Introduction to Phonological Analysis
LING 232A/632A, Fall 2013
Tamás Biró

Final take-home exam

Deadline: December 17, 5:30 pm

Generalities:

- Collaboration with anyone else (including fellow students) is strictly prohibited.
- *Handwritten* solutions will not be accepted. You can use your favorite text editor, but make sure you know how to reproduce notations as standardly used in linguistics.
- The answer to each problem should be a *prose* structured into paragraphs, and built up as a clear, easy-to-follow train of thought. It should be the result of your problem solving process, and not a reflection of your own way toward it. Present it as a gradual way toward the solution, but your readers need not necessarily follow the same path as the one you took. Step back and look at your solution from a different angle, before you write it down.
- *Tables, figures and rules* interspersed in the text (as well as items in the bibliography, if you have a bibliography) must all be referred to in the main text (e.g., "see Table 1").
- *References to the textbook* and other readings used in class are highly recommended. (That goal is that you prove to me you have read them all, and you are familiar with their contents!)
- Looking up *further references* will be appreciated, but certainly not required.
- All literature used must be referenced, and must be referenced in a scholarly way. Any citation system is welcome, but it should be used consistently.
- *The general goal of this take-home exam is that you prove to me that you have learned really much in this semester*. So feel free to include whatever else you want: Hasse diagrams and discussion of learnability, linguistic examples from your textbook and references to chapters not discussed in class, and even criticism of my remarks made to your earlier assignments.

Problem 1: Data from "your language" analyzed in "your framework" (approx. 2 pp, 40%)

Choose a (relatively simple) phonological phenomenon in "your language", and analyze it with a theoretical framework of your choice. First, you will introduce a data set, and then develop an analysis. Alternatively, you can first introduce the first part of your data set (the simpler part), then present a simplified analysis, and subsequently add further data (complexities) in order to refine your original analysis. You need not be comprehensive, but you should include a parenthetical remark (or a footnote) whenever you disregard finer details and complications.

Regarding the theoretical framework used for your analysis, you should follow these steps:

1. Formulate your observations in prose.
2. Formalize them using standard SPE-style formalism, as developed in your textbook.
3. Choose at least one alternative framework, such as historical linguistics, structural linguistics, Lexical Phonology, Autosegmental Phonology, Feature Geometry, OT, etc.
4. Recast your analysis in this new framework. Emphasize the differences between early generative phonology and the alternative framework you have chosen.
5. Explain why the framework you have chosen is useful (or, maybe, less useful than SPE?) in analyzing / explaining / interpreting / modeling the phenomenon being discussed.
6. Summarize your analysis, including unresolved questions and problems.

Most frameworks come not only with notations and formalisms, but also with technical terms and typical arguments. (For instance: Why does rule A must bleed rule B? Why is constraint A ranked higher than constraint B? What features to use? How to organize features into some hierarchy? Are phonetics-based features useful for my language? Is rule A lexical or postlexical? Is that an opaque process? Do our data exhibit an OCP effect? Can my constraints reproduce factorial typology?) Demonstrate your familiarity with the chosen framework by striving to make use of these technical terms as much as you can.

In order to show what you are capable of doing with the framework chosen, I will also very much value (but only if meaningful) hypothetical and counterfactual remarks such as: "*should my language also contain forms like…*", "*should a wug-test with a native speaker confirm that…*", "*should my data be a little bit different…*", etc. Please keep in mind: the goal of this problem is to demonstrate not your familiarity with the linguistic data set, but your familiarity with the framework of your choice.

Problem 2: The concept of a "phoneme" through the ages (approx. 1 page, 20%)

During the course, we have covered (at least to some extent) the following approaches:

a. Historical linguistics (cf. Hayes, chapter 11)
b. Structural phonology
c. Early generative phonology (SPE)
d. Lexical Phonology
e. Autosegmental Pho2nology
f. Feature Geometry
g. Optimality Theory

Phonology is (ought to be) the science of the *phonemes*, but the concept of a phoneme was very often revised during the twentieth century. Generative phonologists refer to *segments*, sometimes instead of, and sometimes beside *phonemes*. To some, defining the phoneme inventory of a language is the main task of phonology; while to others, it is a side result, if they care at all…

Based on your readings during the course, shortly discuss the notion of a *phoneme* in at least <u>five</u> of these seven "schools". What kind of beast is a phoneme? What does it do, and what happens to it? What questions are asked, and what statements are made about it? Feel free to use examples from (existing or imagined) languages.

Hint: words that you may want to (but you don't have to) use include "atomic", "phonetically motivated", "structure preservation", "allophone", "internal structure", "abstract", "complementary distribution", "neutralization", "underlying" and "surface", "big issue" and "not an issue".

Problem 3: History, learnability, opacity and abstractness (approx. 1 page, 20%)

During the course (Handout "Hebrew verbal paradigms, October 15") we discussed that voiceless velars in Modern Hebrew display a three-way behavior. In some cases, the velar stop [k] alternates with the velar fricative [x]. In other cases, no alternation is observed, always featuring [k], and in yet other cases, we only have [x]. Here is how a traditional scholar of Hebrew would tell you the story:

"Biblical Hebrew had three letters for voiceless dorsals: *qof* for the voiceless uvular (or pharyngeal) stop [q], *ħet* for the voiceless uvular (or pharyngeal) fricative [ħ], while *kaf* denotes a voiceless velar plosive [k]. The problem is caused by the fact that *kaf* is pronounced as a fricative [x] in certain positions, typically after a vowel. Modern (a.k.a. Israeli) Hebrew follows the old orthography, but the uvular (or pharyngeal) sounds have merged with the velar ones. Thus, the letter *qof* is pronounced [k], but does not undergo spirantization in a postvocalic position, while *ħet* is pronounced [x], and *kaf* alternates between [k] and [x]."

