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Robert Henderson*

Pluractionality and distributivity

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1 Introduction

Verbs are the canonical way that languages allow speakers to talk about events, but events are slippery things. Imagine how hard it would be, for instance, to watch a short video of an action scene, like a person making a cake, while trying to decide how many distinct events took place. The recipe might, for instance, have the chef combine the yokes of three eggs in a bowl. Is that one event? Perhaps we decide it is three, one for each egg. But then, what about lifting the egg from the carton, or cracking it? What about when the chef passes the yoke back and forth between the halves of the cracked shell? Is that itself a plural event? The problem is that events are slippery things, blending into each other, and depending on non-linguistic factors for individuation, like salience with respect to goals. Languages often address this problem by having morphological marking on verbs that makes clear the structure of the events being discussed. This chapter focuses on marking for two such categories, namely *pluractionality* and *distributivity*.

Pluractionality is meant to be the verbal analog of plurality in the nominal domain. So, for instance, just like English as an affix *-s* which derives the noun *dogs* from the noun *dog*, allowing it to be predicated of plural individuals, Yup'ik has the postbase *-taartuq*, which derives verbs that denote pluralities of events that, individually, would satisfy the underived verb.

***Corresponding author: Robert Henderson,** University of Arizona

(1) **Yup'ik** (Jacobson, 1984, p. 539)

a. nere- 'to eat' ∼ nerqetaartuq 'he keeps eating at intervals'

b. ayag- 'to leave' ∼ ayaketaartuq 'he is leaving, returning, then leaving again'

We call such verb *pluractional verbs*, and the morphemes that derive them *pluractionals* or *pluractional marking*. What pluractionals do is make clear that a plurality of events are being discussed, and while additionally often making clear how this plurality of events is being individuated for counting (e.g., by taking place in different locations, or with different participants, etc.). In the case in (1), for instance, time appears to the be the critical factor, with events satisfying the same predicate but occurring at different times counting as distinct. In terms of how we discussed event individuation above, when presented with a video of a person eating, taking a break, and then eating again, what the pluracational morphology does is allow the speaker to assert using *nerqetaartuq* in 1a that, indeed at least two eating events took place, not merely a one long, slow, luxurious eating event. It is in this way that pluractionals allow speakers to package and present events that can be otherwise hard to individuate.

We see another example of how language packages events is *distributivity marking*. Unlike pluractionality, distributivity is a much broader category and can be marked on quantifiers, numerals, adjuncts, and verbs (in this last case, overlapping partially with pluractionality). In some way this makes sense. Distributivity in inherently relational, saying that parts of a K (for *Key*)—canonically, a noun denotation—are related to an S (for *Share*)—canonically, a predicate they satisfy. So for instance, we see in (2) that Yup'ik has a second postbase that forces an argument to be interpreted distributively. That same verb *nere-* 'to eat' from (1a), when derived by this postbase in (2a), requires that the object denotes (i.e., K) does not get consumed all at once, but instead each singular part of K must on it's own satisfy S, namely be eaten.

(2) **Yup'ik** (Jacobson, 1984, p. 542)

a. nere- 'to eat' ∼ ner'qui 'he is eating them one after another'

b. tekite- 'to arrive' ∼ tekitequut 'they are leaving one after another'

Thus, because distributivity canonically involves the structure of a relation that holds between a noun K and a (verbal) predicate S, we should expect it to be marked, crosslinguistically, on the noun, the verb, or on adverbial elements in-between. In the case where distributivity is marked on verbs, as in (2), it overlaps with pluractionality in the sense that in order to satisfy distributivity,

namely each part of the K eaten satisfies the verbal predicate *nere-* 'to eat', we necessarily require a plurality of events, one eating event per part of K. In the event-individuation terms above, what the distributive pluractional does is to say that there is a plurality of events, and events count as distinct for the construction of that plurality if they have different singular participants. It is this connection that makes studying these two phenomena together a natural undertaking.

With this background laid out, the goal for this chapter is to provide a crosslinguistic survey of pluractionality and distributivity, focusing on Native North American languages. To this end, we will not provide a detailed survey of any one language, but instead illustrate the major sources of variation using as many different languages as possible. A secondary goal flows from the fact that distributivity, and pluractionality, in particular, are both underdocumented. At the end of each substantive section, we will present strategies for determining the types of pluractionality and distributivity available in languages for which those categories have not been extensively documented.

