

PF and LF opacity: predictable and unpredictable, (non)concomitance

**Problem (empirical).** The "minimal" pair *cómparable* "roughly the same" vs. *compárable* "to be able to be compared" is often used in order to illustrate the concomitance of PF and LF opacity (e.g. Marvin 2002:75): while the former is opaque on both sides (semantically non-compositional, unpredictable stress), the latter is fully transparent (compositional and regular stress). It is not the case, however, that PF and LF always go hand in hand: there are also cases of LF-only and PF-only opacity. *Párent-hood* for example is phonologically opaque (stress), but semantically compositional. *Twinkling* "a short moment" on the other hand is semantically non-compositional, but phonologically transparent (unlike *twinkeling* [twɪŋkəlɪŋ] "the act of twinkling" which has a schwa in an open syllable or, in free variation, a syllabic liquid before a vowel). All four logical possibilities thus exist.

**Problem (theoretical).** The possible simultaneous impact on LF and PF suggests that phonology-internal means of dealing with opacity do not qualify: mechanisms must be broad enough to be able to simultaneously affect PF and LF. The literature offers two ways to go about (eventually concomitant) LF-PF opacity. In Distributed Morphology (e.g. Marantz 2007), opacity is held to be a consequence of the merger of a piece directly to the root, i.e. before the first xP is formed (inner word formation, producing words from roots). By contrast, outer word formation occurs when a piece is merged to an item that contains at least one xP (producing words from existing words). This operation is always transparent. *Cómparable* is thus a case of direct merge (of *-able* to the root below the first xP: [[compare][able]]<sub>ap</sub>), while *compárable* is the result of the merger of *-able* to an xP: [[[compare] [v]]<sub>vP</sub> [able]]<sub>ap</sub>. The alternative account of LF-PF opacity is phase-based (Chomsky 2000): the PIC (Phase Impenetrability Condition) prevents previously interpreted strings from being modified (they are frozen). On this count, the contrast between *párent-hood* (PF-opaque) and *parént-al* (PF-transparent) is one of phase structure: the former identifies as the complex [[parent] hood] (class 2 affixes are phase-building), while the latter has only one phase [parent al] (class 1 affixes are phase-neutral). The opaque stress of *párent-hood*, then, is the result of stress assignment to [párent] in isolation, which cannot be undone on later phases.

**Neither theory can cover the entire spectrum.** A key property of DM is that all xPs are phase heads, i.e. trigger spell-out (e.g. Marantz 2007, Embick 2010). This makes DM incompatible with regular PIC-based accounts of opacity, which are crucially based on contrasting phase structures, i.e. the fact that some xPs do, while others do not trigger spell-out (like in the abovementioned *párent-hood* vs. *parént-al*). It cannot be the case either that *párent-hood* is the result of direct merge: we would expect semantic opacity at least for some words, since in DM direct merge is the (only) source of opacity (but does not necessarily produce opacity). Also, in *góvern-ment<sub>2</sub>-hood<sub>2</sub>*, and *univérs-al<sub>1</sub>-ness<sub>2</sub>*, *-hood* and *-ness* behave as expected, i.e. they do not shift stress and hence create an opaque non-penultimate pattern. However, due to the presence of the intervening *-ment-* and *-al-*, they cannot be the sister of the root. Therefore the opacity that they are responsible for cannot be due to direct merge. If thus DM cannot do PF-only opacity, the PIC-based analysis on the other hand is unable to handle LF-only opacity: as was mentioned, *twink-ling* "a short moment" is phonologically transparent and therefore must represent a single phase. On the PIC-based analysis, though, its LF opacity requires the existence of an inner phase. Hence PF transparency and LP opacity issue conflicting requests for phase structure that cannot be simultaneously satisfied.

**Predictable and unpredictable opacity.** In principle there is no reason why all cases of opacity should have the same source. PF-only opacity can be done by the PIC (or purely phonology-internal mechanisms), and LF-only opacity by direct merge. It is implausible, though, that simultaneous PF/LF opacity (the two *comparables*) has two distinct sources. A means to find out which type of opacity we are facing may be the distinction between predictable and unpredictable opacity: *cómparable* "roughly the same" is PF-opaque because it does not have penultimate stress – but we do not know why stress falls on the first vowel. That is, once we know that the word is PF-opaque, we cannot predict *in which way* it will be opaque. By contrast, the opaque stress pattern of *párent-hood* is the same as the one that is found when *párent* is pronounced in isolation, and this is predicted by the PIC and cyclic derivation (*parent* is a cycle of its own). PIC-based accounts thus produce predictable opacity. Direct merge on the other hand is only said to be a source of opacity – what this opacity will look like remains unspecified. Applying this criterion, the source of the opacity for the two *comparables* identifies as direct merge. And a prediction is made to the end that PF-only opacity will always be of the predictable kind (because direct merge is out of business here).