Exceptional nasal-stop inventories

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There are strict restrictions on what can and cannot be a nasal-stop inventory. Crosslinguistic studies have shown that certain members of this consonant class appear in the phonemic inventories of many languages, while others are found in only a few and there are yet others that do not seem to ever have phonemic status (Trubetzkoy 1939, Hockett 1955, Ferguson 1963, 1975, Thompson and Thompson 1972, Le Saout 1973, Crothers 1975, Maddieson 1984, 2011, Cohn 1993). The high degree of uniformity resulting from the ubiquity of a few members of the nasal-stop class suggests that the design of phonological systems is influenced by principles promoting the use of certain sound properties across all languages; however, the decision to declare such principles universal is problematic for there are few linguistic generalizations which are truly exceptionless.

(1)   a.   Every language with at least one nasal-stop phoneme has /n/
       b.   Every language with at least two nasal-stop phonemes has /m/
       c.   Every language with at least three nasal-stop phonemes has /ŋ/
       d.   Every language with at least four nasal-stop phonemes has /ɲ/

The generalizations in (1) suggest that there is a universal order of preference among nasal stops (i.e. /n/ > /m/ > /ŋ/ > /ɲ/), which one may hypothesize is due to decreasing degrees of articulator dexterity. This hypothesis holds that the tongue tip, lips, mid-dorsum and pre-dorsum are gradually less dextrous to form the fast and local constriction consonants require, an assumption leading to the hierarchy of anti-structural constraints presented in (2). The problem with this approach is that, while most languages are congruent with (2), there are a few which contradict it. Toaripi, for instance, has /m/ instead of /n/ as its only nasal-stop phoneme (Brown 1973) and Palauan is known for having the duo /m, ŋ/ rather than the expected /n, m/ (Foley 1975). Despite the low frequency with which they occur, such exceptions advise against the postulation of a universal place hierarchy. Hume and Tserdanelis (2002) and Hume (2003) draw the same conclusion from place assimilation.

(2)   *PREDORSAL >> *MIDDORSAL >> *LABIAL >> *CORONAL

An easy way out of this predicament would be to attribute the exceptions to synchrony; a language would have an exceptional nasal-stop inventory for having inherited it from its ancestor. Unfortunately, this approach soon runs into trouble because there are cases in which a descendant has a unit lacking in the ancestor (e.g. Italian has /ɲ/ despite the fact that Latin did not) and others in which a unit present in the ancestor is lacking in a descendant (e.g. Proto-Austronesian had /n/ but Palauan does not). Furthermore, pointing to previous stages in the evolution of the language is unenlightening because it remits to past grammars without ever answering the question of what caused the irregularity in the first place.

The view defended here is that the ways in which exceptional nasal-stop inventories are structured are brought about by conflict between functional principles. The challenges that the exceptions to (2) pose are resolved when one takes into account that both articulation and perception bear on the design of phonological systems and that they often disagree in their assessment of place features because their functional goals are different. In grammars where articulation has priority, the order in (2) can be respected, but in those where perception takes the lead, distortions follow. The important revelation this study makes is that what appears to

be evidence against a universal place hierarchy based on articulator dexterity is actually evidence for an additional universal place hierarchy: one based on perceptual ease.

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