2 Pluractionality

The term *pluractional* was first used by Newman (1980) to describe a particular class of derived verb stems in Chadic languages, but since then pluractional derivations have been found across the worlds languages. Survey has found that they are especially common in African languages, where they were first described, but also in the indigenous languages of the Americas (Mithun, 1988; Wood, 2007).

In the introduction we defined pluractionals as derived verbs that, in virtue of that derivation, denote event pluralities—that is, unlike their underived counterparts, they are false in single-event scenarios. Before looking at the the main sources of variation in pluractionality, I want to defend this definition, as well as consider some cases that have been called pluractional, but are likely not. First, the definition zeros in on derived verbs. This definition, while conservative, is good precisely because it is conservative. Most importantly, it underscores the intuition that pluractionality in the verbal domain corresponds to plurality in the nominal domain. For instance, consider a language with nouns that have no overt plural marking on nominals, like Choctaw.

(3) **Choctaw** (Broadwell 2006, p. 66, ex. 15a)
?Ofi hochiito-' tdchchiina-'
dog big:PL-NML three-NML

'three big dogs'

In (3) the nominal phrase as a plural interpretation, but we would not want to call the numeral *tdchchiina* 'three' *plural marking* on par with the morpheme *-dyeimishe* in (4) from the language Laguna Keres, which takes singular nouns into nouns that denote pluralities.

(4) **Laguna Keres** (Lachler 2006, p. 71, ex. 27i-j)

a. k'ashiiwana *his Storm Cloud*

b. k'ashiiwan-dyeimishe *his Storm Clouds*

Similarly, many languages adverbials that might require the verb phrase have a plural event interpretation. In (5) we an example from East Cree, which derives temporal adverbials by deriving numerals.

(5) **East Cree** (Junker 1994, ex. 6)
Chii ayimuuch naa-newaau.
past 3-speak-pl RED-four

'They spoke four times each.'

While mandating a plural event, if we were to call such expressions pluractionals, or say *pluractional adverbials*, we would have a large and heterogenous class of expressions, and one diverging from from how we think of plural nouns. Instead, we will take pluractional morphology to be verbal derivations. We can then consider cases like (getrefplural) and (5) in a parallel way. These modifiers all require the head of the phrase, either noun or verb, to be plural, but they do not themselves do the pluralizing. Plural / Pluractionality derivation is required for this, but it is an unmarked category in some languages, like in (5), just as some languages do not always directly mark nouns as plural, as in (4).

The second critical aspect of the definition is that a pluractional must derive verbs that are single-event scenarios. This may seem obvious, but there are subtle cases around the edges of bona fide pluractionality that this definition rules out. First, we find in the literature markers of so-called *participant plurality*, which have sometimes been lumped with pluractionals. Example (6) provides a case from Haida, which involes suppletion.

(6) **Haida** (Swanton, 1911, p. 276)

a. *q!ao* 'sit (one)'

b. *L!u* 'sit (as group)'

c. *tia* 'kill (one)'

d. *L!da* 'kill (several)'

Note that in these cases we are not dealing with plural agreement (see Mithun 1988 for further discussion). The contrast does merely reflect the plural features of a nominal argument, but does, in fact, shape verbal meaning as seen in the translation. Crucially, though, it is not the the case that participant plurality is always pluractional. The reason is that predicates like 'kill (several)' can be satified in a collective scenario where it is not clear there is a plurality of events, rather a single event of collective action (c.f. prediates like *massacre* or *gather* in English).

The second case of quasi-pluractionality that the definition rules out is perhaps the most pernicious. There are multiple cases in the literature where what are perhaps better described as durative, imperfective, intensive, or pregressive markers are mistakently taken to be pluractionals. The reason is that semantic categories like durativity are incompatible with verbs of certain aktionsart classes without coercion into a repetetive reading. We see examples of this below in the language Kiowa. Note that with the activity predicate in (7a), the imperfective marker leads what we would expect, a single extended event. Instead, with the semelfactive in (7b), we do not get a single extended event, but a plurality of events.

(7) **Kiowa** (Watkins, 1980, p. 143, 261, ex. 12c)

a. *à-bánmà*
1SG-go/IMPF

'I am going.'

b. *p^hɑ́y-tò tá:-gyà à-gú:pép*
dirt-with eye-in 1SG-get=hit/IMPF

'I'm getting hit in the eye with dirt.'

