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Semantic Unilocality

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Abstract

If a language regularly places a particular closed class in syntactic construction with an open class—for example, nominal affixes with noun roots, or satellites with verbs—any conceptual category expressed by the closed class tends not to be expressed by the open class. This proposed tendency is here called "semantic unilocality".

For example, English has an extensive closed-class path-satellite system, and the open-class verbs in its lexicon that express Manner in construction with those satellites largely lack any indication of path. Thus, a couple can dance into, out of, or across a ballroom—the verb is neutral to the path followed. By contrast, French, which lacks a path satellite system, has verbs expressing both a particular Manner and a fixed path that do not allow any further path specifications. For example, the verb *arpenter*, glossable as 'pace back and forth along the same bounded straight line', cannot occur in constructions expressing additional paths, unlike English *pace* as seen in: *The boss kept pacing in and out of his office / back and forth around the street corner*.

Exemplifying multiple semantic unilocality, most Atsugewi verb roots are obligatorily surrounded by affixal satellites expressing path, Ground, and instrumental cause. Such verb roots tend to express none of these conceptual categories, which may account for the unusualness of their glosses relative to more familiar languages without such satellites. For example, the verb root *-p'-*, glossable as 'for fabric to move in a way that changes its pattern of bunching', occurs with different satellites to refer to straightening a dress bunched up under one while sitting, opening curtains, or putting on socks. And the verb root *-st'aq'-*, glossable as 'for runny icky material to move / be located', occurs with different satellites to refer to tracking mud over a floor, spitting in someone's eye, flinging rotten tomatoes off a pan, picking up already chewed gum with one's mouth, or guts blowing into a creek.

Cognitively, semantic unilocality in language may arise from several more general tendencies, including one to avoid redundancy and one to segregate the representation of different conceptual categories. Historically, the rise, extended presence, decline, or extended absence of a closed class that expresses a particular conceptual category may foster certain diachronic processes in a syntactically associated open class. These processes include leaching, culling, shift, filtering, and abstention.

Keywords
semantic unilocality - utilization - leaching - culling - redundancy avoidance - semantic segregation

1 Introduction[1]

This study proposes a certain distribution of concept representation within a given language. If a language regularly places a particular closed class in syntactic construction with an open class[2]—for example, nominal affixes with noun roots, or satellites with verbs—any conceptual category expressed by the closed class tends not to be expressed by the open class. This proposed tendency is here called **semantic unilocality** or, for short, simply "unilocality".

Complementarily, if a language lacks a closed class expressing the conceptual category that the preceding type of language had. Its corresponding open class tends to include expression of that conceptual category. The term semantic unilocality is here extended to this tendency as well.

Our term "conceptual category" here can refer to a fully generic concept expressed by a closed class as a whole; a general concept expressed by a subset of its member forms; or indeed a specific concept expressed by just one of its forms.

1.1 *Distinctions*

We next mark two distinctions within the preceding broader description.

1.1.1 Closed-class utilization

In a given language, a particular closed class—or subset or member within it—generally has a certain degree of **utilization** within a specific construction that it occurs in. The term utilization is here intended as a coarse-grained index combining several factors that can, when desired, be separately examined. Included among these factors about the use of a closed-class in a given construction are whether or not the appearance of one of its members is obligatory there; whether all the members in it or in a relevant subset of it can appear there or only some of them can; and, if optional, whether speakers tend to include it or tend not to.

We heuristically distinguish five degrees: full, high, medium, low, and non-utilization. This last zero degree pertains to a case where a closed class that appears in one construction does not appear in another construction where it would have been semantically appropriate.

1.1.2 Additive and operational relations

A closed class generally has either an **additive** or an **operational** type of semantic relation with its syntactically associated open class. In the additive type, the open-class forms do not express the concepts expressed by the closed-class forms they occur with, so that the meanings of the forms in the two classes are largely additive. An English example is verbs that express Manner but no path (e.g., *dance*) in construction with the closed-class system of satellites expressing path (e.g., *in, up, across, apart*).

In the operational type, the open-class forms, in addition to whatever else they express, also express one member of a structural conceptual category, and the closed-class forms operate on that member to yield another member of the category. For an English example, the open-class noun *bird*, in addition to expressing avianness, also expresses singularity—one member of the "number" category. The closed-class morpheme *-s*, when suffixed to the noun, performs an operation of pluralizing on it, changing the original singularity concept to that of plurality, another member of the number category.[3]

The operational type accords with semantic unilocality if the characterization of unilocality is extended to cover not only cases where the two classes do not share the same conceptual category but also cases where they do share the category but not the same concept within it.

1.2 ***Methodology***

The main method used here is to compare two languages that have the same open class or comparable variants of such a class, but where language A regularly associates it with a closed class that expresses a particular conceptual category, while language B lacks either that whole closed class or certain of its relevant members. To the degree that semantic unilocality holds, language A's open class will express less of that conceptual category while language B's open class will express more of it.

The evidence arrayed below points to general accord with semantic unilocality, but since it is only a tendency, to shortfalls in its thoroughgoingness as well. The aim is to build up a full profile of the phenomenon.

1.3 ***Diachronic implications***

This method for comparing languages to provide evidence of semantic unilocality is synchronic. But such unilocality has diachronic implications. This paper does cite pertinent data on language change in some instances but, for the remainder, it invites historical research. What *can* be done here, though, is to propose the following systematic taxonomy of the types of diachronic processes that may pertain to semantic unilocality.

It is posited here that a closed class's state is the diachronic driver of unilocality effects. More specifically, a particular type of closed class—or of a relevant subset or member within it—can have arisen, continued to be present, disappeared, or continued to be absent in the history of a given language over the period for which records or reconstructions are available. And each of these existential states underlies a set of processes affecting semantic unilocality, as outlined next.

1.3.1 Closed-class growth

In the first case considered, a closed class or a subset or member within it, expressing a particular conceptual category, has arisen in a language. This occurrence can foster semantic unilocality through the following five processes in a syntactically associated open class. The first three processes pertain to extant open-class forms, that is, forms already present in the language's lexicon. The fourth process pertains to new open-class forms and the fifth process to potential open-class forms.

a. If an extant open-class morpheme whose meaning included the conceptual category has been in construction with the closed class, it can in time lose that conceptual category while the rest of its meaning—including substantive portions of it—remains. This process is here called semantic **leaching**, based on this word's general reference to the

loss or removal of a particular single component from a composite. Our term is also a deliberate pun on "bleaching", the linguistic term for the loss of the full substantive portion of a morpheme's meaning that leaves only a schematic portion suitable for grammatical use.

b. In a process here called lexical **culling**, an extant open-class morpheme whose meaning included the conceptual category that is now expressed by the closed class can over time drop out of the language's lexicon. The term "semantic culling" might then be applied to the case where such a morpheme has changed its meaning and, in effect, dropped out of the lexicon in its original form.

c. If an extant open-class morpheme had not occurred in construction with the closed class but then (in one of its usages) comes to be, its meaning can change so as to conform to the construction, if necessary also undergoing leaching. This process can be called semantic **shift**.

d. If a language borrows from another language an open-class form whose original meaning includes the conceptual category, that component of its meaning may then get excised while the remainder is retained. This process can be called semantic **filtering**.

e. A fifth process may be in effect when a language fails to add a form to an open class. If the candidate form is from another language but includes the conceptual category in its meaning, the home language might block its entry. Or if native speakers were in a position to coin a new form, they might tend not to do so if the form were to include the conceptual category in its meaning—hence, only introducing forms without the conceptual category. The term lexical **abstention** will here be applied to both cases.

It will be useful to have a term for the case where semantic unilocality will be in effect without any of the preceding five processes taking place.

f. Extant, borrowed, or coined open-class forms that did not express the conceptual category in the first place are already in accord with semantic unilocality. They can be said to exhibit **preaccommodation**.

It will also be useful to have terms for cases that run counter to semantic unilocality, where the first five processes have not had effect.

g. Extant open-class forms that express the conceptual category but have not undergone leaching or culling can be said to exhibit **resistance**.

h. Borrowed or coined open-class forms that express the conceptual category but enter the language despite the processes of filtering and abstention can be said to exhibit lexical **intrusion**.

1.3.2 Continued closed-class presence

In the case where a closed class or a relevant subset or member within it has been present throughout the known history of a language, the first five of the preceding processes may have continued to be in effect.

Thus, resistant or intrusive open-class forms—which would have the conceptual category in their meanings—would be subject to leaching and culling. Extant forms that newly came into construction with the closed class could undergo a process of semantic shift. And the processes of filtering and abstention could continue to exert their augmentive and screening effects on the entry of other borrowed or coined forms.

In the text below, these processes will be designated by the same letters as in section 1.3.1 but under the present section's number, 1.3.2.

1.3.3 Closed-class loss

In a third case, a closed class or a relevant subset or member within it has declined in a language—whether through full disappearance or a reduction in productivity, that is, a decrease in the number or use of members, with some remaining members becoming frozen forms. Such a decline in the closed-class expression of a particular conceptual category can, in accord with unilocality, increase its expression in a syntactically associated open-class through the following three processes. These largely correspond to, and are in part labeled the same as, processes a, b, and e in section 1.3.1. Counterparts to the c and d processes there are not cited here because they would seem to occur rarely or not at all.

a. The meaning of an extant open-class form that did not include the conceptual category could add it in or be otherwise reconfigured so as to newly express it. Such a process can be called semantic **inclusion**.

