Introducing Phon to the socio-phonetics research community

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Researchers interested in phonetics and phonology enjoy access to powerful (and often free) software programs to analyze their data. For example, Praat (http://www.fon.hum.uva.nl/praat/) offers a wide range of functions to study speech acoustics (among several other functions), while CLAN (http://dali.talkbank.org/clan/) supports morpho-syntactic analysis across a wide variety of languages. However, combining analyses from different programs can be cumbersome, if only because they use different file formats, and few programs offer integrated solutions for data management. Often, a data corpus ends up as a set of computer files which must be managed by the user using combinations of clever filenames and associated data sheets. Concerning phonetics and phonology, few of the applications currently available offer support for phonological annotations or analyses: phone classes (e.g. voiceless fricatives) or prosodic positions (e.g. within the syllable or relative to word stress) must typically be annotated manually, in a way such that new analyses of the dataset or even minor verifications of aspects of the dataset must often begin with a new round of painstaking data coding.

The free software program Phon, which integrates several tools for textual, phonological, and acoustic analysis, offers solutions to these challenges. For analyses based on textual forms, Phon can be used to encode text and incorporate lexical or morpho-syntactic annotations, each of which can be compiled through powerful yet easy-to-use query functions. Concerning phonetics and phonology, Phon automatically builds phonological data structure from phonetically-transcribed words: the transcriptions are automatically analyzed by specialized algorithms to identify phones, phonological features, and positions (within the syllable, word, …). Phon also fully integrates with Praat for acoustic analysis: Praat (text grid) data can be imported into Phon, and new text grids can be generated within Phon. Using these combined functions, one can perform an unlimited number of acoustic analyses without the need to add annotations to the corpus, and the results of these analyses can be interpreted in light of all other information (e.g. speaker information, phonological context, ...) contained within the Phon database.

Phon's integrated environment greatly simplifies variationist sociophonetic research, without the need to resort to additional programming or scripting languages. In a nutshell, Phon is to Praat what Studio is to R: it supports all the functions of the program it aims to supplement, and makes these functions more accessible and more flexible to use. In this presentation, after highlighting some practical challenges to sociophonetic research, as summarized above, we illustrate how Phon can be used to streamline research, from the encoding of social or demographic information about speakers or speaker groups to the coding and analysis of their linguistic behaviours. Using Phon, one can avoid much of the manual coding needed to track each variable (Figure 1), or the cumbersome spreadsheets used to combine linguistic data with non-linguistic variables (Figure 2). As we see in Figure 3, Phon allows for the incorporation of social and demographic data regarding study participants alongside linguistic transcriptions and annotations into a single transcript. Large corpora including both linguistic and social variables can then be analyzed at once using powerful yet flexible functions for textual and phonological data query, acoustic analysis, and reporting. Because of its database

data structure, Phon corpora also facilitates collaboration between researchers as it simplifies corpus sharing, for example through data clouds, both within and across different research sites.
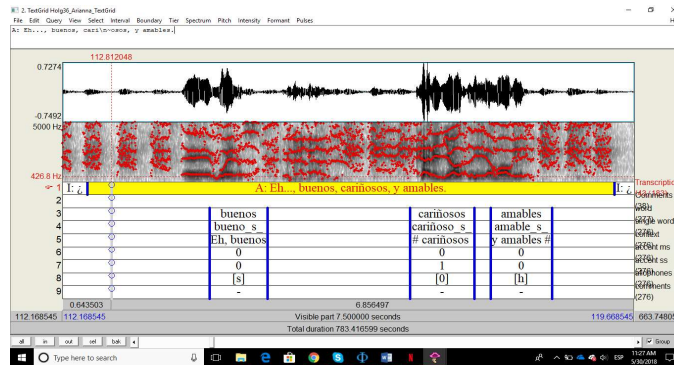

Figure 1: Praat TextGrid file with coding of linguistic factors for /s/ aspiration and deletion in coda position in Cuban Spanish (Tennant et al. 2015).
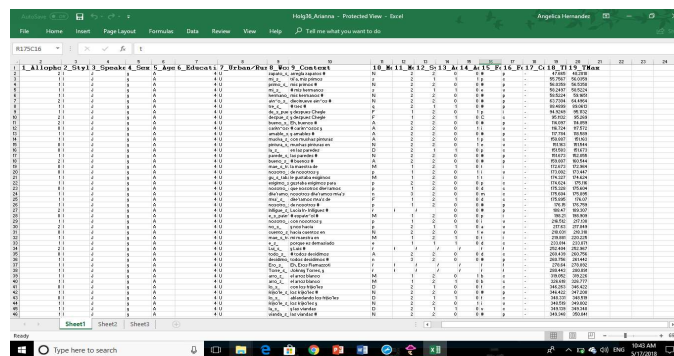

Figure 2: Spreadsheet showing annotations for linguistic factors and corresponding social factors for tokens of /s/ aspiration and deletion in coda position in Cuban Spanish (Tennant et al. 2014).
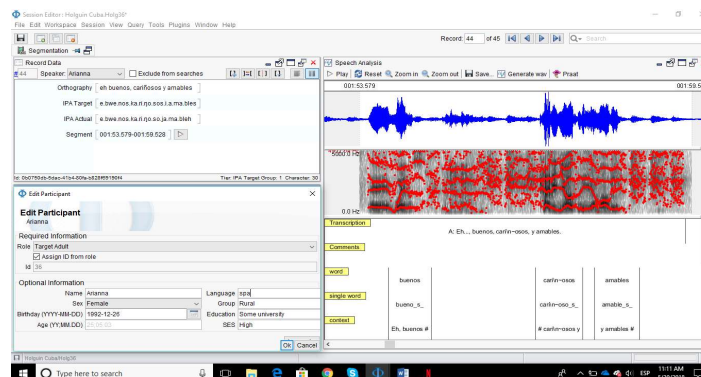

Figure 3: Phon interface combining all annotations for lexical, morpho-syntactic, acoustic, and social data.

Reference:

Jeff Tennant, David Heap, Angelica Hernandez and Jorge Emilio Rosés Labrada. 2015. Aspiration vs. Deletion of /s/ in contemporary Eastern Cuban Spanish: Differing constraints. Paper presented at *New Ways of Analyzing Variation* 44, Toronto, October.