Explain why this paragraph demonstrates that its author is not trained in (contemporary / general) linguistics. What is your understanding of the story? Among other points of criticism, please:

- refer to orthography and underlying forms, to diachrony and synchrony,
- refer to Chapters 11 and 12 in Hayes' textbook, drawing parallels to Polish "jer",
- including terms such as *learnability* and *abstractness*,
- and also explaining why *opacity* may be a relevant concept here.

Feel free to also add your own opinion, your criticism on Hayes' argument, etc.

Problem 4: Metrical Stress in Optimality Theory (OT) (approx. 2 pages, 20%)

In Modern Hebrew, stress usually falls, as a general rule, on the last syllable of a word:

katáv	'he wrote'	*šotér*	'policeman'	*Tel-Avív*	'Tel Aviv'
hitkatvú	'they corresponded'	*yaldá*	'girl'	*mistovevím*	'we turn around'
dibúr	'speech'	*lehitraót*	'good bye'	*Roš-ha-šaná*	'New Year'

Yet, in some words (called *segolates*), it falls in the penultimate syllable:

katávti	'I wrote'	*šotéret*	'policewoman'	Yerušaláyim	'Jerusalem'
mitkatévet	'she corresponds'	*yéled*	'boy'	*Pésax*	'Passover'
maxbéret	'notebook'	*xódeš*	'month'	*šnáyim*	'two'

Historically speaking, the final, unstressed vowel in (most of) the segolates are epenthetical, inserted to prevent word final clusters. For example, when ancient case endings were dropped, an [e] were inserted in the final consonant clusters of the segolate nouns. There are even minimal pairs, such as:

oxél	'he eats'	*óxel*	'food'
beréx	'he blessed'	*bérex*	'knee'

Propose an analysis of metrical stress in Hebrew:

1. You will suppose that the language is composed of two "co-phonologies", one for the majority of the words, and another one for the *segolates*.
2. Develop a (pre-OT) *Metrical Phonology* analysis of these two co-phonologies, based on the discussion of Hayes, chapter 14. (E.g., do you need reference to weight?)
3. Develop an OT analysis of these two co-phonologies. For each of the two co-phonologies, find a ranking of the constraints that assigns the correct stress patterns to any input. (See next page. Several solutions exist.)

Bonus: can you re-cast the historical explanation into an SPE-like, synchronic model?

Remarks regarding the OT model:

Focus on inputs with two, three or four syllables (see the examples above). Moreover, ignore the possibility of having secondary stress. Consider only the set of candidates with one single foot, the one that defines primary stress. That single foot may be either monosyllabic, or a disyllabic iamb, or a disyllabic trochee. As a bonus, after having developed your analysis with this restricted candidate set, you can also reconsider your analysis, including the candidates with more than one foot.

Although the set CON of all constraints is postulated by OT fans to be universal across languages, it significantly varies across linguists. On page 2 of Handout 16, you will find a list of the most frequently used stress constraints. Let us now restrain ourselves to the following ones:

FOOTBINARITY (FTBIN): Each foot must be bisyllabic. Assign one violation mark per foot that is composed of a single syllable.

IAMBIC: Each foot must be iambic (its final syllable being its head). Assign one violation mark per foot that is composed of two syllables and its first syllable is stressed.

TROCHAIC: Each foot must be trochaic (its initial syllable being its head). Assign one violation mark per foot that is composed of two syllables and its second syllable is stressed.

PARSESYLLABLE (PARSE): Each syllable must be parsed into some foot. Assign one violation mark per syllable that is not part of some foot (that is not footed).

NONFINAL: Do not foot the final syllable of the word. Assign one violation mark to the candidate if its last syllable is footed.

ALIGNFOOTLEFT (AFL): Align the foot with the word, left edge. For each foot, assign as many violation marks as the number of syllables intervening between the left edge of the word and the left edge of that foot.

ALIGNFOOTRIGHT (AFR): Align the foot with the word, right edge. For each foot, assign as many violation marks as the number of syllables intervening between the right edge of that foot and the right edge of the word.

NB: If a candidate is composed of more than one foot, then AFL may assign each foot several violation marks, which are then summed up for the candidate. The same applies to AFR. For instance, take candidate [σ́] σ [σ̀ σ] [σ̀ σ] [σ̀ σ], with four of its eight syllables being stressed, and hence, it containing four feet. Constraint AFL will assign no violation mark to the leftmost foot, because it is aligned with the left edge of the word. But it will assign two marks to the second foot (two intervening syllables), four marks to the third foot, and six marks to the rightmost foot. In total, this candidate will incur twelve violation marks for AFL. Similarly, AFR assigns thirteen marks to this candidate.

Good luck with the exam, and have a nice & relaxing holyday season!