

There is nothing surprising regarding (2): one who is familiar with PTH will notice that the numerals 1–5 in SWM are segmentally the same as those in PTH (there are tonal differences not reflected in the transcription). However, things get different when classifiers are added to the numerals. As in (3), a classifier obligatorily follows the numeral when the numeral is used for counting, but interestingly, when the number is ONE, the numeral *yi* ‘one’ is missing:

(3) A: *Count the apples!*

B: Go pingo, liang-go pingo, san-go, si-go, wu-go.
 CL apple two-CL apple three-CL four-CL five-CL
 ‘One apple, two apples, three, four, five.’²

I show that the absence of the numeral *yi* ‘one’ in (3) cannot be understood as a surface phonological effect (contrary to PTH *one*-drop discussed in Section 3). As shown in (4) and (5), when a numeral (or part of a complex numeral) other than ‘one’ is semantically focalized, it is, naturally, also phonologically stressed (reflected below as capital letters):³

(4) A: *How many books did you buy?*

B: Ngo mai=lo WU-ben (su).
 1P buy=PERF five-CL book
 ‘I bought FIVE (books)’

(5) A: *Did you buy twenty-four books?*

B: Meiyou, ngo mai=lo er-si-WU-ben (su).
 no 1P buy=PERF two-ten-five-CL book
 ‘No, I bought twenty-FIVE (books)’

The same, however, is not true for *yi* ‘one’. As in (6), when the intended focus is ONE, the numeral *yi* ‘one’ cannot bear stress; in fact, the nominal in (8) with a stress on *yi* is by itself ungrammatical. Note that when *yi* is part of a complex numeral as in (7), it can naturally be focalized and stressed (it behaves the same as other numeral morphemes here, c.f., (5)); this indicates that the ungrammaticality of (6&8) is not due to the unstressability of *yi* per se, nor due to its linear adjacency with the classifier. It can be safely concluded that the absence of *yi* ‘one’ is morphosyntactically conditioned.

(6) A: *How many books did you buy?*

B: *Ngo mai=lo YI-ben (su).
 1P buy=PERF one-CL book
 intended: ‘I bought ONE (book).’

(7) A: *Did you buy twenty-four books?*

B: Meiyou, ngo mai=lo er-si-YI-ben (su).
 no 1P buy=PERF two-ten-one-CL book
 ‘No, I bought twenty-ONE (books).’

(8) *YI-ben su
 one-CL book

To express the intended meaning of (6), one in fact needs to stress the classifier, as represented in (9a) (note that the same stress pattern is not available for numerals other than *s* ‘one’ (9b)):

(9) a. Ngo mai=lo BEN.
 1P buy=PERF CL
 ‘I bought ONE (book).’

²*Er* in (2) and *liang* in (3) are two allomorphs of ‘two’. See Wu D. 2023 for a recent account of their distribution in PTH (SWM behaves the same in this regard), according to which *er* is the ‘absolute’ form of ‘two’ and *liang* is the ‘contextual’ form (the terminology is from Greenberg 1978).

³*Ben* is the classifier for books; using different classifiers (depending, of course, on the noun chosen) will not change the patterns of concern.

- b. *N_{go} mai=lo wu-BEN.
 1P buy=PERF five-CL
 intended: ‘I bought FIVE (books).’

2.2 *Yi* and the *Da*-Construction

Zhang et al. (2001) report that an SWM numeral may be (partially) reduplicated with the help of a particle *-da-*, resulting in a so-called ‘subjective large quantity’ reading (translatable roughly as ‘as many/much as’). As (10) shows, in the *da*-construction, the first syllable of a numeral is reduplicated before *-da-*. In (10a), the numeral is monosyllabic and is reduplicated as a whole; in (10b), only the first syllable of *er-si-wu* ‘twenty-five’, namely *er*, reduplicates. Note that a partial form-meaning mismatch is found in (10b): it is the whole complex numeral that is semantically focalized, but only the first syllable of it is reduplicated (and only the reduplicated part preceding *-da-* is stressed):

- (10) a. Ta kan=lo WU-da-wu ben su.
 3P read=PERF five-DA-five CL book
 ‘She read as many as FIVE books.’
 b. Ta kan=lo ER-da-er-si-wu ben su.
 3P read=PERF two-DA-two-ten-five CL book
 ‘She read as many as TWENTY-FIVE books.’

