

Hall
Ling 503
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How to present answers to the homework problems

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The purpose of writing up your solution to a homework problem set is to demonstrate that you understand how the phonological alternations in the language work. The communication of your answer is as important as the content of your solution. In writing up your answer, you are likely to uncover hidden flaws, and once you identify those hidden flaws, you can fix them up. All homeworks that involve data analysis in this class therefore *must* follow a particular format, to be described here.

Every solution has three main sections, and they are:

1. Underlying Forms
2. Rules (presented in order of application)
3. Discussion

It is very strongly recommended (but not obligatory) that you type all of your homework solutions. The data for the problem sets is available online (at <http://www.ling.ohio-state.edu/~odden/IntroducingPhonology/>), which means that you will not have to spend much time typing the examples.

The first section of each homework you turn in should list the underlying forms of every morpheme plus the gloss for the morpheme, for example:

/læŋt/ “desire” /t/ “past” /ö/ “fem. sg”

It is important to give **both** the underlying form and the gloss. It is also important to actually give the underlying form and not just give a “rule of thumb” like “The underlying form is the accusative, except if the root ends in a fricative and then the underlying form is the nominative.” Always list the underlying forms of *all* morphemes. A corollary is that you should only list the underlying forms of the individual *morphemes*, and not the entire word (when the word is composed of multiple morphemes). For example, if you were listing English plurals, you might give /fiš/ “fish,” /z/ “plural,” but not /fiš-z/.

After the section listing all of the underlying forms, in the second section give the rules which you require in your analysis. Since the ordering of rules matters in many cases, you should list the rules in their order of application. Each rule should be **stated formally** and given a **distinct name** (something mnemonic like “Vowel deletion,” “denasalization,” etc.) and should also come with an **explanation in plain English** of what the rule does. For example:

(3) *Vowel Nasalization*

$V \rightarrow [\text{nasal}] / ___ [\text{nasal}]$

This rule nasalizes all vowels before any nasal segment.

The reason for not *just* listing the rule is that you may have made an error in using the formalism, but really you do know what the rule is supposed to do. A common example is that people may accidentally formalise “before a nasal” as “/[nasal]__” (that formalism actually says “after a nasal”). This “double statement” of the rule makes it clearer whether you don’t understand what the rule should do, vs. you made a technical error in formalizing it.

The final section is discussion. The purpose of this section is to describe the patterns you found in the data, to provide a prose explanation of how your analysis works, and to give justification for aspects of your analysis. The discussion should be in the form of related paragraphs that first describe the pattern(s) – independently of any analysis! – and then explain your analysis. You should make clear your rationale for deciding e.g. that the underlying form of [qəp] is /qəb/ -- the justification might be as simple as saying that there is an underlying contrast between /qəb/ which becomes [qəp], vs. /qap/ which becomes [qap]. There will be exemplars of presentation distributed in class at various points, so that you will have something to model your homework answers on.

Do not include irrelevant material, i.e. do not “show your work”: only give the solution. As you solve a problem, you may end up listing various preceding and following segments, organised as to whether one thing happens or the other, so that you can figure out what the environment is. If I get a homework that says something like . . .

$a \rightarrow \tilde{a} / t ___ n$	$e \rightarrow \tilde{e} / k ___ m$
$a \rightarrow \tilde{a} / l ___ \eta$	$u \rightarrow \tilde{u} / \# ___ n$ (etc)

. . . I can’t tell if that means you really *think* there are a dozen or so very specific rules that nasalise /a/ after *t* before *n*, or after *l* before *η*, and so on. Or, were you just organising your thoughts? It’s good to organise your thoughts, and doing it on paper is good too. But don’t turn in that paper: give me the actual answer. The equivalent of “show your work” is the third section where you justify one analysis rather than another (of course, you have to figure out what the “other” analysis might be, but that’s part of solving the problem).

Another possibility is that you just can’t solve the problem, and what you’re hoping is that by saying everything that comes to mind, enough of what you say will be true that I’ll give you partial credit – the old “A for effort.” Nope, that doesn’t work. It is true that the shotgun approach of saying everything you can is going to give you a better grade than not even bothering to do the problem. But if you *do* have the answer, don’t mess it up by giving me a bunch of junk that doesn’t matter.

Below is a short example of an answer to a simple data problem, so that you can see how to present a solution.