One type of semantic reconfiguring merits its own distinct term. Where the original closed class was affixal to the open class, its now nonproductive forms can combine with previously associated open-class forms to form new (phonologically longer) morphemes whose meanings now include the conceptual category. This process can be called constituent **melding**.

b. An extant open-class morpheme whose meaning did not include the conceptual category can drop out, perhaps replaced by one or more morphemes that do include it. The term lexical "culling" (1.3.1b) will be applied to this process as well.

c. The term lexical "abstention" (1.3.1e) can be used here as well when a language fails to add a form to the open class. If the candidate form is from another language but lacks the conceptual category in its meaning, the home language might block its entry. Or if native speakers were in a position to coin a new form, they might tend not to do so if the form were to lack the conceptual category in its meaning—hence, only introducing forms with the conceptual category.

Much as above, it will be useful to have a term for the case where semantic unilocality will be in effect without any of the preceding three processes taking place

d. Extant, borrowed, or coined open-class forms that already expressed the conceptual category and so were not subject to exclusion, culling, or abstention can again be said to exhibit "preaccommodation".

It will also be useful to have terms for cases that run counter to semantic unilocality, where the first three processes have not had effect.

e. Extant open-class morphemes that did not express the conceptual category and continue not to do so despite the decline of the closed class—i.e., that do not undergo semantic inclusion or lexical culling—can again be said to exhibit "resistance". However, instead of "resistance", the term **quiescence** might be preferable. The reason is that closed-class growth seems to exert diachronic pressure toward open-class change, while its decline only facilitates such change.

f. Borrowed or coined open-class forms that do not express the conceptual category but enter the language despite the process of abstention can, as in (1.3.1h), be said to exhibit lexical "intrusion".

Finally, it will be useful to have terms for cases where expression of the conceptual category lost in the closed class is not taken up by the syntactically associated open class category.

g. If the speakers of the language feel a need to express the conceptual category, the language can use or develop alternative constructions, regularly employed—a process here called diachronic **periphrasis**—to achieve its expression.

h. Alternatively, with its decline in expression, the conceptual category may also decline in significance to the speakers, represented only on occasion by special locutions. This process might be labeled semantic **disregard**.

1.3.4 Continued closed-class absence

In the case where a particular closed class or a relevant subset or member within it—and the conceptual category that it might have expressed—has been absent throughout the known history of a language, the first three of the preceding processes may have continued to be in effect.

Thus, resistant or intrusive open-class forms—which would lack the conceptual category in their meanings—would be subject to semantic inclusion and lexical culling. And abstention could continue to block the entry of borrowed or coined forms lacking the conceptual category.

In the text below, processes cited in section 1.3.3 that act under continued closed-class absence will be labeled with their original letter but with the number of the present section, 1.3.4.

2 Nouns as the Open Class

We here look at four conceptual categories that can be expressed in a noun phrase. For each of these, some languages have a high-utilization closed class that can express the category when it is in construction with a noun, while other languages lack such a closed class or only have one with low-utilization. For the four cases, we contrast languages of each type and find that, in general accord with semantic unilocality, a language of the former type mainly uses its closed class to express the category, while a language of the latter type mainly uses the noun to express it.

2.1 *Affinality / lineality*

English has a certain closed class of forms—including: *step-, half-, great, grand-, -in-law*—that compound with nouns referring to kin. As a whole, this closed class expresses a conceptual category characterizable as 'deviation from a baseline in kinship relations'. The closed-class forms are in an operational relation (section 1.1.2) to the nouns—when one is added, a noun's original specification of one type of kinship relation shifts to that of another type. The list in (1) shows a number of simplex nouns beside compounds representing two of the closed class's members: affinality (*-in-law*) and (immediate) lineality (*grand-*). Matched with these are the corresponding Yiddish kinship terms.

(1) father / father-in-law—foter / shver | mother / mother-in-law—muter / shviger
brother / brother-in-law—bruder / shvoger | sister / sister-in-law—shvester / shvegerin
son / son-in-law—zun / eydem | daughter / daughter-in-law—tokhter / shnur
father / grandfather—foter / zeyde | mother / grandmother—muter / bobe
son / grandson—zun / eynikl (M) | daughter / granddaughter—tokhter / eynikl (F/N)

As the list shows, wherever English has a compound, Yiddish has an (effectively) single morpheme. Both languages are here in complete accord with semantic unilocality. While both languages have a closed-class for kinship deviation, the one in English includes forms for affinality and immediate lineality, while the one in Yiddish lacks them. Correspondingly, English represents affinal and immediate lineal relations with the relevant closed-class forms in construction with a basic kinship noun and wholly lacks nouns directly expressing such relations. But Yiddish, lacking such closed-class forms, does have nouns directly expressing those relations.

For its part, Old English was more like Yiddish in that its closed class for kinship deviations lacked forms for affinality and immediate descending lineality and that it did have separate morphemes referring to relatives with those relationships. These morphemes included: *swēor* 'father-in-law', *sweġer* 'mother-in-law', *tācor* 'brother-in-law', *snoru* 'daughter-in-law', *āþum* 'son-in-law, *nefa* 'grandson', *nift* 'granddaughter'. But in the course of Old English becoming modern English, the closed class of kinship deviations added the forms *-in-law* and *grand-* —an instance of the diachronic process of closed-class growth (1.3.1). And all the just-cited morphemes disappeared from the lexicon—a clear instance of the diachronic process of lexical culling (1.3.1b).

2.2 *Sex*

A number of languages have a closed class in construction with open-class noun roots that, as a whole, expresses a conceptual category of 'gender' and that includes a subset of, or consists of, two members expressing the concepts 'masculine' and 'feminine'. In turn, when these two forms are with noun roots referring to animate entities, they can as a pair express a conceptual category of 'sex' and individually express the concepts 'male and 'female', respectively.

Spanish has such a masculine-feminine subset, largely realized as the suffixes *-o* and *-a*. Some of their combinations with noun roots referring to people and nonhuman animals are seen in (2). These noun roots cannot occur by themselves and their meanings can be analyzed as free from or neutral to specifications of sex so that, for example, *nin-* can be glossed as 'child', *muchach-* as 'youngster', *cierv-* as 'deer', and *abuel-* as grandparent'. Under this analysis, the closed-class suffixes are semantically in an additive relation with the open-class noun roots. Matched with these words are close English counterparts.

(2) niño/a—boy / girl | muchacho/a—lad / lass | señor/a—Sir, Mister / Ma'am, Missus | rey/reina—king / queen | ciervo/a—stag / doe | gallo/-ina—rooster / hen | cerdo/a—hog / sow
abuelo/a—grandfather / grandmother | tío/a—uncle / aunt | hermano/a—brother / sister hijo/a—son / daughter | sobrino/a—nephew / niece | nieto/a—grandson / granddaughter

novio/a—groom / bride | esposo/a—husband / wife | suegro/a—father-in-law / mother-in-law

For the forms presented in (2), Spanish is in accord with the unilocality principle. Sex is entirely represented by the closed-class gender suffixes while it is entirely unrepresented by the open-class noun roots in construction with them.

By contrast with Spanish, English wholly lacks a closed-class system of gender inflections on nouns.[4] Correspondingly, in accord with the unilocality tendency, for every Spanish entry in (2), English has a pair of open-class forms that specify maleness or femaleness together with a particular type of animate entity.

To turn to diachronic considerations, there seems to have been an increase in the unilocality tendency to reserve the specification of sex in animate entities for the closed-class gender system, present in common from Proto-Indo-European through classical Latin to modern Spanish. Now, the languages at all three stages have had open-class nouns referring to animates that, counter to the unilocality tendency, are lexicalized to specify a particular sex. Such forms can be regarded as exhibiting resistance (1.3.1g) to the unilocality tendency. But progressively more of such nouns seem to have been culled (1.3.1b) from the successive lexicons, their meanings taken over by a sex-neutral noun together with a gender suffix.

Thus, the sex-specific Proto-Indo-European nouns for 'son' and 'daughter' were culled (1.3.1b) en route to Latin and replaced by suffixal sex-differentiation in the forms *filius/a*.

In turn, some of the sex-specific nouns still present in Latin—e.g., *frater / soror*, 'brother / sister'; *patruus / amita* 'paternal uncle / aunt'; *porcus / sus* 'hog / sow'—were culled (lexically or semantically: 1.1.1b) en route to modern Spanish and replaced by the corresponding suffixally sex-distinguished forms seen in (2).

And modern Spanish still has a certain number of sex-specific nouns—e.g., *hombre / mujer* 'man / woman'; *padre / madre* 'father / mother'; *toro / vaca* 'bull / cow'; *and the more colloquially used forms marido / esposa* 'husband / wife'—forms that were accordingly not included in (2). But some of these may in turn yield to replacement by forms with suffixal sex differentiation.

If the diachronic pattern just proposed is confirmed, research will be needed to uncover the factors that lead a particular closed class to increase the sway of its tendency toward semantic unilocality against resistance from its associated open class. Such research might help explain why, for example, Proto-Indo-European, which already had a closed-class gender system, followed a path of leaching, culling, shift, and preaccommodation (1.3.1) that has led to modern Spanish and generally did not do so on the path leading to modern Russian.

To continue with diachronic considerations, as Old English developed into modern English, the original closed-class gender system in construction with nouns (a system that included male/female specifications), completely disappeared—a case of sweeping closed-class decline (1.3.3). If it can be posited that every grammatical system has an associated conceptual category, the loss of the inherited closed-class gender system on nouns and the lack of any replacement for it suggests that English speakers developed a semantic disregard (1.3.3h) for the conceptual category associated with such a gender system. This conceptual category is here held to be distinct from that of sex per se with its member concepts of male and female, which *is* marked in the closed-class pronominal system: *he/she*.

Research will be needed to determine the Old English pattern but, as the list in (1) shows, modern English has numerous noun pairs lexicalized to specify the male or female of a particular animate entity. This fact accords with the tendency of semantic unilocality in the absence of a closed-class specification of sex.

