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REDUPLICATION IN KLALLAM:

A DESCRIPTION OF THE MORPHOLOGY-PHONOLOGY INTERFACE

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By

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ABSTRACT

REDUPLICATION IN KLALLAM:

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Klallam (Salishan) makes extensive use of reduplication, a morphological process
in which a base is copied in part or in whole and then attached to that base in order to
give it either grammatical inflection or a new derivational meaning. As is the case with
many morphological processes, reduplication is also conditioned by phonology and
cross-linguistic markedness constraints, influencing everything from what is available as
the base in partial reduplication to reduplicated surface forms that do not demonstrate a
simple copy-and-attach procedure. This study first outlines those phonological patterns in
Klallam that are particularly relevant to reduplication processes, including the description
of two epenthetic processes not currently described in the literature. Using Montler's
Klallam Dictionary (2012) as a source of data and his *Klallam Grammar* (2015) as a
source for some of the basic explanations of reduplicative processes, it then extends these
descriptions. In the end, this study refines understanding of the description for four of the
eight total processes, adds allomorphs for two more processes, and adds a description for
one of the eight processes that was previously undescribed, the Distributive. It also adds a
description of multiple reduplication in Klallam for the first time. In all of these, an

extensive discussion of the interplay between phonological processes and morphological processes is given, showing the interconnectedness of these two linguistic systems. This in-depth study of reduplication in Klallam reveals that, while the reduplicants are generally unmarked in shape, marked shapes are allowed in certain environments. Finally, suggestions for further research are offered, such as investigations into both the occurrence of and possible motivations for marked shapes in Klallam reduplicants, possible areal effects in the Northwest Coast linguistic area, and the documentation of 'New Klallam,' as the language is now no longer spoken as a first language but is exclusively learned as a second language.

CHAPTER 1: INTRODUCTION

Klallam[1], or *nəxʷsx̣ay̓əmúcən* ([nəxʷstɬ̓ʼajʼəˈmu͡tsən]), historically spoken on the

northern Olympic Peninsula of Washington State and the southern tip of Vancouver

Island in British Columbia, is a language of the Central Coast branch of the Salishan

language family. It is part of the Straits subgroup, and is closely related to Northern

Straits, which is more commonly referred to by its various dialect names: Sooke,

Songish, Saanich, Lummi, and Samish. Klallam is no longer spoken as a first language,

as the last native speaker died in February 2014 at the age of 103 (Rice 2014), but people

now numbering in the hundreds are learning Klallam as a second language in programs

from pre-school through high school and adult school with the Klallam Language

Program (de la Paz 2015, Montler 2015).

Klallam makes extensive use of reduplication, a morphological process in which a

base is copied in part or in whole and then attached to that base in order to give it either

grammatical inflection or a new derivational meaning. As is the case with many

morphological processes, reduplication is also conditioned by phonology and cross-

linguistic markedness constraints, influencing everything from what is available as the

base in partial reduplication to reduplicative surface forms that do not demonstrate a

simple copy-and-attach procedure. This study will discuss some of the relevant

phonological patterns of Klallam, and then, using data from Montler's *Klallam*

Dictionary (2012) and *Klallam Grammar* (2015), will present an inventory of the types of

reduplication in Klallam. While some of the reduplication processes for Klallam have

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[1] Historically, Klallam has often been spelled 'Clallam' both in linguistic literature and in wider
contexts. However, since the mid-1970s, all four Klallam reservations have adopted the spelling with 'k'
as 'c' in Klallam orthography represents the alveolar affricate /t͡s/ (Montler 2012).

been briefly outlined in the literature, neither an in-depth description of the complete typology nor an examination of the phonological and morphological interface in reduplicative processes have yet been done. Doing so will provide a better understanding of the complexities of reduplication processes in Klallam itself, as well as show how phonology and morphology work in conjunction with markedness constraints to produce surface forms.

1.1 Documentation and Revitalization of Klallam

Documentation of the Klallam language has come to be inextricably tied to language revitalization efforts within the four remaining Klallam tribes at Lower Elwha, Jamestown, and Port Gamble in Washington State, and Beecher Bay in Canada, as these tribes experienced the gradual decline and loss of native speakers. From the mid-1800s to the mid-1900s, various tribal members, anthropologists, and government agents made a relatively small number of recordings, collections of vocabulary, and attempts at phonological transcription. In 1863, government agent George Gibbs published a list of about 700 Klallam words, which remained the only extensive word list until the middle of the next century. Photographer Edward S. Curtis included about 150 Klallam words in his 1913 multi-volume work *The North American Indian*, and recordings of songs made by anthropologist Erna Gunther in 1925 have also been a source of data (Montler 2015). However, there was no attempt at a more extensive description of the grammar until the native speaker field studies done by linguists Laurence C. and M. Terry Thompson between 1964 and 1971. Their paper 'Clallam: A preview' (1971) was the first formal description of the grammar. At that time, there were still approximately two hundred

people who spoke Klallam as a first language, though with varying degrees of fluency; by the 1990s, that number had gone down to fewer than ten (Montler 2007).

Recognizing the potential of losing their language altogether, the Klallam Language Program began in 1992 under the auspices of the Lower Elwha Tribal Center. They contacted linguist Timothy Montler, who had done recordings and work with Klallam speakers while a doctoral student working under Laurence Thompson in the late 1970s, for help with preservation efforts (Montler 2015). Montler began working extensively with six Klallam speakers, both making new recordings and transcribing those recordings done by the Thompsons and also by amateur anthropologist Leon Metcalf in 1953. In all, twenty-one elders were recorded from 1953 until the last two informants, Bea Charles and Adeline Smith, died in 2009 and 2013 respectively ('Klallam Language', Rice 2014).

At the same time Montler began working with tribal members to document Klallam, summer classes in the language also began, most of which were held at the Lower Elwha Tribal Center just west of Port Angeles, Washington. The popularity of the classes changed the goal of the language program from preservation to revitalization. Classes are now taught from pre-school through high school and adult school by teachers certified by the Klallam Language Board and recognized by a pilot program of the Board of Education for the State of Washington. Port Angeles High School has offered Klallam classes since 1999, and students may take it to fulfill their World Language requirement ('Klallam Language', Montler 2007). In fact, the school changed the name of the curriculum from Foreign Languages to World Languages in recognition of Klallam's local status and history (Montler 2007). Teacher and Elwha tribal member Jamie Valadez

estimates that approximately 500 students have learned some Klallam since the program

began (de la Paz 2015). The language is being used again at tribal events ('Klallam

Language'), and in 2012, students from Valadez' high school classes became tribally

certified to teach Klallam at the elementary and middle school levels (Montler 2015).

　　　　While vitally important to preserve the language, one of the side effects of both

the documentation process and loss of native speakers has been the inevitable shift of

Klallam from being solely a spoken language to being a written one as well. Indeed, that

shift was one of the reasons there was some initial reluctance to begin the documentation

process at all. As Linda Laungayan, a Klallam Language Board member from Lower

Elwha who now teaches Klallam, told the *Washington Post*, 'At first it was hard to accept

that it was going to be written, because it was always an oral tradition' (Pierre 2003).

This shift from oral to written language is one that inevitably influences the data Montler

has compiled with the extensive help of tribal members in the *Klallam Dictionary* (2012)

and *Klallam Grammar* (2015). While improvements and standards in the field of

linguistic research are currently in place that were not when early attempts were made to

transcribe some words in the mid-1800s, there are still difficulties in transcribing what

had never been written before, ranging from how to deal with the slightly different

varieties spoken in the four different regions, to individual differences within the same

region, to difficulties in assigning hard-to-distinguish phoneme boundaries, most notably

between /a/ and /ə/ (Montler 1998).[2] With so few native informants, the question of

making general what may have been highly individual was accounted for as much as

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[2] Table 2.3 in the following chapter shows the graphemes of the Klallam alphabet developed by Montler
and their corresponding IPA symbols.

possible, but the very process of writing down Klallam changed the nature of the language.

A related issue with the data in the dictionary and grammar is that, as mentioned, the documentation process did not begin at all until Gibbs' work in 1863, and not in earnest until the Thompsons' work got underway in 1964. As a result, the Klallam data available is a very much a synchronic snapshot of the language at a very particular moment in time, and of a limited number of native speakers, all of whom were bilingual English speakers at the time of documentation. Again, the question of generalizing and standardizing the language based on synchronic data from a relatively small number of sources arises. Some of the implications of this for the current study will be discussed further in §1.4. Additionally, because the recent extensive documentation has gone hand-in-hand with language instruction and revitalization efforts, this synchronic data has now been codified and is one of the only sources of linguistic information for language learners. It will be quite important to continue to document Klallam language usage in order to track the ways that the shifts from being an oral language to also being a written language and from being a first language to being a formally taught second language affect the Klallam of the future.

1.2 Review of the Literature: Salishan Languages

The history of Klallam documentation is somewhat mirrored by studies in the Salishan language family as a whole. The first formal academic studies of this family began in the mid-1800s with various attempts at classifying all North American

languages. Powell's 1891 classification included a 'Salish'family[3], and Boas made connections between languages of the Salishan family, the Chemakuan family, and Nuu-chah-nulth of the Wakashan family in his 1894 classification (Campbell 1997, Czaykowska-Higgins & Kinkade 1998). Boas also recorded a small set of Klallam data in 1917 that became part of the first comparative study of Salishan languages, done by himself and Haeberlin in 1927, in which they posited twenty related languages, and also presented the first evidence for distinguishing between Interior and Coastal languages (Czaykowska-Higgins & Kinkade 1998, Montler 2015). In this comparative study, Boas was focused on areal effects rather than genetic relationships, noting that Salishan and other language families of the Northwest Coast may have influenced each other to such an extent that language genetics have little meaning (Campbell 1997).

While initially greatly influenced by Boas, Sapir took studies of North American languages in a different direction. Where Boas was convinced that it was nearly impossible to accurately distinguish areal effects from genetic effects in languages of the Northwest Coast, Sapir was convinced that complex phonological and morphological forms could not be borrowed, and thus comparative studies could and should result in establishing genetic language groups (Campbell 1997). As a result, Sapir was the first to propose the 'Mosan' family, comprised of the Salishan, Chemakuan, and Wakashan languages (Sapir 1929), later taken up and formalized by Swadesh (1953). While this proposed family has since been discounted (Beck 2000, Czaykowska-Higgins & Kinkade 1998), its very proposal is a testament to the large degree of areal influence among the languages of the Northwest Coast linguistic area.

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[3] This is still the family name used at times, but as there is also an individual language called Salish within the family, the name 'Salishan' is often used to distinguish the family from the individual language.

Indeed, while not the focus of this paper, this issue of language families and areal influence is one that would certainly be quite interesting to pursue in further studies of Klallam reduplicative patterns. It is likely in the Central Coast region that the Salishan family has had more influence on its Wakashan and Chemakuan neighbors than the other way around (Fortescue 2009), so it would be interesting to find influence of Straits reduplication patterns in neighboring languages of other families, and even more interesting if there are features of Straits reduplication that bear traits from neighboring languages. This kind of cross-familial comparative study is rare in the literature, with the notable exception of Beck's (2000) study of the influence of Wakashan languages on the grammar of Bella Coola, a Salishan language. Interestingly, unlike the Central Coast area where Salishan has had more influence on Wakashan, Bella Coola, a Salishan language still spoken in British Columbia at the northern boundary of the Salishan region, is surrounded by Wakashan languages on three sides and Athabaskan languages to the east, and there seems to be a nearly unidirectional influence from its Wakashan neighbors on Bella Coola (Beck 2000).

During the period from the 1930s to the 1970s, Salishan studies were focused largely on producing grammars for individual languages rather than continuing attempts at classification. Much of the work – theses, dissertations, word lists and dictionaries – remains unpublished (Czaykowska-Higgins & Kinkade 1998). As mentioned in the previous section, it was during this period that the first extensive attempts to document Klallam began in 1964, and in 1965, the first meeting of what has become the International Conference on Salish and Neighbouring Languages was held in the home of

Laurence and Terry Thompson (Ignace 2015). The archives of now fifty years of papers presented at this conference are an important source of Salishan research.

More recently, work in Salishan languages has shifted focus again, this time to the production of dictionaries and analytical and theoretical work on specific topics such as phonetics, nonconcatenative morphology, and syntax (Czaykowska-Higgins & Kinkade 1998). Unfortunately, as is true with the Klallam language, the modern era has also brought the loss of many first language speakers throughout Salishan indigenous groups, spurring on collaborative efforts between linguists, tribal members, and especially tribal linguists to work together to both document and pass on the languages to younger generations as much as possible (Ignace 2015).

Before continuing on to discuss reduplication in the Salishan language family specifically, it will be important to look at relevant studies in reduplication more generally in order better understand the issues being examined in the Salishan literature.

1.3 Reduplication Characteristics and Relevant Issues

Reduplication is the morphological process of repeating a morpheme for either inflectional or derivational purposes. There are two general types of reduplicative processes: full, where the entire word is repeated and copied, and partial, where copying may look like anything from consonant gemination and vowel lengthening to an almost complete copy of the base (Rubino 2005). Reduplication is common in many of the world's languages, particularly in Austronesia, Australia, and South Asia. Many of the languages of the Americas, including those of the Salishan family, are 'particularly amenable' to reduplication (Rubino 2005:22). While not common in Indo-European languages, it exists in colloquial English in full-word examples such as *night-night* and

bye-bye, rhyming partial-word examples like *easy-peasy* and *super-duper,* and in Ghomeshi et al.'s (2004) oft-cited example of contrastive reduplication, *It's tuna salad, not SALAD-salad*.

An individual language may utilize a variety of full and partial forms, but Klallam uses only partial reduplication, so that will be the focus of this discussion. Cross-linguistically, the reduplicated material is usually found in a prefix position at the beginning of the base, but does occur also in infix and suffix positions (Rubino 2005). It should be noted that, though reduplicants may attach in an infix position, infixation in general is a more marked form cross-linguistically than prefixation and suffixation. Further, infixes are usually inflectional in the world's languages, and derivational infixation is quite rare (Blevins 2014). The reduplicating process may be simple, where the reduplicant copies from the base exactly. That is, consider a nonsense word, *badiga,* in a language where a possible reduplicant shape is CV. A simple partial reduplicative process might look like this: *badiga* → *babadiga*, where the reduplicant CV *ba-* is an exact copy of C_1V_1 in the base. A reduplicating process may also be complex, where the reduplicant contains some phonological material that is not copied from the base (Rubino 2005, Spencer 1998, Steriade 1988). A complex partial process might look like this: *badiga* → *bəbadiga*, where C_1 is an exact copy from the base, but the V slot of the CV reduplicant shape is filled by a preassociated /ə/ which is assigned by rule rather than being copied from the base. Finally, a reduplicating process may also be automatic, occurring together with another affixing process, with the result that the affix and reduplicant are morphophonemic only in combination, not separately (Rubino 2005). An automatic type may look like this: *badiga* → *babadigan*, where the CV reduplicant is

accompanied by an alveolar nasal suffix, both of which are required to create the morpheme. All three of these types are present in the Klallam data, though the majority are of the complex type. Finally, reduplicants are usually contiguous to their base. That is, material copied from the initial part of the base is attached in a prefix position, material copied from the final part of the base is attached in a suffix position, and material copied from the middle of the base is attached in an infix position (Rubino 2005, Spencer 1998). Another form, so-called 'wrong-side' reduplication, is not specifically excluded by most theories of reduplication processes, but neither is it common (Hurch 2005). This is a form of reduplication where the reduplicant attaches to a part of the base not containing the copied material, so, for example, a reduplicant comprised of segments copied base-initially would attach to the base in a suffix position at a distance such that the segments at the right edge of the stem were not the source of the segments in the reduplicant. Using the same nonsense word as above, it might look like this: *badiga* → *badiga**ba***. There is one reduplicative process in Klallam that is similar, though not the same, and could potentially be seen as 'weak' wrong-side reduplication, where the first consonant is copied, but then infixed to the 'wrong-side' of the prosodic unit. On the same nonsense word above, the Klallam process looks like this: *badiga* → *ba**b**diga*. Rather than the infix copying from the middle of the base, the infix copies from the beginning of the base. This will be discussed further in §3.3 on Actual reduplication.

In addition to the above descriptions of some of the characteristics of reduplication, there are several issues from theoretical linguistics that are relevant to the description of Klallam reduplicative processes. One of the most fundamental of these is that of identifying what is the reduplicant and what is the base. In early generative

theories, Marantz (1982) was the first to propose the idea of templatic reduplicant shapes (called 'skeletons' in his terminology), where partial reduplication involved copying the base's segments and mapping them to predesignated slots. So, in his example from Agta (Austronesian), *takki* 'leg' is pluralized as *taktakki* 'legs' by means of a CVC prefixing rule. The base *takki* is copied, and then the segments are matched one by one to the template, left to right. Thus, the first CVC segments in the copy, [tak], find slots to associate with in the CVC template, and the remaining unassociated segments [ki] are then erased, yielding the surface form *taktakki* (Marantz 1982:446). While a breakthrough in understanding the possible generative properties of reduplication, one problem with this model is that there was no constraint on what could be considered as a skeleton, thus generating many more skeleton types than actually seemed to be represented in the empirical evidence (Kenstowicz 1994). The difference between the potential number of template types and the number of template types actually present cross-linguistically was unexplained.

In 1986, McCarthy and Prince addressed this problem by positing the Prosodic Morphology Hypothesis and Prosodic Circumscription. The first states that templates must be defined by prosodic constraints, either as a mora, syllable, foot, or prosodic word; the second, that morphological operations like reduplication may be affected not just by morphological criteria, but prosodic criteria as well (McCarthy & Prince 1998). This meant that the permitted but unattested skeletons of Marantz were now governed by the specific prosodic patterns of a language.

Steriade (1988), while not entirely disagreeing with this model, proposed soon after that templates should not be conceptualized as discreet, fillable slots as described by

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Marantz, but instead that the reduplicant is a full copy of the base, including its prosodic properties, which is then reduced, or 'truncated,' according to parameters defined by the prosodic structure. At times, it also undergoes segmental insertion or substitution. Very importantly, according to this analysis, these processes occur to create templates according to two constraints: one constraint is on prosodic weight, similar to the proposal of McCarthy and Prince, but the other is on the cross-linguistic markedness of the syllable structure. The result is twofold: reduplicants have shapes that draw from their prosodic structure, that is, truncation does not occur on random segments; and reduplicants have shapes according to general markedness principles, that is, shapes are more likely to have an onset than not, more likely to be open than closed, more likely to have simple onsets and codas than complex ones, and more likely to have sonorant codas than obstruent ones. This important insight will be quite pertinent to both the reduplicant shapes found in Klallam, and perhaps also to the tendency to retain a less marked structure even when phonological processes would normally create permitted marked structures in the language. While not well-defined, this tendency will be discussed throughout Chapter 3, as each reduplicant shape in Klallam is discussed in detail, and constrastiveness as a possible reason will be discussed in §3.10 when significant issues from the chapter are explored further.

One other view of reduplicant shape comes from McCarthy and Prince's (1995) discussion of faithfulness in the reduplicant. While they discuss faithfulness from an OT perspective, their point is valid more generally, namely that some reduplicants appear to be exact copies of the base, while some do not. They summarize the possibilities this way: 'transparent' cases are those where the phonological rules apply only in expected

environments, even if this results in the surface form of base and reduplicant being different; 'under-application' occurs when a rule is expected in either the base or reduplicant, but applies to neither; and 'over-application' is the reverse, when a rule is expected only in the base or the reduplicant, but applies to both. Using this model, in her study of aggressive reduplication in Tagalog, Zuraw (2002) finds that most of the reduplicating processes she is examining exhibit transparency, but that there are also cases of both over-application and under-application. That is, all three phenomena may apply within the same language. In the Klallam data, this appears to be the case also, but in the reduplicant only; that is, the over- or under-application of phonological patterns has more to do with an interaction between markedness and phonotactics as the result of the reduplication process rather than issues of faithfulness between reduplicant and base.

Compared to the issue of defining the reduplicant, the issue of defining what is available to be the base has not received the same kind of attention in the literature, according to Haugen (2009). He points out that the pivotal studies by Marantz and McCarthy and Prince assumed that the base is the entire stem, and that unassociated segments are then erased. Again using the nonsense word *badiga* and a reduplicant CV shape as an example of this view, the entire CVCVC shape of *badiga* is the base and gets copied in the reduplication process, but only C_1V_1 are assigned or associated into the CV reduplicant shape, creating the *ba-* reduplicant. The remaining $C_2V_2C_3$ segments then delete, as there is no slot or space in the CV shape for them to be assigned. This assumption was largely taken for granted in much of the generative work done in reduplication. However, co-occurrences of different reduplication patterns on the same stem has proven to be a fruitful field of inquiry in this regard, as the presence of two

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reduplicants on a single stem must raise the question of what is available for copying for the second reduplicant: is it only the original base, or the entire form after the first reduplicative process takes place? Interestingly, the field of Salishan studies has been one of the major contributors to this area of inquiry, as it is one of the few language families where this phenomenon occurs somewhat regularly.

Broselow (1983) considered the issue of the base in her study of double reduplication processes in Lushootseed, a Salishan language neighboring Klallam. She found that, in the case of the co-occurrence of Diminutive and Distributive reduplication, reduplicants copy material contained in the immediately adjacent cycle, not necessarily from the original stem. This results in forms where the second reduplicant mirrors the segments of the first reduplicant, rather than those of the original stem. So, for example, from the stem *bədáʔ* 'child' comes the Distributive-Diminutive *bibibədaʔ* 'dolls,' where the Distributive reduplicant *bi-* copies from the adjacent Diminutive reduplicant *bi-* rather than from the C_1V_1 of the stem, *bədáʔ* (1983:324-5).

Broselow's analysis assumes a cyclic nature of affixation, an important feature of Lexical Phonology which proposes that word formation rules and lexical phonological rules are arranged in levels, and that a derivation proceeds through all the levels, even if there is no relevant morphology that applies at that level. Further, part of the cyclical nature of derivation is that, in the instance of multiple processes, the cycle begins anew rather than from the derived form (Kenstowicz 1994). In this view, Level 1 includes primary inflection and derivation, stress, and shortening; Level 2 includes secondary derivation and compounding; and Level 3 is where secondary inflection occurs (Kiparsky 1982, Kenstowicz 1994). In light of the extensive affixation processes of Klallam, not

only of the co-occurrence of reduplicants but additionally of one or more of the 212

prefixes and suffixes available for derivational, inflectional, and lexical purposes

(Montler 2012), this idea of cyclic word formation will prove to be valuable in describing

the steps going from root to surface forms in Klallam reduplicative processes.

In her dissertation on Lushootseed reduplication, Urbanczyk (1996/2001) agrees

that reduplicants may have two different bases. In formalizing an earlier observation

made by McCarthy and Prince that the base and reduplicant are 'strictly adjacent'

(1993:66), she outlines the Adjacent String Hypothesis (ASH), which states that the base

is the string adjacent to the reduplicant at the 'tropic edge,' that is, the edge following the

reduplicant if it is a prefix, or preceding it if it is a suffix (1996/2001:174). She diverges

from Broselow, however, in a later article specifying that within the constraints of

Optimality Theory, double reduplicative processes must be in parallel, not cyclic as

defined by Lexical Phonology (Urbanczyk 1999).