If we were to only look at the imperfective derivation with achievemnts and semelfactives, it would look like a pluractional. Instead, though, the definition correcly excludes durative morphemes from inclusion. The reason is that, but definition, pluractional derived verbs must be false in single-event scenarios, but we see in (7a) where such a verb is true.

Having clarified what exactly pluractionality is, and having ruled out some semantically adjacent cases, we can now focus on the common kinds of pluractionality. There have been various classifications, but the most recent typological study is Wood (2007). She finds that pluractions can be broadly placed into one of two categories, *event-interal* and *event-external*, reifying a distinction first discussed in Cusic (1981).

(8) The event-internal / event-external spectrum (as summarized in Henderson 2012, 2017)

a. ASPECTUAL SELECTION
Event-internal pluractionals are preferentially formed from verb stems that would otherwise be semelfactives or achievements. Event-external pluractionals are aspectually promiscuous and can be formed from verbs stems of a variety of aktionsarten.

b. CONTIGUITY
The repetitions that form an event-internal pluractional event are preferentially contiguous in time and space. In contrast, event-external pluractionals do not place strict requirements on the temporal or spatial distance between the events that compose the plural events they denote.

c. GENERICITY
This feature is closely related to the previous one, though they do not completely overlap. The generalization is that event-internal pluractionals never allow generic readings, while event-external pluractionals often do.

d. CARDINALITY
Pluractional verbs denote plural events. This general requirement takes no stand on the number of events that compose the plurality. The event-internal / event-external distinction precisifies the plurality requirement. In particular, event-internal pluractionals generally require plural events with large cardinalities, while event-external pluractionals can often be satisfied by events of simple plurality, i.e., two or more events.

e. SHARED TELOS
Event-internal pluractional verbs usually require that all of the events in the plurality share the same theme argument or progress toward a shared telos. In contrast, event-external pluractionals do not share this requirement.

f. BASE-PREDICATE ENTAILMENTS
A sentence with an event-internal pluractional often fails to entail a minimally different sentence without the pluractional morphology. In contrast, even-external pluractional sentences often entail a corresponding sentence without the pluractional morphology.

When we look at individual pluractionals in individual languages, we don't necessarily find that they behave uniformly as event-internal or event-external with respect to these properties. Instead, we might say that the proto-typical event-internal/-external pluractional will have all the relevant properties, but that crosslinguistically pluractionals cluster around the prototype.

Let's start by considering a prototypical event-internal pluractional to illustrate how these properties are instantiated. Yurok, as first discussed in Garrett 2001, and then in later work by Wood (2007), has both event-internal and event-external pluractionality. An event-internal pluractional verb, formed by reduplication of *pegoh(s-)*, 'to split', is shown in (9).

(9) **Yurok** (Wood, 2007, p. 148, ex. 7)
Kich **peg***pegoh ku 'yohlkoych'.*
PERF split.REP ART log

'I made the log into kindling (split it multiple times). (EW 2:6)'

We can immediately see in this example that the pluractional has many properties of event-internal pluractionality. There is a spatiotemporal contiguity. Splitting a log into kindling involves a plurality events that take place on one occacion in the same location. Related, this example is clearly not generic, which would be a property of event-external pluractionals. The number of events satisfies the typically high cardinality requirement of event-internality. Splitting a log, say twice, is not sufficient to make kindling, even though that would be a plurality of events. We see that there is a shared telos of the plurality of events, the log, which is split up into kindling over the course of the event. Turning to entailment, while the cited work does not discuss the entailment facts about this sentence, we see the hints base-predicate entailments generalization above. Event-internal pluractional verbs often have a different character than their non-pluractional counterparts, even under repetition reading. That is, telling someone to make kindling is likely to yield different results than merely telling them to split a log multiple times. Event-internal pluractionals often have this property that the pluractional form would be lexicalized as in independent lexical items in languages without the contrast, as we see here for English and Yurok. Finally, pluractionals derived like (9) in Yurok show propotypical aktionsart effects. As Wood 2007 discusses this type of reduplcation is not possible with activities, accomplishments and run-up achievements. It is common for event-internal pluractionals to select for verbs from a subset of aspectual classes.

