-spatial event] is possible but conditioned: (a) syntactically, the single clause has to be bounded; (b) semantically, the motion path and resultative path are in a successive relation. In addition, the combination [non-spatial event + spatial event] is ruled out, as it disobeys the semantic condition: two events should be assigned to a successive relation.

VI. CONCLUSION

This paper brings the scalarity concept, in an effort to uncover how the lexical, morphological and syntactic resources of the three languages in focus (Japanese, Chinese and German) play essential roles when it comes to lexicalisaing motion events into linguistic forms.

The findings bring us to the point that path-prominent languages seem to favour rendering path via verb roots, which gives rise to a restriction: one verb can only incorporate an endpoint in a single clause. This restriction prevents Japanese conflating sequential paths in a single clause. Moreover, sequential paths in Japanese will have to be drawn explicitly on the syntactic level, i.e. by using a participle complex predicate, thus giving rise to a range of head verbs being in the coordinate position. In this regard, Japanese appears to be a verb-framed language.

In manner-prominent languages, path is rendered via a path verb or a particle, meaning they exhibit two-faced characteristics of conflation. This two-faced characteristic invites a less restrictive morpho-syntactic environment for incorporating path information. In particular, the option of conveying the path via satellites (outside the verb roots) enables sequential paths. Chinese and German are typical in this respect.

Moreover, in German, when path is expressed via a particle, sequential paths are accepted; when path is conveyed via a path verb, or a compound verb, only a single path is allowed. This applies to Chinese, as it also exhibits such two-faced characteristics of conflation.

In Chinese, the occurrence of [spatial event + non-spatial event] is possible but conditioned: (a) syntactically, the single clause has to be bounded; (b) semantically, the motion path and resultative path are in a successive relation. In addition, the combination [non-spatial event + spatial event] is ruled out, as it disobeys the semantic condition: two events should be assigned to a successive relation.

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