Finally, Shaw (2005) also agrees with Broselow's important insight that the

domain of what may be copied may be different for different reduplicants, but disagrees

with the Adjacent String Hypothesis, pointing to several examples in Salishan languages

where the reduplicant appears to be non-adjacent to the base. In Lillooet, for example, the

Diminutive reduplicant may come between the initial Distributive reduplicant prefix and

its base; and in Nuxalk, the reduplicant and base may be disrupted by a 'limited control'

affix. She instead proposes the Constituent Base Hypothesis (CBH), in which the possible

base is limited to being an independent constituent, ranging from a canonical root like

CVC to the prosodic categories outlined earlier by McCarthy and Prince (1998). The

cyclic nature of word formation will prove to be a valuable insight in understanding

Klallam surface forms, and notions of adjacency and non-adjacency will be considered

when Klallam multiple reduplication is described for the first time in §3.9 of this paper.[4]

1.4 Reduplication in Salishan Languages

As mentioned earlier, the Salishan family is one characterized by extensive

reduplication processes in every member of the family. Beyond just Salishan,

reduplication is an areal feature in most languages of the Northwest Coast, especially in

the nominal and verbal reduplication of plurals and diminutives, and perhaps goes back to

the proto-languages of the region, including Proto-Salish (Swadesh 1952, Sherzer 1976,

Campbell 1997). Reduplicative processes in Salishan languages have very little limitation

in where they may apply: they may be on nouns, verbs, adjectives, and even prepositions;

they are on roots with a wide variety of semantic features; and they produce both

inflected forms and derivational forms that result in a wide range of meanings (Jelinek &

Demers 1997, Campbell 1997, Sherzer 1976). Whatever form they take or function they

serve, however, in the basic ordering of morphemes across Salishan languages,

reduplicants are generally closest to the stem (Czaykowska-Higgins & Kinkade 1998),

though as mentioned earlier, Shaw (2005) finds examples where that attachment may be

interrupted by other affixes.

There are three reduplicative shapes found in almost all languages of the Salishan

family: a prefixal CVC shape which usually signifies plurality in some way[5]; a prefixal

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[4] I will use some of the ideas of Lexical Phonology, especially cyclicity, for descriptive purposes while not
adopting it as the framework for the paper as a whole. For example, some patterns will show that semantic
scope is a factor in ordering, not just the affix levels described in Lexical Phonology, and much of what I
describe here may be related to an Optimality Theory framework as well.

[5] See §3.2 for a more extensive discussion of the nature of plurality in Klallam and other Salishan
languages, and §3.10 for further discussion of the possibility of an umbrella Augmentative category in
Klallam and other Salishan languages.

C(V) shape that often expresses diminutiveness, but may have other meanings in individual languages; and a C_2(V) shape which is usually infixed, signifying 'out of control' in Interior Salishan languages, and inception in the Coastal languages (Czaykowska-Higgins & Kinkade 1998). Other attested forms are CVC to express Characteristic in several languages, though van Eijk (1998) argues that this is a variant of the CVC Plural form[3], and forms with preassociated vowels, like C*a-* to signify the Collective in Lushootseed, and C*e-* to express repetition in Spokane (Czaykowska-Higgins & Kinkade 1998). As mentioned above, co-occurrence of some reduplicants is also present in many Salishan languages (Broselow 1983; Urbanczyk 1996, 1999; Shaw 2005; Czaykowska-Higgins & Kinkade 1998).

The first attempt at describing reduplicative patterns in Salishan languages was by Haeberlin in 1918, and was originally intended to be part of his more comprehensive comparative work with Boas, but the information on reduplication 'was found too fragmentary to be embodied in that paper' (1918:154). While inaccurate in many respects, it remains the most complete overview of reduplication in the family and continues to be cited as such, as the majority of studies tend to focus on just one language (Thompson & Thompson 1971, Czaykowska-Higgins & Kinkade 1998). Descriptions and theoretical work have been done for such languages as Bella Coola (Bagehmihl 1992), Moses-Columbian (Czaykowska-Higgins 1998), Comox (Kroeber 1988), Lushootseed (Broselow 1983, Urbanczyk 1996), Shuswap (Broselow 1983), and Thompson (Broselow 1983), as well as languages quite closely related to Klallam, Lummi (Jelinek & Demers 1997) and Saanich (Montler 1986).

Haeberlin's overview of Salishan reduplication includes a description of Klallam in which he describes three types of Plural (CVC, CV, or C*i*) and two types of Diminutive (CV and C*a*). While not wholly accurate, neither was this early description wholly inaccurate, as will be seen in Chapter 3. Further mention of Klallam reduplication was not published until Thompson and Thompson's (1971) study, and it is also briefly mentioned in Fleisher's (1976) dissertation on Klallam ethnolinguistics. Montler mentions a few reduplicative processes in the *Klallam Dictionary* (2012), and goes into more detail for some of these processes in the *Klallam Grammar* (2015). Table 1.1 at the end of this section compares the findings of all five sources. While valuable information, it must be noted that none of these are studies focused solely on Klallam reduplication; where Haeberlin focused on reduplication, it was a study of many Salishan languages; and where the other three focused specifically on Klallam, their scope was much broader than just reduplication, attempting descriptions of the grammar as a whole. As such, reduplication is sketched in these studies, but not described in-depth.

As mentioned in §1.1, the Klallam data available is a synchronic snapshot of the language at a very particular moment in time, and of a very limited number of native speakers. While work has been done in the reconstruction of Proto-Straits (Thompson et al. 1974), that study focuses on phonological features and does not discuss reduplication. As such, the description of reduplication processes must be understood to be a description of the processes as they existed when documented from about 1953 to 2014, that is, from the decades of most intensive documentation until the loss of the last native speaker. The lack of diachronic data and the relatively recent loss of all native speakers means that

certain important issues, such as productivity, will likely never be well-understood, and

as a result, these issues will be mentioned only briefly here.

Table 1.1 Overview of Klallam reduplication in the literature

	Haeberlin (1918)	Thompson & Thompson (1971)	Fleisher (1976)	Montler (2012)	Montler (2015)
Diminutive	C_1V_1- Ca-	$C_1əʔ$- -$C_1ə$-	$C_1V_1(ʔ)$- $C_1ə(ʔ)$-	$C_1aʔ...Vʔ$	$C_1aʔ...ʔ$
Plural	$C_1V_1C_2$- C_1V_1- Ci-	$C_1V_1C_2$- $C_1(ə)C_2$- C_1V_1- C_1-	$C_1V_1C_2$- C_1V_1- C_1i- C_1-	$C_1əC_2$- C_1i-	$C_1(ə)C_2$- C_1i- $C_1...í$ $C_1í$-
Intensive	-	C_1i-	-	-	-
Actual	-	$C_1aʔ$-	C_1-	$[C_1V_1(ʔ)$-$]^6$	-C_1-
Characteristic	-	-$C_1C_2(C_3)$	-	$[C_1V_1C_2$-$]$	$C_1\acute{V}_1C_2$- -C_1C_2 (alt)
Resultative	-	-	-	$[C_1V_1(ʔ)$-$]$	$C_1\acute{V}_1$-
Inceptive	-	-	-	C_1-	C_1-
Affective	-	-	-	C_1i-	C_1i-
Distributive	-	-	-	$[C_1(V_1)C_2$-$]$	-
Multiple	Pl-Dim derived from Dim, by 'extending' the V of Dim	-	-	-	-

1.5 Purpose and Significance

The purpose of this thesis is to extend and further refine the description of the

various reduplicative processes of Klallam made primarily by Montler in his dictionary

and grammar. It will also describe Distributive reduplication and multiple reduplication

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[6] Where in brackets, the reduplicative shapes in Montler (2012) do not come from any of his descriptions, but from his dictionary data. For example, in the entry for the root *łup* 'eat soup,' he includes the reduplicated form *łúłp* 'eating soup' and this morphological analysis: *łú+łup* → actl + eat soup (2012:866). As seen in Table 1.1, many of his analyses changed between publication of the 2012 dictionary and the 2015 grammar, and this will be discussed in Chapter 3.

in Klallam for the first time. In all descriptions, I will explore how the reduplicated form is not just the product of morphological processes, but of Klallam phonological rules as well, both of which are influenced by cross-linguistic markedness constraints. Chapter 2 will be a discussion of these phonological patterns, and Chapter 3 will explore each reduplicative process in turn, including co-occurrence. Chapter 4 will discuss insights gained from the study, most notably a ranking of cross-linguistic markedness factors and phonotactics in producing reduplicant underlying and surface forms, the possibility of an umbrella-like Augmentative reduplicative category rather than individual categories of Plural, Characteristic, and Distributive, and the ordering of reduplicants related to other affixing processes. It will conclude by making remarks on the importance of further study, suggesting several possibilities for future research.

The complexity of reduplication patterns and purposes in Klallam makes it a rich data source for providing further insight into the morpho-phonology of Salishan languages and the Northwest Coast linguistic area. Describing these complex processes provides background for further theoretical inquiry, serving as a testing ground for such questions as markedness and unmarkedness, and the status of reduplicants in relation to concatenative affixes. In addition, having a detailed description of reduplication processes as they occur now can help in the ongoing documentation of 'New Klallam' as the language continues to change in new ways as the result of revitalization programs.

CHAPTER 2: PHONOLOGY

In order to better understand the ways that reduplicative processes in Klallam are conditioned by phonological as well as morphological rules, it will be useful to give some background in the language's phonemic inventory, stress patterns, and phonotactics, as well as some of the associated phonological rules.

2.1 Consonants

Klallam consists of 35 consonants with a few distinctive features worthy of note. Those consonants are shown in Table 2.1 in an IPA chart based on descriptive information from Montler (2012, 2015).

Table 2.1: Phonemic inventory of Klallam consonants

	bi-labial	alveolar		post-alveolar	palatal	velar		uvular		glottal
		central	lateral			plain	labial	plain	labial	
stop +glottal	p p̓	t t̓				(k)	kʷ k̓ʷ	q q̓	qʷ q̓ʷ	ʔ
affricate +glottal		t͡s t͡s'	t͡ɬ'	t͡ʃ t͡ʃ'						
fricative		s	ɬ	ʃ			xʷ	χ	χʷ	h
nasal +glottal	m m̰	n n̰						N N̰		
approx. +glottal			(l)		j j̰		w w̰			

Typical of many languages of the Northwest Coast, and of Salishan languages in particular (Campbell 1997), Klallam has a series of plain and glottalized stops, affricates, nasals and approximants. Where many of the world's languages have a voiced/voiceless phonation contrast, this series of glottalized/plain sounds provide phonemic contrast in

Klallam. Scherzer notes, 'It is interesting that this trait, which is relatively rare in the languages of the world, is found in every language in the Northwest Coast. Multiple multilingual pressure probably contributed to the retention of this trait in the languages in the area' (1976:60). Fricatives are the only articulatory series that do not have this opposition. The opposition also does not exist in glottals, which would be judged impossible to glottalize, and in the rare sounds /k/ and /l/, likely because these sounds in Klallam occur only in borrowed words and are not part of the native phonemic inventory (Thompson 1979, Montler 2015). While these sounds existed in Proto-Salishan, Klallam is one of the Coastal Salishan languages where the voiced laterals /l, l̰/ still found in Interior Salishan were converted to /j, j̰/ (Thompson 1979), and /k, k'/ from Proto-Salishan converted to /t͡s, t͡s'/ (Czaykowska-Higgins & Kinkade 1998). (This affricate will be discussed more in depth toward the end of this section.)

Glottalization in these phonemes is realized differently according to the natural class of sounds to which the opposing pairs belong. The glottalized form of stops and affricates, for example, is realized as an ejective – that is, the blocked air that typifies stops is also compressed by a rapidly raised larynx. When the closure in the mouth is released, the burst is realized with greater amplitude due to that increased pressure of the air (Ladefoged & Maddieson 1996). The velar and uvular ejectives of Klallam are quite common among the languages that have ejective stops, but the bilabial stop /p'/ is dispreferred cross-linguistically (Ladefoged & Maddieson 1996), though it is relatively widespread among the Salishan languages (Campbell 1997).

The glottalized form of nasals and glides, on the other hand, is realized as creaky voice. While creaky voiced sonorants are relatively rare in the languages of the

world, they are a widespread feature in the languages of the Northwest Coast linguistic area. In one study of 567 languages from around the world, creaky sonorants were found in only 29 languages, 20 of which are languages of North America (Maddieson 2013). This voicing is produced with a constriction at the larynx and part of the vocal tract immediately above it so that the vocal folds are pressed more tightly together than in modal voice, such that a shorter length of the folds vibrate (Ladefoged 2005). This creates an auditory effect of 'continual, separate taps in rapid sequence' (Laver 1980:124). One additional note of importance about nasals and glides is that they behave like a [-syllabic, +sonorant] natural class in spite of the lack of liquids in the native phonemic inventory, and they tend to undergo the same phonological processes in Klallam. In general, if a pattern applies to nasals, it also applies to glides. This will become more apparent in the discussion of phonological rules below, and will figure heavily in describing the surface forms of reduplicative processes in Klallam.

Another distinctive feature of Klallam that is typical of Salishan languages is the relative richness of the class of velar and uvular consonants, themselves in a series of plain and rounded sounds in opposition, some of which are also in the plain/glottalized series. Rounding is a type of labialization in which the corners of the lips are drawn together, as for [w], while the primary sound is being produced (Ladefoged 1997). For the velars, only a rounded version is present (recalling that plain /k/ is extremely rare and found almost exclusively in borrowings). In the uvulars, there is a plain/rounded opposition. For stops, rounding may be combined with glottalization, producing such phonemes as /k'ʷ/ and /qʷ/. In Klallam, rounded dorsals exist word-initially, medially, and

though it is quite rare in the world's languages (Ladefoged & Maddieson 1996), in word-

final position as well.

These glottalized and rounded consonants can be difficult for the English

speaker to hear in opposition to their plain counterparts, especially the creaky voiced

glottalization of sonorants. They are indeed, however, truly distinct phonemes whose

presence in a word will change its meaning. For example, *n-* ([n]) is the first-person

possessive prefix, where *n'-* ([n̓]) is the second-person possessive prefix (Montler

2012). In the same vein, replacing the plain alveolar stop in [taʔ] 'back' with its

glottalized counterpart changes the word to [t̓aʔ] 'ask for' (Montler 2012). The same

distinction appears in the uvular stops with rounded counterparts. Notice in 1 the four-

way distinction for uvular stop /q/: 1a is a plain/rounded minimal pair, and 1b is a

glottalized plain/rounded minimal pair.

(1) Uvular minimal pairs
    a. [qaq] 'pole'   [qʷaq] 'muddy'
    b. [q̓s]   'necklace' root   [q̓ʷs]   'hard'

In addition to the glottalized and rounded series, there are other sounds not

present in English that are indeed somewhat unique and warrant explanation. While not

common in Indo-European languages, the voiceless lateral fricative /ɬ/ is not uncommon

elsewhere, and is typical of languages of the Northwest Coast (Ladefoged & Maddieson

1996, Campbell 1997). For this sound, the tip of the tongue is held at the alveolar ridge as

for [t], and air flow passes around the sides of the tongue (Laver 1994, Montler 2015).

The ejective alveolar lateral affricate /t͡ɬ'/, realized in the orthography as ƛ̓, is also typical

of many languages of the Northwest Coast. Interestingly, this ejective does not have a

corresponding plain form as part of the glottalized/plain series of stops and affricates in the phonemic inventory.

In addition to these features of Klallam that are typical of the wider Salishan family, there are also a couple of traits that are typical only of smaller family groups to which Klallam belongs, not the whole Salishan family. Found in the Straits subgroup but almost unheard of in other Salishan languages is the presence of uvular nasals /N, ɴ̠/ (Thompson 1979). Common to the Coast branch but not found in Interior Salish or Proto-Salish is the opposition of the affricates /t͡ʃ/ and /t͡s/, which is a family trait of Nadene and perhaps Penutian, and its presence in Klallam is the result of areal contact (Sherzer 1976). Additionally, the affricate /t͡s/ is itself distinct from /ts/. It is not just a combination of /t/ and /s/ in a cluster, and is quite common in word initial, medial, and final positions (Thompson & Thompson 1971, Montler 2012). In Klallam, the consonant cluster [ts] is pronounced by producing and releasing the [t] sound, then the tongue returns to produce [s]. By contrast, the affricate /t͡s/ is pronounced by placing the tongue in the position for [t], but the tongue then slides 'directly into an *s* sound; the *t* is released into *s* and pronounced as one sound' (Montler 2012:xi). This articulatory description based on information from native-Klallam speakers fits with Ladefoged and Maddieson's (1996) categorization that affricates are midway between simple stops and a cluster of a stop and a fricative, that is, they are stops with the articulation modified so that frication after the burst is lengthened. In this particular case, for example, one can imagine a scale from [t] to [t͡s] to [ts], where each contrast is phonemic rather than allophonic. So in Klallam, the articulation and resulting frication

of *kʼʷənc* [kʼʷən͡ts] 'look at me' distinguishes it from *kʼʷənts* [kʼʷənts] 'he looks at it' (Montler 2012:xi).

2.2 Vowels

While the vowel inventory of Klallam is extremely limited in comparison with its rich consonant system, it is on the vowels where one sees the majority of phonological rules that are relevant in understanding reduplication patterns. The vowels are /i ɛ ə a u/ (Montler 2015), and it is one of the few Salishan languages with a five vowel system instead of four, which may be a result of areal influence from Nuu-chah-nulth, a neighboring Wakashan language (Sherzer 1976). Vowels may be stressed or unstressed, but unstressed vowels are subject to reduction and deletion, as will be described further in §2.4. Notice in Table 2.2 that /a/ in Klallam is a central rather than a front vowel.

Table 2.2: Phonemic inventory of Klallam vowels

	front	central	back
high	i		u
mid	ɛ	ə	
low		a	

Schwa is worth further mention, especially the practice in much of the literature in Salishan research to consider the presence of a stressed schwa in the phonology of these languages. While there is not full agreement among scholars, many agree with Kinkade (1998) that Salishan schwa is weightless and featureless, and that it is not present in underlying representations.[7] Ultimately, he argues for four types of schwa in Salishan

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[7] For example, he argues that the 'surface inventory' of Upper Chehalis includes epenthetic stressed schwa, but the underlying vowel inventory does not include this stressed schwa (1998:197). However, Montler opts to use it in the *Klallam Dictionary* (2012) where he gives an analysis of lexical roots, affixes, and reduplicants which represents his 'current understanding of the language showing hypothetical underlying forms for the morphemes' (2012:xv). Indeed, this is common practice in much of the literature. Cf.

languages: excrescent, epenthetic, as the result of vowel reduction, and as the result of

segment derivation. According to Kinkade, epenthetic schwa can take stress and seems to

be predictable. That is, epenthetic schwa is usually inserted for stress assignment or

syllabification and as such, is subject to phonological effects, where excrescent schwa is

optional and does not interact with a language's prosodic rules (Parker 2011). Using this

model, the presence of stressed schwa is quite consistent in Salishan literature, and,

following Kinkade (1998) is generally understood to be epenthetic when stressed. It is

likely that Klallam exhibits the first three of Kinkade's four schwa types, as will be

discussed in §2.4.

2.3 Stress

Stress is not well understood in Salishan languages, and particularly in non-

Interior Salishan languages, largely due to its complexity. While a general rule may be

proposed for a particular language, there are often exceptions and complications to that

rule. The stress pattern for Klallam has not been described in great detail. Montler (1986)

gives an extensive description of stress patterns for the closely related Northern Straits

language of Saanich, but given the wide diversity of stress patterns in the family and the

variety of ways different languages present different rule exceptions (Czaykowska-

Higgins & Kinkade 1998), it would be a mistake to assume that the patterns of Saanich

are the same as the patterns for Klallam. As such, the ways that stress and reduplication

interact will not be fully explored in this paper.

Czaykowska-Higgins & Kinkade (1998:9-10), Kiyosawa & Gerdts (2010:13). As a full analysis of schwa is
not possible in this paper, I will use Montler's analyses, which include underlying schwa.

That said, a few general patterns are known. First, only one vowel per pause group[8] receives primary stress, but secondary stress also occurs at times (Thompson & Thompson 1971). Second, some roots are always stressed, some suffixes are always stressed, and prefixes and some short grammatical free morphemes are never stressed. While some roots may retain secondary stress when a stressed suffix is attached, it is more often the case that vowels in the root become unstressed (Montler 2012). There is not a rule-based predictability to which roots and suffixes are always stressed. Rather, it seems to be part of a classification system that is part of the lexicon. In Interior Salishan languages, for example, traditional analysis is that roots and suffixes may be classified as strong, variable, and weak, and this forms the basis of a stress hierarchy: strong suffix > strong root > variable root > variable suffix > weak root > weak suffix (Czaykowska-Higgins & Kinkade 1998). For Saanich, Montler (1986) outlines a similar classification of roots as strong, weak, and vowelless; suffixes as strong, ambivalent, weak, and unstressed; and that strong suffixes will take stress away even from strong roots. Klallam appears to have a similar pattern of stress that is morphologically-based and assigned on the fully-derived word, but the details are not yet known (Thompson & Thompson 1971, Montler 1998). Based solely on the wealth of empirical data found in the Klallam dictionary, some proposals could probably be made for placing specific roots and suffixes into generally strong-to-weak categories, but without input from native speakers, this information is more likely to be beyond adequate explanation at this point.

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[8] The extreme affixation processes typical of Salishan and other Northwest Coast languages challenge traditional ideas of what nouns, verbs, words, and clauses are. Thompson and Thompson (1971) use the term 'pause group' instead to describe derived forms. While not explored further here, it is worth noting.

What is apparent in the Klallam data is that stress seems to be most often on the root or on certain suffixes as predicted, and that it shifts to certain reduplicants as well. It will also be shown in the discussion of multiple reduplication in §3.9 that, while often morphological, prosody can also be a factor in stress assignment, though as with the morphological patterns, the prosodic patterns are not yet described in the literature. So stress assignment is both a morphological process and a phonological one in Klallam, and as such, a description of reduplicative processes would be incomplete without accounting for its effects on surface forms.

2.4 Phonological Patterns

Table 2.3: Grapheme/phoneme correspondences

Grapheme	IPA		Grapheme	IPA		Grapheme	IPA		Grapheme	IPA
p	p		c	$\widehat{ts}$		m	m		ʔ	ʔ
p̓	p̓		c̓	$\widehat{ts}$'		m̓	m̰		h	h
t	t		ƛ̓	$\widehat{tɬ}$'		n	n			
t̓	t̓		č	$\widehat{tʃ}$		n̓	n̰		i	i
k	k		č̓	$\widehat{tʃ}$'		ŋ	N		e	ɛ
kʷ	kʷ		s	s		ŋ̓	N̰		ə	ə
k̓ʷ	k̓ʷ		ł	ɬ		l	l		a	a
q	q		š	ʃ		y	j		u	u
q̓	q̓		xʷ	xʷ		y̓	j̰			
qʷ	qʷ		x̣	χ		w	w			
q̓ʷ	q̓ʷ		x̣ʷ	χʷ		w̓	w̰			

Before outlining some of the relevant phonological patterns of Klallam, it will be useful to show a list of the correspondences between the language's orthography and its phonemes. The alphabet adopted by the four Klallam tribes is one developed by Montler based on a standard set of phonetic symbols used in transcribing many languages of the

Northwest Coast, in turn based on the American Phonetic Alphabet ('Klallam language,' Montler 2009). Where some examples throughout this chapter and those following will use IPA transcription, others will use Klallam orthography. Having reference to these correspondences will make some examples more clear.

