Aspectual /-x'id/ in Modern Kwak'wala

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Abstract: One of the most frequent and important suffixes in Kwak'wala is /-x'id/, an aspectual suffix with ten allomorphs in the modern language: \{-x'id, -'id, -x'i, -'i, -nd, -ud, -d, -n, -u, -Ø\}. In this paper I summarize research concerning this suffix’s history, syntax, and semantics, and provide an updated rule-based analysis of the morphophonology of /-x'id/ in modern Kwak'wala. I also comment on issues related to teaching and learning /-x'id/.

Keywords: morphology, phonology, aspect, Kwak'wala, Wakashan

1 Introduction

The suffix /-x'id/ is one of the most frequent suffixes encountered in the Kwak’wala language.\(^1\) In terms of its morphophonology, it is also one of the most complex: in modern Kwak’wala, /-x'id/ has the ten allomorphs, listed in (1).

(1) Allomorphs of /-x'id/ in modern Kwak'wala:
\[-x'id, -'id, -x'i, -'i, -nd, -ud, -d, -n, -u, -Ø\]

One purpose of this paper is to describe the morphophonology of /-x'id/ in modern Kwak'wala. While the distribution of five allomorphs, \{-x'id, -'id, -nd, -ud, -d\}, is unchanged since the language was described at the turn of the 20\(^{th}\) century (Boas 1911, 1947), five new allomorphs \{-x'i, -'i, -n, -u, -Ø\} have arisen due to an optional rule in the modern language, the deletion of \(d\) in syllable-final position. This change has had the effect of making the morphophonology of /-x'id/ more complicated than it was over a century ago.

Because of its high frequency and grammatical importance, /-x'id/ is a central part of the language for consideration by both linguists and language learners. A second purpose of this paper is to bring together what is currently known about /-x'id/. Several recent studies have described the semantics of /-x'id/ (Greene 2013, Sardinha 2018), adding to the detailed descriptions of /-x'id/ provided in Boas’ grammars (Boas 1911, 1947). Novel observations presented below come from field research focused primarily on the central dialect of the language, commonly referred to as Kwak'wala, as spoken by four language consultants from Tsaxis and Gwayi. I have also worked to a lesser extent with two language consultants speaking the Nak'wala dialect from Tsulquate, and am not aware of any differences across the two dialects in the grammar of /-x'id/.

\(^{1}\) Kwak'wala is an endangered Northern Wakashan language spoken in British Columbia on the central coast, adjacent mainland, and intervening islands, as well as in Victoria and the Fraser Valley. The Kwakwaka'wakw population is estimated to consist of 2.2% fluent speakers, 5.9% semi-speakers, and 12.3% active learners (First Peoples’ Cultural Council 2018).

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I begin with an overview of how /-x’id/ is described in the historical literature (Section 2), followed by an overview of its syntax and semantics (Section 3). Then, I proceed to an analysis of the morphophonology of /-x’id/ in the modern language (Section 4). Following this, I comment on some of the issues facing L2 teachers, L2 students, and toddlers acquiring /-x’id/ (Section 5). Section 6 summarizes and concludes.

2 Descriptions of /-x’id/ in the early 20th century

Boas (1911) and Boas (1947) constitute the earliest comprehensive descriptions of Kwak’wala grammar. The focus of these grammars is on the central dialect, especially as it was spoken in and around Tsa’xis (Fort Rupert) around the turn of the 20th century.

At this time and place in the language’s history, there were five allomorphs of /-x’id/: {-/id, -’id, -nd, -ud, -d}. In Boas (1911), the forms -d and -(x)’id are provided separate entries in the list of suffixes (456–457 and 486–488, respectively). However, by the time Boas (1947) is written, these forms are identified as allomorphs of the same morpheme. The description in (2) is reproduced from the annotated glossary of suffixes in Boas (1947).

(2) -(x)’id², -nd, -ud, -d
   “These forms express a momentary aspect, generally an inchoative.” (Boas 1947:365)

   In Boas (1947), there are in fact two distinct morphemes reported with [-(x)’id] as their phonological shape. These include the morpheme in (2) which expresses aspectual information and attaches closer to the root, and the /-x’id/ described below in (3) which attaches further from the root and expresses tense information. Several examples that are identified in Boas (1947) as involving tense /-x’id/ are provided in (4).³

(3) -(x)’id:
   “This suffix does not occur often in the texts although it is quite common in conversation. It refers to recent past, a few hours, day [sic.] or even weeks ago.” (Boas 1947:289)
   “[tense -(x)’id] Retains x except in nouns.” (Boas 1947:366)

(4) Examples with tense /-x’id/:
   a. galx’id
      gal        =x’id
      first      =REC.PAST
      ‘he had been first’ (Boas 1947:366)

   b. lax’id
      la         =x’id
      go         =REC.PAST
      ‘he went’   (Boas 1947:366)

² Brackets around the initial segment indicate that this segment is lost in certain phonological environments, making -(x)’id shorthand for {-/id, -’id}.
³ Glossing conventions and abbreviations are provided at the end of the paper, following References.
c. ḡas’as’ide
   ḡa -’as =x’id =i’
do -LOC.PASS =REC.PAST =NMZ
‘place where he had been before’
(Boas 1947:366)

From a semantic perspective, it is not obvious why the examples of alleged tense /-x’id/ in (4)
could not be analyzed as instances of aspectual /-x’id/. The motivation for positing two distinct
morphemes seems to derive, rather, from the existence of alternations such as those in (5), where
we see [-x’id] attaching either closer to (5a) or further from (5b) the root relative to the suffix -a,
and where we see it is possible for two morphemes with the shape [-x’id] to be present on the
same stem (5c).

(5) Aspectual /-x’id/, tense /-x’id/, and their combination:

a. ḡas’id
   ḡa -x’id
   walk -BEC
   ‘to go’
(Boas 1947:365)

b. ḡasax’id
   ḡa -a =x’id
   walk -A =REC.PST
   ‘he went (about a week or month ago)’
(Boas 1947:366)

c. ḡas’idax’id4
   ḡa -x’id =x’id
   walk -BEC =REC.PST
   ‘he took a walk’
(Boas 1947:366)

Greene (2013) investigates [-x’id] forms in modern Kwak’wala and finds that contemporary
speakers no longer allow this form in the outer tense slot (6).5 In its place, they volunteer forms
with the simple past tense enclitic, =xd (7).6

(6) *ḡasax’id∂xda
ganam lαxa skul
   ḡa -a -x’id =oχ =da gαnαnμ lα =χ =a skul
   walk -A -REC.PST =D2 =DET child PREP =ACC =D4 school

   Intended: The child walked to school (about a week/month ago).’
   (Greene 2013:80)

4 Schwa (a) is epenthetic here, and more generally in any example where it is omitted from the parse and
gloss lines in the morpheme analysis. It is debatable whether schwa is ever phonemic in Kwakwala.
5 Greene’s research also focuses on the central dialect and was carried out with many of the same speakers
as my own.
6 The morpheme analysis of these examples has been changed slightly from the source to make them align
with the glossing conventions adopted here.
In the modern language, aspectual /-x’id/ can co-occur with the simple past tense enclitic =xd, which is realized in the same outer position as tense /-x’id/ was historically (8). This is the position of tense clitics generally, as shown in (9) where the future tense clitic =tl follows aspectual /-x’id/.