We have seen in last subsection that *yi* ‘one’ cannot occur and be assigned stress in many contexts, e.g., (3), (6), and (8). One may wonder what would happen with ‘one’ in the *da*-construction. As illustrated in (11), when the number to be focused in the construction is ‘one’, no overt numeral in fact occurs; instead, reduplication targets the classifier. In (11a), the monosyllabic classifier is reduplicated; in (11b), it is the first syllable of the disyllabic classifier *gongjin* ‘kilogram’ that is repeated before *-da-*:

- (11) a. Ta tian kan=lo BEN-da-ben su.
 3P CL_{day} read=PERF CL-DA-CL book
 ‘She read as many as ONE book (i.e., a whole book) in one day.’
 b. Ta go xiaosi ho=lo GONG-da-gongjin jiu.
 3P CL hour drink=PERF ki-DA-CL_{kilogram} wine
 ‘She drank as much as ONE KILOGRAM of wine in one hour.’

The generalization that can be made, then, is that *yi* ‘one’ in SWM does not show up when it *could have* merged directly with a classifier (recall from (7) that it is not about linear adjacency). First, evidence from the *da*-construction indicates that *yi* ‘one’ is missing at the point the reduplication applies. Second, the stress pattern discussed in subsection 2.1 demonstrates that *yi* ‘one’, when missing on the surface, is not even there in underlying representation.

2.3 An Impoverishment-Based Account

I propose that the peculiarities of SWM *yi* ‘one’ can be captured by the impoverishment rule (12):⁴

- (12) [ONE] => Ø / __ CL
 (13) [ONE] <=> *yi*

(12) states that, in morphosyntax, [ONE] (as a set of formal features) gets deleted if it is structurally adjacent to a classifier. Consequently, the vocabulary insertion rule (13) fails to apply in such contexts, in which, since the lexical item *yi* is simply not inserted, it is always the classifier that (i) bears

⁴Another way of formalizing the same idea is to posit an obliteration rule which deletes the whole Num node when it is structurally adjacent to a classifier (an impoverishment rule will only delete the features) (Arregi & Nevins 2007). The choice is not important for the current purpose.

the stress when focalization targets the whole Num-CL construction, and (ii) undergoes (partial) reduplication in the *da*-construction (11). Note that (12) as a PF rule does not affect semantics, i.e., [ONE] still gets interpreted at LF.

To illustrate further how (12) works, I assume (14) to be the nominal structure of SWM (or of Sinitic languages in general), where the numeral and the classifier form a complex Num-CL head (c.f., Tang 1990, Krifka 1995):⁵

- (14) [DP D [CLP Num-CL [NP N]]]
 e.g., [DP \emptyset [CLP *wu-ben* [NP *su*]]] ‘five books’

Moreover, I suggest that a focus phrase headed by *-da-* can be optionally projected above CLP (15a); *-da-* copies the first syllable in CLP to its left (15b):

- (15) a. [DP D [FocP *-da-* [CLP ...]]]
 b. [DP [FocP *wu* *-da-* [CLP [*wu*-*ben* [NP *su*]]]]]

Assuming, rather standardly, that morphosyntactic rules and vocabulary insertion apply cyclically, the introduction of *-da-* necessarily happens *after* (12) and (13) apply to the Num-CL head:

- (16) a. [CLP ONE-CL [NP BOOK]] => [CLP ONE-*ben* [NP *su*]] ((12) applies) => [CLP *ben* [NP *su*]]
 b. [DP [FocP *ben* *-da-* [CLP [*ben* [NP *su*]]]] (*-da-* copies the first syllable of the classifier)

Recall that the context where the impoverishment rule (12) happens is defined structurally: it is not about linear adjacency. Before ending this section, it is interesting to briefly discuss the expression of ordinality in SWM. There are two strategies to form an ordinal. First, one may use the ordinal prefix *di-* ‘-th’ attached to cardinals (17a); second, zero-marked numerals may be directly used as ordinals, as shown in (17b) (PTH only allows the former overt strategy):

- (17) a. *di-yi/wu*-*jie* ko
 ORD-one/five-CL class
 b. *yi/wu*-*jie* ko (*yi* being focalizable and stressable)
 one/five-CL class
 ‘the first/fifth class’ (impossible: ‘one/a class’)

In both (17a) and (17b), *yi* ‘one’ behaves just like other numerals: it can be focalized and bear stress, and it can never be dropped. I assume that (17b) has the same underlying structure as (17a), where the numeral and the classifier do not merge directly with each other. As represented in (18), the numeral is first merged with the prefix *di-/∅-* to form an ordinal; the ordinal then forms a constituent with the classifier:

- (18) [CLP [OrdP *di-/∅-* [NumP Num]] -CL]
 e.g., [CLP [OrdP (*di-*) [NumP *yi/wu*]] -*jie*]

(17–18) thus confirm further that the absence of *yi* ‘one’ has nothing to do with PF factors such as linear adjacency. Its distribution is conditioned morphosyntactically, by the proposed impoverishment rule (12) which is sensitive only to the underlying structure.