The first phonological pattern to discuss is a feature that is unique to Klallam among all other Central Salishan languages, that of vowel retraction before a glottal stop.[9] In this obligatory rule, non-low stressed vowels /i u ə/ are lowered to /ɛ o a/, respectively, when followed by /ʔ/. /a/, as a low vowel, is not affected. For accurate interpretation of the Klallam data that forms the basis for the reduplication descriptions to follow, it is important to note the spelling changes that accompany this rule, as shown in Table 2.3: *i* changes to *e*, and *ə* to *a*, but *u* remains *u* as there is no *o* in Klallam orthography, likely because there is not a phonemic contrast between the two in the same way that there is between the other pairs (Montler 1998, 2004). This rule is especially obvious in such processes as Diminutive reduplication, which usually involves a glottal infix. Note that in the data below, the first item is the presumed underlying root and the second item is what is referred to in the *Klallam Dictionary* (Montler 2012) as a 'headword,' that is, the surface form as it appears in the dictionary entry. Sometimes the only difference between the root and the headword is stress assignment, but at times it also demonstrates the results of phonological patterns or of affixation on bound roots. In these and all other examples in this paper, the simplest form of the headword is the one included. The format below will be the one used throughout the paper whenever data from the dictionary are presented, though at times the data will be presented in

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[9] While Interior Salishan languages also exhibit vowel retraction, it appears to be the result of uvular and pharyngeal influence, not glottal (Montler 2004).

orthography rather than phonemic transcription. In 2, the root vowel and the corresponding surface vowel are in bold.

(2) Vowel Retraction
    a. /t͡sikʷt/ /ˈt͡sikʷt/   'sea cucumber'   /t͡saʔˈt͡sɛʔkʷt/ 'small sea cucumber'
    b. /ʔipn̥/ /ˈʔipən/   'apron'   /ʔəˈʔɛʔpən̥/   'small apron'
    c. /t͡səqj̥/ /ˈst͡səqiʔ/   'sockeye salmon'   /st͡saʔˈt͡saʔqiʔ/ 'small sockeye'
    d. /ɬup̓/ /ˈɬup̓/   'slurp'   /ɬaʔˈɬoʔpə̀n̥/[10] 'small spoon'
    e. /ɬanj̥/ /ˈsɬaniʔ/   'female'   /sɬaʔˈɬaʔniʔ/   'small woman'

This rule is obligatory, and applies even to borrowed words like 'apron,' as seen in 2b.

Notice in 2c that [i] in the derived form does not lower, even though it is followed by a glottal stop because it is not a stressed vowel. Notice that the [a] in 2e, as a low vowel, is the only stressed vowel that does not retract immediately preceding [ʔ]. Interestingly, glottal stops may delete in rapid or casual speech (Montler 1998, 2015) which can result in the retracted vowel appearing in the surface form for no apparent reason. Montler (1998) gives the following examples:

(3) Vowel retraction and glottal stop deletion in casual speech
    a. /ʃupt/ 'whistle'   [ʃoʔpt] ~ [ʃopt]   'whistling'
    b. /ʔitt/ 'sleep'   [ʔɛʔtt] ~ [ʔɛtt]   'sleeping'

That is, in rapid speech one may hear [ʃopt] 'whistling' and mistakenly analyze it as an instance of vowel alternation when it is in fact the result of a retraction, even though the cause of the retraction is no longer visible.

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[10] Note that, where important to illustrate a phonological pattern, I will include some detail beyond that which is strictly phonemic, as in the case of 2d, where /u/ becomes [o] in the surface form.

In addition to the unique feature of vowel retraction, the effect of stress assignment is one of the important factors behind many of the relevant phonological rules in Klallam. For example, the underlying vowels /i u a/ only remain in the surface form when they are stressed. When they are unstressed, they surface as [ə].

(4) Vowel changes from underlying to surface forms
   a. /nii̓ɬ/   /ˈnii̓ɬ/   '3focus'   /nəɬˈtixʷ/   '3focus-let causative'
   b. /tu̓kʷ/   /ˈtu̓kʷ/   'go home'   /tə̓ˈkʷajɴən/   'want to go home'
   c. /pajuxʷ/   /ˈpajəxʷ/   'steam'   /pəˈjuxʷəɴ̱/   'steaming'

In 4a-b, the underlying vowel appears in the headword because it is stressed, and then reduces to schwa when affixation shifts the stress from the root to the suffix. In 4c, notice the changes in V_1 /a/ and V_2 /u/ as stress shifts in the headword and then in the suffixed form. Vowel reduction appears to be an obligatory process and is not dependent on dialect or rate of speech.[11]

Once an unstressed vowel is reduced to schwa, it is then often deleted altogether (Montler 1998, 2004). For example, the stressed schwa in *čə́səʔ* deletes altogether when the stress is shifted to the lexical suffix[12] *ɬšáʔ* 'ten,' resulting in the derived surface form *čsɬšáʔ* 'twenty.' While unstressed schwa reduction is obligatory, unstressed deletion is more variable. Unstressed schwa is often kept in careful speech, but dropped in natural speaking (Thompson & Thompson 1971, Montler 1998). These two processes together create an environment with significant consonant clusters. These clusters are often acceptable, as may be seen in *ʔcɬtayŋxʷ* 'person' and *ɬqč̓šɬšaʔ* 'fifty' (Montler 1999), but

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[11] See comments in §2.5 regarding obligatory phonological rules and reduplicative processes.
[12] Lexical affixes are quite rare, but an areal feature of the Northwest Coast present in Chemakuan and Wakashan families as well as in every Salishan language. They usually refer to body parts, common items like 'house' and 'food,' and common objects in nature, such as 'plant' and 'water.' They may be either classifiers or refer to specific items (Sherzer 1976, Campbell 1997, Czaykowska-Higgins & Kinkade 1998).

there are other environments where schwa either does not delete, or is perhaps re-inserted epenthetically after deletion.[13] In 5, notice the environments where schwa either inserts (5a-b,d) or does not delete (5c) in spite of being unstressed in the surface form.

(5) Schwa epenthesis
    a. /kʷitʃn/   /ˈkʷitʃən/   spring salmon
    b. /mhuj̯/   /məˈhuj̯/   basket
    c. /ɴəs/   /ɴəˈsət/   bark
    d. /wiʔws/   /ˈswɛʔwəs/   boy
    e. /ɬəj̯qʷ/   /ˈɬəj̯əqʷ/   smash
    f. /ɬəj̯p̓/   /ˈɬəj̯p̓/   flap

Throughout the data, schwa is consistently inserted or not deleted in environments where one of the segments of a consonant cluster is a nasal. The same is true, though not as consistently, when one of the elements is a glide. In 5e, for example, there is a schwa inserted between [j] and [j̯], but not in 5f. A thorough explanation of why this would be is not the focus of this paper, but note that there is also a process of Glide Vocalization that also eliminates glides from consonant clusters in certain situations which I will discuss later in this section.

    Recall from §2.2, Kinkade's (1998) idea that there are four different schwas in Salishan languages. One of those, schwa resulting from vowel reduction, is the type shown in 4 above. The two others relevant to Klallam are excrescent schwa, which is an optional schwa immune to prosody, and epenthetic schwa, which is inserted for stress

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[13] This possibility does not seem to have a clear purpose. In Montler's (1998) paper on vowel phonology, he states that Schwa Excrescence follows Schwa Deletion to counteract resulting sonorant clusters, but also states that schwa does not delete before glottal stops. Why schwa should delete and be re-inserted in sonorant clusters but remain in situ before stops is not clear. However, as the final result is the same for purposes of the reduplication processes I will describe, this is moot for this particular paper. It does raise questions of cyclicity in these processes, however, and would be interesting to look at further.

assignment or syllabification and subject to phonological rules. In his description of

schwa insertion, Montler (1998) refers to it as an excrescent schwa, noting that it is an

optional process that serves to separate adjacent sonorants, and is more common among

speakers from the eastern region than the western. However, it is less clear if the schwa

he describes in the phonological rules of certain reduplicative processes that separates a

sonorant from any other consonant is epenthetic rather than excrescent. From the data, it

appears to be so. This possibility is explored further in Chapter 3, where a more extensive

examination of the interplay between phonological rules and reduplicative processes is

undertaken. The data in that chapter will show that, beyond being an option to prevent

clusters where one of the segments is a sonorant, schwa insertion to prevent these clusters

is one of the most productive phonological patterns throughout reduplicative processes.

As such, I will consider schwa in these environments epenthetic rather than excrescent.

Another environment briefly mentioned in the literature where schwa does not

delete is where a consonant and a glottal stop would form a tautosyllabic cluster.

Thompson and Thompson (1971) mention that /ə/ separates /ʔ/ from voiceless consonants

in 'certain circumstances, notably those where otherwise /ʔ/ would fall between two

voiceless consonants' (259). Montler also briefly mentions that schwa does not delete

before /ʔ/. I would add that, like clusters where one of the segments is a sonorant,

tautosyllabic clusters where the second element is a glottal stop are dispreferred.

Consider the following:

(6) Schwa non-deletion before [ʔ]
a. /ɬaʔt͡ʃi/   /ˈɬaʔt͡ʃi/   'cold'   */ˈɬaʔlʔt͡ʃi/   /ˈɬaʔlaʔt͡ʃi/   'chilly'
b. /niʔʃ/   /ˈníʔʃ/   'on side'   */ˈnɛʔnʔʃən/   /ˈnɛʔnaʔʃən/   'on side'
c. /qʷuʔ/   /ˈqʷuʔ/   'water'   */ˈqʷuʔqʷʔ/   /ˈqʷuʔqʷaʔ/   'to drink'

The process of Characteristic reduplication seen in 6a-c will be discussed more fully in the following chapter, but briefly, $C_1V_1C_2$ copy and attach in a prefix position, and the stress shifts to the copied V. The resulting vowel reduction and schwa deletion from the now-unstressed vowel in the base should result in a form like that found in 6a, *ɬáʔlʔči. This is unattested, however, in spite of the previous assertion that Klallam tolerates consonant clusters.

Interestingly, from the previous rule of retraction, recall that vowels retract only when they are followed by a glottal stop and also stressed. The data in 7a-c show environments where schwa retracts even when it is not stressed. Indeed, the data collected for this paper consistently show a pattern where, if [əʔ] occurs tautosyllabically in the underlying root, it becomes [aʔ] in the surface form, even when unstressed, and it appears to be the case in a number of environments. In the examples below, the first word is the underlying root form, the second is the surface form. Notice that /ə/ surfaces as [a] even when unstressed, regardless of the manner of production of the preceding consonant or the position of [əʔ] in the word.

(7) Unstressed Schwa Retraction
   a. / t͡ʃəʔkʷ/   'conveyance'   /st͡ʃaʔkʷaʔˈjuɬ/   'conveyance'
   b. /t͡ʃəsəʔ/   'two'   /ˈt͡ʃəsaʔ/   'two'
   c. /t͡ʃʼəmt͡sʼnəʔ/   'ant'   /ˈt͡ʃʼəmt͡sʼnaʔ/   'ant'
   d. /kʷələwəʔ/   'shore crab'   /kʷaʔˈkʷələwaʔ/   'little shore crab'
   e. /k̓ʷəʔt͡sʼən̠t͡ʃ/ 'shark'   /k̓ʷaʔˈt͡sʼən̠t͡ʃ/   'shark'

The pattern here seems to go beyond the boundaries of the patterns of schwa epenthesis and stressed vowel retraction discussed earlier. It appears that [ʔ] may not appear as the second member of a cluster with glides, nasals, fricatives, affricates, or stops, regardless

of stress. In instances where unstressed schwa would normally be deleted in the surface form, it is either inserted and then retracted to [a], or never deletes.

The other possibility is that it is not schwa that is inserted, but [a] itself. I find no mention of this possible rule in Klallam literature or that of other Coastal Salishan languages, but there is one mention of something similar in Lillooet (Interior Salish), where [a] is described as 'breaking up a non-permissible final cluster Cʔ' that would have been the result of the internal Diminutive reduplication processes that changes *spzuʔ* 'wild animal' to *spzúzaʔ* 'any duck' (Davis & van Eijk 2014:82, van Eijk 2013). In the case of Klallam, while 7b-d show the break-up of a final cluster Cʔ, 7a,e show the same epenthetic process where Cʔ would occur in word-initial positions as well. As such, the Lillooet data may not apply here. Whether the epenthetic vowel is [ə] or [a] cannot be determined solely from the data here, but since other excrescent and epenthetic processes in Klallam are exclusively with [ə], I will presume the same is true here. Again, as this process appears to be entirely obligatory, I will refer to this also as Schwa Epenthesis.

Another rule related to vowel reduction and schwa deletion is that of glide vocalization. In Klallam, underlying /j/ surfaces as [i] and /w/ surfaces as [u] when they are between consonants, or between a consonant and a word boundary. The same happens with glottalized forms, where glottalized /j̰/ surfaces as [iʔ] and glottalized /w̰/ surfaces as [uʔ] (Thompson & Thompson 1971, Montler 1998). One important thing about this is that when a surface vowel is the result of glide vocalization, the vowel does not usually undergo reduction and deletion as other unstressed vowels do, so when an unstressed [i] or [u] appears in the derived form, this is a good indicator of an underlying glide. So, for example, the unstressed [i] in *qinúŋət* 'angry' is not counterexample to

Unstressed Vowel Reduction and Unstressed Schwa Deletion, but is rather a vocalized /j/

from the underyling root *qəy* /qəj/which does not reduce to schwa. (Notice that the

unstressed schwa in the underlying form does delete in the surface form.) Also, recall that

Klallam has a relatively high tolerance for consonant clusters as evidenced by unstressed

schwa deletion. However, the same rule that creates these clusters also results in there

being more unstressed vowels in the surface form because unstressed schwa deletion

creates environments where glides are vocalized and undeleted (Montler 1998, 2004).

While the above outlines the major phonological processes on vowels that interact

with reduplication processes in Klallam, there are a couple of other patterns affecting

consonants that will help explain some of the derived forms that appear in reduplication

patterns. These include the non-obligatory assimilation of schwa to the stressed vowel

when separated by [ʔ] or [h] (Montler 1998), shown in 8a-b; an alternation from [j] to

[t͡ʃ], shown in 8c; and from [w] to [kʷ], shown in 8d. These alternations may occur in

either plain or glottalized forms (Thompson & Thompson 1971, Fleisher 1976).

(8) Schwa Assimilation and Glide Alternation
     a.   /t͡sə'ʔit/ ~ /t͡si'ʔit/   'true'
     b.   /mə'huj̰/ ~ /mu'huj̰/   'basket'
     c.   /**j**ijt͡ɬ'/   'short'   /**t͡ʃ**'aʔ'jɛʔit͡ɬ'/   'short'
     d.   /**w**at͡s/   'pry'   /'**kʷ**aʔəwt͡s/   'prying'

It is unnecessary for the purposes of this paper to explore this alternation more in depth –

whether it is in free variation or complementary distribution; whether it is optional or

obligatory – but its presence in the data could be confusing if not mentioned here.

2.5 Summary of Phonological Rules

As the phonological processes outlined above are also those most relevant to the discussion of reduplication processes in Klallam, it will be useful to be able to refer to these rules throughout the following chapter.

Table 2.4 Klallam phonological rules

Rule	Description	Occurrence
Vowel Retraction	Stressed non-low vowels lower when followed by [ʔ]. Also occurs on unstressed schwa when followed by [ʔ].	Obligatory
Vowel Reduction	Unstressed vowels reduce to [ə]	Obligatory
Unstressed Schwa Deletion	Unstressed [ə] is deleted	Optional
Schwa Excrescence	[ə] inserted in order to separate adjacent sonorants	Optional
Schwa Epenthesis	[ə] is inserted (or not deleted) to prevent clusters where any segment is a sonorant, or where a tautosyllabic Cʔ would surface. Unclear from the literature the status of this possible rule, but the data seem to confirm.	Possibly obligatory
Glide Vocalization	/j/ and /w/ or their glottalized forms become [i] and [u] or [iʔ] and [uʔ] between non-syllabic consonants or between non-syllabic consonant and word boundary	Optional
Glottal Stop Deletion	Glottal stops in casual speech delete anywhere, but especially before stops	Optional
Schwa Assimilation	Schwa assimilates to stressed vowel when separated by [ʔ] or [h]	Optional
Glide Alternation	[j] and [w] alternate to [t͡ʃ] and [kʷ], as well as in glottalized forms	Not defined here

Additionally, a note should be made on the obligatory and optional nature of these rules with special reference to reduplicants. As mentioned in §1.3, McCarthy and Prince (1995) suggest that phonological rules may be applied differently in processes of reduplication than elsewhere, meaning that either phonology is ignored in order to

preserve an exact match between base and reduplicant, or phonology is applied, resulting in a potential mismatch between base and reduplicant. In a somewhat related vein, there seem to be cases in the Klallam data where phonological rules that would normally apply in the environments described in §2.4 do not. That is, in certain instances markedness considerations, and possibly contrastive considerations take precedence over what is permitted by Klallam phonotactics.

CHAPTER 3: TYPOLOGY OF KLALLAM REDUPLICATION

As mentioned earlier, Klallam makes extensive use of partial reduplication for a variety of derivational and inflectional purposes, using a variety of morphological shapes. Generally speaking, these shapes are CVC, CV, and C, though there may also be a CC shape, which I will discuss in §3.8. Importantly, notice that within the confines of a CVC shape, every possible variation is utilized with the exception of VC and V. If these were reduplicant prefixes, the position of most Klallam reduplicants, this would create a lexical item with V in the word-initial position, a form that seems to be impermissible.[14] Where a vowel is part of the reduplicant, it may be copied from the base, or it may be preassigned. While most Klallam reduplicants attach to the base in a prefix position, one is infixed.

In this chapter, I will discuss each of the eight reduplicative processes in turn, beginning with the two most common uses of reduplication, Diminutive and Plural. In doing so, I will expand on existing descriptions that Montler gives in his dictionary and grammar, extending and refining where appropriate, and adding descriptions of Distributive and of multiple reduplications, neither of which have been described previously in the literature for Klallam. In all of these, I will give special attention to the ways that the phonological rules and the reduplicant shapes interact in producing the reduplicative surface form. Indeed, many of the surface forms of reduplicated items in Klallam are so varied after all affixation and phonological conditioning takes place that the possible reduplication patterns are sometimes nearly obscured altogether without a working understanding of these processes.[15]

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[14] There are no entries in the *Klallam Dictionary* (2015) with V in word-initial position.

[15] Note that throughout this chapter, I will be presenting data in orthographic forms. Table 2.3 showing the grapheme/phoneme correspondences may prove useful in reading this data.

3.1 Diminutive

The use of reduplication to express Diminutive in Salishan languages is widespread, and may be applied to nouns, verbs, and adjectives (Czaykowska-Higgins & Kinkade 1998, Campbell 1997). In Klallam, Diminutive is the most common of the eight reduplicative processes, with around 250 tokens in the *Klallam Dictionary*. With these numbers, it appears that it may be productive, especially as there are also several examples of Diminutive reduplication on loanwords in Klallam, including on relatively modern words like *sxʷkʷaʔkʷáʔčəŋ* 'telephone,' from the root *kʷač* 'yell.' As mentioned in Chapter 1, the lack of native Klallam speakers means that it may no longer be possible to test productivity adequately, but these loanwords and neologisms point in that direction. It will be interesting to see how the language develops as younger speakers learning the language from synchronic data sources with no further direct input from native speakers adapt it in their own ways. Past patterns of productivity may be quite different than current and future patterns of productivity not just in Diminutive, but in all reduplicative processes. This should be kept in mind for each of the descriptions that follows.

In Klallam, the Diminutive makes nouns smaller or more childlike[16], as in *ʔaʔáʔsxʷ* 'small seal' and **q̓a̓ʔ**q̓á̓ʔŋiʔ 'small girl.' On verbs, it can mean to do the activity a little, as in *ʔəɬs***maʔ***máʔnəš* 'smoke a little,' or that a small thing is doing the activity, as **kʷaʔ**kʷaʔnéʔŋət 'to be running (of something small).' And on adjectives, it marks a person or thing as being a little of that quality, as in **q̓a̓ʔ**q̓á̓nə̓ɬ 'kind of slow,' or a little person or thing with that quality, as in **paʔ**páqɬ 'small or young and white' (Montler 2015). Diminutive can also change the word class of the stem to which it is applied and

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[16] As with numbered examples, reduplicants are in bold.

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the meaning is not always predictable, underscoring the derivational rather than inflectional nature of this process. Looking at the examples below, Diminutive changes the word class in a predictable fashion in 9d, but in 9e, the literal meaning of 'small bear' is 'small burned backside.' Finally, Diminutive is one of the more straightforward processes: there is only one allomorph of the reduplicant shape, and there is not an alternate morphological process to express Diminutive. (Some other Klallam reduplication processes are alternatives to processes like infixing or metathesis.) As explained more fully in Chapter 2, note that in the examples below and all others in this chapter, the first item is the presumed underlying root, the second item is the dictionary headword, and all data comes from Montler's *Klallam Dictionary* (2012) or *Klallam Grammar* (2015). Also in 9 and all other examples in the chapter, the segments in bold are those that are presumed part of the reduplicant shape, unless noted otherwise.

(9) Examples of Diminutive reduplication

a.	*cikʷt*	*cíkʷt*	'sea cucumber'	***ca*ʔcéʔkʷt**	'small sea cucumber'
b.	*ťaŋn*	*ťáŋən*	'miss'	***ťa*ʔťáʔŋən**	'barely miss'
c.	*sač*	*sáčəŋ*	'cruel'	***sa*ʔsáʔčəŋ**	'ornery'
d.	*ćuqʷ*	*ćúqʷ*	'suck'	***ća*ʔćúʔqʷəŋ**	'suck a little' or 'suck (of a baby)'
e.	*čəqʷ*	*čə́qʷ*	'burn'	*sč**a**ʔ**č**qʷáʔič*	'small bear'
f.	*ləmətu*	*ləmətú*	'sheep'	***la*ʔlə*m*̓ú**	'small sheep'
g.	*čuy*	*sčúyəłc*	'wave'	*sč**a**ʔč**ú**ʔyəłc*	'small wave' or 'microwave oven'
h.	*kʷač*	*kʷáčəŋ*	'yell'	*sxʷ**kʷa*ʔ**kʷ**áʔčəŋ*	'telephone'

While many Salishan languages use a C(V)- shape to form the Diminutive (Czaykowska-Higgins & Kinkade 1998), Klallam uses a CVC- shape, complex in that the second consonant is a preassigned glottal stop, as may be seen in 9a-h above. It is accompanied by a glottal infix, making this the automatic type of process described by

Rubino (2005) in §1.3, where the reduplicant and the infix together are morphophonemic in marking the Diminutive. From the data, the following rule may be derived:

(10)   Diminutive Reduplication
         X → C$_1$Vʔ$_{stem}$[(C)V(C$_{[+sonorant]}$)]ʔ when [+DIM]
         The diminutive is formed on a word by reduplicating the first consonant and adding [Vʔ], then infixing [ʔ] after the first sonorant following the first vowel of the stem, or lacking a sonorant, the first vowel itself.

Notice in Table 1.1 at the end of Chapter 1 that the same shape Montler describes as Caʔ is described by Thompson and Thompson (1971) as Cəʔ, and by Fleisher (1976) as either CVʔ or Cəʔ. Interestingly, every one of these shapes would surface the same way: Caʔ after Unstressed Vowel Reduction and Vowel Retraction rules apply. Knowing that Montler's dictionary and grammar are largely written as resources for language learning, it makes sense that he would describe the Diminutive shape in its surface form rather than its underlying form, but for purposes of this paper, I will describe it as Fleisher does, with a CVʔ shape. The Diminutive shape is also possible evidence that supports Steriade's (1988) hypothesis that reduplicant shapes tend to be unmarked cross-linguistically. While it may seem that preassociating a glottal stop in the C$_2$ position creates a closed shape that is more marked than an open CV syllable, its presence in Klallam prevents the V in a CV shape from undergoing the Klallam-specific processes of reduction and subsequent deletion, which would result in an even more highly marked CC cluster. That is, if the reduplicant shape were CV only, then the process for 9a above would be *cíkʷt* → *cicíkʷt* → *ccíkʷt* as C$_1$V$_1$ would copy and attach, then unstressed [i] in the reduplicant would reduce and delete.