(8) ḷas’idaxdoxda ḷasanam laša skul
    ḷas  -a  =xd  =ox  =da  ḷasanam  la  =x  =a  skul
    walk  -A  =REC.PST  =D2  =DET  child  PREP  =ACC  =D4  school
    ‘The child was walking to school.’  (Greene 2013:80)

(9) latlan  tlīxw’idtl  laš  Tsaxis
    la  =tl  =ān  tlīxw  -x’id  =tl  la  =x  Tsaxis
    go  =FUT  =1  relocate  -BEC  =FUT  PREP  =ACC  Fort.Rupert
    ka’an  xwanukw
    ka  =ān  xwanukw
    PREP  =1.POSS  child
    ‘I’m going to move to Tsaxis for my child.’  (20160720 VF)

Examples such as (8–9) indicate that tense /-x’id/ is not used by contemporary Kwak’wala speakers. The rest of this paper will only be concerned with aspectual /-x’id/.

3 Syntax and semantics

The suffix /-x’id/ is one of the most frequently encountered morphemes in Kwak’wala, in part because its occurrence on lexical roots is not restricted by syntactic category. The examples in (10) show that /-x’id/ can occur on verbs, nouns, adjectives, and adverbs (see Littell 2016:51–93 for discussion of syntactic categories).

(10) /-x’id/ on lexical roots:
    a. mąx’id  verb  /-x’id/
       mąx  -x’id
       punch  -BEC
       ‘to punch, hit with fist’
    b. bagwanam’x’id  noun  /-x’id/
       bagwanam  -x’id
       man  -BEC
       ‘to become a man’
    c. t’ul’id  adjective  /-x’id/
       t’ul  -x’id
       black  -BEC
       ‘to get black, to blacken’
Regarding its morphosyntax, the suffix /-x’id/ attaches exclusively to the stem which it semantically modifies. In this way, /-x’id/ patterns as a suffix and not as a clitic (see Littell 2016:545–583).

Greene (2013) investigates the semantics of /-x’id/ in modern Kwak’wala and describes the suffix as a non-canonical perfective. One way /-x’id/ resembles a perfective is that it advances event time in narratives: in stories consisting of multiple sequenced events, /-x’id/ is often used to mark a transition from one event to the next (Greene 2013:82–85). Another way /-x’id/ resembles a perfective is shown by its interpretation in the vicinity of when-clauses, which are known to make the reference time of the event explicit. In (11), the reference time is the moment when the speaker (“I”) enters a room where Marion is, thereby scaring Marion. The verb dzalkw’id (‘run-x’id’) in this sentence indicates that Marion’s running began within the reference time, which in this example is the moment I entered the room. This can be contrasted with (12), where the reference time is once again the moment the speaker enters a room where Marion is, this time interrupting Marion’s workout. In (12), the verb dzalkwala with the continuative suffix -la is used to indicate that Marion’s running was ongoing at the reference time.7

(11) Context: Marion was scared of me as soon as she saw me walk into the room.

le’gan le’etla dzalkw’idi Marion
la =i’ =(i)k =gn le’etla dzalkw -x’id =i Marion
AUX =NMZ =V1 =I arrive run -BEC =D3 Marion
‘When I arrived, Marion ran.’ (Greene 2013:87)

(12) Context: I interrupted Marion’s daily workout when I came into the room.

le’gan le’etla dzalkwali Marion
la =i’ =(i)k =gn le’etla dzalkw -la =i Marion
AUX =NMZ =V1 =I arrive run -CONT =D3 Marion
‘When I arrived, Marion was running.’ (Greene 2013:88)

Greene (2013) makes two conclusions from this type of data. Firstly, /-x’id/ minimally requires the beginning of an event to be included within the reference time of an utterance. Secondly, /-x’id/ does not require the completion of an event within reference time — that is, /-x’id/ does not express telicity. If /-x’id/ were telic, we would expect (11) to receive the interpretation whereby the running was completed within reference time (‘When I arrived, Marion had ran.’). Aspectual /-x’id/ is thus unlike canonical perfectives, because canonical perfectives require event completion within reference time. These two conclusions about /-x’id/ are captured by Greene’s denotation in (13).

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7 I have modified the morpheme analysis of (11) and (12) from the source to reflect an update in our knowledge about the structure of when-clauses (Littell 2016:604–606).
Denotation of /-x’id/:\(^8\)

\[ [x’id] = \lambda P, s, v, t, w, e. (\text{BECOME}(P))(e)(w) \land \text{time}(e) \subseteq t \]  

(Greene 2013:88)

Another important finding in Greene (2013) is that Kwakwala has three basic event types, or aktionsart classes, which are referred to as states, processes, and transitions. States are non-telic and non-dynamic; processes are non-telic and dynamic, or composed of stages; and transitions are telic, but are not dynamic; rather, they are momentaneous events. A summary of these properties is provided in Table 1.

**Table 1:** Lexical aspect classes in Kwakwala (from Greene 2013)

<table>
<thead>
<tr>
<th>Verb class</th>
<th>Template</th>
<th>Semantic features</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. States</td>
<td>( \lambda e. P(e) )</td>
<td>[-telic, -stages/-dynamic]</td>
</tr>
<tr>
<td>b. Processes</td>
<td>( \lambda e. (\text{DO}(P))(e) )</td>
<td>[-telic, +stages/+dynamic]</td>
</tr>
<tr>
<td>c. Transitions</td>
<td>( \lambda e. (\text{BECOME}(P))(e) )</td>
<td>[+telic, -stages/-dynamic]</td>
</tr>
</tbody>
</table>

One way of understanding the semantics of /-x’id/ is to look at how it interacts with verbs from each aktionsart class. Greene (2013) shows that on states /-x’id/ receives an inchoative interpretation (14), while on processes /-x’id/ receives either a simple past or inchoative interpretation depending on context (15). Lexical transitions, on the other hand, are ungrammatical with /-x’id/ (16).

(14) States and /-x’id/:

a. \( \text{kəna’is} \) 
   \( \text{kəna’is} \) =\( \text{ān} \) 
   feel.cold =1 
   ‘I’m cold.’  
   (Greene 2013:90)

b. \( \text{kəna’is’id} \) 
   \( \text{kəna’is} \) -\( x’id \) =\( \text{ān} \) 
   feel.cold -\( \text{BEC} \) =1 
   ‘I got cold.’  
   (Greene 2013:90)

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The \( \text{BECOME} \) operator in (13) is defined in Dowty (1979:139f.) as follows:

*Interval:* Let \( T \) be the set of real numbers. Let \( \langle \rangle \) be the standard dense linear ordering of \( T \). \( I \) is an interval iff \( I \subseteq T \) and for all moments \( t_1, t_2, t_3 \), if \( t_1 \langle t_2 \langle t_3 \), then \( t_2 \subseteq I \).

*Initial and final bound:* \( t \) is an initial bound for \( I \) iff \( t \) is the latest moment just before \( I \). Final bound is defined similarly.

\[ [\text{BECOME } \phi] \text{ is true at } I \text{ iff there is an interval } J \text{ containing the initial bound of } I \text{ such that } \neg \phi \text{ is true at } J \text{ and there is an interval } K \text{ containing the final bound of } I \text{ such that } \phi \text{ is true at } K. \]
(15) Processes and /-x’id/:

a. ḳasən
   ḳas =ən walk =1
   ‘I walk (habitually)’ or ‘I am walking’.  
   (Greene 2013:37)

b. ḳas’idoxə da  
   ḳas -x’id =oX =da ḳanənam  
   ḳas -x’id =oX =da ḳanənam la =X =a skul
   walk -BEC =D2 =DET child PREP =ACC =D4 school
   (i) ‘The boy started to walk to school.’
   (ii) ‘The boy walked to school.’  
   (Greene 2013:93)

(16) Transitions and /-x’id/:

a. dulowən
   dulo =ən win =1
   ‘I won.’  
   (Greene 2013:97)

b. * dulox’idən
   dulo -x’id =ən win -BEC =1  
   (Greene 2013:97)

The incompatibility of /-x’id/ and lexical transitions arises from the fact that the denotation of /-x’id/ and the template of lexical transitions (Table 1, c) both contain the BECOME operator. Their combination would derive a non-sensical event type consisting of an initial transition into an instantaneous transition.