Modern English also has a number of open-class forms—e.g., *baby, cousin*—that specify a particular type of animate entity without also specifying its sex. Such forms can be regarded as neutral to sex or as able to refer to either sex equally. In the face of a unilocality tendency toward an open-class expression of sex—given the loss of its closed-class expression—any such forms originally in Old English that remained can be regarded as exhibiting resistance or quiescence (1.3.3e), while any such forms newly borrowed or coined exhibit lexical intrusion (1.3.3f). With such forms, any particularization as to sex requires periphrasis (1.3.3g)—e.g., *a girl-baby / my cousin ... she ...*

2.3 *Personal possession*

Presumably the great majority of languages has a closed class of forms specifying person and in a construction with nouns that expresses the conceptual category of possession.[5] Within this construction, The concepts of person are in an additive relation (1.1.2) with the noun references. Most of these languages are in complete accord with semantic unilocality. None of their nouns are lexicalized to express possession by a particular person in addition to their substantive reference—the representation of personal possession is reserved entirely for the closed class within the construction.

However, semantic unilocality is generally only a tendency. It might accordingly be expected that some nouns in some languages are in fact lexicalized for personal possession. And indeed, many Bantu languages have

that attribute. For example, Haya's three distinct morphemes for 'mother' with the three different singular possessors are seen in (3) (Byarushengo 1977). Such nouns expressing both possessed and possessor cannot in turn take the usual construction representing personal possessors.

(3) máawe—my mother | ñoko—your mother | ñina—his/her mother

The seeming rarity of nouns lexicalized for personal possession, however, testifies to the effectiveness of unilocality in this semantic domain.

2.4 *Number*

Many languages have a closed class in construction with open-class nouns that expresses the conceptual category of number—the number of a noun's referent. We here consider only languages in which the closed class forms express such concepts as 'plural' or 'dual' and 'three or more' in an operational relation (1.1.2) with nouns lexicalized to refer to a single object.[6] English is such a language with its pluralizing suffix *-s*, which occurs in an operational construction with open-class nouns lexicalized to refer to a single object, as in *bird / birds*.

A tendency toward semantic unilocality for this conceptual category would here mean that the concept of plurality for objects would be mostly reserved for expression by the closed class rather than by the open-class nouns. That is, most object-specifying nouns would intrinsically refer to just one object and be able to take the pluralizing suffix, while relatively few would intrinsically refer to a plurality of objects and be unable to take the suffix. And this is indeed the situation found in English. This language does have some nouns lexicalized to refer to a plurality of objects—e.g., *people, faculty, police, cattle*. Such nouns require plural verb agreement and refuse the pluralizing *-s* suffix. But such nouns are quite few relative to the number of nouns like *bird* lexicalized to express a single object.

For contrast, we can consider Japanese, among comparable languages. It seems through its known history to have, except for certain limited subsystems, lacked a closed class expressing number—a condition of extended closed-class absence (1.3.4). The same tendency toward semantic unilocality might complementarily suggest that such languages would have many nouns lexicalized to express a plurality of objects—or perhaps many expressing such a plurality and many expressing singularity. But the nouns of such languages seem instead to be largely neutral to number. To the extent that this is in fact the case, the expression of number might to some degree be subject to semantic disregard (1.3.4h) or else rely on periphrasis (1.3.4g).

3 Verbs as the Open Class

We next look at six conceptual categories that can be expressed in a verb complex. For each of these, some languages have a high-utilization closed class that can express the category when it is in construction with a verb, while other languages lack such a closed class or only have one with low-utilization. For the six cases, we contrast languages of each type and find that, in general accord with semantic unilocality, a language of the former type mainly uses its closed class to express the category, while a language of the latter type mainly uses the verb to express it. Talmy (2000b, chapter 3) presented five types of conceptual categories that a macro-event can express either in a verb or in a closed class in construction with a verb, and two of these—path and realization—are included in the set of conceptual categories examined next.

3.1 *Path*

Our term "Path" refers to the relational component of a "Motion event"—the capitalized forms covering both dynamic and static cases (Talmy 2000b, chapter 1). More specifically, it is the path followed or site occupied by a Figure object with respect to a Ground object in space. Our main focus here, though, is on the dynamic case, represented by uncapitalized "path".

3.1.1 English expression of path

English has an extensive closed-class system expressing the conceptual category of path. It consists of either or both of the following: closed-class path satellites[7] in construction with open-class verbs and closed-class path prepositions in construction with nominals. More loosely, though, we will refer to this whole closed-class system as the "path satellite system" and say that it is in construction with verbs.

Full unilocality with high utilization

The seeming majority of verbs occurring in construction with the path satellite system express Manner.[8] Manner can be characterized as a condition, configuration, or activity that the Figure can—or in some cases can only—exhibit

while also moving along a particular path through space. Further, of the very numerous Manner verbs in English, the seeming great majority express only Manner without any inmixture of a particular path. And these verbs actively occur with the full range of path satellites. Semantic unilocality here—the expression of path reserved for the path satellite system and absent from Manner verbs—is thus in full effect. And the robust use of the path satellite system with such Manner verbs demonstrates high utilization (1.1.1)

A small sample of such Manner verbs not expressing any particular path—what might be called "pure" Manner verbs—is: *scurry, wade, careen, trickle, swarm, drift, hitchhike, inch, accompany (tr.), steer(tr.)*. Such verbs can combine freely with the full range of path satellites insofar as the resulting action is feasible.

We can illustrate this range with the pure Manner verb *dance*, whose prototype meaning might be characterized, with some degree of granularity, as: 'for a standing person to volitionally execute a pattern of steps accompanied by other bodily movements to the rhythm of music either singly or in coordination with one or more others'. A person can perform this activity either at a single locus or while concurrently moving along a particular path—one specified by the path satellite system, as in (4).

(4) The two of them danced into and then out of the room. / up the stairs. / out the door onto the veranda. / past the statuary. / through the crowd across the ballroom. / apart from each other.

In addition to such frequently cited manners as dancing, English extends its semantic pathlessness to what must be analyzed as pure Manner verbs but are less often recognized as such. We illustrate five such verbs in (5). They can be glossed for one of their most physical non-metaphoric senses as follows: *venture*: for a person to proceed despite awareness of risk; *beat*: for one person to precede another (D.O.) as they both speed along competitively, thus demonstrating superiority; *grow*: for an object to incrementally increase its extent from one end, edge, or surface through the formation or accretion of like material; *dig*: for an animate entity to use a bodily or external instrument to shift portions of solid material so as to form an opening through which the entity's instrument or whole body moves; *climb*: for an animate entity to move along on an object or from one to another object by successively gripping it with its prehensile or piercing body parts.

(5) a. They ventured up over the ridge. / out of their hiding place into the vacated parking lot.
b. She beat him out of the gate. / around the marker pole. / across the finish line.[9]
c. The vine grew along the eaves into the attic. / His hair grew down below his collar. / The stalagmite grew up toward the ceiling. d. The mole dug up out of its burrow through the soil onto the surface. / I dug down into the earth toward the buried treasure with my shovel.
e. I climbed up into the tree. / through the tree from branch to branch. / over the fence. / down the ladder.

With regard to diachrony, a path satellite system has been in place from Proto-Indo-European to modern English and so falls under section 1.3.2's category of continued closed-class presence. It is thus likely that some effects on associated verbs due to semantic unilocality have occurred in accord with the processes described in section 1.3.1. For example, regarding some of the verbs cited above, the process of preaccommodation (1.3.1f) may have acted on *hitchhike* when it was first coined, and the process of semantic shift (1.3.1c) may have acted on the previously extant morphemes *inch, venture*, and *beat* when they first came to be used as verbs in construction with path satellites in a sentence expressing a motion event.

For its part, present-day *climb* seems to have undergone the process of leaching (1.3.1a). It developed from the Old English verb *climban*, whose meaning necessarily included the concept of an upward path, a concept that subsequently got leached out, leaving the semantic remainder of a pathless clambering. Currently, *climb* retains this upward path concept only when transitive and taking the Ground as direct object, as in (6a). However, this construction can be reinterpreted synchronically as belonging to a more general syntactic subsystem in English in which an otherwise pathless Manner verb is ascribed a specific path when taking the Ground as direct object, as further illustrated in (6)[10]

(6) a. I climbed [up] the tree. b. I jumped [over] the fence. c. I swam [across] the channel.
d. I wandered [along] the streets. e. They sailed [all about] the seas. f. I dodged [away from] the ball.

Sub-unilocality with still high utilization

In what can be analyzed as a shortfall in semantic unilocality's thoroughgoingness, some English verbs that express Manner also include a constraint as to path. Such verbs, by reason of semantics rather than feasibility, are accordingly not free to occur with the full range of the closed-class path satellite system. In particular, they cannot

occur with a path satellite whose meaning conflicts with the constraint. However, these verbs still do readily occur with the remainder of the path satellite system, now in accord only with the feasibility of the resulting action. This section's discussion thus does not focus on this closed class's degree of semantic unilocality per se—that is, on its capacity to reserve all expression of path to itself—since a breach in unilocality is already noted here. It focuses rather on the high utilization (1.1.1) that this closed class still exhibits despite the breach.

In the simpler cases of a Manner verb with a path constraint, the Figure must follow a path that one of the extant path satellites already specifies. We here provide four examples, each with a proposed gloss for one prominent physical sense. These are: *fall* [down]: for an object to move in uncontrolled flight downward in space due to gravity; *meander* [about]: for a self-agentive entity to slowly proceed volitionally along a course that is itself not pre-planned and includes seemingly random changes of direction; *knock* [off]: for an object in free motion to impact with another object (D.O.) thereby causing it to abruptly move off the location or course that it had had up to then and would otherwise continue to have; *smear* [over]: for a person/instrument, through continued contact with it, to progressively extend an initially condensed amount of viscous material (D.O.) over the surface of a spatially extended object (P.O.) as a comparatively thin coating.