The glottal infix that accompanies this reduplication process is also widespread throughout Salishan languages, where it appears most often with Diminutive reduplication, and targets one of several sonorants in the word (Czaykowska-Higgins & Kinkade 1998). The pattern in its close relative Saanich and others is that glottalization appears to be attracted specifically to the sonorant following the stressed vowel, or the vowel itself in the absence of a sonorant. The pattern for Klallam has not been described previously, but like Saanich, Klallam appears to target either the sonorant after a vowel or the vowel itself if there is no sonorant; unlike Saanich, it seems to target the first vowel of the stem, regardless of stress. That is, as demonstrated in 9b, if the stress is on the second syllable of the word, glottalization still targets sonorant after the first vowel, not the stressed vowel. Notice also that 9b and 9f show the variation in the general pattern of glottalization. Where 9b has a glottal stop in spite of the presence of a nasal following the vowel, 9f glottalizes the nasal.[17]

Because of this glottalization process, the Diminutive is a fruitful process in which to see the Vowel Retraction pattern surfacing. In 9a, for example, notice that the stressed high front vowel [i] in both root and headword lowers to [ɛ] once the glottal stop is infixed, reflected in the orthography as *e*. Along these lines, recall that while the [u] in 9g is indeed retracted by the glottal stop infix, there is no *o* in Klallam orthography, so this lowering is reflected only in speech, not in the written form. Also, [a] is already a low vowel and does not retract further, so there is also no Vowel Retraction in 9b.

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[17] The reasons for this are unclear, but it is true that glottalization production is highly variable in individual speakers. For example, in several Northern Straits languages, 'female speakers are more likely to use glottal stops and display stronger glottalization' (Montler 1999:487). The realization of this glottalization process as a stop or glottalized sonorant may be in free variation. Interestingly, glottalization is one of the features that is reduced in 'New Klallam' and most glottal stops are deleted altogether (Montler 1999).

Finally, notice in 9f that the schwa in the stem is not retracted to [a] when the sonorant is glottalized, rather than a glottal stop being infixed. While glottalized glides may sometimes cause retraction for some speakers, no other glottalized consonant does so (Montler 1999).

Before examining the morphological and phonological processes at work in a few of these examples, notice that in 9g-h that the nominalizing prefix *s-* is not copied. As most affixes in Klallam are suffixal, this instance of a prefix and a reduplicant present on the same stem is valuable information regarding the ordering of morphological processes and the status of reduplicant morphemes in Klallam. The absence of the prefix *s-* associating with the C_1 slot in the reduplicant implies that the reduplication process happens first, then the nominalizing inflection happens second. This may be because Diminutive is derivational, and so would precede inflection in any case. However, it may also be because reduplication is a process that precedes concatenative affixation, whether derivational or inflectional. These clues of process ordering will continue to be explored throughout this chapter. For example, if this ordering holds where the affixation is lexical or derivational rather than inflectional, it may show the non-affixal properties of reduplicant morphemes, or at least that they hold a special status as affix morphemes which requires them to be attached closer to the root than other affixes. That is, using Lexical Phonology terminology, reduplication may be a Level 1 process, even when inflectional. That *s-* is not copied in Diminutive reduplicative processes does not answer the question of ordering or the morphological status of reduplicants, but it is one seemingly small but quite interesting piece of the puzzle. Also, while not the case here, semantic scope, where each suffix that attaches adds a new layer of meaning to the base

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(Saarinen & Hay 2014), may also be a factor in some cases of affix ordering, and this will be kept in mind as well.

While the CVʔ…ʔ shape in Diminutive reduplication is very regular, there is a clear interaction between this morphological process and many of the phonological rules outlined in the previous chapter. The Diminutive form from 9a, for example, goes through the following morphological and phonological steps from the root *cikʷt* to arrive at the surface form *caʔcéʔkʷt*.

(11) Derivation: Diminutive CVʔ reduplication
  a. *cikʷt*   Root
  b. *cíkʷt*   Stress assigned
  c. *ciʔcíʔkʷt* C_1V_1 copied, [ʔ] assigned to C_2 slot, attached in prefix position; glottal infix because no sonorant to target after first V of stem
  d. *cəʔcíʔkʷt*   Unstressed Vowel Reduction
  e. *caʔcéʔkʷt*   Vowel Retraction

The above derivation is fairly straightforward, but some processes are more complex. Notice in 9e, *sčaʔčqʷáʔič*, that there is an apparent lack of glottal infixation in the Diminutive process, which would surface as **sčaʔčaʔqʷáʔič* if stress reassignment didn't result in deletion of the glottalization target, the first vowel in the stem. The derivation in 12 below demonstrates the processes at work to produce *sčaʔčqʷáʔič*. Both 11 and 12 show the extensive interaction of phonological processes and reduplicant processes to derive the surface forms.

(12) Derivation: Diminutive CVʔ reduplication with lexical suffixation
  a. *čəqʷ*   Root
  b. *čə́qʷ*   Stress assigned
  c. *čə́qʷayʼ*   Lexical suffix *=ayʼ* 'wood' attached
  d. *čə́qʷaiʔ*   Glide Vocalization at word boundary

e. *čəqʷáiʔ* Stress reassigned
f. *čəqʷáiʔič* Lexical suffix =*ič* 'backside' attached
g. *čqʷáiʔič* Unstressed schwa deleted
h. *čʔčqʷáiʔič* C_1 copied, no V_1 available to copy, [ʔ] assigned to C_2 slot, attached in prefix position
i. *čʔčqʷáiʔič* With no sonorant or vowel in the base *čq*, there is nowhere for the glottal infix to target and attach, so the stem remains as is.
j. *čəʔčqʷáiʔič* Schwa epenthesis to prevent CʔC cluster
k. *čaʔčqʷáʔič* Vowel Retraction in the reduplicant, Unstressed Vowel Reduction and Schwa Deletion in suffix
l. *sčaʔčqʷáʔič* Nominalizing prefix *s-* attached.

The necessary ordering in 12 also presents new information regarding the ordering of morphological processes, where lexical suffixes appear to precede reduplicative processes in the derivation. If reduplication were to occur prior to the stress shift and resulting vowel reduction and deletion processes that are part of the lexical suffixing process, then the glottal infix would remain in the surface form as **sčaʔčʔqʷáʔič,* and would probably actually surface as **sčaʔčaʔqʷáʔič* because of the Schwa Epenthesis rule to prevent tautosyllabic Cʔ clusters, as mentioned in Chapter 2. The ordering above may also influenced by semantic scope. That is, the Diminutive may have scope – adding a new layer of meaning – to 'wood,' and 'backside.' Notice that the Level 3 nominalizing prefix s- still attaches after the reduplication process is finished.

While the Diminutive process is fairly regular, there are four irregular forms, though all of them also have a regular form that is acceptable for some informants (Montler 2015). It should be noted that Montler finds five irregular forms, but one of them, *sséʔyaʔ* 'grandparent' has a form more easily explained by Affective reduplication rather than irregular Diminutive. Interestingly, the latter is the analysis he gives in his 2012 *Dictionary*, and this is also the only token that has no alternative regular Diminutive

form like the other four have in the 2015 *Grammar*. As such, I will only list the four that truly seem to be irregular diminutives. As always, the first item is the underlying root and the second is the headword. Here, though, the fourth is the irregular form, and the fifth is the regular form accepted by some elders.

(13) Irregular Diminutive forms with acceptable regular counterparts

a.	*huʔpt*	*húʔpt*	'deer'	*húhaʔpt*	*haʔhúʔpt*	'small deer'
b.	*məyc*	*smə́yec*	'elk'	*smə́ʔyəʔəc*	*smaʔmə́ʔyec*	'small elk'
c.	*tuʔwy'*	*stúʔwiʔ*	'river'	*stútaʔwiʔ*	*staʔtúʔwiʔ*	'creek'
d.	*x̣əws̓*	*x̣ə́w'əs*	'new'	*x̣éʔəw'əs*	*x̣aʔx̣aʔw'əs*	'a little new'

In addition to these irregulars, there are also a few instances where only the Diminutive form is possible or preferred. While *qiʔcíy'* 'rabbit' exists, for example, most informants felt that the non-diminutive form 'is strange,' and that the Diminutive *qaʔqiʔcə́y'* is preferred (Montler 2015:285). Indeed, because *qaʔqiʔcə́y'* has essentially become a frozen form, the expression 'little rabbit' must be done lexically, not through Diminutive reduplication. Two more examples, *k'ʷaʔk'ʷáʔt'ən'* 'mouse' from a root for 'rat,' and *sk̓ʷaʔk̓ʷátuʔ* 'crow' from a root for 'raven,' also require lexical expression of 'little' as it appears that double Diminutive reduplication is not permitted.[18]

In summary, the Diminutive reduplication process in Klallam is a derivational, productive and fairly regular process, though there are a few irregular and frozen forms. It is a CVC- shape, where the C_2 is a preassigned glottal stop. Because of the particular rules of vowel reduction and retraction present in Klallam, the form invariably surfaces as *CaʔC* and never attracts stress. It is an automatic form of reduplication, in that it is always

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[18] Though note that there is at least one example of triple Plural reduplication, on *łiłiłiłtə̓t* 'fling it' from the stem *łə̓t* 'flick.' There is also a considerable amount of double reduplication where two different forms are expressed, such as Diminutive and Affective, and this will be explored later in the chapter.

accompanied by a glottal stop infix, unless other processes eliminate the targets for glottalization. While this particular shape for Diminutive is different than the CV- shape common among Salishan languages, the accompanying glottal infix is quite common as part of the Diminutive process. This glottal infix creates an environment where it is very easy to see the rather unusual Vowel Retraction pattern of Klallam emerge. From the data here, it seems that the derivational reduplicative Diminutive process precedes inflectional affixation, as evidenced by the nominal inflection *s-* never being copied as the C_1 in this reduplicative shape. At the same time, however, it seems that lexical affixation precedes Diminutive reduplication, and it may also be that semantic scope plays a role. Rule ordering in Klallam word formation will continue to be explored throughout the remainder of this chapter.

3.2 Plural

In Salishan languages, the notion of plurality is not confined to the idea of number, but may be more accurately thought of as generally augmentative or pluractional in nature. In addition to plurality, it may also refer to collectivity, intensiveness, repetition, distribution, or frequency (Czaykowska-Higgins & Kinkade 1998, van Eijk 1998). While 'plural' is often used in the literature, 'distributive' and 'augmentative' are quite common terms as well (Czaykowska-Higgins & Kinkade 1998). In fact, not only because of the wide range of semantic uses but also because of the morphological patterns which emerge, there is some discussion that plurality in Salishan languages is not inflectional at all, but may be more derivational or lexical in nature (Czaykowska-Higgins 1998, Kinkade 1981).

This certainly seems to be true for the idea of plurality in Klallam specifically. It does not trigger subject-verb agreement, it applies to nouns, verbs, and adjectives, it may change the word category of the stem, and the derived meaning is not necessarily predictable. On nouns, it is better thought of as collective, so instead of the plural form marking a number of things, it marks instead a group of things. Likewise, plural forms on verbs can mark either a group of things or people doing the action, as in *ʔəɬʔíɬən'* 'eat'; or the action happening to a group of things or people, as in *c̓íc̓s̓íkʷst* 'punch several' and *k̓ʷik̓ʷə́xt* 'drive away a group. It may also express a repeated action, as in *šišč̓ət* 'hit it repeatedly' (Montler 2012, 2015). The same is true for adjectives, where plural forms mark a group of things that have the quality of the adjective. For example, there is a singular adjective *pə́q'* 'white' and a plural adjective *pipə́q'* 'white,' but this is unrelated to agreement, as the meaning is literally 'a group of white ones' (Montler 2012, 2015), not just 'white' with a plural agreement inflectional marker. There are also instances where the collective nature of the plural may be interpreted instead as augmentative or as an intensifier rather than as 'collective,' as in the change from singular *qə́s* 'dunk' to plural *qiqə́s* 'immerse' and *č̓ič̓ə́qʷ* 'on fire' from *č̓ə́qʷ* 'burn.' In fact, Thompson and Thompson (1971) classify Intensive as a reduplicative Ci- process distinct from Plural, but it would be difficult to support this, as the data show that Ci- is used for plural meanings other than that of intensification, and that some intensive meanings do not use the Ci- shape. All things considered, 'collective' may be inadequate to express the fullness of this semantic category in Klallam. On the other hand, 'augmentative' may be too broad, as Characteristic and Distributive reduplicative processes in Klallam would easily fit under that umbrella as well semantically, but it remains to be seen if that is possible

morphologically. That said, the semantic properties and the reduplicative shapes mean

that grouping these three processes into one larger Augmentative reduplication process is

not out of the question, as will be discussed in §3.10. I will adhere for now to the term

'Plural' used by Montler (2012, 2015) and elsewhere (Haeberlin 1918, Thompson &

Thompson 1971, Fleisher 1976).

Plural in Klallam is usually formed with the infix *-əy̓-* or *–aʔy-* (or an allomorph

of one of these) inserted after the first consonant of the root (Montler 2015). Examples

are in 14a-d, but as it is not the focus of this paper, I will not further explore this process

or the phonological patterns that accompany it. As in §3.1, in all examples in this section,

the first item is the presumed underlying root and the second is the 'headword' or surface

form as it appears in the dictionary.

(14) Examples of Plural infixing

a.	*čuɬ*	*sčúɬ*	'wood'		*sčáʔiɬ*	'a bunch of wood
b.	*ŋəqsn*	*ŋə́qsən*	'nose'		*ŋəyə́qsen*	'noses'
c.	*ʔaʔčš*	*ʔáʔčš*	'change (v.)'		*ʔaʔyáʔčš*	'change (pl. v.)'
d.	*čq*	*čə́q*	'big'		*čə́y̓q̓*	'many big things'

Less commonly, but on roughly 200 tokens in the dictionary, it can also be formed by

reduplication.

(15) Examples of Plural reduplication, all allomorphs

a.	*ɬəmxʷ*	*ɬə́məxʷ*	'rain (v).'	**ɬəmɬə́məxʷtəŋ**	'be poured on'
b.	*nəw̓*	*nə́w̓*	'in'	**nuʔnuʔásən**	'to be put in (pl.)'
c.	*ʔays*	*ʔáyəs*	'sister'	**ʔi̓ʔáyəs**	'sisters'
d.	*c̓ə̀x*	*c̓ə̆x*	'worn out'	**c̓i̓c̓ə̆x**	'completely wear out'
e.	*ƛ̓ə́w*	*sƛ̓ə́wən̓*	'earring'	**sƛ̓ƛ̓i̓wən̓**	'earrings'

In one process, see in 15a-c, the shape is CVC-, which surfaces as CəC, or C*u* and C*i* where C$_2$ undergoes Glide Vocalization. The other shape is C(V)- in one of two allomorphs: in one, the V slot is preassigned with the high front vowel [i] so the surface form is C*i*-, and in the other, only the first consonant copies, and this is accompanied by an ablaut [i] which then attracts stress, thus surfacing as C…*í*. These two forms may be seen in 15d-c, respectively. Note that, while the C*i*- allomorph is an unmarked syllable structure, the C…*í* allomorph is a marked structure on its own, and results in CC clusters in word-initial position that are also marked.[19] I will discuss this further at the end of this section.

There are some phonological factors that may help determine which form is possible but there is no definite pattern that predicts which should be applied to a given root. The CVC pattern, for example, often occurs when at least one of the consonants is a sonorant, but not always. In fact, some words have two or more forms in free variation, either an infixed form and a reduplicative form, or two allomorphs of a reduplicative form. For example, *sə́mi* 'blanket' may be either *sisə́miʔ* (C*i*-) or *ssími?* (C…*í*) in its plural form 'blankets.' Recall that diachronic information is not available regarding the marking of Plural by infixing and by reduplication in Klallam. That the use of CVC-reduplication to mark Plural is the most common process throughout the Salishan language family may indicate that the reduplicative process was at one time the

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[19] Montler (2015) adds a third variation of the CV- form, C*í*- where [i] is stressed, but he also notes that this variation occurs only on two tokens, **m*í*məqʼ** 'full bellies' and *sxʷíxʷəkʷ* 'rumps.' As both of these also have regular C*i*- forms (*mimə́qʼ* is listed as the regular form in the dictionary, and *míməqʼ* is listed as a variation recorded by two informants; *sxʷixʷə́kʷ* is listed as the regular form with *sxʷixʷə́kʷ* the variant recorded by one informant), it is difficult to justify this as an allomorph. There is a wide range of possibilities, from idiolects to hard-to-hear stress patterns, to explain these two tokens in the data, and without more robust input from native speakers, a satisfactory explanation may no longer be possible.

productive process for Klallam as well, but it seems that the current productive form is the infix *-əy̓-/-aʔy-*. As students using the *Klallam Grammar* are advised, 'If you come across a new Klallam word and do not know the plural, use the *-əy̓-/-aʔy-* infix. Since it is so common, it's a good bet that *-əy̓-/-aʔy-* is right' (Montler 2015:176). What was likely a gradual decline in the productivity of reduplication to mark Plural will likely be sped up in the newer generations of Klallam speakers as they learn this method of indicating plurality.

The dictionary also states that this infix is the form used for new and borrowed words, but there are at least four which use reduplication instead. Notice that both CVC- and C(V)- shapes are used.

(16) Plural reduplication on borrowed words
a.	*ləmətu*	*ləmətú*	'sheep'	***ləm**lemətú*	'sheep'	Chinook Jargon
b.	*məs*	*mə́st*	'mess'	***mi**mə́stxʷ*	'mess up'	English
c.	*talə*	*tálə*	'money'	***təl**tálə*	'money'	English
d.	*tiy*	*sxʷtiháy*	'teapot'	*sxʷ**ti**tiháyə*	'teapots'	English

This should not be taken to mean that Plural reduplication is still productive in Klallam, but it does underscore the degree to which plurality in Klallam is nearly impossible to predict in form, and that the current productivity of infixation may be more fluid than is now being taught through the *Klallam Grammar*. Indeed, the unpredictable nature of which form to use may be somewhat similar for non-native Klallam learners as the experience of non-native English learners trying to understand which verbs are regular and which are irregular in the past tense and in past participles. While there are phonological factors that influence forms, in the end, which verbs are irregular and what forms they take must be memorized because of the lack of predictable patterns.

While the particular Plural process a root takes is difficult to determine, once the process is established, the surface form becomes fairly predictable. Shown in 15a, *ɬəmɬə́məxʷt* 'be poured on' is an example of the CəC allomorph of the CVC- Plural pattern, and the derivation goes through the following steps:

(17) Derivation: Plural reduplication, CəC pattern
    a. *ɬəmxʷ*   Root
    b. *ɬə́məxʷ*   Stress assigned, Schwa Epenthesis[20]
    c. *ɬəmɬə́məxʷ* $C_1V_1C_2$ copied and attached in prefix position
    d. *ɬəmɬə́məxʷ*   No Schwa Deletion in reduplicant in order to prevent cluster where
                          one segment is sonorant
    e. *ɬəmɬə́məxʷtŋ*   -*t* (Transitive) and –*ŋ* (Passive) suffixes attached
    f. *ɬəmɬə́məxʷtŋ*   No stress reassignment to suffixes
    g. *ɬəmɬə́məxʷtəŋ* Schwa Epenthesis in suffixes in order to prevent cluster where one
                          segment is a sonorant

In these steps, is it certain that the suffixes are attached after the reduplication process? No, but there are a couple of good reasons to suppose this is the case. First, the fact that the nominalizing *s-* prefix is not copied in the Plural reduplication process (as seen in 15e) indicates that Plural reduplication precedes inflectional affixation in morphological ordering. Second, the status of the Plural in Klallam as derivational rather than inflectional underscores that it probably occurs before the Transitive and Passive suffixes are attached. Lastly, so far it has been shown that only lexical affixation may precede reduplication in ordering processes, and the affixes in question here are not lexical.

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[20] This is an example where the schwa insertion does not appear to fit the definition of Schwa Excrescence for Klallam: it is not separating two sonorants, nor is it optional. While the dictionary contains a great deal of information about individual speakers' variations, especially in pronunciation or deletion of schwa, this item in the dictionary has no variation regarding this unstressed schwa. Apparently, all informants pronounced it in the recordings. In this and in many other cases in the data, it appears to confirm that there is also an epenthetic schwa rule in Klallam that prevents consonant clusters where one of the consonants is a sonorant. As such, I will label this and other similar processes as Schwa Epenthesis, though this rule is not confirmed in the literature.

One might also ask if Plural is in fact a CVC- process, or if only C_1C_2 are copied and schwa is inserted to separate the adjacent sonorants, as described by Montler (2015). This is also difficult to answer with certainty, largely because the CVC- pattern occurs almost exclusively where the second consonant is a sonorant – usually nasals or glides, although at least twice with liquids. As such, it could be that the schwa is inserted in accordance with the rule of Schwa Epenthesis in a CC- pattern, but it could as easily be that the vowel is copied in a CVC- pattern which then undergoes Vowel Reduction, Unstressed Schwa Deletion, and finally Schwa Epenthesis to separate any sonorant cluster in the reduplicant. One last possibility that will come up again in §3.3 in describing Actual is that the unstressed vowel undergoes reduction, but the resulting schwa never deletes in order to preserve the reduplicant shape, CVC-. There is one item in the data that supports this idea: from a root *x̣ɬ* 'hurt' comes the derivation *x̣əɬx̣ɬnáx̣ʷ* 'hurt people.' Neither C_1 nor C_2 is a sonorant, and as can be seen in the stem of the derived form, [x̣ɬ] is a permissible cluster in Klallam. In spite of this, the surface form is not **x̣ɬx̣ɬnáx̣ʷ*, as one would expect if the reduplicant shape were indeed CC-. Rather, there is an inserted schwa unmotivated by Klallam phonotactics, resulting in a CVC shape. As a result, a less marked reduplicant shape surfaces instead of the more marked shape permitted by Klallam phonology. In all, three factors lead me to believe CVC- is the better description. First, there is precedence to suppose that it might be CVC-, as this shape is common throughout Salishan languages in Augmentative reduplication processes (Czaykowska-Higgins & Kinkade 1998, van Eijk 1998). Second, CVC- is a less marked shape than CC-. Third, in the example of *x̣əɬx̣ɬnáx̣ʷ*, neither C_1 nor C_2 is a sonorant, and yet the CVC- shape is preserved.

Both of the allomorphs of the CVC- pattern are the result of Glide Vocalization where /j/ and /w/ become [i] and [u] between consonants, as illustrated in 15b-c. In the previous example, *xəɬxɬnáxʷ*, schwa is inserted in order to preserve the less-marked CVC shape, so why would the CVC shape not be preserved in the C*i* and C*u* allomorphs of CVC? Notice that the result of Glide Vocalization is the least marked syllable shape, CV. It seems that a ranking system of cross-linguistic markedness is beginning to emerge. Where phonological rules may not apply to reduplicant shapes if this would result in a more marked pattern, if application of those phonological rules would result in a less marked pattern, they may apply even if it changes the underlying reduplicant shape. This possible ranking system will be tracked throughout the rest of the reduplicative processes. In the token from 16b, *nuʔnuʔásəŋ* 'to be put in,' the CVC- Glide Vocalization process looks like this:

(18) Derivation: Plural reduplication, C*u*- Allomorph
  a. *nəw'*   Root
  b. *nə́w'*   Stress assigned
  c. *nəw̓nə́w'* $C_1V_1C_2$ copied, attached in prefix position
  d. *nəuʔnə́uʔ*   Glottalized /w̓/ vocalizes to [uʔ] both between consonants and again at word boundary;
  e. *nuʔnúʔ*   Stress reassigned from marked schwa to unmarked [u]; Schwa Deletion in reduplicant and stem
  f. *nuʔnúʔasŋ*   -*as* (locative causative) and –*ŋ* (Passive) suffixes attached
  g. *nuʔnuʔásŋ*   Stress reassigned to strong suffix
  h. *nuʔnúʔásəŋ*   Schwa Epenthesis

A similar process occurs for 16c, where /j/ in the stem *ʔáyəs* copies and then vocalizes to [i] between the two glottal consonants to surface as *ʔiʔáyəs* in Plural form. This results in a reduplicated surface form that looks like the C*i*- pattern, but is in fact analyzed as the CC- pattern. Is it possible to know if this is indeed the case? The reality is that the result

is the same, whether analyzed as a C*i*- pattern or as a CC- pattern with glide vocalization, so knowing for certain is difficult. However, the likelihood that it is, in fact, the CC- pattern rests on the fact that it is more probable that the natural class of glides will behave in the same manner, and thus it is more likely that both /w/ and /j/ will undergo copying and subsequent vocalization. It is also important to note that, as with all other Plural reduplication patterns, this is non-productive and seemingly in free variation with C*i*- allomorphs. That is, if a root with a glide in the C_2 position undergoes CVC- reduplication, phonological rules cause it to undergo vocalization. However, a root with a glide in the C_2 position is not required to reduplicate in a CVC- pattern. There are also cases like 19a-b, where both C(V)- allomorphs occur on roots where /w/ is in the C_2 position, C*i*- in 19a and C with [i] ablaut in 19b.