Sardinha (2018) extends Greene’s system by proposing that three frequent suffixes in Kwakwala have the function of deriving Greene’s three event types: -ala ‘stative’ derives states, -la ‘continuative’ derives processes, and -x’id ‘become’ derives transitions. These suffixes form a paradigm with -a, an unmarked default, to specify the event type of every event expressed in the language. Some verb roots, such as duḵw- ‘to see’, can be used to express all three event types through derivation with these suffixes (17).

(17) duḵw- ‘to see’ with -ala (a), -la (b), -x’id (c), and default -a (d):

a. Context: Mabel thinks she heard something in the bushes. She keeps her eye on the bushes to see if it’ll move again.

   ḱa̱m̓ is duḵwala  
   ḱa̱m̓ is =(w)is  
   AUX =VER and.so see -STAT =ACC =D4 =DET bush
   ḱa̱m̓ is kayos da la̱ w̓ ixa
   ḱa̱m̓ is kayos =i =da  
   NEG.EXIST =D3 =DET move -A
   ‘She watched the bushes, but nothing moved.’  
   (20160712 VF)
b. Context: Vicky drew a complicated picture of a garden. In it there was a butterfly. She asked Eddie if he could find the butterfly.

The existence of a system of event type marking explains why /-x’id/ is so frequent, and why the other suffixes in its paradigm, -ala and -la, are similarly frequent. In contrast with tense, which is only obligatory in the future, the specification of event type is obligatory.

On nouns, /-x’id/ derives an inchoative with the meaning ‘to become N’ (18). Semantically, this involves the coercion of a predicate of individuals into a predicate of events defined over an interval of time (see (13) and footnote 8).

(18) a. bagwanamux ba̱gwaŋam man =ux =D2 Connor
‘Connor is a man.’ (20100129-Abel VF)

b. bagwanamx’idida kwankwaŋxwalige’
‘Thunderbird became a man.’ (20130710 VF)
While /\textipa{x'id}/ is in principle possible on any noun, such examples are rare for pragmatic reasons.

In summary, /\textipa{x'id}/ patterns morphosyntactically as a suffix and attaches to every category of lexical root. Semantically, /\textipa{x'id}/ marks a category of event type known as transitions, and its use requires that the event in question began, but was not necessarily completed, during the reference time of the utterance.

4 Morphophonology of /\textipa{x'id}/

In modern Kwákwala, there are ten allomorphs of /\textipa{x'id}/ which fall into three sets. The set of allomorphs in (19a) and the set of allomorphs in (19b) are differentiated by the morphological environment they appear in, while the allomorphs in (19c) appear in either morphological environment and arise due to an optional phonological rule.

(19) Allomorphs of /\textipa{x'id}/ in modern Kwákwala:

a. \textipa{-nd}, \textipa{-ud}, \textipa{-d} After lexical suffixes  
b. \textipa{-x'id}, \textipa{-'id} On stems without lexical suffixes  
c. \textipa{-x'i}, \textipa{-'i}, \textipa{-n}, \textipa{-u}, \textipa{-∅} Arises due to optional \textipa{d} loss syllable-finally

In Section 4.1, I discuss the morphological conditioning of the sets of allomorphs in (19a) and (19b), as well as the phonological conditioning of allomorphs within these sets. Then in Section 4.2, I discuss the allomorphs in (19c), which arise due to the occasional omission of \textipa{d} at the end of syllables in connected speech. Section 4.3 presents the full set of rules for the morphophonology of /\textipa{x'id}/.

The phonological inventory of Kwákwala is summarized in Appendix A.

4.1 \{-\textipa{nd}, \textipa{-ud}, \textipa{-d}\} and \{-\textipa{x'id}, \textipa{-'id}\}

Two sets of allomorphs were attested in the Kwákwala spoken around the turn of the 20th century: \{-\textipa{nd}, \textipa{-ud}, \textipa{-d}\} and \{-\textipa{x'id}, \textipa{-'id}\}. These allomorphs are analyzed here as instances of the same abstract morpheme, /\textipa{x'id}/. This unified analysis is motivated by the fact that these sets are identical in meaning and are in complementary distribution (exceptions are discussed below). The conditions underlying the distribution of these sets is morphological in nature.

Of these two sets of allomorphs, \{-\textipa{nd}, \textipa{-ud}, \textipa{-d}\} is more restricted. These allomorphs occur exclusively on stems which already contain one or more “primary suffixes” (Boas 1911:455), a set which includes nearly all suffixes in the language. Suffixes which are specifically listed as not being primary suffixes include terminal completive -a (Boas 1911:456), -la ‘continuative’, -ala ‘stative’, and -\textipa{!iq} ‘in mind’ (Boas 1947:365). The reciprocal suffix -\textipa{ap} ‘each other’ may be added to this list. What Boas calls primary suffixes are referred to in the literature on Northwest Coast languages as lexical suffixes, a term which refers to suffixes with meanings resembling independent lexical items in familiar European languages. Some examples of lexical suffixes in Kwákwala include -\textipa{(g)m} ‘face’, -(x)\textipa{tla} ‘on the fire’, and -\textipa{'sta} ‘in(to) water’. As ‘lexical suffix’ is the more familiar term, I adopt it below. Clitics are naturally excluded from this set, and in any case always attach to the right of /\textipa{x'id}/ within the word.

With stems containing one or more lexical suffixes, one of the allomorphs in the set \{-\textipa{nd}, \textipa{-ud}, \textipa{-d}\} is chosen according to three phonological rules (Boas 1947:365). After stem-final \textipa{m} and \textipa{n}, the allomorph \textipa{-d} is realized. After stem-final rounded vowels and semi-vowels, \textipa{-o}, \textipa{-u}, or \textipa{-gw}, the allomorph \textipa{-ud} is realized, with \textipa{o} and \textipa{gw} being converted to \textipa{u}. Elsewhere, the allomorph \textipa{-nd} is
realized, in which case up to three additional phonological rules apply: one, if the stem ends in a consonant, ɡ (schwa) is inserted before -nd; two, if the stem ends in the vowel a, this vowel is shortened to ɡ; and three, if the stem ends in an obstruent, it undergoes softening (lenition). These rules for realizing {-nd, -ud, -d} are summarized in (20) along with examples.

(20) Phonological conditioning of the allomorphs {-nd, -ud, -d}:

A. Realize [-d] when the rightmost lexical suffix ends in m or n.

i. /kus/- + /-ɡ/ɑm/ + /-x’id/ → [kusɑmd]
   kus- ‘to shave’, -ɡɑm ‘face’, kusɑmd ‘to shave face’

ii. /lus/- + /-(k)’qn/ + /-x’id/ → [lusɑnd]
    lus- ‘to uncover’, -(k)’qn ‘body’, lusɑnd ‘to get naked, undress’

B. Realize [-ud] when the rightmost lexical suffix ends in a rounded vowel or semi-vowel (u, o, or gw), and convert the vowel or semi-vowel to u.10

i. /day/- + /-’stu/ + /-x’id/ → [di’sud]
   day- ‘wipe’, -’stu ‘round opening’, di’sud ‘to wipe eyes’

ii. /niş/- + /-wako/ + /-x’id/ → [nişwɑd]
   niş- ‘to pull’, -wako ‘out of hole’, nişwɑd ‘to pull out of hole’

iii. /kuş/- + /-saw/ + /-x’id/ → [kuşsud]
    kuş- ‘to dress’, -saw ‘in’, kuş’sud ‘to get dressed’

C. Realize [-nd] elsewhere after lexical suffixes, and apply the following three additional rules:

a. If the stem ends in a consonant (other than m or n), insert ɡ (schwa) before -nd.

   i. /tɔm/- + /-(a)nɔx/ + /-x’id/ → [tɔmɑnxɔnd]
      tɔm- ‘melt’, -(a)nɔx ‘season’, tɔmɑnxɔnd ‘season of melting (ice)’
      (Boas 1947:305)

b. If the stem ends in a non-rounded vowel (a, i, or e)11, shorten this vowel to ɡ.

   i. /ɑx/- + /-ba/ + /-x’id/ → [ɑxɑnd]
      ɑx- ‘empty root, do’, -ba ‘end of long horizontal object’, ɑxɑnd ‘to put at end’
      (Boas 1947:365)

10 The Umista letter o used here corresponds to the letters ̆ and ̇ in Boas (1947), while the Umista letter u here corresponds to u, ʊ, o, and ơ in Boas (ibid.). Note that the sequence gw is phonetically identical to o when it makes up the rhyme of a syllable. Phonologically, however, the sequence gw can be distinguished from o in a variety of ways (see Littell 2016:444–448).

