synopsis of the phonological rules for
Transforming Sanskrit into Pāḷi
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Pāḷi and Sanskrit are very closely related and the common characteristics of Pāḷi and Sanskrit easily recognized by those who are familiar with both. Indeed, a very large proportion of Pāḷi and Sanskrit word-stems are identical in form, differing only in details of inflection.

Technical terms from Sanskrit were converted into Pāḷi by a set of conventional phonological transformations. These transformations mimicked a subset of the phonological developments that had occurred in Proto-Pāḷi. Because of the prevalence of these transformations, it is not always possible to tell whether a given Pāḷi word is a part of the old Prakrit lexicon, or a transformed borrowing from Sanskrit.

However, the existence of a Sanskrit word regularly corresponding to a Pāḷi word is not always secure evidence of the Pāḷi etymology, since, in some cases, artificial Sanskrit words were created by back-formation from Prakrit words.

The following phonological processes are not intended as an exhaustive description of the historical changes which produced Pāḷi from its Old Indic ancestor, but rather are a summary of the most common phonological equations between Sanskrit and Pāḷi, with no claim to completeness.
Vowels and Diphthongs

Sanskrit ai and au always monophthongize to Pāḷi e and o, respectively.

Examples:
- maitrī → mettā,
- auṣadha → osadha

Sanskrit aya and ava likewise often reduce to Pāḷi e and o.

Examples:
- dhārayati → dhāreti,
- avatāra → otāra,
- bhavati → hoti

Sanskrit avi becomes Pāḷi e (i.e. avi → ai → e).

Example:
- sthavira → therā

Sanskrit ṛ appears in Pāḷi as a, i or u, often agreeing with the vowel in the following syllable. ṛ also sometimes becomes u after labial consonants.

Examples:
- kṛta → kata,
- tṛṣṇa → taṇha,
- smṛti → sati,
- ṛṣi → isi,
- dṛṣṭi → diṭṭhi,
- ṛddhi → iddhi,
- ṛju → uju,
- sprṣṭa → phuṭṭha,
- vrddha → vuddha
Sanskrit long vowels are shortened before a sequence of two following consonants.

Examples:
- kṣānti → khanti,
- rājya → rajja,
- īśvara → issara,
- tīrṇa → tiṃṇa,
- pūrva → pubba

**Consonants**

**Sound changes**

The Sanskrit sibilants ś,ṣ, and s merge as Pāli s

Examples:
- śaraṇa → saraṇa,
- doṣa → dosa

The Sanskrit stops ḍ and ḍh become ḍ and ḍh between vowels (as in Vedic)

Examples:
- cakravāḍa → cakkavāḷa,
- virūḍha → virūḷha

**Assimilations, General Rules**

Many assimilations of one consonant to a neighboring consonant occurred in the development of Pāli, producing a large number of geminate (double) consonants. Since aspiration of a geminate consonant is only phonetically detectable on the last consonant of a cluster, geminate kh, gh, ch, jh, ṭh, ḍh, th, dh, ph and bh appear as kkh, ggh, cch, jjh, ṭṭh, ḍḍh, tth, ddh, pph and bbb, not as khkh, ghgh etc.
When assimilation would produce a geminate consonant (or a sequence of unaspirated stop+aspirated stop) at the beginning of a word, the initial geminate is simplified to a single consonant.

Examples:

- prāṇa → pāṇa (not ppāṇa),
- sthavira → thera (not tthera),
- dhyāna → jhāna (not jjhāna),
- jñāti → ūti (not ūnūti)

When assimilation would produce a sequence of three consonants in the middle of a word, geminates are simplified until there are only two consonants in sequence.

Examples:

- uttrāsa → uttāsa (not utttāsa),
- mantra → manta (not mantta),
- indra → inda (not indda),
- vandhyā → vañjha (not vañjjha)

The sequence vv resulting from assimilation changes to bb

Examples:

- sarva → savva → sabba,
- pravrajati → pavvajati → pabbajati,
- divya → divva → dibba,
- nirvāṇa → nivvāṇa → nibbāna

**Total Assimilation**

Total assimilation, where one sound becomes identical to a neighboring sound, is of two types: progressive, where the assimilated sound becomes identical to the following sound; and regressive, where it becomes identical to the preceding sound.
Internal *visarga* assimilates to a following voiceless stop or sibilant

Examples:
- *duḥkṛta → dukkata*,
- *duḥkha → dukkha*,
- *duḥprajña → duppañña*,
- *niḥkrodha (=niṣkrodha) → nikkodha*,
- *niḥpakva (=niṣpakva) → nippakka*,
- *niḥśoka → nissoka*,
- *niḥśattva → nissatta*