(19) C(V)- Plural reduplication with a glide in C_2
    a. *k̓ʷəwyʔ*   'skin'   **k̓ʷik̓ʷə́wi**   'skins'   C*i*-
    b. *pə́wy̓*   'flounder'   **p̓p̓ı̆́wy̓**   'flounders'   C…*í*

The C(V)- reduplicative process is somewhat simpler than the CVC- process, in that it does not interact as much with the phonology. Using 19a as an example, the steps look like this:

(20) Derivation: Plural reduplication, C*i*- allomorph
    a. *k̓ʷəwyʔ*   Root
    b. *k̓ʷə́wiʔ*   Stress assigned, Glide Vocalization between two consonants
    c. *k̓ʷik̓ʷə́wiʔ* C_1 copied, [i] preassigned to V slot, attached in prefix position
    d. *k̓ʷik̓ʷə́wi*   Optional glottal deletion in word final position

While the steps are simpler than those of CVC- reduplication, notice that the unmarked shape is preserved in the reduplicant in an environment where Klallam phonological rules

would normally apply. In 20c, [i] is inserted into its preassigned slot, but in 20d, the unstressed [i] does not undergo Vowel Reduction and Schwa Deletion as one would expect if it had been in a stem. Consonant clusters of the type that these processes would result in are allowed, so there is no phonotactic motivation to preserve the [i] in this environment. It seems that at least presassigned segments in reduplicants are immune to phonological processes that would result in their deletion in order to preserve the unmarked CV shape.

Like C*i*-, the steps for C- reduplication with stressed [i] ablaut are rather more straightforward than those for CVC- reduplication.

(21) Derivation: Plural reduplication, C- with stressed [i] ablaut allomorph
  a. *pə́wyʼ*   Root
  b. *pə́wyʼ*   Stress assigned
  c. *ppíwyʼ* C_1 copied, attached in prefix position; ablaut [i] replaces
                         stressed V, assumes stress

While a simple process in terms of steps, this process is of extreme importance in terms of markedness. The stop-stop cluster in word-initial position in 21c is permitted in Klallam phonotactics, but C- as a reduplicant shape is marked, and the resulting CC cluster is also highly marked in the world's languages. Why would this be, especially in light of the examples shown so far where reduplicant shapes under-apply Klallam phonology in order to preserve less marked shapes? This is not answerable yet, but it seems that, where a shape that is marked cross-linguistically does not violate Klallam phonotactics, it may be permitted as a reduplicant shape and a surface form. This possibility will be discussed at the end of this chapter once all reduplicative processes have been described with issues of markedness and contrastiveness in mind.

To review, Plural in Klallam is derivational, productively an infix pattern and non-productively a reduplicative one. It is nearly impossible to predict which form of plural any given token will take, and some tokens have at least two forms in free variation. The two general patterns are CVC- with three allomorphs, and C(V)- with two allomorphs, one with a preassigned [i] in the V position, the other with an ablaut [i] in the stressed vowel of the stem. Where Montler (2015) finds a third allomorph for the C(V)-pattern, there does not seem to be sufficient data to support this third type. The CVC- pattern could conceivably be analyzed as a CC- pattern, but the prevalence of CVC- in other Salishan languages combined with the issue of markedness underscore the probability that CVC- is the correct analysis. Similarly, the CVC- allomorph where C*y*- is copied and vocalized to C*i*- could be seen as the C*i*- allomorph, but since natural classes tend to behave in the same manner, and C*w*- can copy and vocalize to C*u*-, it should be supposed that C*y*- undergoes the same vocalization process. In terms of markedness, the CVC- shape, while more marked than an open syllable, actually prevents the possibility of CC clusters in word-initial position, and thus may be deemed less-marked than the alternative. Also, C(V)- shapes are generally preserved by the under-application of Klallam phonological processes, but the C- allomorph with accompanying [i] ablaut results in a highly marked stop-stop initial cluster that begs further examination. Finally, the fact that the nominalizing prefix *s*- does not copy as the C_1 of a reduplicative process indicates that Plural reduplication precedes inflectional affixation, further evidence that the plural in Klallam is derivational.

3.3 Actual

      The majority of Salishan languages make a distinction between aspect that is

imperfective/continuative/actual and perfective/noncontinuative/nonactual, the difference

generally being that the former marks an ongoing or incomplete action while the latter is

a completed action (Czykowska-Higgins & Kinkade 1998). 'Actual' is the terminology

used for Klallam and many other Salishan languages where the imperfective is the

marked form in order to show that this aspect is not quite the same as languages with an

imperfective/perfective system, where it appears to be the perfective forms that are

marked (Thompson & Thompson 1971). In Klallam and other Salishan languages, Actual

may also be applied not just to verbs, but to nouns and adjectives as well, and Thompson

and Thompson (1971) and Montler (2015) explain that because of this, its semantics are

best understood as any situation, not just a predicative one, that is actually occurring, or

that was actually occurring at a specified time. For example, the noun *skʷúl* 'school' may

be marked with Actual, *skʷúkʷəl*, to change its meaning to 'going to school,'[21] and when

the number three, *łíxʷ,* undergoes the Actual process, its meaning becomes 'being three,'

łíłxʷ. Likewise, the adjective *ʔiyə́m'* 'strong' may take Actual marking (along with a

reflexive suffix), *ʔaʔyaʔyə́mct*, which changes the meaning to 'making oneself strong.'

Indeed, the Actual/Nonactual distinction is so pervasive in Klallam that there is a list of

close to 700 stems in both their Actual and Nonactual forms in the *Klallam Grammar*.

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[21] The most common way to express Klallam Actual in English is to use the progressive form *–ing* on
verbs, and conversely, the way the English progressive form is translated into Klallam is to use the Actual
aspect (Thompson & Thompson 1971, Montler 2015). This has obvious drawbacks in cases like this, where
the stem is a noun or adjective rather than a verb. Morphologically, it would be more accurate to translate
this as 'school that is actually happening' as there is no morpheme indicating movement in this lexical
item. It may be translated as 'going to school' because this is easier to understand in English, or because
semantically and/or pragmatically, 'going to school' is in fact closer to the meaning.

In Klallam, Aspect is an inflectional process that may be formed by either infixation, metathesis, or reduplication. The first two of these processes are shown below for demonstration purposes only; they will be discussed only to highlight certain processes that relate directly to Actual reduplication as well.

(22) Examples of Actual infixation and metathesis

a.	c̓ut̓	c̓út̓	'nudge'	c̓úʔt̓		'nudging it'
b.	čaq̓ʷ	čáq̓ʷən	'sweat'	čáʔq̓ʷəŋ̓		'sweating'
c.	ƛ̓acu	ƛ̓ácu	'fish (v.)'	ƛ̓áʔcuʔ		'fishing'
d.	x̣ʷš	x̣ʷšə́t	'agitate it'	x̣ʷə́št		'agitating it'
e.	tč	tčə́ŋ	'spear (v.)'	tə́čəŋ̓		'spearing'

Glottal infixation after the stressed vowel, shown in 22a-c, is the most common form and also a highly productive process, since, as mentioned earlier, most verbs in Klallam exist in an Actual-Nonactual dyad. Much less common is a $C_2V_1 \rightarrow V_1C_2$ process of metathesis, as shown in 22d-e.[22] Metathesis appears to be complementary with the reduplicative process, occurring only on roots with a CC cluster in word initial position. There are perhaps three roots of this type where reduplication is the process applied instead, but it is largely the case that in environments where metathesis can occur, reduplication does not occur. Glottal infixation, on the other hand, will be discussed further in the description of Actual reduplication, as these two processes seem not to be complementary but in free variation, even co-occuring at times.

There are a couple of accompanying phonological patterns that appear in these examples that will also be relevant to the discussion of Actual reduplication. First, notice in 22b that in addition to the glottal infix, the 'middle voice' suffix -ŋ is also glottalized.

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[22] The metathesis is not as easy to see in 22e, where, after metathesis, Schwa Epenthesis prevents a cluster with a sonorant segment. The steps look like this: tčə́ŋ → tə́čŋ' → tə́čəŋ'

The final -ŋ is also glottalized in 22e, where there is no glottal infixation. Recall that a glottal infix accompanying reduplication processes is widespread throughout Salishan languages, where it appears most often with Diminutive reduplication, and targets one of several sonorants in the word (Czaykowska-Higgins & Kinkade 1998). Section 3.1 showed that only a glottalized sonorant or a glottal stop infix will appear in the surface form as the result of a glottalization process, not both. The presence of both a glottal infix and a glottalized sonorant in 22b indicates that there is a different process in the Actual than that of the Diminutive process. Montler gives a rule in the *Klallam Grammar* (2015): 'Any *m*, *n*, or *ŋ* following the stressed vowel in a word in any form of the actual becomes glottalized' (229), which is another one of the targets identified in Salishan languages by Czaykowska-Higgins and Kinkade (1998). In the same discussion, however, they also mention that another common target is any sonorant in the final syllable of the lexical item, which would certainly describe 22b,e. Since both of these patterns are present in the Actual, an examination of that data may refine the description of the pattern.

Like metathesis, reduplication is a less common process than glottal infixation to form the Actual. It is probably not a productive process, keeping in mind again that the data available is a synchronic rather than diachronic view of the morphology, and there are no current data that would shed light on the historical developments at work here. That said, reduplication does appear in over 65 tokens in the dictionary, including one borrowed word, *skʷúkʷəl* 'going to school,' which was mentioned earlier. There appear to be at least two different shapes for reduplicants in the Actual, one of which is shown below.

(23) Examples of Actual reduplication, C infix

    a. *ŋaʔ*   *ŋáʔ*   'give'   *ŋáŋaʔtxʷ*   'giving away at a potlatch'

    b. *qanʼ*   *qánʼ*   'steal'   *qáqən̓*   'stealing'

    c. *c̓ap*   *c̓ápt*   'interfere'   *c̓ác̓pt*   'busy'

According to Montler's (2015) grammar, the pattern does not seem complex: copy the first consonant and insert it after the stressed vowel. While it seems relatively simple, it should be noted that this pattern is marked in a variety of ways: the shape is only C, which is more marked than a CV or CVC shape; the infixation process is more marked than prefixation or suffixation; and it may result in highly marked consonant clusters, as seen in 23c. Interestingly, while Rubino (2005) states that infixes are usually copies of material from the middle of the base, which in the case of a CVC root could be assumed to be C_2. However, the Actual infix still copies from C_1. This could possibly be interpreted as a weak form of wrong-side affixation, as mentioned in §1.3, but not strongly so, as it is still attaching to the prosodic base from which the copied material comes. If interpreted this way, the -C- process for Actual would then be very highly marked in four significant ways. The derivation for 23c would go through the following steps:

(24) Derivation: Actual reduplication, C infix

    a. *c̓ap*   Root

    b. *c̓áp*   Stress assignment

    c. *c̓ác̓p*   Copy C_1, insert after stressed V

    d. *c̓ác̓pt*   Transitive suffix *–t* attached

In 24c, the marked shape C reduplicant infixes, it does not attach to the edge of the prosodic unit that was the source of the copied material, and it results in a marked consonant cluster which is only exaggerated in 24d. Actual appears to be a highly marked

reduplicating process cross-linguistically. However, this does not seem to tell the whole

story. Compare the stress pattern in the following with that of 23 (stress, rather than

reduplicant, is highlighted here):

(25) Examples of Actual reduplication, different stress patterns
   a. *həwš*   *həhə́wəš*[23]   'thank'   *həhə́wəš*   'thanking'
   b. *ʔəʔyi̓*   *ʔáʔiʔ*   'borrow'   *ʔaʔáʔiʔ*   'borrowing'
   c. *p̓aʔ*   *p̓áʔet*   'try'   *p̓ap̓áʔt*   'trying it'
   d. *kʷy̓*   *kʷə́y̓*   'spill'   *kʷəkʷə́y̓*   'spilling'

Notice in 23 that the stress remains in place on the base, even after epenthesis. How can

the stress shift be explained in 25? These cannot be cases where a 'strong' suffix shifts

stress to itself. In 25a-b, there is no suffixation at all, and in 25c, it is not the suffix -*t* that

receives the stress. Can the C_1 infixation process account for the surface form in 25a?

Consider the derivation below.

(26) Derivation: Actual reduplication, C infix
   a. *həwš*   Root
   b. *hə́wəš*   Stress assignment and Schwa Epenthesis
   c. *hə́hwəš*   Copy C_1, insert after stressed V
   d. *hə́həwəš*   Schwa Epenthesis to prevent sonorant cluster
   e. **həhə́wəš*   Stress shift to epenthetic schwa, no known motivation

At 26e, the derivation encounters serious problems. While it is not unknown for

reduplicants to attract stress away from roots, it would be extremely difficult to find a

plausible explanation for the stress shifting to an epenthetic schwa following the

reduplicant in a language where stress is at least partially related to morphology (recall

the discussion of strong and weak morphemes in Chapter 2) rather than, for example, the

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[23] Note that this root surfaces only in reduplicated form.

number of syllables in a lexical item. This analysis also fails to explain why some Actual reduplication would not result in a stress shift, as in the examples in 23, but some would, as seen in 25. Finally, prosodic stress doesn't explain the shift either, as 23a is a three-syllable token with stress on the first syllable, and 25a-b are three-syllable tokens with stress on the second syllable.

Another issue is that Montler states that Actual reduplication is quite rare, occurring 'only on words that have exactly three sounds: C-V-C' (2015:225). However, the data show reduplication on roots not only of CVC, but on CC, CVCC, CCVC, CVCCV, and CVCVC as well, three of which may be seen in 25a-b,d. Interestingly, in his morphological analysis in the *Klallam Dictionary* (2012), Montler shows, but does not explain, the Actual reduplicative shape as being a CV- copy in the prefix position. While certainly a possibility, this alone, like the -C- infix, is unable to account for the fact that the tokens in 23 are stressed on the first syllable while those in 25 are stressed on the second.

It seems the best answer lies in describing Actual reduplication in Klallam as having both of these reduplicant shapes. In Plural reduplication more than one reduplicant shape is possible for a given process, and this more adequately explains the facts here as well. If categorized by stress pattern, the data reveal that without exception, tokens with stress on the first syllable before additional affixation processes occur may be analyzed as having $-C_1-$ infixation, and those with stress on the second syllable may be analyzed as having a C_1V_1- copy in the prefix position. When categorized in this way, there are approximately 40 instances of -C- infixation, and the root is usually (but not exclusively) the CVC shape mentioned by Montler in the *Klallam Grammar*.

Additionally, there are almost 20 instances of a CV- shape where the roots include all of

the shapes listed above, from CC to CVCVC, including many of the CVC shape.

Examining the data above in light of this possibility, let us see what the derivation for 25a

would be if CV- reduplication were another possible process of Actual reduplication.

(27) Derivation: Actual reduplication, CV shape
  a. *həwš*   Root
  b. *hə́wəš*   Stress assignment, Schwa Epenthesis to prevent sonorant cluster
  c. *həhə́wəš* C_1V_1 copied, attached in prefix position

All phonological patterns are followed, and there is no unmotivated stress shift. This

appears to be a viable solution to the problem of stress shift in Actual reduplicative

forms. Additionally, the CV- pattern is common in several other Coast languages to

express the Actual (Czaykowska-Higgins & Kinkade 1998), including the closely related

Northern Straits language Saanich. Again, a diachronic look at Klallam and surrounding

languages would perhaps reveal interesting information regarding the presence of these

two shapes. Might the -C- infix occur as the result of areal influence from neighboring

Wakashan or Chemakuan languages, where the more common shape for Salishan Actual

is CV-? This would certainly be another fruitful line of inquiry for an examination of

historical Klallam and its place in the Northwest Coast linguistic area.

While the data are explained nicely by the presence of both shapes of reduplicant,

it must be noted that the exact nature of the CV- shape is in question; there is no existing

description of this shape for Klallam Actual. Based on the data, it may be a C_1V_1- copy,

or it may be a $C_1ə$- copy where schwa is preassigned to the V_1 slot, or it may be a CV-

shape with two allomorphs, C_1V_1- and $C_1ə$-. Because of the combination of the

phonological rules Unstressed Vowel Reduction and Vowel Retraction, most of the

surface forms in the data may be derived using either of these possible allomorphs. There

is exactly one item where it seems to matter, as seen in 25c above. The reduplicative

process from *ṗaʔ* to *ṗapá̈ʔt* requires a C_1V_1- shape, as there is no phonological motivation

for a preassociated schwa in a $C_1ə$- shape to surface as [a]. At the same time, however,

evidence from 25d shows that, where there is no V available for copying, [ə] is inserted

into the V slot of the CV- shape, so *kʷy'* surfaces as *kʷəkʷə́y'* in reduplicated form. This

schwa insertion is true for both other tokens with a CC root shape. Because *ṗapá̈ʔt* exists

as a token requiring a C_1V_1- shape, and all other surface forms other than those with CC

roots can be analyzed using this same shape, this indicates that $C_1ə$- is perhaps the

allomorph for the specific environment where the root CC, and C_1V_1- is the 'elsewhere'

allomorph.

    One further feature of the CV- reduplicant in either allomorph is its unmarked

shape. Notice that the unstressed schwa in 27c does not delete, in spite of it being an

environment where it is phonologically justified in doing so. Recall that schwa is either

not deleted or inserted into clusters only where one of the consonants is a sonorant. In the

case of all Actual reduplication with the CV- shape, however, the V never undergoes

deletion. It may reduce to schwa, but it does not delete, thus maintaining its unmarked

shape. Recall that in the C*i*- allomorph of Plural reduplication, the preassigned [i] does

not undergo reduction and deletion in spite of being unstressed. Here, the same process

occurs with non-preassigned vowels in the reduplicant. In fact, the requirement that all

segments of the reduplicant shape be filled is so strong that in the case of 25d, where *kʷy'*

surfaces as *kʷəkʷə́y'* in the Actual form, an epenthetic schwa is inserted into the V slot

where no V exists in the root. Again, there is no phonological need for this epenthesis, as

kʷkʷ clusters are permitted and occur the data, as in the case of *kʷkʷet* 'warm something.'

It appears that, while reduplicative processes certainly interact with phonological patterns

in Klallam, some of those patterns under-apply when markedness of the reduplicant

would be heightened.

Another interesting feature in all forms of Actual, whether formed by glottal infix,

metathesis, or either pattern of reduplication, is the pervasiveness of glottal stops and

glottalized sonorants. Interestingly, there are many cases where Actual reduplication co-

occurs with Actual glottal infixation. It couldn't be described as an automatic form of

partial reduplication in the same way that Diminutive is, because both reduplication and

infixation can exist alone, meaning that one does not require the presence of the other in

order to be morphophonemic. The co-occurrence is interesting, nonetheless. 28a-c are

examples of C_1 infixation: 28a where no additional glottalization surfaces, and 28b-c with

additional glottalization. 28d-f demonstrate the same patterns with CV- prefixation.

Notice that 28b,e exhibit a glottal stop infix in addition to the reduplicant, an apparent

double process of Actual formation, and 28c,f demonstrate a glottalized sonorant where

this glottalization does not exist in the root. Finally, notice in 28g-h that there is no

additional sonorant glottalization. Both glottalization and reduplication are in bold below.

(28) Examples of Actual reduplication, plain and glottalized

a.	*łixʷ*	*łíxʷ*	'three'	*łíłxʷ*	'being three'
b.	*łax*	*łáx*	'lie flat'	*łáʔłxt*	'laying it on'
c.	*k̓ʷin*	*k̓ʷín*	'how many'	*k̓ʷík̓ʷən̓*	'how many'
d.	*həwš*	*həhə́wəš*	'thank'	*həhə́həš*	'thanking'
e.	*qʷix̣*	*qʷíx̣*	'move'	*qʷaʔqʷíx̣ct*	'moving'
f.	*qəy*	*qə́y*	'spoil'	*qəqə́y̓*	'spoiling'
g.	*ŋus*	*ŋús*	'four'	*ŋúʔŋəs*	'being four'
h.	*niʔn*	*níʔn*	'acknowledge'	*naʔná́ʔnət*	'acknowledge someone'

Recall from the discussion of Actual metathesis that Montler's rule for glottalization is that any nasal after the stressed vowel becomes glottalized in any form of the Actual. 28f shows that this rule may be expanded to any sonorant, especially since nasals and glides generally undergo the same phonological processes, behaving much like a [-syllabic, +sonorant] natural class. From 28g-h, the rule may be further refined to specify sonorants in word final position, rather than after the stressed vowel, as none of the sonorants after the stressed vowel in these surface forms are glottalized. As mentioned in the discussion of glottalization and metathesis, the rule in this refined form is more akin to one of the possible glottalization targets mentioned by Czaykowska-Higgins and Kinkade (1998), but with the variation that it must be a sonorant in word final position, not merely in the final syllable.

In summary, Actual reduplication is a non-productive process best explained not just by infixation of C_1, but also by a CV shape attached in the prefix position. This accounts for both the stress patterns in surface forms, and the under-application of certain phonological processes where one would otherwise expect them to arise. That is, the vowel in the CV- shape does not delete, even when the environment is appropriate for the combination of Unstressed Vowel Reduction and Schwa Deletion to enact this deletion. As seen also in the C*i*- shape in Plural reduplication, it seems that preservation of the unmarked CV- shape in Actual reduplication is preferable to the application of appropriate phonological rules. Preservation of this shape is so important that, while the vowel in the CV- shape is usually a copy of V_1 in the base, in cases where the root is CC and there is no vowel, the reduplicant is a C*ə*- allomorph, again maintaining the CV- shape. At the same time, however, the C_1 infix is highly marked by shape, by infixation

in itself and further by the possibility of it being a weak 'wrong-side' infixation, and by the sometimes extreme consonant clusters that result in the surface form. Finally, glottalization is an important element in all Actual processes – infixation, metathesis and reduplication. There are many instances of both glottal stop infixation and reduplication co-occurring in the same surface form. There is also a glottalization process that accompanies all processes, targeting any sonorant in word final position.

3.4 Characteristic

Characteristic gives the idea of 'typicality' (Montler 2015) or 'generalization' (Thompson & Thompson 1971) to the nouns, verbs, and adjectives the reduplicant attaches to. That is, *c̓ə́q*ʷ 'dirt' becomes *c̓ə́q*ʷ*c̓q*ʷ[24] 'dirty' after undergoing the Characteristic formation, *yə́cm* 'tell' becomes *yə́cyəcəm* 'tattletale,' and *x*ʷ*ə́ŋ* 'fast' becomes *x*ʷ*ə́ŋx̓*ʷ*ə́ŋiʔ* 'speedy.' Notice from the derived forms that Characteristic may change the word class, and that the derived meaning is not necessarily predictable: *x*ʷ*áy* 'perish' becomes *x*ʷ*áčx*ʷ*č* 'cow parsnip' because it wilts quickly, and *c̓áʔq*ʷ 'glitter' becomes *c̓áʔc̓aʔq*ʷ 'shady place' because of the visual effect of sunlight filtering through the leaves under the shade of a tree (Montler 2012). Taken together, these facts point to Characteristic being a derivational process rather than an inflectional one. It was likely not a productive process for the informants that provided the data for the dictionary, as it occurs only around 60 times in the dictionary in spite of its ability to attach to three word classes, and it occurs on no borrowed words or neologisms.