Examples of these verbs with additional path specifications are given in (7) together with a starred example containing a conflicting path satellite.

(7) a. A crate fell out of the plane's cargo bay through a cloud into the ocean.
*Due to the tornado's suction force, his bed fell up through the skylight.
b. The band of free spirits meandered into / past / through / out of the valley.
*The band of free spirits meandered straight ahead along the narrow walkway.
c. After hurtling through the air and hitting him/it, the rock knocked
the street performer out of the circle into the crowd. / the vase off the table into the trash can.
the rocket off course into the forest below. / my tooth out.
*the moving car more quickly along the road.
d. I smeared grease over the panel. / into all the crevices. / all along the groove. / onto the nailhead.
*I smeared the grease off the surface of the panel.

In more complex cases, the Manner verb's path constraint is not equivalent to any single path satellite. For a first example, one sense of English intransitive *pull* can be characterized as 'for a person to pilot a car/truck through a comparatively short bounded divergence from its prior location or course'. As seen in (7a), the verb can accordingly occur with numerous path satellites consistent with short bounded divergences, but not with satellites like *along* that refer to an unbounded path. Or again, the meaning of *pry* can be characterized as for a person, gradually and against resistance, to remove a Figure from a Ground to which it is attached by levering a third object between them'. The verb can be used with path satellites consistent with spatial separation, but not otherwise, as seen in (8b).

(8) a. I pulled into / out of the driveway. / out into the traffic. / off the road onto the shoulder. /
over to / away from the curb. / up alongside / past / ahead of the car in front of me on the freeway.
*I pulled steadily along the freeway. / around the circular track.
b. I pried the lid off/up/open. | I pried apart the two disks glued together.
*I pried the lid back onto the box.

We can amplify on how the phenomenon of high utilization manifests here. It might for example have been thought that the path concept '(all) about' that is lexicalized in the Manner verb *meander* would provide the only path specification in a clause that the verb appears in. Instead, the verb is readily accompanied by path satellites expressing additional forms of path also present in the total situation, as seen in (7b), and speakers are ready to note and to express such additional paths.

We might note that if unilocality were thoroughgoing, English would have had a different lexicon in which verbs like those in (7) and (8) were replaced by semantically more general verbs like those in (5), that lacked a path constraint and so could occur with the full range of the path satellite system.

For example, instead of *smear*, English might have had a pathless verb "X" meaning 'move viscous material' that could appear in all the clauses of (7d) including the starred one. Or instead of *pry*, it might have had a pathless verb "Y" meaning 'for a person, gradually and against resistance, to attach or detach a Figure relative to a Ground with a third object' that could appear in all the clauses of (8b).[11] But counter to semantic unilocality, English lacks such pathless Manner verbs.

Additional shortfalls in unilocality or utilization

While the path-constrained Manner verbs of the preceding section showed some slippage in semantic unilocality, still greater shortcomings in either unilocality or utilization occur. Several of these are presented next to build up a more complete profile of the two factors.

Sub-unilocality with low utilization.

English position verbs are Manner verbs with path constraints perhaps comparable to those of the preceding section but with low utilization of the path satellite system. The term **position verbs** here refers to verbs that specify the position of a Figure relative to a Ground that supports it against gravity, and that do so in terms of the Figure's shape, orientation, or supportive means, whether the Figure is located at or moves with respect to the Ground. Seven main position verbs in English are illustrated in (9), where the related nonagentive and agentive forms *lie/lay* are treated as a single case.

(9) English position verbs: Figure is located at Ground / Agent moves Figure to Ground
- a. Figure's shape: 1-D or 2-D; Figure's orientation: horizontal / vertical / oblique; supportive means: rest
  - lie/lay: The broom lay / I laid the broom on the floor.
  - stand: The broom stood / I stood the broom on the floor in the corner.
  - lean: The broom leaned / I leaned the broom against the wall.
- b. Figure's shape: roughly equidimensional; supportive means: rest
  - sit: The box sat / I sat the box on the table.
- c. Figure's shape: any; supportive means: attachment
  - hang: The broom hung / I hung the broom from the ceiling by a hook.
- d. Figure's shape: 1-D; supportive means: inward pressure from adjacent material
  - stick1: The knife stuck in the tree. / I stuck the knife into the tree.
- e. Figure's shape: any; supportive means: adhesion
  - stick2: The plaque stuck to the door. / I stuck the plaque on the door.

With one exception, these position verbs all have the same path constraint. They can refer to a Figure only as located at a Ground in a given position or as moving to the Ground into the position. But they cannot be used in referring to any other path relative to the Ground—such as moving away from it and out of its given position (*stick2* is the exception here), or moving along the Ground while retaining its position. Starred attempts at such locutions—together with acceptable alternatives that may demonstrate the process of periphrasis (1.3.3g)—are shown in (10).[12]

(10) a. A Figure moving from a Ground out of its position
- *I laid the broom up off / unlaid the broom from the floor.
  I picked the broom up off the floor where it was lying.
- *I stood the broom away from / unstood the broom from the floor in the corner.
  I took the broom away from where it was standing on the floor in the corner.
- *I leaned the broom away from / unleaned the broom from the wall.
  I took the broom away from the wall it was leaning against.
- *I sat the box up off / unsat the box from the table.
  I picked the box up from the table it was sitting on.
- *I hung the broom down from / unhung the broom from the ceiling.
  I took the broom down from the ceiling it was hanging from by a hook.
- *I stuck the knife out of / unstuck the knife from the tree.
  I pulled the knife out of the tree it was sticking in.
- *I stuck the plaque off the door. But okay: I unstuck the plaque from the door.

b. A Figure moving along a Ground while retaining its position
- The girl *sat / slid down the slide on the playground.
- The woman *hung / *glided down along the zip line.
- I stuck/slid the magnet across the side of the fridge.

It is unclear why this path constraint would hold for position verbs in English, but it seems to be rather general throughout Indo-European languages. However, it is not universal. For example, the semantically most comparable verb roots in Atsugewi (a Hokan language of California—see Talmy, 1972) readily take a fuller range of directional—Path+Ground—suffixes, as illustrated in (11).

(11) verb root: it^{u} 'for a linear object oriented horizontally to move / be located'
a. with suffix -ak. 'on the ground' plus inflections
/'- w- itu -ak. -^{a}/ → [w'it•ak•a] 'It (e.g., the arrow) lay on the ground.'
b. with suffix -mic' 'down onto the ground' plus inflections
/s- '- w- itu -mic' -a/ →[sw'it^{h}mic'] 'I laid it (e.g., the arrow) down onto the ground.'
c. with suffix -ic' 'up' plus inflections
/s- '- w- itu ic' -a/ → [sw'it.uc'] 'I picked it (e.g., the arrow) up off the ground it was lying on.'

There is also some evidence that the relevant Atsugewi verb roots can take the full range of directional suffixes so that, say, *it^{u}* could with one directional refer to an arrow sliding across a floor while lying on it and, with another directional, even refer to an arrow flying through the air. In cases like the last one, these Atsugewi roots would not actually be "position" verbs requiring a supportive Ground, as defined above, but would rather specify Figures only in terms of their shape and orientation, so that *it^{u}* would here simply refer to a horizontal linear Figure moving or located.

These Atsugewi verb roots are accordingly either freer from path constraints than English position verbs or are entirely free of them. Its closed-class path-specifying system here thus either accords more than English does with semantic unilocality or accords with it entirely. In the course of language change leading to Atsugewi, it can be inferred that processes at least of leaching and of culling (1.3.1a,b) acted on any verb roots having greater path constraint.

Sub-unilocality with non-utilization
Some English manner verbs can be analyzed as specifying not only a particular Manner, but also that that Manner is to be realized at a single locus or within a confined location. Their meaning thus again includes a constraint on Path, but this time on a capital "P" Path, which covers both paths and sites, here requiring a site. As before, this constraint prevents the verb from combining with satellites whose meanings conflict with the constraint but, this time, that includes all (small "p") path satellites.

Three such site-constrained Manner verbs are shown in (12), paired for contrast with semantically comparable Manner verbs free of Path constraints.

(12) a. The craft hovered over the pier. / *off across the lake.
but: The hovercraft glided/flitted off across the lake.
b. The two dogs frisked (about) in front of me. / *across the yard.
but: The two deer frolicked together across the meadow.
c. The fish they caught floundered (about) on the boat's deck. / *across the boat's deck.
but: The fish they caught flopped across the boat's deck.

The preceding judgments on acceptability are based on my own current English, but the English path satellite system is so robust that there would be little surprise in finding occurrences of the above three verbs in sentences with path satellites. If in fact my judgments reflect an earlier English and some speakers can presently add a path satellite, then a diachronic process of leaching (1.3.1a) has occurred that has removed the concept of stationariness from the verbs.

Full unilocality with low utilization
In a sentence expressing a Motion event, Talmy (2000b, chapter 1) distinguishes two constructions involving the hierarchy in the verb's argument structure. In one, the Figure-expressing nominal is higher than the Ground-expressing nominal: In a nonagentive sentence, it is the subject while the Ground NP is the direct or prepositional object and, in an agentive sentence, it is the direct object while the Ground NP is a prepositional object. In the other construction, the Ground nominal is higher than the Figure nominal, both nominals showing the complementary pattern of occurrence. These two constructions are here assigned the labels **F-G** and **G-F**, respectively. Some verbs do not allow expression of the second nominal and so occur in what will be called the **F-only** or the **G-only** construction.