11 I have generalized this rule to include e, though I have not found any examples with this vowel in this position. The only lexical suffix in Boas (1947) which ends in this vowel is -’x’id ‘on top of head, name’ (pg. 274), and the only relevant example provided takes the allomorph [-x’id]: nil ʼgilex’id ‘to begin to show head’.
ii. /dz’am-/ + /-(k)ayì/ + /-x’id/ → [dz’amkayänd]
dz’am- ‘to bury in soil’, -(k)ayì ‘on top (of a surface)’, dz’amkayänd ‘to cover with dirt’  
(Boas 1947:355)

c. If the stem ends in an obstruent, soften the obstruent (e.g. s → dz, k → g, k → g).

i. /la-/ + /-ɔxs/ + /-x’id/ → [laxdzänd]
la- ‘to go’, -ɔxs ‘in canoe’, laxdzänd ‘to shift from one side to other in canoe’  
(Boas 1947:365)

ii. /gal-/ + /-ɔik/ + /-x’id/ → [galigänd]
gal- ‘to crawl’, -ɔik ‘on back’, galigänd ‘to climb on back’  
(Boas 1947:365)

iii. /påtl-/ + /-pìk/ + /-x’id/ → [pålpigänd]
påtl- ‘to fly’, -pìk ‘stick, tree’, pålpigänd ‘to fly to pole’  
(Boas 1947:338)

In some cases, more than one of the above rules apply. The example in (c-iii), for instance, undergoes both g insertion (C-a) and softening of k to g (C-c).

The rules in (20) are motivated to varying degrees on phonological grounds. The split between the consonants m and n in Rule 20A and all other consonants in Rule 20C-a may be a form of dissimilation, with the allomorph -d being realized instead of -nd in order to prevent sequences of nearly adjacent nasal consonants (*...ngnd, *...mngnd). Note that the glottalized nasals, m and n, pattern along with obstruents rather than nasals in failing to trigger Rule A. While Rule 20C-c has been generalized to make reference to all obstruents, the inventory of obstruents which actually appear at the right edge of lexical suffixes is quite small. In fact, the consonants s, k, and g are the only obstruents which occur at the right edge of lexical suffixes and trigger this rule. I know of only one exception to this generalization, which is that the final consonant of the suffix -(k) ‘ut ‘opposite’ hardens to t before the -nd allomorph of /-x’id/, giving rise to forms such as lakutgänd ‘to go to other side’ (from la- ‘to go’, -(k) ‘ut ‘opposite’) (Boas 1947:358).\footnote{It is ironic that the final consonant of a suffix meaning ‘opposite’ undergoes hardening — the opposite of softening — after the -nd form of /-x’idl/. This should make it an easy exception to remember!}

Rule 20B, on the other hand, has numerous exceptions. Boas (1947:365) lists a set of suffixes which do not end in rounded vowels or semi-vowels, but which nevertheless invariably condition the -ud form of /-x’id/.

(21) Exceptional lexical suffixes which condition the use of -ud:

\begin{itemize}
  \item \textit{a.} /əx-/ + /-aça/ + /-x’id/ → [əxaçaud]
    əx- ‘empty root, do’, -aça ‘down’, əxaçaud ‘to take down’  
    (Boas 1947:321)
  
  \item \textit{b.} /əx-/ + /-(g)a’l/ + /-ɔtlay̱/ + /-x’id/ → [əx’atlay̱ud]
    əx- ‘empty root, do’, -(g)a’l ‘telic directional’,\footnote{This and other directional suffixes are analyzed in Rosenblum (2015:88–93 and 294–312).} -ɔtlay̱ ‘moving on water, at sea’, əx’atlay̱ud ‘to put on water’  
    (Boas 1947:377)
\end{itemize}
c. /mən̓s-/ + -(g)aɬ’/ + /-tłəɬa/ + /-x’id/ → [mən̓s’atləɬud]
mən̓s- ‘to measure’, -(g)aɬ’ ‘telic directional’, /-tłəɬa/ ‘above ground’, mən̓s’atləɬud ‘to measure, to try on’ (Boas 1947:350)

d. /həntɬ-/ + -(x)ta/ + /-x’id/ → [həntɬɬud]
həntɬ- ‘to hunt with rifle’, -(x)ta ‘seaward’, həntɬəɬud ‘to shoot seaward’ (Boas 1947:373)

e. /day-/ + /- tɬa/14 + /-x’id/ → [disdəɬud]
day- ‘to wipe’, /- tɬa/ ‘ear’, disdəɬud ‘to wipe ear’ (Boas 1947:309)

I have not checked with contemporary speakers to verify whether the same pattern of exceptions holds in the modern language.

If a stem does not contain a lexical suffix, one of the allomorphs in the set {−x’id, -’id} is realized instead. These allomorphs also follow -la ‘continuative’, -ala ‘static’, and -(l̓)sq ‘in mind’ (Boas 1947:365), as well as -aʃp ‘each other’ (see 22C-i). The choice between allomorphs {−x’id, -’id} is conditioned by a complex set of phonological rules governing the loss of initial x, as well as changes to the final consonant of the stem. These rules, based closely off of the ones stated in Boas (1947:365), are provided alongside examples in (22). In a few places, these rules have been generalized over phonological classes to make predictions about segments for which there is no data; round brackets ‘()’ are used to indicate these segments.

(22) Phonological conditioning of the allomorphs {−x’id, -’id}:

A. Realize [−x’id] when the stem ends in a vowel {a, e, i, (o) u, (g)}; or one of the following consonants: {m, n, l, m̓, n̓, l̓}.

i. /da-/-x’id/ → [dax’id] da- ‘to take in hand’
ii. /ale-/-x’id/ → [alex’id] ale- ‘to search’
iii. /məltɬ-/ + /-x’id/ → [məltɬx’id] məltɬ- ‘to recognize’
iv. /gəɬy-/-x’id/ → [gəɬyxw’id]15 gəɬy- ‘to ask in marriage’

v. /ɪsɬəɬ- + /-x’id/ → [ɪsɬəɬx’id] ɪsɬəɬ- ‘to point’
vi. /wəɬəɬ- + /-x’id/ → [wəɬəɬx’id] wəɬəɬ- ‘to hide’

vii. /ɪsəɬ- + /-x’id/ → [ɪsəɬx’id] ɪsəɬ- ‘to spawn’
viii. /həɬm- + /-x’id/ → [həɬmɪx’id] həɬm- ‘to eat’
ix. /dəɬəɬ- + /-x’id/ → [dəɬəɬx’id] dəɬəɬ- ‘to be loyal’

x. /wəɬ- + /-x’id/ → [wəɬx’id] wəɬ- ‘to stop’

B. Realize [−x’id] when the stem ends in {y, w̓, j, ɬ̓} and change these semi-vowels to a corresponding vowel: y → i, w → o, j → i, ɬ̓ → u.