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[24] Where in previous sections, reduplicants were bolded in this type of example, much of this section is a discussion of what exactly the Characteristic reduplicant is. For this reason, reduplicants are not bolded in these examples.

Montler (2015) gives two alternatives to describe the process by which the same reduplicative surface form is arrived at: one that copies $C_1V_1C_2$ of the root, attaches it in a prefix position, and then shifts the stress to the reduplicant; another that copies C_1C_2 and attaches the resulting reduplicant 'to the right' with no accompanying stress shift (287). In order to illustrate these different ways of interpreting the same surface form, notice that the first item of each pair below (29a,c,e) demonstrates the first alternative, with the $C_1\acute{V}C_2$- reduplicant in bold, while the second item of each pair (29b,d,f) demonstrates the second alternative, with the $-C_1C_2$ reduplicant in bold.

(29) Characteristic reduplication, two shape options compared

a.	*c̓əqʷ*	*c̓ə́qʷ*	dirt	***c̓ə́qʷc̓qʷ***	dirty
b.	*c̓ə́qʷ*	*c̓ə́qʷ*	dirt	*c̓ə́qʷ**c̓qʷ***	dirty
c.	*čay*	*čáy*	work	***čáy**či*	diligent, busy
d.	*čay*	*čáy*	work	*čáy**či***	diligent, busy
e.	*tqʷ*	*tə́qʷ*	tight	***tə́qʷ**tqʷ*	red snapper
f.	*tqʷ*	*tə́qʷ*	tight	*tə́qʷ**tqʷ***	red snapper

I will explore whether or not one or the other might be a better explanation for this reduplication process, or at the very least, to see if these alternatives can be further refined. While it would be easy to favor the CVC- prefix alternative over the more marked -CC suffix shape, it would be premature to make this judgment without examining the data, since Klallam appears to permit other instances of relatively marked shapes and processes in Plural and Actual reduplication.

Before analyzing Klallam data specifically, however, it should be noted that in other Coast Salishan languages, Characteristic has a CVC- shape with accompanying stress shift, including the closely related Northern Straits language of Saanich

(Czaykowska-Higgins & Kinkade 1998). This also lends support to the CVC- explanation for Characteristic in Klallam.

It should likewise be noted that van Eijk (1998) argues that the CVC- Characteristic described in various Salishan languages is actually under the umbrella of the CVC- Augmentative pattern found in most Salishan languages. As mentioned in §3.2 on Plural reduplication, the semantics of plurality in Salishan languages go far beyond number, and include concepts of collectivity, intensiveness, repetition, distribution, and frequency (Czaykowska-Higgins & Kinkade 1998, van Eijk 1998). Based solely on semantic purpose, van Eijk says that Characteristic could easily be classified as a subset of the repetitive or intensive function of Augmentative. Further, where Montler and others argue that the stress shift to the CVC- reduplicant in Characteristic indicates a fundamental difference from that of the unstressed CVC- Augmentative, van Eijk finds this analysis problematic unless 'a sufficient number (say, half a dozen) cases' could be found in a single language where both stressed and unstressed CVC- patterns were found on the same root, producing different meanings (van Eijk 1998:464). A quick look through the Klallam data reveals that, while Characteristic and Plural do exist on more than a half dozen roots, the Plural forms are all of the Ci- shape rather than CVC-, so Klallam will not serve as the language van Eijk requires in order to settle this question. That said, considering the fact that Characteristic never occurs in a Ci- shape, and that the Plural nearly always takes the Ci- shape rather than the other possible CVC- shape on roots where Characteristic reduplication also occurs, this does indicate that there may be a conceptual distinction between Plural and Characteristic in Klallam. This seems to be evidence against the question posed earlier in §3.2 about the possibility that Plural,

Characteristic, and Distributive could all be classified together as one extensive

Augmentative process. Again, this will be taken up in greater detail at the end of this

chapter once each of these processes is described more fully.

Let us now return to examining the two possible Characteristic processes in

Klallam. Again, both processes yield the same surface form, so this may be a question

that comes down to likelihoods based on marked and unmarked reduplicant qualities, and

as such, combined with the unavailability of native speaker insight, the answer may

remain uncertain. Using the example from 29a, consider the following possible

derivational steps, where 30 applies the CVC- prefix with stress shift, and 31 applies

the -CC suffix with no stress shift.

(30) Derivation: Characteristic reduplication, CVC- option
    a. *c̓əqʷ*   Root
    b. *c̓ə́qʷ*   Stress assigned
    c. *c̓əqʷc̓ə́qʷ* $C_1V_1C_2$ copied and attached in prefix position
    d. *c̓ə́qʷc̓əqʷ*   Stress shift to reduplicant
    e. *c̓ə́qʷc̓qʷ*   Schwa Deletion

(31) Derivation: Characteristic reduplication, -CC option
    a. *c̓əqʷ*   Root
    b. *c̓ə́qʷ*   Stress assigned
    c. *c̓ə́qʷc̓qʷ* C_1C_2 copied and attached in suffix position

Both of these are plausible, and both are relatively simple. Does the Glide Vocalization

pattern in 29c make a difference? Again, the first derivation is of the CVC- pattern, and

the second is -CC.

(32) Derivation: Characteristic reduplication, CVC- option with Glide Vocalization
    a. *čay*   Root
    b. *čáy*   Stress assigned

    c. *čayčáy* $C_1V_1C_2$ copied and attached in prefix position
    d. *čáyčay*   Stress shift to reduplicant
    e. *čáyčai*   Glide Vocalization at the word boundary
    f. *čáyči*   Unstressed Vowel Reduction resulting in Schwa Deletion

(33) Derivation: Characteristic reduplication, -CC option with Glide Vocalization
    a. *čay*   Root
    b. *čáy*   Stress assigned
    c. *čáyčy* C_1C_2 copied and attached in suffix position
    d. *čáyči*   Glide Vocalization at the word boundary

Again, both processes are plausible. That there are fewer steps for both roots to derive

the -CC shape is something worth noting, but in each case, the extra steps required for the

CVC- shape are quite common in other reduplication processes. In the three other

reduplicative processes described so far, there have been processes of Unstressed Vowel

Reduction and Schwa Deletion throughout. The existence of these processes in 30 and

32 is not sufficiently significant to make -CC reduplication more likely, in spite of its

relative simplicity.

       Not only that, but phonological patterns in general are not as useful for identifying

the reduplicant and stem as they have been in the other processes discussed so far, and

that is because of the environment created by Characteristic reduplication, no matter if it

is analyzed as CVC- or -CC. Up to this point, the possibility that reduplicants tend to

maintain their shape has been useful in distinguishing between reduplicant and stem.

Where processes of unstressed vowel reduction and deletion do not occur in

environments where they normally would, all things being equal, this points to the

morpheme being a reduplicant rather than a stem. However, neither analysis of

Characteristic creates environments where the reduplicant has an unstressed vowel that

must be maintained. In a CVC- process, the vowel is stressed, and the aforementioned

processes of reduction and deletion occur only on unstressed vowels. In a -CC process, there is no vowel whatsoever, so the shape is automatically maintained with the possibility of an epenthetic schwa when one of the consonants is a sonorant. Other avenues of inquiry must be pursued instead.

The morphological and phonological processes are relatively straightforward for the roots in 30-33, as their shape is quite simple, CVC. What happens when the root shape is more complex? Derivational steps for both possible processes on a CVCC root, *c̓aʔqʷ* 'glitter,' are below.

(34) Derivation: Characteristic reduplication, CVC- option on CVCC root
  a. *c̓aʔqʷ*   Root
  b. *c̓áʔqʷ*   Stress assigned
  c. *c̓aʔc̓áʔqʷ* $C_1V_1C_2$ copied and attached in prefix position
  d. *c̓áʔc̓aʔqʷ*   Stress shift to reduplicant

(35) Derivation: Characteristic reduplication, -CC option on CVCC root
  a. *c̓aʔqʷ*   Root
  b. *c̓áʔqʷ*   Stress assigned
  c. *c̓áʔc̓qʷ* C_1C_2 copied and attached after C_2 position
  d. *c̓áʔc̓aʔqʷ*   Schwa Epenthesis to prevent tautosyllabic Cʔ cluster

Again, both derivations are plausible, but 35 does provide for a small refinement in the description of the process as described by Montler, that C_1C_2 are copied and attached 'to the right.' While many roots in Klallam are CVC, there are other permitted shapes as well, as seen in the CVCC root above. If the reduplication process copies C_1C_2 and then attaches it 'to the right' in a suffix position, this would create **c̓áʔqʷc̓aʔ* at the stage in 35c. However, as maybe seen, the reduplicant attaches to the right of C_2, making it an infix and producing *c̓áʔc̓aʔqʷ.* A better explanation for the -CC process would thus be to describe it as copying C_1C_2 and attaching it in an infix position after C_2. This is consistent

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with all data, including such root shapes as CVCCVC (*ɬaʔčiy* 'cold' → *ɬáʔɬaʔči* 'chilly'), CVCVC (*šəway* 'grow' → *šə́wšəweyu* 'grow'), and CCVC (*tíŋuʔ* 'swim' → *təŋtə́ŋúʔəŋ* 'good swimmer'). With this refinement of the potential pattern comes the important fact that, not only is the -CC- option a more marked shape, infixation is a more marked process morphologically. Not only that, but infixes associated with derivation rather than inflection are rarer still in the world's languages (Blevins 2014). All of this, added to the prevalence of CVC- shapes for Characteristic in other Salishan languages, this tips the balance towards a CVC- shape in the prefix position being the more likely explanation.

One final issue must be addressed before CVC- emerges as the more likely process, and that is the stress shift. Is it plausible that the Characteristic reduplicant in Klallam takes the stress? Again, it is not unheard of for this to happen in other Salishan languages, including CVC- Characteristic (Czaykowska-Higgins & Kinkade 1998, van Eijk 1998), and the following section will describe a reduplication pattern where the stress does shift to the reduplicant. Additionally, while stress patterns are not well-understood in Coastal Salishan languages, and no description has been attempted for Klallam, it is known that stress in these languages is not only prosodically conditioned, but morphologically as well. As such, a stress shift is entirely possible in this reduplication process.

To review, a stressed CVC- prefix has the advantage of being similar to Characteristic reduplication in other Salishan languages, where an unstressed -CC- infix does not. Prefixes are also less marked morphologically than infixes, especially derivational infixes, giving CVC- another advantage. Finally, the CVC shape is less marked than the CC shape. On the other hand, an unstressed -CC- infix has the advantage

of not requiring a reduplicant that shifts the stress to itself, though this is not an impossibility in Klallam reduplication, as will be shown in the following section. In consideration of all of these factors, it seems safe to say that the Characteristic pattern is indeed a CVC- shape in the prefix position. As with Montler's description of the Diminutive by its surface form C*aʔ*, it may be that he included the alternative -CC analysis for Characteristic merely as a teaching tool. As seen in 31 and 33, the steps to derive the surface form are simpler when following the -CC pattern, and from a learning standpoint rather than a linguistic description standpoint, this has its advantages. Interestingly, a CVC- shape also leaves open the possibility that Plural, Characteristic, and Distributive are all different aspects of one larger Augmentative process, as will be discussed in §3.10.

3.5 Resultative

Unlike the forms already described, very little exists in the literature regarding the Resultative in Salishan languages and there are only a couple dozen tokens in the data. Montler's (2015) description of its use in Klallam agrees with more general cross-linguistic descriptions, that it marks a state that is the result of a previous action (Lindstedt 2006). Not surprisingly, in the data it appears most often on verbs, and the meaning is not precisely predictable. From the root *suy* 'swell,' for example, comes the reduplicated form **sú*ʔ*si*ʔ*** 'swollen,' but from the root *łiʔn* 'attach' comes the Resultative *ʔəs**łé*ʔ*łən'* 'to be tied up.' The semantic connection is clear in this latter example, but it seems more derivative than inflectional. In addition, there is at least one example each of a Resultative reduplicant attached to a noun, an adjective, and even a preposition. With so few tokens in the other parts of speech, predictability of meaning is more difficult to

gauge, but the semantic connection remains clear. The noun *paʔxʷ* 'fog' becomes

pápaʔxʷəŋ 'foggy' in its resultative form, the adjective *c̓uʔm* 'wet' becomes **c̓uc̓aʔməŋ**

'juicy,' and the preposition *c̓iʔ* 'upon' becomes *ʔəsc̓ěʔc̓i* 'to be atop.' This extends our

understanding of the use of Resultative in Klallam, and using the language of Thompson

and Thompson (1971) and Montler (2015) when they similarly extended the definition of

Actual, it could be said that Resultative in Klallam marks a state that is the result of any

previous situation, not just a predicative one. That the Resultative is able to attach to

many parts of speech, it may change the word class of the stem, and the derived meaning

is not entirely predictable point to this marker being more derivational than inflectional.

Finally, notice also in the tokens for 'to be tied up' and 'to be atop' that it is often

combined with a Stative prefix *ʔs-* marking a completed state, so when together, the

Stative-Resultative marks a completed state that is the result of a previous situation.

As with other patterns, there is more than one way to form the Resultative in

Klallam, either by ablaut or by reduplication. Unlike the free variation that seems to be a

feature of Plural, the Reduplicative process that applies to a particular root is more rule-

based and depends on the word's phonology. If the stressed vowel in a stem is [ə], it

changes to [a], so *x̣ə́ɬ* 'get hurt,' for example, becomes *x̣áɬ* 'be hurt' in Resultative. If the

stressed vowel is not [ə], then CV- reduplication applies, where the first consonant and

vowel are copied and attached in a prefix position, shifting the stress to the reduplicant

vowel (Montler 2015). As mentioned above, Resultative is often combined with a prefix

marking Stative, *ʔs-*, in which case it seems to be invariably attached directly to the left

of the stem, with Stative then attached as a prefix onto the reduplicant. This will be seen

in 36, which shows the steps in this process of deriving *ʔəsmámaʔkʷɬ* 'crippled' from the root *maʔkʷ* 'injure.'

(36) Derivation: Resultative reduplication
   a. *maʔkʷ*   Root
   b. *máʔkʷ*   Stress assigned
   c. *mamáʔkʷ* C_1V_1 copied and attached in prefix position
   d. *mámaʔkʷ*   Stress shift to reduplicant
   e. *máməʔkʷ*   Unstressed Vowel Reduction
   f. *mámaʔkʷ*   Schwa does not delete, in order to prevent sonorant-glottal cluster, but undergoes Vowel Retraction
   g. *ʔsmámaʔkʷɬ*   Stative prefix *ʔs-* and Durative suffix *-ɬ* attach
   h. *ʔəsmámaʔkʷɬ*   Schwa Epenthesis to prevent tautosyllabic ʔC cluster

As with the nominalizing prefix *s-*, notice that the reduplication process must precede the Stative prefixing process, as no segments from *ʔs-* are copied in the reduplicant. This observation leads to another: though Stative and Resultative could be supposed by their function to be on a similar level of affixation in terms of Lexical Phonology, this ordering provides further evidence that reduplication processes precede affixation processes, other than lexical suffixation. Recall that Diminutive and Plural processes show that these two derivational reduplication patterns precede inflectional affixing. With the ordering of Resultative prior to Stative, it appears that reduplication also precedes affixing where the two processes are more similar on a derivational-inflectional continuum.

As with the other processes discussed so far, Resultative is not quite as simple as 36 would indicate. Like Actual, most tokens in Resultative could potentially also be interpreted as a -C- infix rather than a CV́- prefix accompanied by a stress shift. Also, like Actual, many tokens in Resultative appear to have glottal infixation accompanying the reduplicant. In fact, some forms analyzed as Resultative in the Klallam dictionary could as easily be analyzed as Actual both semantically and morphologically, such as

ɫáɫčct 'getting dark' from a root *ɫač* 'dark,' where C₁- would copy and attach after the stressed V as is does in an Actual process. In the dictionary it is analyzed as having a Resultative CV́- reduplicant *ɫá* attached to the root where the unstressed vowel in the stem subsequently reduces and deletes, but semantically, one might expect a translation more like 'being dark' if this were truly an example of Resultative. Other examples are *ɫáɫuʔ* 'healing' from the root *ɫaw'* 'heal,' and *súʔskʷ* 'bathing' from the root *sukʷ* 'bathe.' While these analyses were presumably done with input from native speaking informants, the possibility of gathering more information on their use from native speakers, which might give more insight into this analysis, is now no longer available. Regardless, the similarity of form and semantics between Resultative and Actual raises questions about the existence of these two forms as distinct categories. A set of derivations on one root, *xʷakʷ* 'crazy' will be useful in this discussion. 37a is the headword in the dictionary, which only surfaces in the Stative form.

(37) A comparison of the Resultative and Actual on the root *xʷakʷ* 'crazy'
    a.   s-xʷáʔkʷ-iʔ
         STAT-crazy-DUR
            'crazy'

    b.   ʔəs-xʷáʔ-xʷəkʷ
         STAT-RSLT-crazy
            'drunk'

    c.   s-xʷá<ʔ>kʷ-i-ʔ
         STAT-crazy<actl>-DEV-ACTL
            'acting crazy'

In comparing 37b and 37c, it seems that there is a different conceptual category for Resultative and Actual, and that it is valid to analyze these as two different processes.

The example in 37b has one other interesting feature: notice that the CV́-
reduplicant is accompanied by a ʔ in the coda position. While not mentioned in the

literature, roughly half of the Resultative tokens have this glottal infix. There are a couple

of possibilities for this. One is that, like Actual and Diminutive, there is a glottalization

process accompanying the reduplication process. Recall that in the Actual, glottalization

targets the sonorant following the stressed V and surfaces as a glottal stop in the absence

of a sonorant. In the Diminutive, the glottal stop targets the first vowel of the stem,

regardless of stress. If this is the explanation for Resultative, then another target would

have to be described: the vowel of the reduplicant. However, since it only surfaces in

about half of the tokens, and glottalized sonorants are not a consistent feature where

glottal stops do not surface, this explanation is unsatisfactory. Another possibility is that

the glottal stop surfaces here for similar reasons of markedness, though following a

pattern that is not immediately apparent. In his description of Saanich Actual, for

example, Montler (1989) finds that the glottal stop is inserted in order to preserve a

CVCC structure. This does not appear to be the case in Klallam, but there may be similar

morphological motivations here. Further investigation of CV́- and CV́ʔ- environments

would certainly be profitable. For now, however, at the very least it is probably accurate

to describe Resultative as being a CV́- shape with two allomorphs: CV́- and CV́ʔ-.

Finally, a derivation of one final pattern where stress shifts to a lexical suffix will

show that a CV́- shape rather than a -C- infix is the correct analysis of the Resultative

pattern. The root is again *xʷakʷ̓* 'crazy,' this time deriving the form 'to be crazy.'

(38) Derivation: Resultative reduplication with lexical suffixation
   a. *xʷakʷ̓*   Root
   b. *xʷákʷ̓*   Stress assigned

c. *xʷákʼʷiʔqʷ*	Lexical suffix *-iʔqʷ* 'head' attached
d. *xʷakʼʷíʔqʷ*	Stress shift to lexical suffix
e. *xʷakʼʷéʔqʷ*	Vowel Retraction
f. *xʷaxʷakʼʷéʔqʷ*	C_1V_1 copied and attached in prefix position
g. *xʷaxʷakʼʷéʔqʷ*	Stress does not shift to reduplicant
h. *xʷaxʷkʼʷéʔqʷ*	Unstressed Vowel Reduction resulting in Schwa Deletion in stem only
i. *sxʷaxʷkʼʷéʔqʷ*	*s-* nominalizer attached

As before, notice that the lexical suffix precedes the reduplication process, but that reduplication precedes other inflectional affixation. Of particular interest are 38f and 38h. If Resultative were a -C- infix, then the failure to reduce and delete the [a] in 38h appears unmotivated. As seen before, CC clusters of stops, fricatives, and affricates are permitted and hardly unusual in Klallam. There is no phonotactic reason to maintain a vowel in this position. However, if this segment is part of a reduplicant rather than the stem, there have already been several instances where the reduplicant shape appears to resist phonological patterns that would normally apply in a given environment in order to preserve an unmarked shape. While this cannot be considered conclusive, it points to the CV́-analysis being correct for Resultative. Furthermore, if this is the case, then it is an example of reduplication process where stress does shift, adding more evidence to the probability that the Characteristic reduplicative shape is CV́C- rather than a -CC- infix.

The Resultative in Klallam is at least somewhat derivational, applying after lexical affixation but before the other similar-level Stative affixation process, providing more support for the idea that reduplication tends to precede concatenative affixation other than lexical affixation. It is of a CV- shape where the stress shifts to the V of the reduplicant. While not mentioned in other descriptions, the Resultative also includes some glottalization, which could be related to the process common in all Salishan

languages that often accompanies various reduplication processes, but it seems to be more like the Diminutive glottalization pattern where it serves as a coda in the shape, for markedness purposes. With all of this in mind, the Resultative reduplication pattern may be described as CV́- with two allomorphs: CV́- and CV́ʔ-.

3.6 Inceptive

Like Resultative, there is little in the literature about the Inceptive in Salishan languages. Czaykowska-Higgins and Kinkade (1998) mention it as an example of C₂ reduplication in Sliammon, another Coastal Salishan language, but it has not been a focus of study in the Salishan family. It is not mentioned in any of the Klallam studies until Montler's (2012) dictionary. Inceptive, as the name implies, marks a stem as beginning, or just starting (Montler 2015), and as with other aspect markers, its meaning in Klallam extends beyond just predicative situations to any situation to which the reduplicant is attached. There are nearly 50 tokens in the data, and while most often verbal roots, it also occurs on nouns and adjectives. Thus, *pə́kʷɬ* 'race' becomes *pp̓ǎʔkʷɬ* 'start to race;' *kʷačy* 'day' becomes *kʷkʷǎʔyiʔ* 'daybreak,' and *qʷy* 'deaf' becomes *qʷq̓ʷiyánìyŋ* 'going deaf.' There is even an instance of a preposition *c̓aʔ* 'upon' being derived to *c̓c̓aʔwáčəŋʼ* 'sit down' through marking 'upon' with the Inceptive reduplicant and attaching a lexical suffix *əwač* 'bottom.' With this data, it seems that the Inceptive is derivational, though not as strongly as such processes as Plural, for example. As with other patterns, productivity is hard to judge, but there is one instance of the Inceptive on a word borrowed from English, where *tawn* 'town' becomes *ƛ̓aʔttáʔwən* 'going to town.'

This is a reduplicative process that is much less complex morpho-phonologically than most of the processes discussed so far, but its shape is marked, which is unusual in

Steriade's (1988) analysis. The Inceptive process is to copy the first consonant and attach it in a prefix position to the stem.