The Data (this would be in the book)

<i>bare verb</i>	<i>derivative 1</i>	<i>derivative 2</i>	<i>gloss</i>
bukas	buksin	buksan	‘open’
putol	putlin	putlan	‘cut’
kapit	kaptin	kaptan	‘embrace’
laman	lamnin	lamnan	‘fill’
damit	damtin	damtan	‘clothe’
bata	bathin	bathan	‘suffer’
bili	bilhin	bilhan	‘buy’
dipa	diphin	diphan	‘open’
puyo	puyhin		‘saddle bag’

The Analysis (this is what you would turn in)

Robin Studentov

Stem Alternations in Tagalog

1. Underlying forms

/bukas/	‘open’	/putol/	‘cut’	/kapit/	‘embrace’
/laman/	‘fill’	/damit/	‘clothe’	/batah/	‘suffer’
/bilih/	‘buy’	/dipah/	‘open’	/puyoh/	‘saddle bag’

/-in/ ‘derivative 1’

/-an/ ‘derivative 2’

2. Rules

(1) *Vowel Deletion*

$V \rightarrow \emptyset / VC_CV$

A vowel deletes when it is preceded by a single consonant which is after a vowel and when it is followed by a single consonant plus a vowel.

(2) *h-deletion*

$h \rightarrow \emptyset / __\#$

The consonant [h] deletes at the end of the word.

3. Discussion

There are two main alternations in this dataset from Tagalog. The first is a vowel alternation: there are vowels that appear in the bare form of verbs that do not appear in the derived forms (for example, the bare form of ‘cut’ is [putol], while the first derivative is [putlin], without the [o], and the second derivative is [putlan]). The second alternation is an alternation with [h]: there is an [h] in some derivatives, such as [bathin] ‘suffer, deriv. 1’ that does not appear in the bare form of the verb [bata].

In all of the first derivative forms of the verbs, the last two sounds are [in], while in all of the second derivative forms, the last two sounds are [an]. This consistency (which is the only aspect that all the words in each of the derivative columns has in common) is indicative that [in] and [an] are the morphemes for the first and second derivatives, respectively. These morphemes never vary in the data set, so it will be assumed that their underlying forms are in fact /in/ and /an/.

Stems in Tagalog underlyingly have two syllables, for example /bukas/ ‘open.’ When a vowel-initial suffix is added to the stem, the last vowel of the stem is deleted, hence /bukas+in/ becomes [buksin], and /bukas+an/ becomes [buksan]. When no suffix follows, the underlying vowel of the second syllable is not deleted, so /bukas/ surfaces as [bukas]. The data provide no examples of the sequence VCVCV, which is explained by the rule Vowel Deletion, which deletes a vowel in that context.

Another possibility to explain the vowel alternation would be to have monosyllabic underlying forms of each of the stems, and to have a rule of vowel insertion. This is not feasible, however, because there is no way to predict which vowel is inserted. For example, the underlying form of ‘open’ in this analysis would be /buks/, the underlying form of ‘fill’ would be /lamm/, and the underlying form of ‘embrace’ would be /kapt/. There would have to be several different vowel insertion rules, one that would insert an /a/ between [k] and [s] or between [m] and [n], and a different one that would insert an /i/ between [p] and [t]. There is no logical way to group these sounds together into natural classes; instead, such rules would simply be stipulations. Therefore, the vowel quality is unpredictable and should go into the lexicon in the underlying forms of each stem.

Stems such as ‘suffer,’ which appears in the bare form with a final vowel, e.g. *bata* ‘suffer,’ have an underlying final *h* which is deleted at the end of the word, thus /batah/ → [bata] by *h*-deletion. The *h*-deletion rule predicts that no word phonetically ends with [h], which is correct given the available data. When a suffix is added, the *h* is not at the end of the word, so it not deleted, as in /batah-in/ → [bath-in].

Another possibility is that the stem is underlyingly /bata/, and there is a rule inserting *h* between vowels, so that the bare form [bata] does not undergo any rule and [bathin] first undergoes the following *h*-insertion rule:

Alternative rule – [*h*]-insertion:

$\emptyset \rightarrow h / V _ V$

Given this rule, /bata+in/ first becomes *batahin* by insertion of *h*, and then [bathin] by Vowel Deletion. There is no data available that shows which of these two analyses is correct.