i. /day-/ + /-x’id/ → [dix’id] day- ‘to wipe’
ii. /təɬw-/ + /-x’id/ → [təɬxw’id] təɬw- ‘to go forward, get closer’

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14 This suffix triggers reduplication of the root CV and insertion of s into the coda of the reduplicant.
15 Velar and uvular segments neutralize to rounded after rounded vowels and semivowels.
iii. /iəɣ̱-/ + /-x̱'id/ → [iəx̱'id]  
   iəɣ̱- ‘to be sheltered’
iv. /gəw̱-/ + /-x̱'id/ → [gu'x̱w̱id]  
   gəw̱- ‘to help’

C. Insert a after the stem and realize [-x̱'id] when the stem ends in a glottalized plosive {p̱, ṯ, ḵ, kw̱, ʞ̱ (kw̱), ṯs, ṯ̩l, ṯ} or voiced plosive{(b), d, (g), gw̱, (g̱w), dẕ, (dḻ)}.

i. /gəḻap̱-/ + /-x̱'id/ → [gəḻapa̱x̱'id]  
   gəḻap̱- ‘to reproach each other’
ii. /yənḵ-/ + /-x̱'id/ → [yənḵa̱x̱'id]  
   yənḵ- ‘to throw with sling’
iii. /kwəkw̱- + /-x̱'id/ → [kwəkw̱a̱x̱'id]  
   kwəkw̱- ‘to peel off’
iv. /ṯli̱ḵ- + /-x̱'id/ → [ṯli̱ḵa̱x̱'id]  
   ṯli̱ḵ- ‘to be jealous’
v. /məx̱ts̱- + /-x̱'id/ → [məx̱ts̱a̱x̱'id]  
   məx̱ts̱- ‘to be ashamed’
vi. /x̱aḻṯ- + /-x̱'id/ → [x̱aḻta̱x̱'id]  
   x̱aḻṯ- ‘small amount’
vii. /taḻ- + /-x̱'id/ → [taḻa̱x̱'id]  
   taḻ- ‘to have blanket pinned on left shoulder’

viii. /wəḏ- + /-x̱'id/ → [wəḏa̱x̱'id]  
   wəḏ- ‘to be cold’
ix. /yugw̱- + /-x̱'id/ → [yugwa̱x̱'id]  
   yugw̱- ‘to rain’
x. /udẕ- + /-x̱'id/ → [udza̱x̱'id]  
   udẕ- ‘wrong, not working’

D. Elsewhere, initial x is lost and [-'id] is realized, along with the following additional changes to the final stem consonant:

a. The glottal stop in [-'id] fuses with stem-final p and t (p → p̱, t → ṯ).
   i. /dap̱-/ + /x̱'id/ → [dap̱pid]  
      dap̱- ‘to tow with rope’
   ii. /səlṯ-/ + /x̱'id/ → [səlṯtid]  
      səlṯ- ‘to be silent, quiet, calm’

b. Stem final velars, uvulars, and the unvoiced lateral affricate undergo spirantization (k → x̱, kw → x̱w, ḵ → x̱, kw → x̱w, ṯl → ṯl).19
   i. /ni̱ḵ- + /-x̱'id/ → [ni̱x̱'id]  
      ni̱ḵ- ‘to say’
   ii. /məḵkw̱- + /-x̱'id/ → [məḵx̱w̱'id]  
      məḵkw̱- ‘to iron’
   iii. /pəḵ- + /-x̱'id/ → [pəx̱'id]  
      pəḵ- ‘to taste’
   iv. /duḵkw̱- + /-x̱'id/ → [dux̱w̱'id]  
      duḵkw̱- ‘to see’
   v. /əgəṉuṯḻ- + /-x̱'id/ → [əgəṉuṯḻid]  
      əgəṉuṯḻ- ‘night’

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16 The vowel change is specific to this stem: ɪ̱g̱ʃ̱- ‘to be out of sight, protected by an intervening shelter against sight, heat, light, against being seen, to keep secret’ (Boas 1948:174).
18 This example is from Boas (1948:178).
19 In the case of velars and uvulars, I have also encountered increased aspiration as an alternative to spirantization (k → ḵ, kw → ḵw̱, ḵ → ḵ, kw → ḵw̱). Hypothetically, this would produce the following alternative set of examples: [ni̱ḵ'id], [məḵkw̱'id], [pəḵ'id], and [duḵkw̱'id]. Boas (1911:231) also mentions aspiration as a reflex of /-x̱'id/ suffixation, though he only provides examples involving spirantization.
There is no change to the final stem consonant when it is a fricative \{s, x, xw, g, \_xw, l\}.

i. /kas-/ + /-x’id/ → [kas’id]  kas- ‘to walk’
ii. /dax-/ + /-x’id/ → [dax’id]  dax- ‘to open eyes’
iii. /daxw-/ + /-x’id/ → [daxw’id]  daxw- ‘to jump’
iv. /danx-/ + /-x’id/ → [danx’id]  danx- ‘to sing’
v. /yaxw-/ + /-x’id/ → [yaxw’id]  yaxw- ‘to dance’
vi. /kal-/ + /-x’id/ → [kal’id]  kal- ‘to be scared’

I am not aware of any roots ending in phonemic g (schwa) or o, though we predict these segments to be followed by [-x’id] as with other vowels. The only roots I am aware of which end in ts are phonologized loanwords (labits ‘rabbit’, kalitis ‘carrot’), and I have not observed these words with /-x’id/. In theory, we might expect root-final ts to undergo spirantization (ts → s) by analogy with the other plain plosives. As indicated by square brackets above, there are a number of glottalized plosives and voiced plosives for which I lack data; in general, these segments are rarely encountered in the coda of lexical roots. The last remaining unmentioned segment, h, only occurs word-initially, and therefore never interacts phonologically with /-x’id/.

The number of exceptions to the rules in (22) appears to be quite small. One notable exception is the root ts’gk- ‘to be awake’, which together with /-x’id/ results in ts’gks’id ‘to awaken’, though we would expect to see spirantization of root-final k (*ts’gks’id). It is likely that ts’gks’id arises and has been conventionalized in order to avoid homonymy with tsx- ‘to hurt, be in pain’, which together with /-x’id/ forms tsx’id ‘to become in pain’. Without schwa epenthesis in the former example, the /-x’id/ forms of ts’gk- and tsx- would be identical. This exception to the rules in (22) thus appears to be motivated by a need to maintain a contrast in the language between the /-x’id/ forms of two lexical verb roots.

Up to this point we have been assuming that \{-nd, -ud, -d\} and \{-x’id, -’id\} always occur in different morphological environments. In fact, when we look at large amounts of data, we see that this morphological conditioning is not always obeyed and that the \{-x’id, -’id\} allomorphs are often acceptable following lexical suffixes. Boas (1947:365) even remarks that “probably all the other [lexical] suffixes may also take -x’id...”. Boas’ grammar lists numerous examples where one or more lexical suffixes are present on the stem — that is, where we would expect \{-nd, -ud, -d\} — but where allomorphs from \{-x’id, -’id\} can also occur. Two such examples are given in (22–23).