Many English verbs can be used in both constructions. All the examples of the English path satellite system so far have been in F-G constructions. But English can also include the path satellite system in G-F constructions. In that construction, however, the path satellite system has only low utilization. Specifically, it seems to be in use with

relatively few verbs and in frozen and perhaps disappearing use with other verbs, while some of its members seem wholly unusable in the G-F construction.

English verbs taking both constructions are shown in (13). As seen in (13a), the verb *wipe* (like *wash* and *scrub*) can within the G-F construction readily take five different path satellites that express the path of the Figure. The first three of these are in a G-only construction, while the last two can occur in a full G-F construction. The verb in (13b) can take the path satellite *through* equally well in an F-G or G-F construction. And the verb in (13c) can do the same with the path satellite *about*. The path satellite *in* in (13d), however, seems blocked from occurrence in a G-F construction.

(13) a. i. F-G: I wiped the crumbs off the table into the garbage can. / G-F: I wiped the table off.
ii. F-G: I wiped the food residue out of the bowl. / G-F: I wiped the bowl out.
iii. F-G: I wiped the dirt down off the walls. G-F: I wiped down the walls.
iv. F-G: I wiped all the crumbs from the table. / G-F: I wipe the table clear/free of all crumbs.
b. F-G: The fencer ran her sword through the dummy. G-F: The fencer ran the dummy through with her sword.
c. I set rubies about the central diamond. / G-F: I set the central diamond about with rubies.
d. F-G: I stuck toothpicks into the peach. / G-F: I stuck the peach (*in) with toothpicks.

But examples like those in (13a-c) represent the best that English can offer in the way of path satellites in the G-F construction. Research will be necessary, but the use of such G-F path satellites seems more robust in other Germanic languages, perhaps in Old English as well. If so, a high utilization of the path satellite system in G-F constructions underwent a decline en route to modern English, representing the diachronic loss not of a closed-class system but of its utilization in one particular construction.

3.1.2 ***French expression of path***

Latin had a productive closed-class path satellite system comparable to that of English. It consisted of one or both of the following: satellites in the form of unstressed prefixes on verbs, and prepositions in construction with nominals. But as Latin developed into modern French, the subsystem of satellites largely collapsed in a process of closed-class loss (1.3.3). A few pockets of the original subsystem did survived, like the still productive prefix *re-* 'back', as in *revenir*, 'come back', and the prefixes *a-/en-* on *porter* 'carry' yielding the meanings 'carry toward/ away'.

But for the most part, the original satellites disappeared or became unproductive. In the latter case, they commonly underwent the process of melding (1.3.3a) with the original verbs to form new phonologically longer verbs with noncompositional (idiomatic) meanings. For example, French frozen satellites prefixed to the verb *venir*, 'come', to yield longer verbs with at most only a metaphoric relation to the physical path sense and to coming, include: *circonvenir* 'trick', *convenir à* 'suit', *devenir* 'become', *parvenir* 'manage to', *prévenir* 'warn', *provenir de* 'result from', *se souvenir de* 'remember', *survenir* 'occur suddenly'. And none of these prefixes also occur with *aller* 'go', further demonstrating the loss and lost productivity of the inherited path satellite subsystem on its way to French.

The language continuum leading to modern French retained a closed-class subsystem of path prepositions. But in the face of losing the inherited subsystem of path satellites, it developed a subsystem of **path verbs** that solely express particular paths without Manner, in what might be regarded as the process of diachronic periphrasis (1.3.3g) at work. Such verbs include *entrer, sortir, monter, descendre, passer, traverser, avancer* that respectively refer to moving in, out, up, down, past, across, an ahead.

However, such path verbs cannot be considered a closed class because, first, they cover not only the "main" path concepts but shade off indefinitely into more idiosyncratic path notions; and, more importantly, little or nothing distinguishes them syntactically from other verbs not expressing path. Thus, as a comparison, English expresses path mainly with a wholly closed-class system consisting of a closed class of path satellites and/or a closed class of path prepositions. But French expresses path mainly with a partially closed-class system consisting of path verbs and/ or a closed-class of path prepositions.

The comparability of these two languages' path systems leads to certain comparable specifications of path in motion sentences. For example, where both languages have a pure Manner verb—like English *dance* and French *danser*, the verbs can combine with their respective path systems in a comparable way, as seen in (14). Such cases manifest full utilization (1.1.1) of the respective path systems.

(14) They danced out of the room.
Ils sont sortis de la piéce en dansant. (They exited from the room in dancing.)

In addition, where both languages have verbs expressing Manner together with one path constraint, the verbs can combine with their respective path systems to express a further path not in conflict with the verb's path. Thus,, as seen in (15), the English verb *fall*, which in one usage refers to uncontrolled flight in space due to gravity along a downward path, can combine with the English path system to further specify an exiting path. Comparably, the French verb *grimper*, which refers to clambering along an upward path (equivalent to English *climb up*), can combine with the French path system to further specify an exiting path. Such cases manifest high utilization (1.1.1) of the respective path systems.

(15) The crate fell out of the plane's cargo bay.
Elle est sortie en grimpant de la partie la plus dense de l'arbre.
(She exited the densest part of the tree in climbing up.)

However, the loss of the closed class of path satellites en route to modern French does still seem to have had some diachronic consequences. First, the diachronic processes of semantic inclusion and melding (1.3.3a) that might accompany a closed class decline may well have led to additional open-class Manner verbs that incorporate reference to a particular path. While English does have some of these, as illustrated in (7) and (8), French seems impressionistically—subject to confirmation—to have more of them. In addition to *grimper* above, here is a sample of semantically distinctive verbs of this type, glossed for one of their prototype physical senses: *debouler* 'for a roundish object / person to roll / tumble down along an inclined slope'; *deriver* 'for an object / vessel to drift off from an expected or planned course due to water currents'; *se ruer* 'for a person to rush on foot toward or to a site for a purpose'; *arracher* ' for a person, by gripping it with a body part or tool, to pull out, against resistance, an object (D.O.) embedded in a substrate.

Though some of these verbs can, like *grimper*, combine further with the path system to express additional paths present in the situation, an additional consequence of closed-class loss is that other French verbs expressing both Manner and path cannot do so. This is an instance of non-utilization (1.3.1). An example is the verb *arpenter*, one of whose senses can be glossed as: 'for a person—due e.g., to anxiety or pensiveness—to pace back and forth along the same bounded straight line that is located along / in', as in (16a). But this verb cannot further combine with the path system, unlike the semantically comparable English verb *pace* in (16b and c). French cannot easily render (16b) and might instead use a sentence like (16d) that leaves the Manner to inference.

(16) a. Il a arpenté le trottoir. "He paced back and forth along the sidewalk."
b. The boss kept pacing in and out of his office.
c. Instead of waiting patiently at the corner, she paced back and forth around it.
d. Le patron entrait et sortait de son bureau inquiet.
"The boss (repeatedly) entered and exited from his office worried."

As a third consequence of closed-class loss, the transitive G-F construction in French allows no use of the path system at all—an instance of non-utilization (1.1.1). A number of French Manner+path verbs can only occur in such a construction and so cannot subserve any expression of path beyond the one lexicalized within them. To reprise the illustration in (13a), consider first the English verb *wipe*, which can occur either in an F-G construction together with the path system in high utilization, as seen in (17a), or in a G-F construction together with the path system in low utilization, as in (17b). The semantically closest French verb, *essuyer*, though, can (according to one consulted French speaker) occur only in the G-F construction—in fact solely in the G-only construction. For expression of the additional path content seen in (17a), a supplementary clause must be added, as in (17c)—an instance of the process of periphrasis (1.3.3g).

(17) a. F-G: I wiped the crumbs off the table into the garbage can.
b. G-F: I wipe the table off. / free of crumbs.
c. J'ai essuye la table et j'ai mis les miettes dans la poubelle.
"I wiped the table and put the crumbs in the garbage can."

3.1.3 ***Individual closed-class path expression***

The discussion of closed-class path expression with verbs has so far dealt only with a whole closed class. But the effects of semantic unilocality can be seen as well for an individual closed-class form expressing a particular path concept. For example, one member of the Russian closed-class path satellite system—consisting of a verb-prefixal satellite and an optional preposition that can be represented as in (18a)—expresses a path that can be glossed as 'into

arrival at'. It can occur in construction with Manner verbs, as seen in (18b). The English path satellite system lacks a corresponding form with such a meaning. To convey the same semantic content as the Russian sentence, a speaker might have to use a sentence like that in (18c).

(18) a. F ... pri- (k+DAT/na+ACC/v+ACC G) 'into arrival at'
b. Ya pri-exal k granitse. I drove into-arrival-at the border.
c. Driving, I arrived at the border."

Both languages here accord with unilocality. Russian, which can express the path concept of arrival with its closed-class path system, lacks an open-class verb root lexicalized to express that concept. And English, which cannot express the concept with its closed-class path system, does have an open-class verb root lexicalized to express it, namely, *arrive*.

For another example, the Yiddish closed-class satellite system includes the bound prefix *tse-*, one of whose senses can be interpreted as expressing either path or state change and as referring to a Figure's or Patient's physical shift from an integral to a non-integral or greatly subdivided condition. It can occur for instance with the Cause verbs *raybn* 'rub', *tretn* 'step', and *kvetshn* 'squeeze' to yield the resulting meanings grate', trample, and 'crush'. Yiddish here accords with semantic unilocality in that it has no verbs lexicalized to express the last three cited "breakdown" meanings. English is also here in accord with unilocality in that, lacking a closed-class satellite comparable to *tse-*, it does have the three cited open-class verbs.