We see a constrating set of properties for the event-external pluraction, glossed ITR (*iterative*), in (10).

(10) **Yurok** (Wood, 2007, p. 146, ex. 5)
*Neg**pe-ek' nepuy.*
eat.ITR-1SG salmon

'I eat salmon all the time. (EW 1:28)'

First, note that the repetitions are not spatiotemporally continguous. This sentences can be true of days go by without eating salmon and if the salmon is eaten in different places. The events repeat on different occasions. This example is also different from (9) in virtue of not having a shared telos. Clearly the speaker is not eating the same salmon on every occasion. We also see that this example likely supports entailments to the base predicate. Eating salmon all the time is qualitatively similar to a mere plurality of eating salmon events, and so we should get the entailment that the speaker has eaten salmon once if (10) is true. Turning to questions of aspect, there are two effects this type of pluractionality shows which group it with event-external pluractionals. First, note, that (10) has a generic reading flavor. The fact that this iterative morpheme can have generic or habitual readings is a property of event-external pluractionality. Finally, as Wood 2007 notes, this morpheme is possible with verbs of all aktionsart classes, which is type of event-external pluractionals.

The fact that Yurok has both of these typologically common kinds of pluractionality is fortuitous because we can see how they differ semantically in one language, while controlling for things like aspect, aktionsart, etc. What we see in Yurok are fairly prototypical examples event-internal and event-external pluractionality. The following section provides a few suggestions for uncovering the semantic properties of pluractional verbs in langauges whose pluractional systems are less well documented.

3 Documenting pluractionality

We have seen a high level overview of the typology of pluractionality, along with how it is instantiated some Native American languages. Given that pluractionality is an under-described aspect of the grammars of many languages, this section will lay out advice for documenting and describing pluractionality. Let's start with documentation. How do we find pluractionals in a language and document their use? First and most importantly, video should be used when documenting pluractionality. The reason is that pluractionals are closely related in meaning to other expressive morphology, like affect words and ideophones, and like these related expressions, ideophones often occur with co-speech gestures. These gesture are not just an important aspect of their use that should be documented, but they can also hint at the meaning of the pluractional. For instance, some pluractional require chaotic repetitions in time, while others sometimes require periodic repetitions. A co-speech hand gesture might immediately clarify whether the pluractional at hand falls into one category or the other. As for finding pluractional morphemes,

there are no current standardized set of stimuli for finding pluractional morphemes. That said, one route would be to exploit the fact that pluractionals often convey similar meanings to expressions like ideophones. Thus one could use the materials developed in Tufvesson 2011 to elicit ideophones in order to see if any pluractionals appear instead. Another option would be to use language of perception tasks, like Majid and Levinson 2011.

Moving on to deeper description, especially working to fit a pluractional expression into the wider typology. We have seen that pluractionality is about event realization, requiring that there be more than one event, where the definition of what counts as distinct events is controlled by the pluractional—e.g., taking place in different time, with different participants, etc. It is not surprising, then, that pluractionality interacts greatly with tense, aspect, aktionsart, and other categories that concern event realization. It is these categories that one must carefully control for when eliciting pluractionals.

First, when working on pluractionality, it is helpful to keep tense and aspect in mind. As we saw for durative markers, imperfect aspect and present tense can often lead to repetition with achievements, and especially semelfactive predicates. My recommendation for the initial description of pluractionals is to structure the elicitation so to elicit pluractionals in simple past tense and completive aspect if possible. These temporal / aspectual contexts are biased toward single-event readings, and so it is in these context that the plural contribution of the pluractional can more easily shine through.

A second, related point concerns aktionsart. As discussed above, achievements and semelfactives have the ability to be easily coerced into repetitive readings by expressions that encode non-pluractional notions like durativity. This means that one should confirm the necessity of plural event readings using achievements and activities. That said, the broader recommendation is that when studying pluractionals, one should use a variety of verbs from a variety of aktionsart classes. Those aspects of mean that appear across all classes under pluractional derivation can be attributed to the pluractional. Any effects of pluractional derivation that occur in verbs of only one aktionsart class are likely due to coercion, and are not built into the meaning of the pluractional. Without testing verbs from a variety of aktionsart classes, one can mis-attribute the source of various meaning components.