(23) **ba** ‘end of long horizontal object’:

a. dzq̱xband
dzq̱k -ba -x’id
rub -END.OF.LONG.OBJECT -BEC
‘to rub end’

(Boas 1947:336)

b. hilbax’id
hil -ba -x’id
right -END.OF.LONG.OBJECT -BEC
‘to turn the right way’

(Boas 1947:336)
(24) -\(s\)i\'sta ‘around’:

a. hiłsi\'sta\ndh
   -\(s\)i\'sta  -x\'id
   right  -around  -BEC
   ‘to go right around’

   (Boas 1947:341–342)

b. le\'sta\x\'id
   la  -\(s\)i\'sta  -x\'id
   go  -around  -BEC
   ‘to start to go around, to set right’

   (Boas 1947:341–342)

Similar sets of examples exist for stems containing at least the following lexical suffixes:

- ilba ‘outside of nose, point of land’ (Boas 1947:330), -\(stu\) ‘round opening’ (343), -\(sg\)gm ‘round surface, round thing’ (343–344), -\(dzu\) ‘on a flat thing’ (345), -\(sgw\) ‘in, inside’ (356), -\(kas\) ‘to eat’ (357), -\(k\)\’an ‘body’ (357), -\(g\)gm ‘face, head, in front, ahead’ (360), -\(x\)\(s\)ana ‘hand’ (372), -\(yto\) ‘on top of long object’ (373), and -\(l\)\(x\)\(d\)la ‘hind end, stern of canoe’ (374).

In the course of my research on modern Kwakwala, I have also occasionally run into particular stems with lexical suffixes that take either {\(-nd, \-ud, \-d\)} or {\(-x\'id, \-id\)}, with no apparent difference in meaning.

An example from my own data is given in (25) with the verb k\(ux\)ts\(gw\)- ‘to dress’.

(25) -\(ud\) and -\(x\'id\) on the same stem (modern Kwakwala):

a. l\(\text{a}^\text{m}\)u\(\text{x}\)l\(\text{a}^\text{m}\)x\(\text{w}\)'\(\text{id}\)\(\text{u}\)\(\text{x}\) Monica, l\(\text{a}^\text{m}\)u\(\text{x}\)
   l\(\text{a}^\text{m}\)x\(\text{w}\)  -\(x\'id\)  =u\(\text{x}\) Monica  l\(\text{a}^\text{m}\)x\(\text{w}\)  =\(\text{m}\)  =u\(\text{x}\)
   AUX  =VER =D\(2\)  dry  -BEC =D\(2\) Monica  AUX  =VER =D\(2\)
   k\(\text{u}^\text{t}\)s\(\text{u}\)\(\text{d}\)\(\text{a}\)
   k\(\text{u}\)\(\text{x}\)  -\(\text{sg}\)w  -\(x\'id\)  =\(\text{a}\)
   dress  -in  -BEC  =\(\text{a}\)
   ‘Monica got dry, then she got dressed.’

   (20181127 VF)

b. l\(\text{a}^\text{m}\)u\(\text{x}\)  Shelli\(\text{y}\)\(\text{a}\)\(\text{x}\)  \(\text{\'k}\)\(\text{u}^\text{t}\)s\(\text{o}\)\(\text{x}\)\(\text{\i}\)\(\text{d}\)a
   l\(\text{a}^\text{m}\)x\(\text{w}\)  =\(\text{m}\)  =u\(\text{x}\) Shelly  =\(\text{a}\)\(\text{\x}\)\(\text{\x}\)  k\(\text{u}\)\(\text{x}\)  -\(\text{sg}\)w  -\(x\'id\)  =\(\text{a}\)
   AUX  =VER =D\(2\) Shelly  =V\(2\)  dress  -in  -BEC  =\(\text{a}\)
   ‘Shelly got dressed.’

   (20191205 VF)

In contrast, I am not aware of any examples where {\(-nd, \-ud, \-d\)} allomorphs are present on stems lacking lexical suffixes where we would expect to see {\(-x\'id, \-id\)}.

I am aware of only a few examples where a difference in meaning has been conventionalized between stems containing allomorphs from {\(-nd, \-ud, \-d\)} and stems containing allomorphs from the set {\(-x\'id, \-id\)}. One such example is given in (26), where the difference between a stem with -\(ud\) (26a) and one with -\(x\'id\) (26b) corresponds to a semantic difference in the configuration and attachment of objects in a caused motion event (this difference is productive; see Boas 1947:361 for additional examples). Another example is given in (27) between a stem with -\(nd\) (27a) and a stem with -\(x\'id\) (27b). Modern speakers use la \(st\)\(g\)x \(i\)\(d\) to refer to bathing the whole body in water.
(26) a. kakatud
   Ca~ kut -(g)u -x’id
   RED~ long.horizontal -between/together -BEC
   ‘to put a long thing between’
   (Boas 1947:361)

   b. kakatuxw’id
   Ca~ kut -(g)u -x’id
   RED~ long.horizontal -between/together -BEC
   ‘to put long things together’
   (Boas 1947:361)

(27) a. la’stand
   la -’sta -x’id
   go -in.water -BEC
   ‘to put into water’
   (Boas 1947:365)

   b. la’stax’id
   la -’sta -x’id
   go -in.water -BEC
   ‘to begin to go into water’
   (Boas 1947:365)

Altogether, the overlap in distribution of these two sets of allomorphs suggests that since the turn of the 20th century, and extending into the present day, the forms {-nd, -ud, -d} have lost some of their productivity while {-x’id, -’id} forms have been expanding into these other forms’ morphological domain. Thus, researchers and students of Kwakala should not be surprised to encounter the occasional use of {-x’id, -’id} forms in contexts where {-nd, -ud, -d} forms are expected. Note that since these are all allomorphs of the same morpheme, /-x’id/, alternations of this sort should have no effect on the expressive potential of the language.

4.2 {-x’, -’i, -n, -u, -Ø}

The remaining five allomorphs of /-x’id/ are innovations in the modern language. They arise due to an ongoing phonological change, whereby speakers occasionally do not pronounce d in syllable-final position. This pattern can be modeled using an optional phonological rule of d deletion (28), which gives rise to the five allomorphs in (29)

(28) d deletion:

   d → Ø / [σ C V (C) ___] (d is deleted syllable-finally)

(29) {-x’, -’i, -n, -u, -Ø}

Examples of d deletion from the speech of modern speakers are provided in (30). In all of the (a) examples below, the d in /-x’id/ is syllabified in the onset and is retained; in all of the (b) examples, the d in /-x’id/ is syllable-final and is not pronounced. Were d to be added back into these (b) sentences, they would still be judged as grammatical.
(30) Retention (a) and deletion (b) of syllable-final $d$ in modern Kwak’wala:

A. $-x’id → -x’i$

a. Ɂə̱mən̓uʃ  dax’iduʃ  Katıeyəx
   l(a) = ’m =u̱x  da -x’id =u̱x  Katie =(a)x
   AUX =VER =D2  take.in.hand -BEC =D2  Katie =V2
   ɬa  tłat’àmɬaɬ =laɬa
   =x =a  tłat’àmɬ =(a)x  la =x =u̱x =a
   =ACC =D4  hat =V2  PREP =ACC =D2 =D4
   kwəxdaɬənɬɬ
   kwəxdaɬənɬ ==(a)x
   chair =V2

‘Katie picked the hat up from off of the chair.’ (20160707 VF)

b. Ɂə̱mən̓uʃ  waxuʃ  Məbɛlɬə  dax’i
   l(a) = ’m =u̱x  wax =u̱x  Mabel =x  da -x’id
   AUX =VER =D2  try =D2  Mabel =V2  take.in.hand -BEC
   ɬaɬa  kwəx
   =x =a  =da  kwəx
   =ACC =D4 =DET  tree

‘Mabel tried to grab the log.’ (20160714 VF)

B. $-’id → ’i$

a. Ɂə̱mən̓iɬən  gugwəɬyɬu
   Ɂə̱mə -x’id =ən  gugwəɬyɬu
   itchyy -BEC =1.POSS  leg/foot

‘My leg got itchy.’ (20150621 JF)

b. wələsaləx  Simoŋɬə  Ɂə̱məi  sis
   wələsal =u̱x  Simon =x  Ɂə̱mə -x’id =s =i(’)s
   big/very =D2  Simon =V2  itchy -BEC =INST =3.REFL.POSS
   alumas  ɬəניɬə
   alumas  ɬəɲιɬə
   new  clothing