In a sequence of two dissimilar Sanskrit stops, the first stop assimilates to the second stop

Examples:
- *vimukti → vimutti*,
- *dugdha → duddha*,
- *utpāda → uppāda*,
- *pudgala → puggala*,
- *udghoṣa → ugghosa*,
- *adbhuta → abbhuta*,
- *śabda → sadda*

In a sequence of two dissimilar nasals, the first nasal assimilates to the second nasal

Examples:
- *unmatta → ummatta*,
- *pradyumna → pajjunna*

*j* assimilates to a following ñ (i.e., jñi becomes ññ)

Examples:
- *prajñā → paññā*,
- *jñāti → ŏñīti*
The Sanskrit liquid consonants r and l assimilate to a following stop, nasal, sibilant, or v

Examples:
- mārga → magga,
- karma → kamma,
- varṣa → vassa,
- kalpa → kappa,
- sarva → savva → sabba

r assimilates to a following l

Examples:
- durlabha → dullabha,
- nirlopa → nillopa

d sometimes assimilates to a following v, producing vv → bb

Examples:
- udvigna → uvvigga → ubbigga,
- dvādaśa → bārasa (besides dvādasa)

t and d may assimilate to a following s or y when a morpheme boundary intervenes

Examples:
- ut+sava → uṣava,
- ud+yāna → uyyāna
Progressive Assimilations

Nasals sometimes assimilate to a preceding stop (in other cases epenthesis occurs)

Examples:
  agni → aggi,
  ātman → atta,
  prāpnoti → pappoti,
  śaknoti → sakkoti

m assimilates to an initial sibilant

Examples:
  smarati → sarati,
  smṛti → sati

Nasals assimilate to a preceding stop+sibilant cluster, which then develops in the same way as such clusters without following nasals

Examples:
  tīkṣṇa → tikṣa → tikkha,
  lakṣmī → lakṣī → lakkī

The Sanskrit liquid consonants r and l assimilate to a preceding stop, nasal, sibilant, or v

Examples:
  prāṇa → pāṇa,
  grāma → gāma,
  śrāvaka → sāvaka,
  agra → agga,
  indra → īnda,
  aśru → assu
  pravrajati → pavvajati → pabbajati,
y assimilates to preceding non-dental/retroflex stops or nasals

Examples:
cyavati → cavati,
jyotiṣ → jotī,
rājya → rajja,
matsya → macchya → maccha,
lapsyate → lacchya → lacchati,
abhyāgata → abbhāgata,
ākhyāti → akkāṭi,
saṁkhyā → saṅkhā (but also saṅkhya),
ramya → ramma

y assimilates to preceding non-initial v, producing vv → bb

Examples:
divya → divva → dibba,
veditavya → veditavva → veditabba,
bhāvya → bhavva → bhabba

y and v assimilate to any preceding sibilant, producing ss

Examples:
paśyati → passati,
śyena → sena,
asva → assa,
iśvara → ēssara,
kariṣyati → karissati,
tasya → tassa,
svāmin → sāmī

v sometimes assimilates to a preceding stop

Examples:
pakva → pakka,
catvāri → cattāri,
sattva → satta,
dhvaja → dhaja
Partial and Mutual Assimilation

Sanskrit sibilants before a stop assimilate to that stop, and if that stop is not already aspirated, it becomes aspirated; e.g. śc, st, śṭ and sp become cch, tth, ṭṭh and pph.

Examples:
- paścāt → pacchā,
- asti → atthi,
- stava → thava,
- śreṣṭha → setṭha,
- aṣṭa → atṭha,
- sparśa → phassa

In sibilant-stop-liquid sequences, the liquid is assimilated to the preceding consonant, and the cluster behaves like sibilant-stop sequences; e.g. str and ṭṛ become tth and ṭṭh.

Examples:
- śāstra → śasta → sattha,
- rāṣṭra → raṣṭa → raṭṭha

t and p become c before s, and the sibilant assimilates to the preceding sound as an aspirate (i.e., the sequences ts and ps become cch).

Examples:
- vatsa → vaccha,
- apsaras → accharā

A sibilant assimilates to a preceding k as an aspirate (i.e., the sequence kṣ becomes kkh).

Examples:
- bhikṣu → bhikkhu,
- kṣānti → khanti

Any dental or retroflex stop or nasal followed by y converts to the corresponding palatal sound, and the y assimilates to this new...
consonant, i.e. **ty**, **thy**, **dy**, **dhy**, **ny** become **cc**, **cch**, **jj**, **jjh**, **ññ**; likewise **ṇy** becomes **ññ**. Nasals preceding a stop that becomes palatal share this change.