Finally, one should be careful about verb choice to ensure that the lexical semantics of the verbs in question do not preclude a plural event reading. Be particularly careful with verbs of creation and destruction. Consider, for instance, a verb like *kill*. The object of such a verb cannot participate in two events that satisfy this verb. That means that with a definite object, a pluractional morpheme will be ruled out without concocting a supernatural scenario. Verbs of creation are the same—you can't bake the same cake twice. It is best to avoid verbs like

these in initial elicitation because they can lead confusion results that are hard to interpret.

4 Distributivity

Distributivity broad category, much broader than pluractionality, because it concerns any situation in which parts of some A, called the textitkey, stand in relation to some B, called the *share*. Those A's and B's can be anything, but canonically the key is a noun phrase denotation and the share is a (verbal) predicate. In this chapter we will focus on this canonical case of distributivity between verbs and their arguments, but see, for instance, Champollion 2017 for extensive discussion of distributivity across categories. Additionally, this chapter will focus on the explicit marking of distributivity. That is, some verbs, in virtue of their lexical semantics are inherently distributive. A verb like *die* is an example. In virue of it's lexical semantics (presumably in any language), if a group of A die, then each a in A dies, which means there is a distributive relationship this verb and it's subject. The exact source of this kind of inherent predicative distribtivity and how to formalize it is an intereting question (see, e.g., Champollion 2017; Winter 2002), but one we will not consider here. Instead, we will focus on explicit distributivity-marking.

We see an example of distributivity-marking in the minimal pair in (11) from Navajo. Note that the plural object *'Ashiiké* denotes a plurality of little boys across both (11a) and (11b), but in the later, where the verb bears the distributivity operator *da-*, each little boy in the plurality must individually stand in the theme relation with the verb. That is, the object is the key, whose parts must individually stand in relation to the share *bił n**da**ashné* 'I play with'.

(11) **Navajo** (Yazzie, 2000)

a. *'Ashiiké yázhí bił naashné*
boy-PL little 3O-with 1SGS-play

'I play with the little boys (collectively).'

b. *'Ashiiké yázhí bił n**da**ashné*
boy-PL little 3O-with *da-*1SGS-play

'I play with the little boys (with each of >2, in a distributive sense).'

Before moving on to discussing how distributivity is marked in Native American languages, I want to use this example to illustrate how distributivity is related

to pluractionality. Note that for (11b) to be true there must be a plurality of events. If each child x has to have the property that 'I played with x', then there will be as many playing events as there are children. Moreover, note that *da-* is verbal derivational morphology, so it appears to satisfy this additional requirement of our strict definition of pluractionals. So, is *da-* distributivity operator or a pluractionality operator? There is only one hard and fast test, which is to see how event-based *da-* is. The critical fact is that certain distributors require distinct events in a stronger way than others do. For instance, suppose I take bag of pecans and place then on a scale. In English, I can say *I weighed every pecan*, but it is infelicitous to say *I weighed each pecan.* The latter distributivity operator strongly prefers a scenario where each pecan is weighed in a distinct event. This is much closer to a pluractional reading, and so it would be critical to test *da-* in these kinds of scenarios to see whether we want to call it a pluractional. Beyond testing whether the distributivity operator is event-based, ideally to be classified as a pluractional, we should be able to find some other property that the operator shares with pluractionals more widely. For instance, we could see whether it is only acceptable with predicates of events and not stative verbs, which is a property pluractionals often have. Similarly, we could look and see whether it is accepted with verbs of all aktionsart classes because, as we have seen, the distirbution of pluractionals is often constrainted by lexical aspect. In the meantime, distributivity marking on verbs provides a true edge case between pluractionlity and distributivity.

What makes distributivity a broader phenomenon only partially overlapping with pluractionality is that it is not marked only on verbs. In fact, now that we have these notions of key and share, we can classify languages and expressions in those langauges as whether distributivity is marked on the key or the share. The Navajo example in (11) is clearly an example of share-marking. Because the share is canonically the verb phrase, which can be quite large and varied, share-marking can occur on various expression. In Navajo the verb can be marked, but we also commonly see share marking on verb phrase arguments. Consider the case of Piipash in (12). Here the quantifier *maṭ-čaamxperm* 'all' is bears the morpheme *-xper* which can also acts as share marking on verbs of the kind we saw in Navajo in (11). Here, though, it occurs inside the noun phrase 'all the sticks', and as a share, enforces the distributive interpretation of the subject *ipač xvikk* 'two men', as the translation indicates.