(39) Examples of Inceptive reduplication

a.	*kʷaʔ*	*kʷáʔet*	release	***kʷkʷáʔ***	to let something go
b.	*taŋn*	*táŋən*	evening	***ttáŋən***	start to be evening
c.	*x̣an*	*x̣aníti*	growl	***x̣x̣anítiʔ***	start growling
d.	*c̓aʔ*	*c̓áʔ*	upon	***c̓c̓aʔwáč̓əŋʾ***	sit down
e.	*nił*	*níł*	3focus	***nənəłtíxʷ***	let be the one
f.	*št*	*štə́ŋ*	walk	***šəštə́ŋ***	start to walk

Notice in 39a-d that stops, fricatives, and affricates are all permitted in initial clusters. In the case of a sonorant C_1, then the shape becomes Cə-, though whether by allomorph of C- or by Schwa Epenthesis is difficult to say. Montler's rule for this is to insert schwa if C_1 is a sonorant or glottal stop, and that 'if the consonant is anything else, the schwa is sometimes inserted' (2015:287). This may be the case, but it occurs in the data only when C_1 is a sibilant [s] or [š], and once on a token where C_1 is [kʷ]. It is possible that it is inserted between a sibilant reduplicant and the sibilant C_1 of the stem for saliency purposes, similar to the [ɪz] Plural allophone in English when Plural –*s* suffixes to a stem with a sibilant in word-final position. Without further evidence from other instances of sibilant cluster, this cannot be confirmed.[25] The insertion on the [kʷ] token seems more arbitrary, as no other tokens with [kʷ] in word-initial position include a schwa insertion, as may be seen in 39a. Whether this schwa may be interpreted as a Cə- allomorph of the C- shape or as Schwa Epenthesis is unanswerable in this paper, but quite interesting nonetheless. If it is a phonologically-conditioned allomorph, then the

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[25] In the data for Affective, discussed in the following section, there one case of a reduplicant and root combination creating precisely this kind of cluster in *sséʔyaʔ* 'grandparent,' so [s] + [s] clusters are certainly permitted phonotactically.

description of Inceptive reduplicative shapes can be more specifically described to include this allomorph. Regardless, this further refines the observations made thus far about the relative unmarkedness of reduplicants. With this information, it could be said that Klallam allows some markedness in reduplicant shape, but reverts to a less marked shape when the marked shape could interfere with meaning, as in the case of sibilants. That is, *šštə́ŋ 'start to walk' (unattested) might be difficult to distinguish from the base štə́ŋ 'walk,' and Schwa Epenthesis resulting in šəštə́ŋ 'start to walk' helps identify the Inceptive meaning. Or, if not related to saliency, it could at the very least be seen as a ranking system: an unmarked reduplicant shape is generally preferred; some marked shapes are allowed according to Klallam phonotactics that allow obstruent-obstruent clusters; marked shapes are not allowed when they violate Klallam phonotactics that prevent clusters where one of the members is sonorant. As with the C…í allomorph in Plural, the reasons for this are unclear.

3.7 Affective

The Affective in Klallam is quite rare, with only about 20 tokens in the data. Like Inceptive, there is little discussion of Affective in the Salishan literature, though it is mentioned as a C*e*- shape in Thompson, an Interior Salishan language (Czaykowska-Higgins & Kinkade 1998). While the Diminutive in many languages can include notions of affection (Dahl 2006 goes so far as to call it a possibly universal mechanism), it seems to be a different conceptual category in Klallam. Recall that Diminutive in Klallam makes nouns smaller or more childlike, and on verbs it can mean to do an activity a little or that a small thing is doing the activity. While certainly not drastically different, Montler describes Affective as indicating something that is 'tricky, cute, familiar, minor,

amusing, or less important' (2015:288). Its focus is more on emotional qualities than on physical smallness. Further, the shape for the Affective reduplicant is different than the Diminutive shape, and there are quite a few cases of co-occurrence where both Affective and Diminutive process apply on the same root, as seen below in 40c-e, so it isn't likely to be a case of two shapes in complementary distribution for the same process. Multiple reduplication will be described in greater detail in §3.9, but these examples illustrate that the conceptual categories are likely different. Within the relatively small number of tokens, Affective applies to both nouns and verbs with largely predictable derived meanings, though it may change a root's word class, as seen in 40c. Because of the affectionate meaning this process derives, it is no surprise that five of the 20 tokens are for family members, and three are for characters from well-known Klallam stories.

(40) Examples of Affective reduplication
a.	*qəy*	*qə́y*	'to be sorry'	**qiqə́y**	'to be sorry'
b.	*tʼx̣*	*tʼə́x̣*	'deviate'	**tʼitʼə́x̣**	'wrong'
c.	*ŋəqsn*	*ŋə́qsən*	'nose'	**ŋiŋə́qsən**	'cute nose'
d.	*ŋəqsn*	*ŋə́qsən*	'nose'	**ŋaʔŋə́qsən**	'little nose'
e.	*ŋəqsn*	*ŋə́qsən*	'nose'	**ŋaʔŋiŋə́qsən**	'cute little nose'

As shown in 40a-c, the reduplicant shape is CV where V is a preassigned [i]. There is very little additional affixation that accompanies Affective forms, and because of its pattern (a fixed shape with no stress shift), it is a relatively simply process compared to others discussed so far.

(41) Derivation: Affective reduplication
a.	*ŋəqsn*	Root
b.	*ŋə́qsn*	Stress assignment
c.	*ŋə́qsən*	Schwa Epenthesis
d.	*ŋiŋə́qsen*	C$_1$ copied, preassigned [i] attached in prefix position

While the C*i*- shape is unmarked, making it the preferred form for a reduplicant shape, there are two instances where the shape doesn't conform to this pattern, *ssə́ʔyaʔ*[26] 'grandparent' (mentioned in Footnote 13) and *qqáyẋ̣s* 'Little Liar,' the name of a character in a story. While the CC cluster in these surface forms is permitted in Klallam, in all other Affective tokens where this cluster would be permitted through reduction and deletion of the unstressed, preassigned [i], it does not occur, as evidenced in 40a-b above. As in other forms, it is more preferable to retain the unmarked reduplicant shape than to follow regular phonological rules. These two cases do not follow this tendency for reasons that are unclear.

ssə́ʔyaʔ is also one of two interesting cases of the glottalization infix pattern of Diminutive on the Affective form, without the accompanying Diminutive reduplicant. As seen in Actual and Resultative, glottalization is a common occurrence in Salishan languages accompanying various reduplication processes, but the rarity of its occurrence in the Affective data reduces the possibility that there is an Affective glottalization pattern. Montler's assertion that this is an 'unusual diminutive' (2012:502) is the more likely explanation, especially considering the overlap of these two categories. The other instance is in *x*ʷ*ixáʔƛ̓qen* 'small pillow,' and the steps from root to surface form for this token are in 42.

(42) Derivation: Affective reduplication with Diminutive glottalization
    a. *x*ʷ*ə́ƛ̓qən*   Root

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[26] While I wonder if Schwa Epenthesis occurs in the Inceptive (as in the case of *šəštə́ŋ* 'start to walk' mentioned in that section) for saliency reasons, the same saliency requirements do not seem to be present here. That is, the knowing exactly whether a speaker is uttering *síyaʔ* 'grandparent' or *ssə́ʔyaʔ* 'cute grandparent' is perhaps not as important a distinction to make pragmatically. Thus, the sibilant cluster here does not require Schwa Epenthesis for saliency purposes, as it might in the Inceptive.

b. *xʷə́λ̓qən*　　Stress assigned

c. *xʷixʷə́λ̓qən*　　C₁ copied, preassigned [i] attached in prefix position (Affective reduplication)

d. *xʷixʷə́ʔλ̓qən*　　In the absence of a sonorant following stressed V, glottalization surfaces as infix (Diminutive glottalization)

e. *xʷixʷáʔλ̓qən*　　Vowel Retraction

While they have different morphological patterns and different conceptual categories, the Affective and the Diminutive appear to have some connection. This is not surprising, and perhaps best imagined as a Venn diagram where the categories are distinct, yet share some overlap.

3.8 Distributive

　　Distributives are related to the idea of plurality on verbs, as discussed in §3.2, but beyond the idea of collectivity or intensity, it indicates 'spreading entities or events over various locations or times,' and while present in many of the world's languages, it is 'particularly well developed' in Salishan languages (Mithun 1999:42). While it may apply to many parts of speech, in Klallam reduplication it occurs almost entirely on numerals, with one instance on a verb, and examples of its usage are below. In 43a, for instance, where Plural marking on the verb 'arrive' would indicate that the collective nature of the action, instead Distributive reduplication occurs on the numeral 'one,' indicating the arrival of individual entities spread over time. Distributive on the numeral in 43b indicates entities distributed among other entities, and on the verb in 43c indicates an action spread over time. As with other data, the following is from Montler (2012).

(43) Examples of Distributive usage
　　a. *ʔiʔ**nəčṅə́ciʔ** ʔəɬ táčis tiə ʔaycɬtáyŋxʷ*
　　　　'The people arrived here **one at a time**.'

b. *ɬíxʷɬxʷtxʷ kʷi*
   'Give them **three each**.'

c. *kʷɬnuʔnuʔnáčt cn*
   'I'm **paying** it **back** right now [**in installments**].'

In terms of morphology, Distributive may be marked by prefixation, suffixation, or reduplication throughout the Salishan family. When a reduplicant, it is often in a CVC-shape, and is one of the reduplicative processes sometimes accompanied by glottalization (Czaykowska-Higgins & Kinkade 1998). In Klallam, it may be entirely a reduplicative processes, and there are very few instances, perhaps as few as six. Other potential processes were not found in the data, but with so few overall, examples would be easy to miss. It is not productive even within numerals, as it does not apply freely to any number, but only on those from one to five. It also seems to be one of the more inflectional reduplication processes in Klallam. That is, where most of the reduplicative processes already discussed range on a scale from being very derivational (such as Plural) to slightly derivational (Actual), because the Distributive applies to a very restricted word class, the word class does not change when applied, and the meaning is fairly predictable when applied, show its inflectional properties. Unlike the CVC- shape mentioned for other Salishan languages, the reduplicant shape in Klallam appears to be CC-. Notice that in 44c, this is the form that Montler analyzes as Distributive in the data – 'dist+three-letcaus' – but the reduplicant shape, stress shift, and translation do not fit with the rest of the data. However, 44d also appears in the data, and fits both the reduplication pattern and the translation of the other numerals. He analyzes it as 'three-three=person', but I believe this is, in fact, the Distributive token. Following are all of the tokens I was able to find in the data.

(44) All occurrences of Distributive reduplication

a.	*nəċuʔ*	*nə́ċuʔ*	'one'	*nəčnə́ċuʔ*	'one a a time, one by one'
b.	*čəsəʔ*	*čə́saʔ*	'two'	*čsčsáyə̀*	'two at a time'
c.	*ɬixʷ*	*ɬíxʷ*	'three'	*ɬíxʷɬxʷtxʷ*	'give three each'
d.	*ɬixʷ*	*ɬíxʷ*	'three'	*ɬxʷɬxʷáy*	'three at a time'
e.	*ŋus*	*ŋús*	'four'	*ŋəsŋəsáy*	'four at a time'
f.	*ɬq̓ačš*	*ɬq̓ắčš*	'five'	*ɬq̓ɬq̌čšáy*	'five at a time'
g.	*nẁnač*	*nuʔnáčt*	'repay'	*nuʔnuʔnáčt*	'to be repaying [in installments]'

If the dictionary is digitized at any time in the future, thus facilitating searching through the data, more cases of Distributive may be found, and this would certainly add to the current description. One possible interpretation is that Distributive is in fact a CVC pattern where, rather than under-applying phonological processes in order to maintain this relatively unmarked shape, as has been the case throughout the data, the unstressed V in the reduplicant undergoes regular phonological processes of reduction and deletion to result in a more marked shape. This shape is able to explain all six instances, but is unsatisfactory in that, contrary to the markedness patterns shown so far, a relatively unmarked shape would follow phonological rules to become a marked shape in the reduplicant. More likely is that the process for Distributive in Klallam is to copy C_1C_2 of the stem and attach it to the left. While a marked shape, it follows the ranking tentatively established so far: that unmarked reduplicants are preferred, but marked reduplicants are permitted as long as they don't violate the phonotactic rule against sonorant and CʔC₂ clusters. Notice that this is indeed the case in 44a,e,g. In 45 below are the morpho-phonological steps to derive *ɬq̓ɬq̌čšáy* 'five at a time,' which undergoes reduplication with transparent phonological processes, and the final surface form of which underscores that extreme consonant clusters are permitted in Klallam as long as there are no sonorants. In

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46 are the steps for **nuʔnuʔnáčt** 'repaying someone,' in which the CC shape surfaces as

CVC because of the glide /w̓/ in the C_2 position[27]. Finally, 47 shows the steps to derive

ŋəsŋəsáy 'four at a time,' where phonological rules prevail in order to prevent a sonorant

cluster.

(45) Derivation: Distributive reduplication with permitted obstruent clusters
    a. *ɬq̓ačš*   Root
    b. *ɬq̓áčš*   Stress assignment
    c. *ɬq̓áčšayə*   Lexical suffix =ayə 'person' attached
    d. *ɬq̓ačšáyə*   Stress shift
    e. *ɬq̓ɬq̓ačšáyə* C_1C_2 copied and attached in prefix position
    f. *ɬq̓ɬq̓čšáy*   Unstressed Vowel Reduction and Schwa Deletion in stem and
                      lexical suffix

(46) Derivation: Distributive reduplication with Glide Vocalization
    a. *nw̓ač*   Root
    b. *nw̓áč*   Stress assigned
    c. *nw̓nw̓áč* C_1C_2 copied and attached in prefix position
    d. *nuʔnuʔnáč* Glide vocalization between consonants in stem and reduplicant
    e. *nuʔnuʔnáčt* Transitive –t suffix attached

(47) Derivation: Distributive reduplication with sonorant cluster prevented
    a. *ŋus*   Root
    b. *ŋús*   Stress assignment
    c. *ŋúsayə*   Lexical suffix =eyə 'person' attached
    d. *ŋusáy*   Stress shift, Unstressed Schwa Deletion
    e. *ŋsŋusáy* C_1C_2 copied and attached in prefix position
    f. *ŋəsnusáy*   Schwa Epenthesis to prevent sonorant cluster
    g. *ŋəsnəsáy*   Unstress Vowel Reduction, but no Schwa Deletion in order to
                      prevent sonorant cluster

As mentioned in the discussion of Plural and Characteristic, there remains the possibility

that Distributive may fit into an umbrella Augmentative category with these other two

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[27] Based on glide vocalization in other reduplicant processes, it is fairly certain that, if the glide had not
been glottalized in the root, then the reduplicant would have surfaced as the even less-marked CV shape,
Cu-.

processes, but with the CC- pattern emerging here, this possibility looks less likely. Again, this will be explored in §3.10.

3.9 Multiple Reduplication

As shown already, Klallam has quite a few cases of multiple reduplication, that is, instances where two reduplicants co-occur on the same stem. Of approximately 20 tokens found in the data, 13 different combinations occur, as shown in Table 3.1, and over half of these include the Diminutive. This is perhaps not surprising, as Diminutive reduplication is by far the most common reduplicative process in Klallam. The table should be read first by row and then by column so that, for example, the first '+' in the Diminutive row is a Diminutive-Plural co-occurrence where the Diminutive is on the outer edge and the Plural is attached to the stem. The first '+' marked in the Plural row, on the other hand, is a Plural-Diminutive co-occurrence where the Plural is on the outer edge and the Diminutive is attached to the stem.

Table 3.1: Distribution of Klallam multiple reduplication

	Dim	Plural	Actual	Char	Result	Incept	Affect	Distrib
Diminutive		+	+	+	+	+	+	
Plural	+	+						
Actual		+		+		+		
Characteristic								
Resultative								
Inceptive								
Affective	+			+				
Distributive								

A few general patterns emerge immediately. One is that the Diminutive may occur with any other reduplicative process except for itself and the Distributive, and when it occurs, it is almost always on the outer edge rather than attached to the stem. On

the other end of the spectrum, the Distributive does not co-occur with any other reduplicant. The Resultative, Characteristic, and Inceptive always attach to the stem when they co-occur with another reduplicant. The Actual is like Diminutive in that it is more often on the outer edge. Interestingly, when Actual and Plural processes occur with other processes, they almost always use their more productive infixing process rather than reduplication. The exceptions indicated in Table 3.1 are rare.

This table also reveals one more piece of important information regarding the ordering of morphological processes. It has been shown that lexical suffixation precedes reduplication, and that reduplication precedes all other affixation, even when the reduplicant is inflectional. What ordering patterns take place in the case of two reduplicant processes? It is perhaps not surprising that Actual is most often on the outside edge of the form, as it is less derivational than other reduplicants. Likewise, it is not surprising that the Characteristic is more often attached to the stem, as it is derivational. However, it is quite interesting that the Diminutive, in spite of being derivational, is almost always on the outside edge of the form, even when is co-occurs with an less derivational form like Actual. There are also quite a few cases of the same reduplicants applying in different order. For example, there are both Diminutive-Affective forms and Affective-Diminutive forms, as well as Diminutive-Plural forms and vice versa. This indicates that while derivational-inflectional processes may influence the order of reduplication and affixation overall, semantics may also play a role. That is, semantic scope is likely an additional factor in the ordering. As we saw in (12), the Diminutive derivation for *sča?čqʷá?ič* 'small bear,' the Diminutive reduplicant in that example may have scope over the lexical affixes 'wood' and 'backside,' resulting in it being the last of

the inflectional processes in the derivation. There may be similar issues of scope in multiple reduplication. For example, Diminutive may have scope over the Inceptive, where it would not make as much sense for the Inceptive to have scope over the Diminutive. Additionally, as will be shown below, some of the instances of multiple reduplication occur when the root surfaces only in a reduplicated form, which may then undergo further reduplication of a different type.

Chapter 1 explained that the presence of two reduplicants on the same stem is a good environment for attempting to answer the question of what is available to serve as the base in reduplication. In single reduplication, it was assumed by Marantz (1982) and McCarthy and Prince (1998) that the base is the entire stem, but cases of double reduplication question this assumption. Broselow (1983) and Urbanczyk (1996/2001) find cases of double reduplication in Lushootseed (Coast Salishan) where the reduplicants copy material from the immediately adjacent cycle, not from the original stem. Shaw (2005), however, finds a number of counterexamples in other Salishan languages where the reduplicant is non-adjacent to the base. Unfortunately, Klallam will not be the language that contributes significantly to this debate. Because the majority of reduplicant shapes in Klallam involve only copying the first consonant, it is impossible to know whether first consonant in a double reduplicant was copied from the stem or the co-occurring reduplicant, since they are all identical. This phenomenon is better examined in cases where a C(V)C- shape is on the outer edge of the surface form, because the second consonant would have to copy either non-adjacently from the original stem, or adjacently from whatever the second consonant would be in the intermediate reduplicative stem. In Klallam patterns, this could only be on tokens where the Plural CVC- allomorph or the

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Characteristic CVC- shape are on the outer edge of the form. In the 20 tokens of multiple

reduplication, only one fits these requirements: *sxaʔxaʔxáʔwəs* 'newlyweds' from the root

xəẃs 'new,' but an unexplained glottalization pattern may render this example moot as

well. Compare two possible derivations for *sxaʔxaʔxáʔwəs* in 48 and 49, noting

especially 48f and 49d when the Plural CVC- reduplicant is copied and attached. In 48,

the Diminutive glottalization pattern occurs immediately after the Diminutive reduplicant

is copied and attached. This was the ordering shown in §3.1, Example 11 as well. In 49,

this glottalization pattern occurs after both Diminutive and Plural reduplicants are copied

and attached.

(48) Derivation: Diminutive-Plural reduplication, glottalization with Diminutive
- a. *xəẃs*   Root
- b. *xə́ẃs*   Stress assignment
- c. *xaʔxə́ẃs* C_1V_1 copied, [ʔ] assigned to C_2 slot, C_1V_1ʔ Diminutive shape attached in prefix position, Vowel Retraction in reduplicant
- d. *xaʔxə́ʔws*   Glottalization infixed after stressed vowel, rather than targeting glottalized sonorant[28]
- e. *xaʔxáʔws*   Vowel Retraction
- f. *xaʔxaʔxə́ʔws* $C_1V_1C_2$ copied and attached in prefix position for Plural, either from adjacent reduplicant or from stem.
- g. *sxaʔxaʔxə́ʔws* Nominalizing s- prefix attached

(49) Derivation: Diminutive-Plural reduplication, glottalization after all reduplication
- a. *xəẃs*   Root
- b. *xə́ẃs*   Stress assignment
- c. *xaʔxə́ẃs* C_1V_1 copied, [ʔ] assigned to C_2 slot, C_1V_1ʔ Diminutive shape attached in prefix position, Vowel Retraction in reduplicant
- d. *xaʔxaʔxə́ẃs* $C_1V_1C_2$ copied and attached in prefix position for Plural from adjacent reduplicant
- e. *xaʔxaʔxə́ʔws*   Glottalization infixed after stressed vowel, rather than targeting

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[28] As discussed in §3.1, the glottalization pattern accompanying Diminutive targets the sonorant following the first vowel of the stem or surfaces as a glottal stop infix after the first vowel of the stem. In the example here, the glottal stop surfaces, and this seems to result in the de-glottalization of the following sonorant. What is actually going on here is quite unclear.

f. *x̣aʔx̣aʔx̣áʔws*   Vowel Retraction
g. *sx̣aʔx̣aʔx̣ə́ʔws*   Nominalizing s- prefix attached

If the glottalization process that accompanies the Diminutive reduplication process occurs together with that reduplication, then 48 shows that even in the case where the environment is right, Klallam still does not hold any clues regarding what is available as the base in reduplication. The CVC- pattern of Plural is the same whether copied from the adjacent Diminutive reduplicant or from the non-adjacent stem. If, by some chance, it could be shown that the glottalization process is a later-level affixation processes that, in spite of being part of the Diminutive pattern, waits for all reduplication processes to occur before it applies, then 49 shows that it is indeed the adjacent reduplicant that is the base for the Plural CVC- copy, rather than the non-adjacent stem. While quite fascinating to consider, there is simply not enough data in Klallam to further this conversation. If research were to be done on the ordering of the glottalization processes that accompany many reduplication processes in Salishan languages, it would help in answering the question for this one item, but even so, this one instance should not be considered generalizable.

While Klallam multiple reduplication does not answer the question of what is available to be the base, there are certainly other items of interest in the data. First, consider these examples of relatively straightforward cases.

(50) Examples of multiple reduplication

a.	*ŋəqsn*	*ŋə́qsən*	nose	**ŋaʔŋiŋə́qsən**	cute little nose	Dim-Aff
b.	*xʷamʼ*	*xʷámx̣ʷəmʼ*	alone	**xʷaʔxʷə́mx̣ʷəmʼ**	a little lonesome	Dim-Char
c.	*tiym*	*tiym*	sing	**táʔtíéʔimʼ**	start singing	Dim-Incep
d.	*sayʼ*	*sáysiʔ*	afraid	**sáʔsiʔsiʔ**	scared	Act-Char

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Recall that Diminutive and Affective, while related, seem to be different conceptual categories in Klallam, and 50a underscores this categorization. 50b,d show another relatively common occurrence: in many cases of multiple reduplication, the root does not exist on its own as a headword in the dictionary, but only surfaces as a reduplicated form. So, for example, *xʷam̓,* the root for 'alone' only surfaces in the Characteristic form *xʷám̓xʷəm̓.* This should not be taken to mean that the headword is necessarily an entirely lexicalized reduplicative form, however. Consider the interesting case of *c̓ě?c̓ə̀m̓* 'bird.'

(51) Derivation: Affective-Diminutive-Plural reduplication
  a. *c̓i̓?c̓m̓*   bird   Root is Affective *c̓i̓?+c̓m̓*
  b. *c̓ě?c̓ə̀m̓*   bird   Vowel Retraction, Schwa Epenthesis in headword
  c. *c̓i̓c̓a̓?c̓ə̀m̓*   nestling   Diminutive interrupts Affective and stem
  d. *c̓c̓i̓c̓a̓?c̓ə̀m̓*   nestlings   Plural attached, C…*í* allomorph

In this case, the root itself exists only in an Affective form, according to Montler (2012). Where there are many cases of a root surfacing only in some derived form, as in 50b,d above, that the root itself is considered Affective is worth noting. Further, in spite of this close association of Affective and what, for lack of a better term, I'll call the root-stem *c̓m̓,* the Diminutive is apparently capable of coming between Affective and root-stem in 51c, creating an Affective-Diminutive co-occurrence. The reduplicated form is then further reduplicated in 51d when Plural is added as well, creating a Plural-Affective-Diminutive multiple reduplicative form. Explaining the morphological processes at work in the root and surface forms of 'bird' must enter a theoretical realm beyond the descriptive work of this paper. It may be better understood with diachronic data, or it may simply be described as highly irregular.