Examples:
- **tyajati** → **cyajati** → **cajati**,
- **satya** → **sacya** → **sacca**,
- **mithyā** → **michyā** → **micchā**,
- **vidyā** → **vijyā** → **vijjā**,
- **madhya** → **majhya** → **majjha**,
- **anya** → **aṇya** → **aṇṇa**,
- **puṇya** → **puṇya** → **puṇṇa**,
- **vandhya** → **vañjhya** → **vañjjha** → **vañjha**

The sequence **mr** becomes **mb**, via the epenthesis of a stop between the nasal and liquid, followed by assimilation of the liquid to the stop and subsequent simplification of the resulting geminate.

Examples:
- **āmra** → **ambra** → **amba**,
- **tāmra** → **tamba**

**Epenthesis**

An epenthetic vowel is sometimes inserted between certain consonant sequences. As with **ṛ**, the vowel may be **a**, **i**, or **u**, depending on the influence of a neighboring consonant or of the vowel in the following syllable. **i** is often found near **i**, **y**, or palatal consonants; **u** is found near **u**, **v**, or labial consonants.

Sequences of stop + nasal are sometimes separated by **a** or **u**

Example:
- **ratna** → **ratana**,
- **padma** → **paduma** (**u** influenced by labial **m**)

The sequence **sn** may become **sin** initially
Examples:

- snāna → sināna,
- sneha → sineha

i may be inserted between a consonant and l

Examples:

- kleśa → kilesa,
- glāna → gilāna,
- mlāyati → milāyati,
- ślāghati → silāghati

An epenthetic vowel may be inserted between an initial sibilant and r

Example:

- śrī → sirī

The sequence ry generally becomes riy (i influenced by following y), but is still treated as a two-consonant sequence for the purposes of vowel-shortening

Examples:

- ārya → aryā → ariya,
- sūrya → suryā → suriya,
- vīrya → viryā → viriya

a or i is inserted between r and h

Example:

- arhati → arahati,
- garhā → garahā,
- barhiṣ → barihisa
There is sporadic epenthesis between other consonant sequences

Examples:
\[ \text{caitya} \rightarrow \text{cetiya} \ (\text{not cecca}), \]
\[ \text{vajra} \rightarrow \text{vajira} \ (\text{not vajja}) \]

Other Changes

Any Sanskrit sibilant before a nasal becomes a sequence of nasal followed by \( h \), i.e. \( \text{ṣṇ, sn and sm} \) become \( \text{ṇh, nh, and mh} \)

Examples:
\[ \text{ṭṛṣṇa} \rightarrow \text{ṭaṅha}, \]
\[ \text{uṣṇīṣa} \rightarrow \text{uṇhīsa}, \]
\[ \text{asmi} \rightarrow \text{amhi} \]

The sequence \( ſn \) becomes \( ſh \), due to assimilation of the \( n \) to the preceding palatal sibilant

Example:
\[ \text{praśna} \rightarrow \text{praśña} \rightarrow \text{pañha} \]

The sequences \( ūh \) and \( ūv \) undergo metathesis

Examples:
\[ \text{jihvā} \rightarrow \text{jivhā}, \]
\[ \text{ṛghya} \rightarrow \text{gayha}, \]
\[ \text{guhya} \rightarrow \text{guyha} \]

\( h \) undergoes metathesis with a following nasal

Example:
\[ \text{ṛṛḥṇāti} \rightarrow \text{gaṇhāti} \]

\( y \) is geminated between \( e \) and \( a \) vowel

Examples:
\[ \text{śreyas} \rightarrow \text{seyya}, \]
\[ \text{Maitreya} \rightarrow \text{Metteyya} \]
Voiced aspirates such as **bh** and **gh** on rare occasions become **h**

Examples:
- **bhavati** → **hoti**,  
- **-ebhiṣ** → **-ehi**,  
- **laghu** → **lahu**

Dental and retroflex sounds sporadically change into one another

Examples:
- **jñāna** → **ñāṇa** (*not* **ñāna**),  
- **dahati** → **ḍahati** (*besides* Pāḷi **dahati**)  
- **nīḍa** → **nīla** (*not* **nīla**),  
- **sthāna** → **ṭhāna** (*not* **ṭhāṇa**),  
- **duḥkṛta** → **dukkaṭa** (*besides* Pāḷi **dukkata**)

**Exceptions**

There are several notable exceptions to the rules above; many of them are common Prakrit words rather than borrowings from Sanskrit.

- **ārya** → **ayya** (*besides* **ariya**)  
- **guru** → **garu** (*adj.*) (*besides* **guru** (*n.*))  
- **puruṣa** → **purisa** (*not* **purusa**)  
- **vṛkṣa** → **rukṣa** → **rukkha** (*not* **vakkha**)