(12) **Piipash** (Gil, 1995, ex. 39b)

Ipač	*xvikk*	*ʔii*	*maṭ-čaam***xper***m*	*paayšík.*
man-PL:NOM	3-two-SG-SS	stick	REFL-3-PL-**dist.share**-DS	S-carry-DL-REAL

'(Each of) two men carried all the sticks.'

A special case of share-marking an argment is that well-known case of so-called distributive indefinites. This is an extremely common strategy, more more common that what we saw in (12), and suggests that there is something special about the semantics of indefinites lending them to distributivty marking. Tlingit provides the best-studied example of this phenomenon for Native American languages (Cable, 2014). We see an example in (13). Here the numeral *nás'k* 'three' bears a special distributivity morpheme *-gáa*, which derives a numeral that requires a distributive interpretation of the sentence. Note that crosslinguistically distributive numerals are often formed via reduplication (see e.g., Henderson 2014).

(13) **Tlingit** (Cable, 2014, ex. 3b)
Nás'gigáa *xáat has aawasháat.*
three.DIST fish PL.3O.PFV.3S.catch

'They caught three fish each' or 'They caught three fish each time.'

It is important to see that in this example, the distributive numeral is share-marking. That is, it is not the case that distribute over the fish, requiring that each individual fish be caught by them. No, instead, the two available readings require that each object belonging to the key stand in relation to a share with three (distinct fish). In the first reading, the key is the they. Each individual must satisfy the key *caught three fish*. In the second reading, the key is some contextually supplied temporal extent. Each time must have the share property of being a time in which "they caught three fish". As discussed in Henderson (2014), crosslinguistically distributive numerals are often ambiguous with respect to their keys, which can be expressions that denote worlds, times, events, individuals, etc. That said, there appears to be an implicational universal that if such a share marker allows distributivivity over worlds, it allows it over times/events, and it if allows it over the latter, it allows it over keys that denote individuals.

Besides the head of the share, the verb, or on of its arguments, we also share-marking through adverbial elements. Choctaw provides a nice example, where quantifiers come in DP-internal and coverbal forms, including distributive quantifiers. In (14) the distributivity item *áyyokaalih* is external to the noun *hattak* 'man', and is instead in the VP (which can be detected through fronting facts as discussed in Broadwell 2006, p. 227).

(14) **Choctaw** (Broadwell, 2006, p. 231, ex. 55)
Hattak áyyokaali-h pi̲sa-li-h.
man all:DISTR-TNS see:N-1SI-TNS

'I saw each person.'

There is another important class distributivity operators that often appear as verbal adjuncts, which I treat below under the heading *simultaneous distributivity*, but we will see that it is different than simple share marking we see in examples like (14). For now, we will move on to the second major category of distributivity marking, that is, key-marking. Key-marking almost always appear in the guise of quantifiers with distributive lexical semantics, some time in addition to other quantificational meaning. We see a few examples in (15-16).

(15) **Inuit** (Compton, 2004, ex. 48)
uqalimaaga-it **atu**-*nit* *titiqqa-li-it*
book-PL each-3PL.ACC letter-which.has-PL

'Each of the books has letters in it.'

(16) **St'at'imcets** (Matthewson, 1996, p. 342, ex. 2a.)
zi7zeg' i *wa7* *pix-em'* *kwámem* *ku* *mixalh*
each pl.det prog hunt-intr take(redup) det bear

'Each of the hunters caught a bear.' (they caught one each).

It is important here to pause and emphaise the difference between distributive indefinites, which are a kind of share-marking, and key-marking distributive quantifiers. Indefinites are themselves usually, at least descriptively, considered quantifiers. This means that in the difference between (16) and (13) we see clearly the difference between keys and shares. In (16), we have take then hunters—the key—and split them up and require each to satisfy the predicate 'caught a bear'. It is this key that is marked. In (13), 'three fish' is marked, but it isn't the key. We don't take those three first, split them up, and require each to satisfy the predicate 'be caught by them'. Instead, what we split up is the 'they', the key, which is not marked. Each individual in the group that 'they' denotes must then satisfy the share, namely, 'catch three fish', which includes the distributive operator.