3 The Phonological Nature of *One-Drop* in Putonghua

The impoverishment rule (12) is, of course, a language-particular one; it looks ‘unnatural’ in some

⁵For ease of exposition, I assume that the DP layer is always present in Chinese nominals, putting the NP/DP debate aside; nothing in this paper actually hinges on this assumption.

sense. One wonders, naturally, how it comes into being in the first place. This section will show that the answer to this question will become clear once we understand the essence of *one-drop* in PTH, a similar phenomenon in another Mandarin variety that is closely related to SWM.

3.1 *One-drop* in Putonghua as a phonological effect

In this subsection I examine *one-drop* in PTH, a phenomenon which is relatively well described and discussed in the literature (compared to SWM ONE-impoverishment (12), which has escaped attention). Though some controversy exists, there is good evidence that PTH *one-drop* is a phonological phenomenon, as demonstrated below.

As in (20–21), in PTH, the numeral ‘one’ can optionally ‘drop’ in postverbal positions (Lü 1990[1944], Li 1998, Cheng & Sybesma 1999, Wu Y. & Bodomo 2009, Zhang 2013, Wang 2019; PTH *yi* and SWM *yi* are evident cognates):

- (20) Wo xiang mai (yi) -ben shu. [PTH]
 1P want buy one CL book
 ‘I would like to buy one book.’
- (21) Ta shi (yi) -ge maimairen. [PTH]
 3P be one CL businessman
 ‘She is a businessperson.’

(20) and (21) are natural either with or without *yi*. Briefly speaking, two kinds of analyses have been proposed in the literature. On the one hand, a number of works argue that CL-NPs and *yi*-CL-NPs in PTH are underlyingly different (Cheng & Sybesma 1999, Li & Bisang 2012); on the other hand, many scholars contend that CL-NPs *are* *yi*-CL-NPs in PTH, *yi* deleted at PF (Jiang 2012, Li & Feng 2015, Li & Wei 2019, Wang 2019, 2020). The second type of analysis is illustrated in (22):

- (22) *yi* => ∅ (contexts defined in low-level phonological & stylistic terms; see below)
 e.g., [DP [CLP yi-ben [NP shu]]] ≡ delete *yi* at PF ≡ [DP [CLP ben [NP shu]]]

I will follow the latter PF-approach to PTH *one-drop*, positing that (22) is the correct analysis. This is because arguments in favor of the former line of research are in fact empirically incorrect. Due to space limitations, I will only be able to address one here. It has sometimes been claimed that *yi*-CL-NPs can be either specific or nonspecific, while CL-NPs receive only the nonspecific interpretation, so they must be underlyingly different. However, Jiang (2012) points out that this observation does not hold under careful scrutiny:

- (23) Ruguo ni neng he (yi)-ge bendiren qu Beijing dehua,
 if 2P can with one-CL local.person go Being if
 ni wan duojiu wo dou bu-guan. [PTH]
 2P play how.long 1P DOU NEG-care
 ‘If you can go to Beijing with one/a local, no matter how long you stay there, I will not care.’
 [(*yi*)-CL-NP>if] or [if>(y*i*)-CL-NP]
 (regardless of the presence/absence of *yi*)
- (24) Mei-ge xuesheng dou bei (yi)-ge pianzi pian=le
 every-CL student DOU PASS one-CL con.man con=PERF
 liang-qian kuai.
 two-thousand yuan
 ‘Every student got conned out of ¥2000 by a con man.’ (adapted from Jiang 2012)
 [(*yi*)-CL-NP>every] or [every>(y*i*)-CL-NP]
 (regardless of the presence/absence of *yi*)

In both (23) and (24), the (*yi*)-CL-NP can be either specific or nonspecific, with or without *yi*. Li & Feng (2015) argue that PTH *one-drop* results from destressing *yi* ‘one’, making *yi* lose its tone and vowel quality. Additionally, to license the deletion of *yi*, there must be a stressed syllable following *yi*, creating a weak-strong contrast. Also, deletion applies only with certain types of classifiers. As

shown below, (25a) and (25b) are different in the choice of the classifier: *-shan* in (25a) is a classifier specifically used for windows in formal register; (25b), in contrast, uses *-ge*, the generalized classifier commonly used for all kinds of count nouns in colloquial speech. Thus, (25) indicates that *one-drop* is sensitive to the register: it is much more common and unrestricted in informal contexts:

- (25) a. Ta kai=le ??(yi)-shan chuanguhu. [PTH]
 3P open-PERF one-CL window
 ‘She opened a window.’
 b. Ta kai=le (yi)-ge chuanguhu. [PTH]
 3P open=PERF one-CL window
 ‘She opened a window.’ (Li & Wei 2019)

It is also expected that PTH *yi* ‘one’ cannot be deleted if it is focalized and stressed, as shown in (26a), different from SWM ONE-impoverishment (26b):