3.2 *Causing event*

As argued in Talmy (2000a, chapter 8), a full causal situation consists of a causing event and a resulting event, each with a Figure object and a Ground object. The Ground of the causing event is the same as the Figure of the resulting event. And what is traditionally referred to as an "instrument" in linguistics is generally the Figure of the causing event. The whole causal situation can in turn be embedded within an agentive matrix, where it is the Agent that sets the Figure of the causing event—the instrument—in motion.

An example of a full causal situation, one where the resulting event appears in the main clause and the causing event in the subordinate clause, is: *The aerial [F2] toppled off the roof [G2] as a result of a flying rock [F1] hitting it [G1 = F2]*. The rock here, as the Figure of the causing event, is the instrument of the whole causal situation. When this whole causal situation is embedded in an agentive matrix with the speaker as the Agent, one of the structures that can represent the entirety is *I [A] toppled the aerial [F] of [G] the roof with a rock [I]*—a structure now having the "with NP" phrase traditionally associated with instruments.

3.2.1 Atsugewi and English expression of instrument

Atsugewi has a closed class of some two dozen prefixes to the verb root that express different instruments or, more accurately, different causing events. Though the Hokan literature generally refers to such forms as "instrumental prefixes", a better term might be "causing-event prefixes" or "Cause" prefixes. Atsugewi's set includes ones involving forces: *cu- 'as a result of air blowing on the Figure", ru-* 'as a result of a pulling force acting on the Figure'; particular objects: *cu-* 'as a result of a linear object acting axially on (poking into) the Figure', *uh-* 'as a result of a linear object acting circumpivotally (swinging) on the Figure', *ra-* 'as a result of a linear object acting obliquely/laterally on the Figure'; body parts: *ma-* 'as a result of a foot acting on the Figure', *ci-* 'as a result of a hand acting manipulatively on the Figure', *tu-* 'as a result of a hand acting centripetally on the Figure', *hi-* 'as a result of the head or whole body acting on the Figure'.

Most Atsugewi open-class verb roots must take a causing-event prefix, And many of those verb roots specify a particular kind of object or material as moving or located, in turn often requiring a directional suffix expressing both a Path and a Ground. Where all three elements occur together, the combination refers to a whole causal situation in which the verb root expresses the Figure of the resulting event, the suffix expresses the Path and Ground of the resulting event, and the prefix expresses the causing event including its instrument. The obligatory occurrence of the prefix means that speakers must indicate the kind of causing event that led to the event represented by the verb root and directional suffix—a case of full utilization (1.1.1).

While Atsugewi has apparently long had a closed class of Cause satellites in full or high utilization, thus exemplifying an extended closed-class presence (1.3.2), English and the languages leading to it have never had such a system, exemplifying extended closed-class absence (1.3.4). And both languages are in strong accord with semantic unilocality.

To look at English first, without a closed class to absorb reference to the conceptual category of causing events with their instruments, the open-class verbs in this language are free to, and many do, express that conceptual

category. Thus, all the sentences in (19) express a full causal situation consisting of a resulting event in which a figure object, "it", moves into a Ground object, the creek, and of a causing event in which an instrument moves into contact with the Figure to cause its motion. In all but the first sentence, this causal situation is further embedded within an agentive matrix with "I" as the Agent. In all these sentences, it is the open-class verb that is lexicalized to express the causing event and its instrument. Thus in (19a), the verbs refer to a gusting, pressuring, or tractional force on the Figure; in (18b) to a linear object acting axially, circumpivotally, or laterally on the Figure; and in (18c) to an arm, foot, or head acting on the Figure.

(19) a. forces: It blew into the creek. | I pushed / pulled it into the creek.
b. particular objects: I poked / batted / swept it into the creek.
c. body parts: I threw / kicked / butted it into the creek.

By contrast, Atsugewi with its closed class satellites expressing the conceptual category of causing events and their instruments has virtually no verb roots lexicalized to express that category. The language thus simply has no verb roots comparable to English *blow, push, pull, poke, bat, sweep, throw, kick, butt*, nor to such sets as *put/take, carry/ bring/take, give (to)/take (from)*. Sentences corresponding to those in (19) would instead include multimorphemic verbs consisting of a verb root referring to the type of Figure object in Motion, a suffix referring to the Figure's path and to the ground object, and a prefix referring to the event causing the Figure's'Motion, together with further inflectional affixes.

The entries in (20) show Atsugewi counterparts to the English sentences in (19). If the "it" above in (19) were, say, a hunk of mud, the Atsugewi word will have the verb root *-st'aq'-* ''for runny icky material to move/be located'. *Into the creek* will be represented by the directional suffix *-ic't* 'into liquid'. And the causing-event prefixes will be the ones shown in corresponding succession.[13]

(20) a. /w- '- ca- st'aq' ic't -a/ | /s- w- '- ci- / ru- st'aq' -ic't -a/
b. /s- w-'- cu- / uh- / ra- st'aq' -ic't -a/
c. /s- w- '- uh- / ma- / hi- st'aq' -ic't -a/

3.2.2 The effect of Cause and Path+Ground unilocality on Atsugewi verb roots

As noted, many Atsugewi verb roots are obligatorily surrounded by closed-class affixal satellites expressing Cause and Path+Ground. due to the effect of semantic unilocality, such verb roots tend to express none of these semantic categories. But this circumstance involves the compounded effects of multiple forms of unilocality on the same open class. And in fact, such Atsugewi verb roots tend to have meanings that are quite unusual relative to those of more familiar languages without such satellites.

For example, the verb root *-p'-* might be glossed as: 'for a planar fabric to move in a way that changes its pattern of bunching'. This verb root can occur with different Cause and Path+Ground satellites to refer to straightening a dress bunched up under one while sitting, opening curtains, or putting on socks. Comparably, the verb root *-st'aq'-,* glossable as 'for runny icky material to move / be located', can occur with different satellites to refer to tracking mud over a floor, spitting in someone's eye, flinging rotten tomatoes off a pan, picking up already chewed gum with one's mouth, or guts blowing into a creek. Or agai*n, -swal-*, which can be glossed as 'for a linear flexible object suspended at one end to move/be located', can occur with different satellites to refer to clothes blowing down from a clothesline, sliding a snake away by suspending it under the head with the end of a stick, walking along while carrying dead rabbits strung down from one's belt, or having one's penis hang limp. (Talmy 2000b, chapter 2, elaborates on such examples).

It is possible that verb roots with such relatively idiosyncratic meanings arose from ones with meanings more comparable to those of other languages through multiple processes of leaching (1.3.1a), in which any original semantic components expressing Cause, Path, or Ground dropped out while leaving the remainder of the original verbs' substantive meanings.

3.2.3 A collapse of the closed-class Cause system

As in Atsugewi, a closed class of Cause prefixes is present in all the languages in the Pomo branch of Hokan with one exception: Southeastern Pomo. A phonological change took place in the development leading to that language—the loss of the vowel in an initial unstressed syllable of a word—and this led to the collapse of the Cause prefix system there (1.3.3) (Moshinsky 1974, Oswalt 1976). In a process of melding (1.3.3a), the original prefix and verb root fused into a phonologically longer morpheme, one whose meaning now often included particulars as to Cause. Speakers of this language wanting to express a causing event and its instrument along with a resulting event largely

must, like English speakers, use a Cause verb—of which there were now many new ones—along with an instrumental phrase comparable to English *with NP*.

3.3 Realization

The conceptual category of "realization", proposed in Talmy (2000b, chapter 4), pertains to the degree to which a sentient Agent's intention is fulfilled.

The closed-class satellite systems of both English and Mandarin include members that express realization—what can be called "realization satellites"—and that are in construction with verbs (see Li 2018, Li 2019, Talmy 2016 for arguments that second-position "verbs" in Mandarin have largely become grammaticalized into satellites). The verbs in turn are posited to fall into four types with respect to realization. "Intrinsic realization" and "attained realization" verbs are lexicalized to already express the full realization of an Agent's intention, and they generally do not enter into construction with a realization satellite. Verbs of the remaining two types do not express such full realization and can take realization satellites to express it.

As one of the latter two types, a "moot-fulfillment" verb specifies that an Agent executes a certain action with the intention that it lead to a particular result, but does not specify whether that result comes about or not. If a realization satellite is used with such a verb, it indicates that the intended result has in fact come about. This is a "fulfillment" satellite. It is in an operational relation (1.1.2) with the verb—it shifts the verb's semantic component of uncertainty to one of positive certainty.

An English example of a moot-fulfillment verb is *hunt*, which specifies that an Agent searches about with the intention of capturing a person or animal but which, by itself, does not specify whether the capture takes place, as illustrated in (21a). But when a realization satellite expressing fulfillment is added to the verb—the *down* in (21b)—it indicates that the verb's intention has been fulfilled: the capture has taken place.

(21) a. The police hunted the fugitive for one week.
b. The police hunted the fugitive down in two weeks.

An "implied-fulfillment" verb is lexicalized much like the moot-fulfillment verb, but further adds the implicature that the result has come about, though this implicature is defeasible. But the addition of a realization satellite now confirms the implicature. This is a "confirmation" satellite.

The expression of realization differs in Mandarin and English, and does so largely in accord with semantic unilocality. In Mandarin, the closed-class system of realization satellites is sizable and exhibits high utilization. Correspondingly, many if not most of its verbs are of the moot-or the implied-fulfillment types—that is, they do not fully express realization and must take a realization satellite for that to be specified.

In English, by contrast, the number of closed-class satellites used to express realization is small, and they exhibit low utilization. Correspondingly, its verbs are mostly of the intrinsic- and attained-fulfillment types—that is, they already do fully express realization—so there is no need for realization satellites to be added for that to be specified. Where moot- or implied-fulfillment verbs do exist, full realization is specified less by adding a realization satellite and more by switching to a different, semantically corresponding, verb that does express full realization. English has a number of such verb pairs where Mandarin only has the non-realization member in its lexicon.