In addition to distributive quantifiers, there are specialized distributive markers that occur inside keys, which occur along with determiners / quantifiers. We see an example below from the language St'áat'imcets in (17), where the distributive operator *pipápla7* occurs inside the DP key along with a determiner.

(17) **St'áat'imcets** (Matthewson, 2000, ex. 5a)
pelpápla7 *i* *smelhmúlhats-a* *cat-an'-táli* *ti* *tíipvl-a*
DIST.HUMAN DET.PL woman(PL)-DET lift-TR-TOP DET table-DET

'The women lifted the table one at a time.'

This is the extent of the different kinds of distributive marking strategies we see across languages.

We turn now to the final case of distributive expressions that we will consider here. These expressions are specially because they do not fit clearly into the key-share paradignm. Instead, these expession express *simultaneous distributivity*. We see an example here from the Comox-Sliammon. Comox-Sliammon has a series of distributivity items built on numerals that roughly translate as NUM-BY-NUM in English.

(18) **Comox-Sliammon** (Mellesmoen, 2018, ex. 14)

a. *paʔapyaʔ* 'one by one'

b. *saʔasyaʔ* 'two by two'

c. etc.

Crucially, Mellesmoen 2018 notes that these distributors not only distribute over an individual argument, but also place conditions on the event. In particular, (19) is felicitous if Daniel and Kaining arrive at the same time, but through different doors. In contrast, it is infelictious if they arrive at the same time through the same door. That is, this distributor requires at least spatially distinct events, in addition to distributing over an argument.

(19) **Comox-Sliammon** (Mellesmoen, 2018, ex. 12)

paʔapyaʔ	*qʷəl*	*təs-uɬ*	*Kaining*	*higa*	*Daniel*
DIST	come	reat-PST	Kaining	and	Daniel

'Daniel and Kaining arrive one by one.'

The fact that expressions such as these simulataneously places constraints on both the event the verb denotes and an argument of that verb is why we called it *simultaneous distributivity*. This simultaneous effect also degrades the key-share relationship. In a standard distributive construction, the distributor only places conditions on the key. For this reason these expressions are special, and should be classified apart. In fact, in virtue of the fact that such expressions tend to require a plurality of events and structure those events in the way pluractionals do, expression like *paʔapyaʔ* in (19) have been called *pluractional adverbials*. We saw in the previous section why I am hesitant to call non-derviational morphology *pluractional*, but being treated thusly by previous authors confirms that these expressions are not vanilla distributivity operators.

5 Documenting distributivity

Distributivity is much more well studied than pluractionality, and is a somewhat more unified phenomenon. Thus, a genearal plan for describing the distributivity operators in a language is a bit easier. The first step would be an investigation of distributive predication. That is, verbs can be inherently distributive (like *die*, inherently collective (like *gather*), or are so-called 'mixed' predicates, allowing collective or distributive readings (like *lift*). Moreover, it is common to find two kinds of collective predicates, ones like *gather* and ones like *be numerous*, the latter of which are 'stronger' in the sense that they are infelicitous with more distributivity items. We can see this in English, where a distributive quantifier like *everyone* is ungrammatical with *be numerous* (e.g., *#Everyone is numerous*), but grammatical with *gather* (e.g., *Everyone gathered in the park*).

Once verbal predicates have been categorized, one can move to looking for distributivity operators. The reason why it is helpful to know about different predicate types is that we are more like to get elicit distributivity operators if initially work with so-called 'mixed-predicates'. The reason is that these expressions are ambiguious between distributive and collective intrepretations, and so one can lead speakers into disambiguiating the two readings with distributivity operators. Here is can be helpful to use act-out tasks. For instance, if we learn that 'touch' is a mixed predicate, bringing a set of items to touch in various ways while the speaker describes the actions would be one way to elicit distributivity items without asking for translation from a contact language, which an bias the kinds of structures that produced—for instance, if the contact language mostly has key-marking, one might only elicit key-marking with a translation task.

Finally, once a set of distributivity items has been uncovered, one can investigate the strength of distributivity. That is, what can it distribute over. We want to know whether, for a given distributivity operator, whether it can have a distributive key that is a distributive predicate, mixed predicate, gather-type collective predicate, or a be-numerous style collective predicates, where these are ordered by how strongly they resist destributivity. Finally, it is important to know whether the distributors in question require event-based readings in the sense discussed above when we considered the difference between pluractionality and distributivity.