The fact that *c̓c̓ic̓aʔc̓əm̓* has three reduplicants attached is also of interest. Other

cases exist as well: *t̓-t̓eʔ-t̓-t̓éʔim* 'go along singing' is an Actual-Plural-Actual form of the

root *t̓iym* 'sing,' and *łi-łi-łi-łtə̓t* 'fling it' has the Plural C*i*- reduplicant attached three

times to the root *łə̓t* 'flick.' What is perhaps unusual about these instances of triple-

reduplication is that, while also occurring in other languages, there it is more often like

the case of *łiłiłiłtə̓t,* where the same reduplicant is repeated for intensifying effect (Rubino

2005, Blust 2001). In Klallam and other Salishan languages, multiple reduplication more

often involves different reduplicative processes occurring on the same stem, rather than

multiple occurrences of the same reduplicant.

Another interesting feature of multiple reduplication is that the stress patterns

seem to be different than in processes of single reduplication plus other affixation.

Explaining the stress patterns is not possible with the current data, but still interesting to

make note of. Take, for example, the case of *ƛ̓əqł* 'child,' where multiple reduplicants

switch positions in order to alter the derived form's meaning. Again, this shows that

semantic scope may play a role in affix ordering along with derivational/inflectional

status of the affixes.

(52) Stress patterns on alternate ordering of multiple reduplicants
   a. *ƛ̓əqł*   child   Root
   b. *sƛ̓iƛ̓á̓ʔƛ̓qł*   child   Dictionary headword: Affective + Diminutive
   c. *sƛ̓aʔƛ̓íƛ̓aʔqł*   small child   Diminutive form: Diminutive + Affective

Interesting in its own right morphologically and semantically, notice the stressed vowel

(in bold) in 52b,c. Neither Affective nor Diminutive is a reduplicant that normally shifts

stress to itself, yet in 52b the Diminutive reduplicant has the stressed vowel, and in 52c

the Affective reduplicant has the stressed vowel. In both cases, the stressed syllable itself

remains the same, on the second syllable of the form.[29] It seem that, while stress patterns in Salishan languages, including Klallam, are at least partially morphologically conditioned, prosody still plays a role as well.

There are also other unusual stress patterns. In *xíxaʔxaʔ* 'ashamed, bashful,' the stress is neither on the stem *xéʔ*, nor on the Characteristic *xaʔ-*, which normally shifts stress to itself, but on the first syllable, which is the Affective *xí-* reduplicant. In single reduplication, Affective never takes the stress. There are other cases like this, where the first syllable in a three-syllable form receives the stress where it wouldn't normally for morphological reasons. On the other hand, there are also cases where the stress is on the second syllable of a three-syllable form. For example, in *saʔsúsəŋ'* 'stinky,' the stress remains where it normally does in single reduplication: on the root for both Diminutive and Actual processes, both of which are attached to the root *súŋ'* 'smell.'

To summarize, multiple reduplication in Klallam is an arena where many of the patterns discussed in single reduplication emerge in new ways. For example, the ordering of reduplicative processes is more easily explained by semantic scope than by derivational and inflectional affixation ordering. Also, stress patterns are unusual in multiple reduplication. Prosody seems to play a stronger role in stress than it normally does, but morphological conditioning still applies at times as well. Also, while triplication most often has an intensifying effect in its rare occurrences in the world's languages, Klallam has two instances of triplication where the same reduplicant does not

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[29] As Klallam syllable structure has also never been described, whether these forms are three syllables with complex codas or four syllables with the lateral fricative [ɬ] serving as the sonorant peak or with untranscribed aspiration serving as the same is unknown. For this reason 'the second syllable' will have to suffice, rather than 'penultimate' or 'antepenultimate,' for example.

repeat for intensification, rather, different reduplicants attach to the same stem to derive new meanings. Finally, even though multiple reduplication is a fruitful environment to examine questions of adjacency in reduplication, the specific reduplication shapes in Klallam mean that the available data cannot further our understanding in this area. Multiple reduplication in Klallam occurs largely where only the first consonant is copied in the reduplicant on the outside edge, meaning that this could be copied from either the adjacent reduplicant or from the non-adjacent stem.

3.10 Discussion

In this section, I will discuss two of the major issues raised in the descriptions above: that of the interaction of markedness, reduplicant shape, and application of phonological rules; and that of the possibility of an umbrella Augmentative category that includes Plural, Characteristic, and Distributive. Table 3.2 at the end of this chapter contains a summary of the reduplicative patterns in Klallam.

In reviewing the reduplicant shapes allowed, it becomes immediately noticeable that the two most common shapes used are the relatively unmarked CV and CVC shapes, though two marked shapes are also used, C and CC. In fact, the -C- shape of the Actual is even more marked in that it is an infix, rather than a less-marked prefix or suffix. In the world's languages, it appears that the least marked form of a syllable is for it to have a simple onset and a nucleus, resulting in a CV structure. Many languages also permit a simple coda resulting in a CVC structure, or a syllable lacking an onset or lacking both onset and coda, resulting in either VC or V structures, though these are slightly more marked forms (Steriade 1988). By contrast, recall from Chapter 2 that Klallam permits an environment with significant consonant clusters, especially in onsets, and usually as the

result of the unstressed schwa being dropped in rapid speech, or even altogether for some speakers. This becomes clear in such examples as the following, where clusters of CCC, CCCC, CCCCC and even CCCCCC are permitted.

(53) Permitted consonant clusters in Klallam
    a. *k'ʷɬxʷiyúʔəŋ*   /k'ʷɬxʷijuʔəN/   mourners
    b. *ʔcɬtayŋxʷ*   /ʔt͡sɬtajNxʷ/   person
    c. *pspstə́nəq*   /pspstənəq/   jealous
    d. *ɬqčšɬšaʔ*   /ɬq'␣t͡ʃ␣ɬʃaʔ/   fifty

At the same time, however, consonant clusters are not permitted when one of the members is a nasal or glide, or when a consonant and a glottal stop are in a tautosyllabic cluster. A phonological rule of Schwa Epenthesis prevents these types of clusters from surfacing, whether from root to surface form, or as the result of other affixing processes. In the reduplicant patterns for Klallam, it seems that the permissible highly marked clusters are not utilized as reduplicant shapes, where more unmarked forms emerge. This aligns with Steriade's (1988) important insight that reduplicant shape is constrained by both prosodic weight, as proposed by McCarthy and Prince (1998), and also by the markedness of the syllable structure.

    In Klallam, this has been shown true some of the time, but not all of the time. Notice that both Actual, Inceptive and Distributive use shapes that are more marked cross-linguistically, C and CC. Why should this be? It is possible that this is an issue of saliency or of contrast. Notice that none of the possible reduplicants exceed the CVC structure (importantly, what both Shaw (1995) and Urbanczyk (2006) call the 'canonical' shape for Salishan languages), but almost every possible variant within that structure is represented, and even with these variations, the relatively unmarked shapes are repeated.

However, notice that where shapes are the same (as in the CVC- shape of Plural and Characteristic, and the CV- shape of Actual and Resultative), there is an stress shift accompanying the Characteristic and the Resultative, thus increasing contrast between the repeated shapes. In her examination of other Salishan languages, Urbanczyk (2005) finds that in languages with multiple reduplicants of the same shape, precisely this kind of contrastive phonological process is common.

Stress shifts may serve to increase contrast between repeated reduplicant shapes, but it seems that the use of one shape for multiple reduplicative processes still does not meet the needs for expression of all reduplicative patterns of Klallam within the CVC shape. Again, the presence of two shapes that are relatively marked cross-linguistically, C and CC, underscores the need to use all possible variants within the CVC structure. Interestingly, it seems that within Klallam phonotactic rules, the consonant clusters resulting from C and CC shapes are preferable to the onsetless syllables that could be created by -VC. This brings up the issue of the transparent phonological rules (where they apply only in expected environments), and under- and over-application of phonological rules, as described by McCarthy and Prince (1995), which are inextricably entwined with issues of markedness in Klallam reduplication.

Based on the data examined in all reduplicative processes, it appears that there is a ranking of markedness and faithfulness to Klallam phonotactics at work that can be described using the following principles:

(54) Ranking of markedness and cluster phonotactics in Klallam
  a. Reduplicant shapes are generally unmarked, and phonological rules are under- or over-applied in order to maintain the unmarked shape.
  b. Marked reduplicant shapes are permitted when they do not violate Klallam clustering rules; obstruent-obstruent clusters may result.

c. Marked reduplicant shapes are not permitted when they violate Klallam clustering rules; sonorants may not be a member of a consonant cluster.

The CV shapes of Plural, Actual, and Affective, for example, are maintained even when phonological rules would normally reduce the unstressed vowel to schwa, and then delete the unstressed schwa. That is, the under-application of these rules maintains the unmarked shape. The CV shape of the Resultative has a stressed vowel, which does not undergo these processes, and as such, maintains unmarkedness by shape by transparent phonology. The CV shape of the Actual is also an environment for the over-application of phonological rules, as the shape surfaces as Cə-, even when there is no vowel in the root to copy, as in the case of *kʷy'* 'spill' surfacing as *kʷəkʷə́y'* 'spilling.' This schwa is not required by Klallam phonotactics, but over-applies in order to preserve the unmarked CV shape.

At times, the shape itself prevents further markedness. The Diminutive shape, for example, is CVC. While the presence of a coda makes this shape more marked than a light CV shape, the preassigned glottal stop in the coda prevents the transparent application of phonological processes that would reduce an unmarked CV reduplicant to as a simple C in the surface form, which would create more highly marked consonant clusters. Again, while permitted in Klallam, these clusters are dispreferred in most reduplication processes of Klallam.

Where a relatively more marked structure is allowed, it never violates the Klallam phonotactic rule prohibiting clusters where one of the members is a sonorant. The C…í allophone of Plural results in such obstrent clusters as *sƛ̕ƛ̕íwən'* 'earrings,' but never sonorant clusters like **ŋŋíkʷt* 'chew.' Rather, the root *ŋakʷ* uses the Ci- allomorph to

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surface as *ŋiŋák^wt* 'chew it up.' In fact, all roots with a sonorant in the C_1 or C_2 use either

the CVC- shape or the C*i*- allomorph, precisely in order to avoid these dispreferred

clusters. This principle remains the same for the Actual -C- infix, where phonological

rules are transparent. That is, they apply in their regular environments. If the infix results

in an obstruent cluster permitted by Klallam phonotactics, no rules apply. If the infix

results in a dispreferred sonorant cluster or a CʔH cluster, then Schwa Epenthesis applies to

break up the cluster. The same holds true for Inceptive and Distributive: in all cases

where the marked reduplicant shape would result in a sonorant cluster, Schwa Epenthesis

prevents the cluster, but obstruent clusters are permitted.

In summary, Klallam generally follows the cross-linguistic pattern that

reduplicant shapes tend to be less marked than may otherwise be allowed in the language.

At the same time, however, perhaps for reasons of saliency or contrast, Klallam does

permit more marked structures as long as they do not violate the phonotactic rule

preventing sonorant clusters. Urbanczyk (2006) proposes that the relative markedness of

the Distributive reduplication pattern in Lushootseed and unmarkedness of the

Diminutive reduplication pattern can be explained by extending root-affix asymmetry to

reduplication; namely, the Distributive in Lushootseed is a root, and the Diminutive is an

affix. Whether it could be said that the Actual, Inceptive, and Distributive in Klallam are

all roots, while the remaining reduplicants are affixes would be premature without further

insight into the language. Rather, this is an area that would be interesting for further

investigation.

Another major question in Salishan reduplication is that of plurality and the

possibility of an Augmentative category using a CVC shape that may encompass such

processes in Klallam as Plural, Characteristic, and Distributive. This is not unheard of, as Haji-Abdolhosseini, Massam, and Oda (2002) argue very much the same thing, saying that plural participants, frequentativity, iterativity, and intensity can all be categorized as a single Pluractional reduplicatve process on verbs in Niuean (Polynesian/Tongic). van Eijk (1998) argues for an Augmentative category for the Salishan language family, but this is by no means agreed on generally. Where does Klallam fit in this debate? There is no absolutely conclusive evidence, but several factors point to an Augmentative category as being inadequate to explain these processes for Klallam. First, there is a stress shift in the CVC- shape of Characteristic that does not exist in the CVC- shape of Plural. Recall from §3.4 that a stress shift to CVC occurs on the Characteristic in quite a few Salishan languages, and that Montler (1986) is just one of the linguists who argues that this indicates a fundamental difference from that of the unstressed CVC- Augmentative. In Klallam, while Characteristic and Plural do exist on more than a half dozen of the same roots, the Plural forms are all of the Ci- shape rather than CVC-, so a comparison cannot be made of the meanings produced by a stressed CVC shape and an unstressed CVC shape. That said, the very fact of their existence on the same roots and that the shape is always different points towards these being different conceptual categories in Klallam. In addition, while the Distributive could possibly be analyzed as a CVC shape, I presented reasons against this in §3.8, concluding that it is best analyzed as a CC shape instead. There are no instances of the roots in Distributive also occurring in a Plural form, but the shape alone could preclude it from being in van Eijk's CVC Augmentative category. Again, while not definite, the data from Klallam indicate that, at least in this language, Plural, Characteristic, and Distributive can continue to be considered separate categories.

Table 3.2: Summary of reduplication patterns in Klallam

Reduplicative Process	Shape • Allophones	Remarks
Diminutive	$C_1V_1ʔ$-	Accompanied by ʔ infix that targets the first vowel of the stem
Plural	$C_1V_1C_2$- • $C_1əC_2$- when sonorant C_2 • C_1u- when CVw • C_1i- when CVy $C_1(V_1)$- • Ci- • C- with stressed ablaut [i]	Unpredictable application of shape to root; some in apparent free variation
Actual	-C_1- when stress on first syllable C_1V_1- when stress on second syllable • $C_1ə$- for CC root • C_1V_1- elsewhere	Stress remains on root; often accompanied by glottalization after stressed vowel
Characteristic	$C_1V_1C_2$-	Stress shifts to reduplicant
Resultative	C_1V_1- • $C_1V_1ʔ$	Stress shifts to reduplicant; glottalized allophone environment unclear
Inceptive	C_1- • $C_1ə$- possible	Cə- may be an allophone or the result of post-reduplication phonological processes
Affective	C_1i-	
Distributive	C_1C_2-	
Multiple	Shapes remain largely the same	Possible combinations • Actual-Characteristic • Actual-Inceptive • Actual-Plural • Affective-Characteristic • Affective-Diminutive • Diminutive-Actual • Diminutive-Affective • Diminutive-Characteristic • Diminutive-Inceptive • Diminutive-Plural • Diminutive-Resultative • Plural-Diminutive • Plural-Plural

CHAPTER 4: CONCLUSION

4.1 Insights Gained from the Study

The purpose of this study was to extend and further refine the description of reduplicative processes in Klallam, including descriptions of the Distributive and of multiple reduplication, neither of which had been described previously in the literature. These descriptions included discussion of the interaction of phonological patterns with the morphological processes, showing the interconnection between these two systems. Several insights have emerged from these descriptions, including possible ranking principles of markedness and phonotactics, and the ordering of reduplication with regard to other affixing processes.

As summarized in Table 2.4, two important phonological patterns were described and shown in the reduplicative data. Rather than just an optional Schwa Excrescence rule described by Montler (1998), it appears that there is also an obligatory Schwa Epenthesis rule that prevents clusters where any member of the cluster is a sonorant, or a tautosyllabic Cʔ cluster would surface.

Then, as shown in Table 3.2, several reduplicative patterns were further refined from previous descriptions in Haeberlin, Thompson and Thompson, Fleisher, and Montler. First, combining aspects of both Fleisher's (1976) and Montler's (2015) descriptions, the Diminutive was shown to be better described as a CVʔ shape with its accompanying glottalization process targeting the first vowel of the stem. The Plural was then categorized as a CVC- shape rather than CC-, with CəC-, Cu- and Ci- allomorphs; and also as a C(V)- shape with either a Ci- allomorph or C- with accompanying [i] ablaut on the stressed vowel in the stem. The Actual reduplicative process was found to be

better described as having not just a highly marked -C- infix pattern, but a CV- pattern as well, where Cə- is the allomorph for a CC root, and CV- is the elsewhere form. Finally, where Montler (2015) described two possible interpretations for the Characteristic process, it was shown that a CVC- shape with accompanying stress shift to the reduplicant is the best explanation for this process according to markedness and other principles. The shapes and processes for Resultative and Inceptive are not different than those in Montler (2015), with the addition of a likely CVʔ- allomorph for the Resultative, and a possible Cə- allomorph for the Inceptive. Affective is the one reduplicative process where all shapes and processes are fundamentally the same as in the current descriptions in Montler (2015). Distributive was described for the first time, and turns out to be a CC-shape attached in the prefix position.

Multiple reduplication processes – largely double, but some instances of triple as well – were also described for the first time and it was found that Diminutive is by far the greatest participant in co-occurring reduplicants, almost always occurring on the outer edge of the surface form, as does the Actual. The Resultative, Characteristic, and Inceptive, on the other hand, always attach to the stem when co-occurring with another reduplicant. It may be that semantic scope is one of the factors in ordering multiple reduplicants, especially in light of the fact that there are both Diminutive-Affective and Affective-Diminutive forms, as well as Diminutive-Plural and Plural-Diminutive. That is, the switch in order could imply a switch in scope as well. Stress patterns in multiple forms also appear to be more conditioned by prosody than in single forms and other affixing processes, where stress is often a morphological consideration. Finally, it was discovered that Klallam multiple reduplication does not provide the kind of environment

that is needed to gain further insight about the identity of the base in reduplication, as adjacency or non-adjacency are not factors (with one possible exception, as discussed at the end of §3.9).

The interaction of markedness constraints and Klallam phonotactics also revealed a possible ranking system, repeated here from Chapter 3:

(55) Ranking of markedness and cluster phonotactics in Klallam
   a. Reduplicant shapes are generally unmarked, and phonological rules are under- or over-applied in order to maintain the unmarked shape.
   b. Marked reduplicant shapes are permitted when they do not violate Klallam clustering rules; obstruent-obstruent clusters may result.
   c. Marked reduplicant shapes are not permitted when they violate Klallam clustering rules; sonorants may not be a member of a consonant cluster.

That is, while reduplicants are generally unmarked in the world's languages, Klallam does allow some markedness in the shape, but these marked shapes never violate the phonotactic constraint in Klallam against clusters where one of the members is a sonorant. With further investigation, tautosyllabic Cʔ clusters could also be added to the constraints that are never violated.

Finally, an ordering pattern for Klallam also emerged. Because all reduplication patterns in Klallam except for the Actual infix allomorph are prefixes, surface forms that included both a prefixed reduplicant and an inflectional or derivational prefix were examined. It was found that the reduplicant never copies material from a prefix, indicating that reduplication processes precede other affixation processes. Further, it was shown that the Resultative reduplication process always precedes the Stative prefixation process, in spite of their derivational similarity, indicating that reduplicants may have precedence over most concatenative affixation processes. However, in the case of lexical

suffixes, of which there are many in Klallam, it was shown in the Diminutive derivation of *sčaʔčqʷáʔič* 'small bear' (literally, 'small burned backside)' that reduplication must follow the lexical suffixation process, possibly for reasons of semantic scope. And finally, where some ideas of the relative derivational or inflectional qualities of the reduplicants themselves might be revealed through the ordering of co-occurring reduplicants, it was shown that this was not, in fact, the case. Rather, Klallam reduplicants are largely derivational, so this was not a factor in multiple reduplication. Rather, like with lexical affixation, semantic scope appears to be a more important factor in the ordering of multiple reduplicants.

4.2 Directions for Future Research

The insights gained from the descriptions in this study, while valuable, leave some questions unanswered and raise others. First, while a ranking system of markedness and phonotactics emerged from the data, questions remain regarding the presence in Klallam of reduplicant shapes that are relatively marked cross-linguistically. The descriptions here could serve as a springboard to further research in this area. Is it because all possible shapes within the 'canonical' CVC structure are needed in a language with such a rich and complex reduplication system? Are there issues of saliency? Heightened contrast? It would certainly be worthwhile to begin with a study of the highly marked Actual infix: marked for its C shape, for its position as an infix, its possible categorization as a weak 'wrong side' reduplicant, and for the marked consonant clusters it produces when applied.

Other, smaller issues and questions arose from the descriptions that would be interesting to pursue: the digitizing of the dictionary for better data retrieval and

examination would be very fruitful; the order of glottalization processes with regards to reduplication processes could provide one small example in support of the adjacency theory of the base discussed by Broselow (1983) and Urbanczyk (1996/2001); and the possible Resultative CVʔ- allomorph would benefit from a better description of the possible morphological and phonological constraints on its environment. Finally, the question of stress is very ill-defined in Klallam. It is not clear when and how stress is conditioned by morphology, as seen in the model of weak and strong roots and affixes, and when also by prosody, as may be the case in multiple reduplication.

Another related area of interest entirely beyond the scope of this study is that of Klallam's presence in 'one of the most extensive and geographically diverse *Sprachbünde* [linguistic areas] in the world' (Beck 200:153). Some of Klallam's shared traits with other Salishan languages have been noted here, but much more work could be done both in comparative studies with Salishan languages and other languages of the Northwest Coast. For example, it would be quite interesting to compare the features of Klallam reduplication with those of neighboring Wakashan and Chemakuan languages. Are there features of Klallam and other Straits languages that have influenced their neighbors? Are those features of Klallam that are not common in other Salishan languages, such as vowel retraction and the CVC shape for Diminutive, borrowed from neighboring language families? Any research in this regard would give further insight into the historical interconnectedness of the people of this region.

Finally, one of the most pressing needs for research beginning now is that of documenting 'New Klallam,' a term used by Montler (1999) to describe the varieties of Klallam being used as the result of the revitalization effort. Again, most of the data and

descriptions currently available in Klallam date from 1953 to the present, making this a highly synchronous snapshot of the language. In addition, the combined effects of the loss of native speakers, the transition from an exclusively oral language to one that is both oral and written, and that some of the descriptions of morpho-phonological processes are written for pedagogical purposes rather than formal descriptive purposes mean that the language must inevitably change as the new generation of Klallam learners use this language. This is not a negative trend by any means, but it will be important to document. Indeed, Goodfellow (2003) believes that 'the greatest obstacle to keeping Native American languages thriving is a prevalent belief of linguists, language planners, teachers, and the general public that a language must somehow be maintained in its "pure" form' (2003:53). Montler (1999) has already noted that the 'new' versions of Straits languages have simplified grammar systems, such as using periphrastic constructions rather than lexical suffixes; they include neologisms like the Klallam words seen in Chapter 3 for microwave, *sčaʔčúʔyəɬc*, literally 'small wave,' and telephone, *sxʷkʷaʔkʷáʔčəŋ*, 'yell a little; and the anglicization of consonant clusters and other phonemes that are difficult to produce for non-native speakers like the lateral affricate /t͡ɬ'/. With the rise of periphrastic constructions, will reduplication – a process almost completely absent in English – be phased out over time? Will reduplicants with more than one shape and several allomorphs be simplified into just one shape and allomorph? The continued documentation of Klallam as a living, changing language would be of immense value to the study of other revitalizing languages, Salishan languages, reduplicative studies, and other fields of both theoretical and applied linguistics.

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