# Production Instructions

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In a recent paper (Morton and Tatham 1980) we argued that since phonological processes are confined to deriving a perceptually real phonetic specification, and that since phonetic processes are confined to characterising the effects of universal constraints on the phonetic realisation of that specification, there existed a need for a third category of operations which we called Production Instructions. Since phonetic rules are universal they cannot of course be omitted differentially in languages: the set of Production Instructions is intended to provide the means of inhibiting or enhancing the operation of phonetic rules. This inhibition or enhancement is language-specific, but does not derive perceptually real objects.

Inhibition and enhancement are seen as opposite poles of a single scale, the balance or null point of which would neither inhibit nor enhance the phonetic rule. Thus:
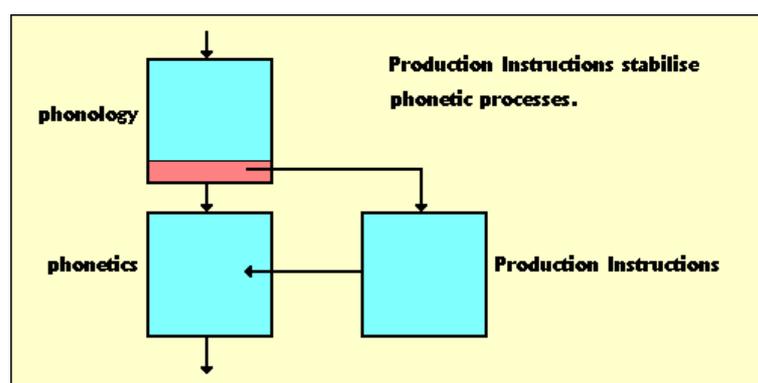


Maximum inhibition (or 1 inhibition) and maximum enhancement (or 1 enhancement) are defined independently of the linguistics, and establish the maximum influence possible on the phonetic rule in question In practice inhibition and enhancement will be 1 (that is, between 1 and 0 — the null point), since it is assumed that little in language operates too near the limits of the system

Production Instructions have on the one hand a phonetic character since they influence phonetic processes; on the other hand they are applied voluntarily and in a language-specific or phonologically determined manner although their output does not add anything which is perceptually real to the phonetic specification derived in the phonology they do serve to cue perceptually real objects for the listener Production Instructions are therefore tied to phonetic rules, but are linguistically sensitive, and we should ask to what in the linguistics are they sensitive?

For the most part these Instructions take into account contrastable aspects of the phonology's segmental and feature inventories They are there to ensure contrast once this has been established phonologically But perhaps more interestingly they increase the phonologically usable set of contrasts by manipulating the precision of phonetic realisation We imagine a phonetics which, given fully operating neuro-physiological, mechanical,

aerodynamic and acoustic constraints, would provide a phonology with but a sparse set of linguistically manipulable contrasting effects the existence of a regulator for these constraints enables the phonological inventory (intra-segmentally (i.e. feature-wise), segmentally, and inter-segmentally (i.e. sequence-wise))to be that much reliably enlarged By focusing (differentially at will within overall limits) or narrowing phonetically-induced variability the number of differentiable areas within the perceptual space is effectively enlarged — in this way enlarging the set of phonological possibilities
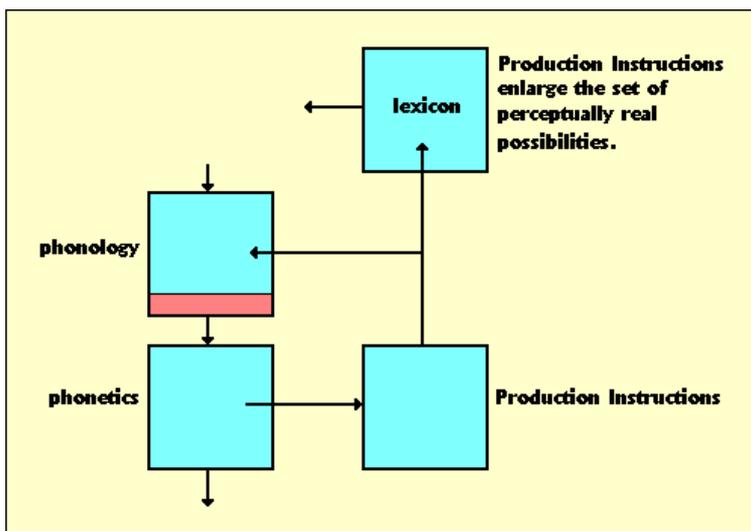
Thus (Fig l) for enlarging the lexicon and introducing some phonological rules involving Increased phonetic precision (Morton and Tatham 1980, p 9):
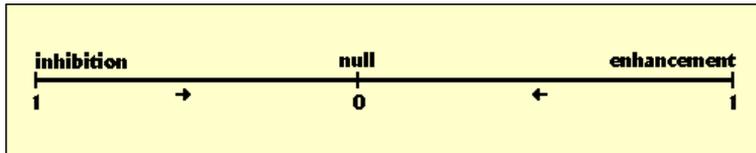


And (Fig. 2a) in the speaker:
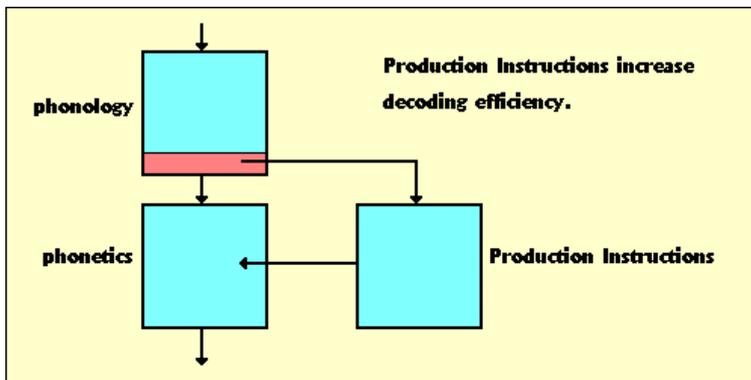


And (Fig. 2b) in the listener:

Reference

Katherine Morton and Marcel Tatham (1980) Devoicing, aspiration, and nasality — cases of universal misunderstanding? *Occasional Papers* 23 : Department of Language and Linguistics, University of Essex