6 Summary and Challenges

This chapter has provided a high-level a crosslinguistic survey of pluractionality and distributivity in the Native North American languages. An additional goal

was to present strategies for determining the types of pluractionality and distributivity available in languages for which those categories have not been extensively documented. This second goal grows out of the fact that comprehensive semantic documentation of distributivity and pluractionality in Native North American languages is limited. So, for instance, while we have a fairly good understanding of the semantic parameters along which pluractional and distributive operators vary across language, we cannot say anything about how different types of distributivity and pluractionality are distributed across languages and families in Native North America. Doing this kind of basic description in a necessary prerequisite to this larger challenge of understanding the typology and areal distribution of pluractionality and distributivity in the Native North American languages. It is my hope that this chapter can serve as a springboard to this next step in documention and description of pluractionality and distributivity in these languages.

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References

Broadwell, George Aaron. 2006. A choctaw reference grammar. U of Nebraska Press.

Cable, Seth. 2014. Distributive numerals and distance distributivity in tlingit (and beyond). Language 90:562–606.

Champollion, Lucas. 2017. Parts of a whole: Distributivity as a bridge between aspect and measurement, volume 66. Oxford University Press.

Compton, Richard. 2004. On quantifiers and bare nouns in inuktitut. Toronto Working Papers in Linguistics 23.

Cusic, David. 1981. Verbal plurality and aspect. Doctoral Dissertation, Stanford University.

Garrett, Andrew. 2001. Reduplication and infixation in Yurok: morphology, semantics, and diachrony. International Journal of American Linguistics 67:264–312.

Gil, David. 1995. Universal quantifiers and distributivity. In Quantification in natural languages, 321–362. Springer.

Henderson, Robert. 2012. Ways of pluralizing events. Doctoral Dissertation, University of California, Santa Cruz.

Henderson, Robert. 2014. Dependent indefinites and their post-suppositions. Semantics and Pragmatics 7:1–67.

Henderson, Robert. 2017. Swarms: Spatiotemporal grouping across domains. Natural Language & Linguistic Theory 35:161–203.

Jacobson, Steven A. 1984. Yup'ik Eskimo Dictionary. Fairbanks: Alaska Native Language Center, University of Alaska.

Junker, Marie-Odile. 1994. Reduplication in east cree. Algonquian Papers-Archive 25.

Lachler, Jordan. 2006. A grammar of laguna keres. The University of New Mexico.

Majid, Asifa, and Stephen C Levinson. 2011. The senses in language and culture. The Senses and Society 6:5–18.

Matthewson, Lisa. 1996. Determiner systems and quantificational strategies: evidence from salish. Doctoral Dissertation, University of British Columbia.

Matthewson, Lisa. 2000. On distributivity and pluractionality. In Semantics and Linguistic Theory, volume 10, 98–114.

Mellesmoen, Gloria. 2018. A one (morpheme) by one (morpheme) approach to paapya:-v-as a temporal pluractional infix in comox-sliammon. UBCWPL 143.

Mithun, Marianne. 1988. Lexical categories and the evolution of number marking. In Theoretical morphology, ed. Michael Hammond and Michael Noonan, 211–234. New York: Academic Press.

Newman, Paul. 1980. The classification of chadic within afroasiatic. Leiden: Universitaire Pers Leiden.

Swanton, J.R. 1911. Haida. Handbook of American Indian languages, volume Bureau of American Ethnology Bulletin 40. US Government Printing Office.

Tufvesson, Sylvia. 2011. Analogy-making in the semai sensory world. The Senses and Society 6:86–95.

Watkins, Laurel Jayne. 1980. A grammar of Kiowa. Doctoral Dissertation, University of Kansas.

Winter, Yoad. 2002. Flexibility principles in boolean semantics: The interpretation of coordination, plurality, and scope in natural language, volume 37. MIT press.

Wood, Esther Jane. 2007. The semantic typology of pluractionality. Doctoral Dissertation, University of California, Berkeley.

Yazzie, Helen Yellowman et al. 2000. Da: the Navajo distributive plural preverb. In T. Fernald and K. Hale (eds.), Diné Bizaad Naalkaah: Navajo language investigations, working papers on endangered and less familiar languages 3, 141–160. Cambridge, MA: MIT.