To illustrate, English has two distinct verbs expressing knowledge acquisition, shown in (22). The moot-fulfillment verb *study* might be glossed as: 'come to know more of a particular subject by attending to material on the subject with the intention of knowing it wholly'. The attained-fulfillment verb *learn* can have the same meaning but with the addition of: 'n fulfilling that intention'. By contrast, Mandarin uses the same main verb, *xúe* 'study', for both meanings but for the second meaning adds the realization satellite *hùi* which might here be glossed as 'to a state of knowing'.

(22) I studied French for 3 years. / I learned French in 5 years.

For another example, English has two distinct verbs referring to a quest. The moot-fulfillment verb *seek* can be glossed as: 'search about with the intention of encountering'. The attained-fulfillment verb *find* has the same meaning but with the addition of the concept 'with the fulfillment of that intention'. Again here, Mandarin uses the same main verb, *zhǎo* 'seek' for both meanings but, for the second meaning, adds the realization satellite *dào*, which, in this context, might be glossed as 'to the point of arrival at'.

Or again, pertaining to health improvement, English has the moot-fulfillment verb *treat* (e.g., an illness), glossable as 'administer medications and the like with the intention of thereby bringing to health', and the attained-fulfillment verbs *cure* and *heal* with the same meaning plus the concept with the fulfillment of that intention'. But

Mandarin here uses the same main verb *zhì* 'treat' for both meanings but, for the second meaning, adds the realization satellite *hǎo*, which may have a more general gloss but in the present context might be interpreted as meaning to the point of health'.

Still further examples pertain to perception. English has the three moot- or implied fulfillment verbs *look, listen, sniff* that can be glossed as: 'to volitionally direct one's visual / auditory / olfactory sensory apparatus toward something with the intention of thereby perceiving it'. Corresponding to these are the three distinct intrinsic- or attained-fulfillment verbs *see / hear / smell* that, in their attained-fulfillment usage, have the same respective meanings but with the addition of the concept 'with the fulfillment of that intention'. By contrast, Mandarin uses the same three main verbs for both triplets—respectively, *kàn, tîng, wén*. But for the second triplet, these verbs add the realization satellite *jiàn*, which might be glossed as 'to the point of perception.[14]

3.4 ***Source/Goal focus***

In expressing a transfer of goods from one Agent to another, many languages can focus on either the donating Agent or the receiving Agent through argument structure. English, for example, can represent the Agent in focus as the subject NP, as in: *The landlord rented the apartment to the tenant. / The tenant rented the apartment from the landlord*.

Some languages, though, can additionally mark the distinction within the verb complex. Thus, German has several verbs lexicalized to represent a goods transfer from the perspective of the receiver, e.g., *kaufen* 'buy' and *erben* 'inherit'. Further, the German closed-class satellite system includes a prefixal member, *ver-* that, in an operational relation to the verb (1.1.2), shifts the verb's focus on the receiver to one on the donor. Thus, *verkaufen* means 'sell' and *vererben* means 'bequeath'.

Moreover, in accord with semantic unilocality, German has no verbs lexicalized to express commerce or estate transfer from the perspective of the donor, that is, as selling or bequeathing.[15]

For its part, English is here also in accord with semantic unilocality. The English satellite system lacks a form comparable to German *ver-* that shifts focus from a receiver to a donor. And in the face of the loss (1.3.3) or long-term absence (1.3.4) of such a closed-class form, English's open-class verbs do include members lexicalized to mark the focus distinction: *buy/sell, inherit/bequeath, borrow/lend, learn/teach*. Some of these verbs filling out the slots of the focus distinction may have entered the lexicon through processes of semantic inclusion (1.3.3a) or preaccommodation (1.3.3d).

3.5 ***Versality***

Consider a set of nonconcurrent subactions that, if performed in one sequence, results in what is regarded as an unmarked or default action but, if performed in the reverse sequence, results in a marked complementary action. We propose **versality** as the cover term for the two sequences as well as **proverse** for the unmarked sequence and **reverse** for the marked sequence. For any two such complementary actions, it generally seems that the one treated as unmarked or proverse tends to be the one in which the components of a physical system become spatially closer to each other in the process rather than more separated.

3.5.1 The operational versality satellites in English

The English closed-class satellite system includes certain prefixal members—*un-, dis-, de-* —that express reverse versality. They occur in an operational relation with a verb lexicalized to express the corresponding proverse action, which they shift to its opposite. Examples include: tie up / untie a sack; fasten / unfasten a plaque; button / unbutton a shirt; lock / unlock a door; wind thread onto / unwind thread from a spool; braid / unbraid hair; veil / unveil a face; stack / unstack books; assemble / disassemble a jungle jim, activate / deactivate a robot.

English also has pairs of verbs lexicalized to express both forms of versality. Examples are: close/open a box; fill/ empty a container; gather/ scatter some leaves. But such verb pairs seem fewer in number relative to the V / unV type of verb pairs. Their apparent low count is in accord with semantic unilocality. The existence of closed-class means to express reversal militates against its open-class expression in verbs. It can be noted, though, that these verb pairs offer little basis for assigning proverse as against reverse status other than the semantic basis cited above. Accordingly, one verb in each pair can be regarded as exhibiting resistance (1.3.2g) to semantic unilocality, but it is not clear which one.

3.5.2 The lack of versality satellites in Mandarin

By contrast with English, Mandarin's relatively closed-class satellite system lacks a member expressing reversal. And again in accord with semantic unilocality, it is largely open-class verbs that are lexicalized to express the versality distinction.

We can provide some examples, here citing just the main verb without its often accompanying path and/or deictic satellites. The verb *jie3*, whose basic meaning can be characterized as 'unknot', can be used to express the versality opposite to that of such verbs as *jì* 'tie (e.g., a sack)' and *biân* 'braid/weave (e.g., hair, a basket)'. The verb *châi*, whose basic meaning might be characterized as 'disassemble', can be used to express the versality opposite to that of such verbs as *zhuâng* 'assemble (e.g., a bookshelf, car)' or *dîng* 'fasten by nail/screw/staple (e.g., a plaque to a door)'. The verb *qù* 'remove (e.g., a stain)' can be used to express the versality opposite to that of *nòng* 'cause (e.g., a stain). The verb *kâi*, 'open', can express the versality opposite to that of verbs like suǒ 'lock'. And for a versality opposite to that of the verb *juǎn* 'roll/wind up (e.g., wire on a spool)', the verb *lâ* 'pull' followed by the constituent *zhái* 'straight' can be used where English would use *unwind*.[16]

3.5.3 The additive versality satellites in German

With some of its verbs, German can use its closed-class satellite system to express versality, but in a way different from that in English. The verb here takes either of two different satellites that represent opposite types of versality—again with difficulty in saying which is proverse and which reverse. Two examples are shown in (23).

(23) a. Ich habe den Sack zu- / auf- gebunden.
I have the sack to-a-closed-configuration / to-an-open-configuration "roped"
"I tied up / untied the sack."
b. Ich habe den Hund an- / los- gekettet.
I have the dog to-an-attached-configuration / to-a-free-configuration "chained"
"I chained the dog up (to something). / I unchained the dog (from something)."

Native speakers report that, in their sense of the meanings of the verb roots by themselves, they are neutral to versality. Thus, *binden* and *ketten* mean something like 'manipulate a string/rope | a chain in a way that involves securing | tethering'. Since the Proto-Germanic verb leading to modern German *binden* was lexicalized to express specifically the proverse form of versality—that is, tying up—a process of leaching (1.3.1a) has clearly occurred in which the 'proverse' semantic component was removed from the original meaning while leaving intact the remainder's reference to securing. The satellites here accordingly have an additive relation (1.1.2) to the verbs rather than an operational relation as in the case of English *un-*.

3.6 Manner

English lacks a closed-class system of satellites expressing the semantic category of Manner (characterized in section 3.1.1) that might occur in construction with the verb in motion sentences. But in accord with semantic unilocality, English expresses the category in its open-class verbs, where it is extensive.

However, such a closed-class system does occur, if uncommonly, for example in Nez Perce, a polysynthetic language of North America (Aoki 1970, Talmy 2000b, chapter 1). In motion sentences, the verb root in this language characteristically expresses motion + path while, at the same time, one of an extensive set of satellites prefixed to the root specifies the particular Manner in which the motion is executed. In such sentences, again in accord with unilocality, Manner is characteristically not expressed by the verb, though research is needed to see if this tendency holds throughout the language.

Turning to Japanese, scores of forms in its lexical class of mimetics can, in motion sentences, express Manner of motion in construction with open-class verbs (Hirose 1981, Toratani 2012). Given their number and readiness to occasionally add new members, Japanese mimetics can be construed as an open class (Dingemanse, 2019). But since this openness falls far short of that of the open class of nouns—a speaker can learn and use ten new nouns in one day by attending a geology class—they will here be regarded as a partially closed class.

Now, Japanese does have a certain number of open-class Manner verbs, including *aruku* 'walk', *hashiru* 'run', *oyogu* 'swim', *tobu* 'fly'. But these seem to be relatively few in number and to designate fairly broad concepts of Manner by comparison with the many scores of English Manner verbs that subcategorize the domain of Manner of motion into both broad and fine-grained concepts. However, the semantically broader Japanese Manner verbs can be combined with mimetics to yield fine-grained concepts of Manner of motion. This can be seen in the sample list in (24) (provided by Kiyoko Toratani, p.c.), which pairs granular English Manner verbs with closely corresponding combinations in Japanese of a mimetic with the verb for walking (or proceeding).