‘Simon got really itchy from his new clothes.’ (20160714 VF)

C. $-nd → -n$

a. Ɂə̱mən̓uʃ  Simoŋɬə  ɬəməɬzʌnda
   l(a) = ’m =u̱x  Simon =x  tip -(x)sis -x’id =a
   AUX =VER =D2  Simon =V2  step -leg/foot -BEC =A

‘Simon is putting on his shoes.’ (20160718 VF)
b.  kalal̓an  kutil̓an  ipsidz̓an
kal̓ -la  =ān  k̑u  =tl  =ān  tip  -(x)sis  -x̱’id
afraid  -CONT  =1  if  =FUT  =1  step  -leg/foot  -BEC
  ḥa  amabidu  geese-a’
  =x̱  =a ꞑma  =bidu  geese  =a’
  =ACC  =D4  small  =DIM  geese  =I3
‘I was afraid I would step on the tiny geese.’
(20181205 VF)

D.  -ud → -u\(^\text{20}\)

a.  laʼgm  maʼl̓a̱na  aχstudi
  l(ʔ)  =ʼm  maʼl̓  -l̓a̱na  a̱x  -(’)stu  -x̱’id  =i
AUX  =VER  two  -time  do  -round.opening  -BEC  =D3
  Eddie  ḥa  t̕ax̱a  la
  Eddie  =x̱  =a  t̕ax̱a  la
  Eddie  =ACC  =D4  door
‘Eddie has opened the door twice now.’
(20160721 VF)

b.  l̓a̱nisgm  aχstudi  ḥa  i̱tax̱a  la
  l(ʔ)  =ʼm  =(w)is  =ān  a̱x  -(’)stu  -x̱’id  =x̱  =a  t̕ax̱a  la
AUX  =VER  and.so  =1  do  -round.opening  -BEC  =ACC  =D4  door
‘I opened the door.’
(20160715 VF)

E.  -d → -∅

a.  lu̱x  Monica̱x  k̕wałis’ām
  l(ʔ)  =ux̱  Monica  =(ʔ)x̱  k̕wałis  =ʼm
AUX  =D2  Monica  =V2  do.oneself  =VER
  tsuስx̱̕wa̱mda
  Ci~  tsušw  -(g)̱am  -x̱’id  -a
  RED~  wash  -face  -BEC  -A
‘Monica washed her own face.’
(20181127 VF)

b.  lu̱x  Shellya̱x
  l(ʔ)  =ux̱  Shelly  =(ʔ)x̱
AUX  =D2  Shelly  =V2
  tsušx̱̕wa̱mbidu  ux̱x  Simonx
  Ci~  tsušw  -(g)̱am  -x̱’id  =bidu  =x̱  =ux̱  Simon  =x̱
  RED~  wash  -face  -BEC  =DIM  =ACC  =D2  Simon  =V2
‘Shelly washed little Simon’s face.’
(20181127 VF)

The rule of d deletion is a post-lexical rule which tends to apply in connected, conversational speech. In citation speech, which is slow and deliberate, d is more reliably retained. This kind of speech occurs during more formal elicitation and teaching contexts, and is more common with some speakers than with others. According to my own observation, it seems that d deletion is most

\(^{20}\) Technically, it is ambiguous whether the u remaining in examples of this sort belongs to the suffix or to /-x̱’id/. In any case, I have bolded this segment for expository purposes.
common when \( d \) is word-final, and is slightly less common when \( d \) is word-medial. However, I have not done the quantitative work necessary to verify whether these impressions are correct.

4.3 Summary: The morphophonology of /-x’id/

The morphophonology of /-x’id/ in modern Kwakwala is presented below for easy reference.

If a stem contains one or more lexical suffixes:

A. Realize [\(-d\)] when the rightmost lexical suffix ends in \( m \) or \( n \).

B. Realize [\(-ud\)] when the rightmost lexical suffix ends in a rounded vowel or semi-vowel (\( u, o, \) or \( gw \)), and convert the rounded vowel or semi-vowel to \( u \).

C. Realize [\(-nd\)] elsewhere after lexical suffixes, and apply the following three additional rules:
   a. If the stem ends in a consonant (other than \( m \) or \( n \)), insert \( g \) before -\( nd \).
   b. If the stem ends in a non-rounded vowel (\( a, i, \) or \( e \)), shorten this vowel to \( a^\prime \).
   c. If the stem ends in an obstruent, soften the obstruent (e.g. \( s \rightarrow dz, k \rightarrow g, ḵ \rightarrow g̱ \)).

If the stem does not contain any lexical suffixes:

A. Realize [\(-x’id\)] when the stem ends in a vowel \( \{a, e, i, o, u, g\} \), or one of the following consonants: \( \{m, n, l, m̓, n̓, l̓\} \).

B. Realize [\(-x’id\)] when the stem ends in \( \{y, w, ỹ, w̃\} \) and change these semi-vowels to a corresponding vowel: \( y \rightarrow i, w \rightarrow o, ỹ \rightarrow i, w̃ \rightarrow u \).

C. Insert \( g \) after the stem and realize [\(-x’id\)] when the stem ends in a glottalized plosive \( \{p, ʰ, kw, ʰ, kw̃\} \) or voiced plosive \( \{b, d, gw, gw̃\} \).

D. Elsewhere, initial \( x \) is lost and [\(-’id\)] is realized, along with the following additional changes to the final stem consonant:
   a. The glottal stop in [\(-’id\)] fuses with stem-final \( p \) and \( t \) (\( p \rightarrow p̂, t \rightarrow ʰ \)).
   b. Stem final velars, uvulars, and the unvoiced lateral affricate undergo spirantization (\( k \rightarrow x, kw \rightarrow xw, ḵ \rightarrow x̱, kw̃ \rightarrow x̱w, ṯ \rightarrow ʰ \)).
   c. There is no change to the final stem consonant when it is a fricative \( \{s, x, xw, x̱, x̱w, l\} \)

When a stem with /-x’id/ is used in a sentence, the rule of \( d \) deletion is optionally applied:

\[ d \text{ deletion: } d \rightarrow ∅ / [σCVC(C)_] \quad (d \text{ is deleted syllable-finally}) \]

\[ 21 \text{ Or, perhaps, aspiration } (k \rightarrow kʰ, kw \rightarrow kwʰ, ḵ \rightarrow kʰ, kw̃ \rightarrow kwʰ). \]
5 Teaching and learning /-x’tid/

Throughout this paper, we have come to see that the suffix /-x’tid/ is a complex and vital component within the grammar of Kwakwala. This means that every second language learner of Kwakwala will at some point need to study and master the use of this suffix in order to become a competent speaker. Luckily for learners, though the grammar of /-x’tid/ is complex, it is also highly regular and is therefore something that can be precisely taught and studied. It will take effort and patience to learn /-x’tid/, but because the rules governing its use have few exceptions, it should be learnable with practice.

There are at least two questions that Kwakwala teachers will have to grapple with in the course of teaching /-x’tid/. One is the question of what attitude to take regarding the use of the allomorphs {-x’tid, -’id} in morphological contexts where the allomorphs {-nd, -ud, -d} were used historically. As mentioned near the end of Section 4.1, the occasional use of {-x’tid, -’id} even after lexical suffixes has been occurring since the turn of the 20th century. Since generalization of {-x’tid, -’id} would have the effect of making the grammar simpler without any loss of meaning, it is conceivable that some teachers and students could adopt an accepting attitude towards using the {-x’tid, -’id} forms in all morphological environments. On the other hand, teachers and students may prefer to learn the language as it was traditionally described, even if this means the grammar is more complicated. Such teachers and students may opt to preserve a distinction between {-nd, -ud, -d} and {-x’tid, -’id}, possibly making the distinction more rigid than it currently is. There may end up being disagreement in the community of teachers and students about what to do. Ultimately, it will be up to the next generation of speakers to decide what is best.