(24) stagger: hurahura aruku 'swayingly walk'
stomp: doshindoshin aruku 'stepping-noisily walk'
stroll: burabura aruku 'leisurely walk'

mince: chokochoko aruku 'in-small-steps walk'
tiptoe/skulk: kosokoso aruku 'stealthy walk'
limp: yotayota aruku/susumu 'swayingly walk/progress'
amble: nonbiri aruku 'relaxingly walk'

Both languages can here be regarded as according with semantic unilocality. English wholly accords with it—lacking a closed-class system expressing the semantic category of Manner, that category is expressed by open-class verbs. And Japanese, with its partially closed class of Manner-expressing mimetic forms, captures much of the expression of Manner of motion, yet some of that expression remains with its open-class verbs.

4 Conclusion

This paper has provided evidence for the relatively great degree to which semantic unilocality and the diachronic processes that lead to it occur in language. A further issue to consider, then, is the bases for their occurrence.

One such basis might be a general tendency in languages to avoid redundancy. And such **redundancy avoidance** might in turn arise from a more general tendency toward **communicative efficiency**. In the present context, redundancy avoidance would minimally entail that, in a construction consisting of a closed class in an immediate syntactic relation with an open class, a particular concept can be expressed in only the one or the other class but not in both.

To illustrate, we look again at the concept of plurality in the English nominal. On the one hand, the noun *bird* is lexicalized to refer to a single bird, and the addition of the closed-class suffix *-s* performs an operation of pluralizing, so that the whole nominal refers to a plural number of birds. The concept of plurality is here expressed solely by the closed-class form, not by the noun. On the other hand, the noun *cattle* refers to a plural number of cows, and the noun refuses the closed-class pluralizing form: **cattles*. Thus, the concept of plurality is here expressed solely by the noun, not by a closed-class form. Redundancy is avoided across this pair of nominals.

But a principle of redundancy avoidance is not enough to account for the linguistic patterns related to it. If it were, the number of open-class forms that do not express a given concept but take a closed-class form that does express it might equal the number of open-class forms lexicalized to include the concept in their meanings. Yet the former in general greatly outnumber the latter. For example, the English nouns that specify a singular referent and can take the closed-class pluralizing suffix *-s* enormously outnumber the nouns specifying a plurality of referents and refusing the *-s*.

To account for this pattern, one might adduce a principle of **closed-class priority**. By this principle, if a language has a productive closed-class form that expresses a certain concept, it tends to express that concept with that closed-class form rather than with an associated open-class form lexicalized to include that concept in its meaning. Accordingly, any extant open-class forms that do include that concept are subject to leaching, culling, and shift—diachronic processes that favor expression of the concept by the closed-class form.

In addition to the dearth of plural noun roots in English, the principle of closed-class priority can account, for example, for the lack of verb roots meaning 'sell' or 'bequeath' in German, or the lack of a verb root meaning 'arrive' in Russian.

Consider next a semantic domain of the size and type that can foster the linguistic representation of multiple concepts within it. If a language has one closed-class form expressing one such concept, it tends to have more expressing other such concepts. Further, the closed-class forms here tend to have the same syntactic characteristics, and their concepts together tend to be representative of the whole domain. Such a tendency can be called **closed-class constellation**. Several semantic domains of this sort have been discussed above under the term "conceptual category". These have included "path" as expressed by the English closed-class satellite plus preposition system; "causing event" as expressed by the Atsugewi closed-class verb prefix system; and "Manner" as expressed by the Nez Perce closed-class verb prefix system and by the Japanese partially closed-class mimetic system.

The principle of closed-class constellation can combine with those of closed-class priority and redundancy avoidance. Then if a language has a closed class that expresses a particular conceptual category, the associated open-class forms tend to exclude the category as a whole and the particular concepts within it from their meanings. This combination of principles has an overall effect: a tendency toward **semantic segregation**. Such segregation can be abetted by the first five diachronic processes presented in section 1.3.1.

Among the examples treated above that illustrate segregation, the closed-class satellite system of English tends to draw the expression of path to itself, in construction with verbs that, for the most part, express Manner without any indication of path. And the closed-class prefixal system of Atsugewi tends to draw the expression of a

causing event to itself, in construction with verb roots that, for the most part, express a Figure's Motion without any indication of the event leading to it.

We can propose two further tendencies that act in accord with that of semantic segregation. One is a tendency to favor a process of **semantic composition** across different morphemes over placing greater semantic content within a single morpheme. Here, some larger portion of conceptual content tends to be represented less by a single morpheme and more by combining subportions of that content represented separately by different morphemes. The other tendency is toward **lexical conservatism**, which favors keeping down the total number of entries in a language's lexicon, presumably from cognitive constraints on memory and access. All three tendencies taken together explain why, for example, English expresses the larger portion of conceptual content 'take steps along a particular path' by combining the verb *walk*, which expresses the 'taking steps' subportion, with such satellites as *in, out, up, down, across, through*, which express particular paths. English does not have a verb X meaning 'walk in', another verb Y meaning 'walk out', a third verb Z meaning 'walk up' and so on.

Taken together, all the general tendencies proposed so far in this section would seem to account for the rise and continuation of closed classes, or of particular subsets or members within them, that is observed across languages. But what about the reverse counterparts? For example, why has the language continuum leading to modern English failed to develop—that is, why has it exhibited an extended absence of—a closed class expressing the conceptual category of causing event (Cause) of the kind present in Atsugewi? As one suggestion, a possible basis for this might be that a language has a countervailing tendency to limit the total number of conceptual categories segregated off for expression by closed classes. Polysynthetic languages, for example, may approach such a limit. And why would any closed class previously present in a language undergo a decline? At least in Southeastern Pomo (section 3.2.3), phonological change—specifically the loss of the initial syllable's vowel—caused the collapse of its inherited Cause prefix system. Further research will be needed to address these issues.

Endnotes

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2. As used traditionally in linguistics and as further specified in Talmy (2000a, chapter 1), an open class is a lexical category whose forms are relatively numerous and easy to add to, while a closed class is one whose forms are relatively few and difficult to add to. The main open classes are those of (the roots of) nouns, verbs, and adjectives. Closed classes of the phonological type can be bound—like inflections, derivations, and clitics; or free—like some determiners, conjunctions, adpositions, and satellites. Nonphonological closed classes can include syntactic constructions, lexical categories, argument structures (including grammatical relations), and word order. The terms "lexical" and "grammatical", though common in respectively marking the same distinction, are here mainly used only in adverbial form (e.g., grammatically).
3. The distinction between a closed-class form being in an additive as against an operational relation with an open-class form is an instance of the distinction between an "even array" pattern and a "basic-divergent" pattern across linguistic constituents, as described in Talmy (2000b, chapter 5).
4. The most that English has is the closed-class derivational suffix *-ess* that forms a construction of the operational type (1.1.2) with nouns referring to male animates, shifting their male reference to that of a female (*baron/baroness, lion/lioness*). But its use was always limited and seems now to be waning.
5. Some languages have two distinct closed classes or constructions that express alienable as against inalienable possession. But this distinction does not affect the present analysis.
6. Not considered, thus, are languages like Latin whose closed-class forms for number express both the singular and the plural, as in *equus / equi*, 'horse / horses'. On the basis of such a closed class, the noun root might be analyzed as being neutral to number, though arguments for its being lexicalized for a single referent might otherwise arise.
7. As a term introduced in Talmy (1972), a "satellite"—in particular a satellite to a verb—is a form within a closed-class category in a sister relation to a verb root, relating to it as a dependent to a head. The term does not apply to an NP or PP complement to the verb root. Satellites, which can be either bound affixes or free words, thus encompass all of the following: English verb particles, German separable and inseparable verb prefixes, Latin or Russian verb prefixes, Chinese verb complements, Lahu non-head "versatile verbs", Caddo incorporated nouns, and Atsugewi polysynthetic affixes around the verb root. Satellites can be

further labeled for the type of conceptual category they express—for example, satellites that express path are "path satellites".

8. In the pattern more fully described in Talmy (2000b, chapter 1, and 2017), the verb expresses the action of a Co-event that can be in any of eight relations to the Motion event. The seemingly commonest relation is that of Manner, but others include Cause, enablement, precursion, and concomitance.
9. More granularly, nonprogressive uses of *beat* tend to require point-like paths, whereas progressive uses can apply to extended paths, as seen in: *She not only beat him across the finish line, she was beating him along the whole race course*.
10. This subsystem is rather limited. Most Manner verbs—e.g., *flow, scuttle, float, dance*—do not take part in it.
11. One might have said the same about a pathless verb "Z" and verb "W" instead of *fall* in (7a) and *meander* in (7b) except that two extant verbs, *sail* (in its 'through the air' sense) and *wander* come fairly close.
12. Apart from this constraint on paths relative to the Ground, some of these verbs do allow limited specification of paths relative to other objects. Some acceptable and nonacceptable examples are shown in (i).
    (i) I hung the rope [from a hook] out the window past the ledge.
    The broom lay [on the floor] halfway out of the pantry.
    *I stood the ladder [on the floor] up into the attic.
13. The first prefix shown in (20c), *uh-*, renders the concept 'by throwing because a swinging arm is classed with a linear object moving circumpivotally.
14. The fact that these verbs do not express full realization can be shown by sentences like (i) that explicitly deny perception.
    (i) I kept looking through the telescope but saw nothing.
15. The same cannot be said of the verb *leihen*, which, like English *rent*, can be used in different constructions to mean either 'borrow' or 'lend', and so is neutral to the focus. However, the prefixed form verleihen can only mean 'lend'.
16. For other cases of reverse versality, Mandarin uses periphrasis (1.3.4g). For example, one counterpart of 'deactivate a robot' is "make robot stop working": shǐ jîqìrén tíngzhǐ gôngzuò.

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