The second question Kwakwala teachers will have to grapple with in order to teach /-x’tid/ is how to teach the rule of d deletion, as this rule is optional in the modern language. Here too, the next generation of speakers will need to decide how to make use of this rule in their language.

Children who are learning Kwakwala as a first language are faced with a fairly difficult task when it comes to acquiring /-x’tid/. In addition to having to learn a distinction between {-nd, -ud, -d} and {-x’tid, -’id} forms, which is complicated enough, modern Kwakwaka’wakw toddlers also must connect these allomorphs with their counterparts lacking d in certain environments, {-nd, -u, -d, -x’t, -i}, in order to form a coherent grammar of this suffix. Fortunately, there are a few Kwakwaka’wakw children currently learning the language through immersion (Sara Child, p.c.). It will be interesting to see what the grammar of /-x’tid/ looks like to them someday.

6 Conclusion

The aspectual suffix /-x’tid/ is a very complex morpheme from a morphophonological perspective, and one that is central within Kwakwala grammar, making it a vital part of the language for linguists and language learners to understand. This paper has laid out a rule-based analysis of the morphophonology of /-x’tid/ for the modern language. The morphological conditioning of {-nd, -ud, -d} versus {-x’tid, -’id} allomorphs, as well as the phonological conditioning of allomorphs within these sets, has remained essentially unchanged from the language described at the turn of the 20th century. In the modern language, there are five additional allomorphs of /-x’tid/ which arise due to an optional rule of d deletion syllable-finally. Luckily, even though the grammar of /-x’tid/ is complex, it is also highly regular, making it a suffix which can be precisely taught and studied. In addition to discussing the morphophonology of /-x’tid/, this paper has summarized what is known about /-x’tid/ from recent research, most notably regarding its semantics as a non-canonical
perfective (Greene 2013) and its role within a paradigm of aspectual suffixes that mark event type in the language (Sardinha 2018).

The study here is limited in a number of ways. First, the grammar of /-x`id/ described above is derived from speakers of two dialects, Kwakwala and to a lesser extent, Nakwala. It is not known whether the generalizations here hold for other dialects of the language, or even for other speakers of these same dialects. There has also not yet been any quantitative analysis of corpora to understand the frequency of deletion syllable-finally, or to understand the degree to which {-x`id, -`id} forms are replacing {-nd, -ud, -d} forms following lexical suffixes. Quantitative analysis of this sort would help to establish the extent of these processes, which otherwise can only be guessed at.

My hope in writing this paper is that the complexity of /-x`id/ will cease to be a barrier for students and researchers who are striving to master the language.

References


### Glossing Abbreviations

<table>
<thead>
<tr>
<th>Gloss</th>
<th>Morphs</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>affix boundary</td>
<td></td>
</tr>
<tr>
<td>=</td>
<td>clitic boundary</td>
<td></td>
</tr>
<tr>
<td>~</td>
<td>reduplicant boundary</td>
<td></td>
</tr>
<tr>
<td>!</td>
<td>hardening mutation</td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>softening mutation</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>first person singular</td>
<td></td>
</tr>
<tr>
<td>1.POSS</td>
<td>possessed by first person</td>
<td></td>
</tr>
<tr>
<td>3.POSS</td>
<td>possessed by third person</td>
<td></td>
</tr>
<tr>
<td>3.REFL.POSS</td>
<td>possessed by third person who is coreferent with the sentential subject or topic</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Terminal completive -a; in at least some instances, -a functions as a default aspectual suffix (Greene 2013:8), though -a also may correspond to more than one morpheme</td>
<td></td>
</tr>
<tr>
<td>ACC</td>
<td>=x acc</td>
<td>accusative case</td>
</tr>
<tr>
<td>AUX</td>
<td>l(a) aux</td>
<td>auxiliary verb</td>
</tr>
<tr>
<td>BEC</td>
<td>-x¹id, -'id, -x¹i, -'i, -nd, -ud, -d, -n, u, -∅</td>
<td>become operator, momentaneous aspect, inchoative; marks transition predicates (Greene 2013, Sardinha 2018)</td>
</tr>
<tr>
<td>C</td>
<td>(various)</td>
<td>consonant</td>
</tr>
<tr>
<td>CONT</td>
<td>-la</td>
<td>continuative aspect; marks process predicates (Sardinha 2018)</td>
</tr>
<tr>
<td>D2</td>
<td>=ux, =w</td>
<td>third person medial deictic determiner (“this, close by”) (Nicholsen &amp; Werle 2009). The =w morph is realized in some third person medial DPs in the accusative case</td>
</tr>
<tr>
<td>Code</td>
<td>Symbol</td>
<td>Meaning</td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>D3</td>
<td>=i</td>
<td>third person distal deictic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>determiner (&quot;that, over there&quot;)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Nicholsen &amp; Werle 2009)</td>
</tr>
<tr>
<td>D4</td>
<td>=a</td>
<td>existential deictic determiner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Black 2011)</td>
</tr>
<tr>
<td>DIM</td>
<td>=bidu</td>
<td>diminutive</td>
</tr>
<tr>
<td>EMB</td>
<td>=a</td>
<td>embedding a (Littell 2016: 604–606)</td>
</tr>
<tr>
<td>FUT</td>
<td>=tł</td>
<td>future</td>
</tr>
<tr>
<td>I3</td>
<td>=a’</td>
<td>third person distal invisible</td>
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<td>INST</td>
<td>=s</td>
<td>instrumental case</td>
</tr>
<tr>
<td>JF</td>
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<td>judged form</td>
</tr>
<tr>
<td>NEG</td>
<td>(k)i’s</td>
<td>negation</td>
</tr>
<tr>
<td>NEG.EXIST</td>
<td>kayos</td>
<td>negative existential (&quot;there is no&quot;, &quot;there are no&quot;)</td>
</tr>
<tr>
<td>NMZ</td>
<td>=i’</td>
<td>nominalizer</td>
</tr>
<tr>
<td>PREP</td>
<td>la, ḵ(a)</td>
<td>preposition</td>
</tr>
<tr>
<td>REC.PST</td>
<td>=xd, ={(x)’id}</td>
<td>recent past tense; -{(x)’id} is not used in modern Kwakwala</td>
</tr>
<tr>
<td>STAT</td>
<td>-ała</td>
<td>stativizer (Sardinha 2018)</td>
</tr>
<tr>
<td>VER</td>
<td>=’m</td>
<td>verum focus (Littell 2016)</td>
</tr>
<tr>
<td>V1</td>
<td>=(i)k</td>
<td>third person proximal visible</td>
</tr>
<tr>
<td>V2</td>
<td>=((a)g)</td>
<td>third person medial visible</td>
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<tr>
<td>VF</td>
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<td>volunteered form</td>
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Appendix A: Phonological Inventory

### Table 2: Kwak’wala Consonants

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<tr>
<th></th>
<th>plain plosives</th>
<th>glottalized plosives</th>
<th>voiced plosives</th>
<th>fricatives</th>
<th>plain resonants</th>
<th>glottalized resonants</th>
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<td>k</td>
</tr>
<tr>
<td></td>
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<td>ł</td>
<td>t̓</td>
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<td>t̓s</td>
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<td></td>
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<td>kw</td>
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<td>kw</td>
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<td>ŋ</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>kw̓</td>
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### Table 3: Kwak’wala Vowels

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
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<tbody>
<tr>
<td>High</td>
<td>i</td>
<td></td>
<td>u</td>
</tr>
<tr>
<td>Mid</td>
<td>e</td>
<td>ą</td>
<td>o</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>a</td>
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