- (26) a. Jiaoshi-li zhi you *(YI)-ge ren. [PTH]
 classroom-in only have one-CL person
 ‘there is only one person in the classroom’ (Li & Wei 2019)
 b. Jiaosi-tou zi you GO ren. [SWM]
 classroom-in only have CL person

The same contrast is observed in (27), which also shows that bare CL-NPs in SWM can occur sentence-initially (27b), whereas this is impossible in PTH (27a) (the sentence is grammatical with *yi*):⁶

- (27) a. *(YI)-liang che neng zuo wu-ge ren. [PTH]
 One-CL car can sit five-CL person
 ‘One car is enough for five people to sit in.’ (Tsai 2001; adapted)
 b. TAI cezi zo-dexia wu-go ren. [SWM]
 CL car sit-can five-CL person

I thus conclude, following Li & Feng 2015, among others, that PTH *one-drop* is a result of phonological deletion, subject to a number of factors, including phonological and stylistic ones. Note finally that PTH *yi* shows none of the morphosyntactic peculiarities attested in SWM discussed in Section 2.

3.2 The Genesis of ONE-Impoverishment in Southwestern Mandarin

The discussion so far shows that PTH and SWM are very different regarding *yi* ‘one’; however, on the surface, the two languages demonstrate a great similarity: *yi* ‘one’ is just often absent when it is expected to be present (1), repeated here as (28):

- (28) a. Wo xiang mai ben shu. [PTH]
 1P want buy CL book
 ‘I want to buy a book.’ (yi-deletion at PF; (22))
 b. Ngo xiang mai ben su. [SWM]
 1P want buy CL book
 ‘I want to buy a book.’ (ONE-impoverishment in PF syntax; (12))

Since the two languages are genetically closely related, and (28a) and (28b) share a huge surface similarity, it seems inevitable to make the conclusion that PTH *yi*-deletion and SWM ONE-impoverishment are genetically related to each other as well. To be specific, I suggest that the PTH case reflects an earlier stage of SWM: early Mandarin and most modern varieties of Chinese behave like

⁶Note that bare CL-NPs in many Sinitic languages, including varieties of Cantonese and Wu Chinese, may occur in subject positions freely and receive a definite reading (Cheng & Sybesma 1999, 2005, among others). Bare CL-NPs do not have such a usage in PTH and SWM; they must be indefinite.

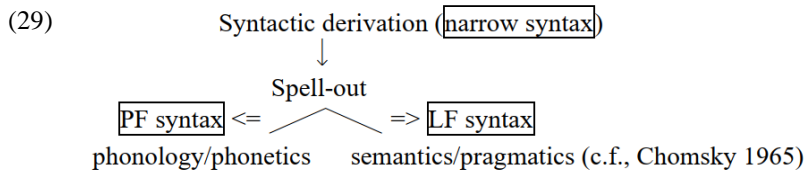
PTH regarding the absence of ‘one’ (that is, the peculiarities reported in Section 2 are only attested in Southwestern Mandarin). ONE-impoverishment can thus be understood as a recent SWM innovation. It is the surface similarity between cases like (28a) and (28b) that makes the PTH-to-SWM change possible. Before moving on to the discussion of the mechanism behind this historical change in next section, it is worth pointing out that although SWM ONE-impoverishment (12) seems to involve some complexity and ‘unnaturalness’, one cannot simply say that the more innovative SWM system is more complex than the arguably more conservative PTH system, as the latter also has an optional PF rule (22) that does not seem to exist in SWM.

4 Discussion

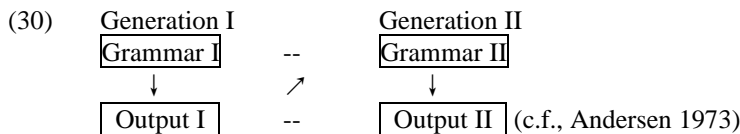
4.1 Acquisition, Economy, and Language Change

This section discusses what the PTH-to-SWM change regarding *yi* ‘one’ informs us of the nature of syntactic change in general. It has long been recognized that acquisition plays a crucial role in language change (Lightfoot 1979, 1991, Roberts 1993, Ringe & Eska 2013, Stanford 2015). The idea is that a child during acquisition selects a grammar that is most compatible with the primary linguistic data (Chomsky 1965), and a change happens if that grammar selected is different from the grammar of the old generation. In addition, a linguistic structure diachronically tends to be reanalyzed as a more economical one (Campbell 1998, van Gelderen 2004, among others; though the definition of economy differs), which, of course, does not mean that economy will drive an overall simplification of the grammar, e.g., no one would argue that French grammar is overall ‘simpler’ than Latin grammar, since the economization of one part may cause complexity of another part of the grammar.

Apparently, the denial of overall simplification, or global economization, may make the role that economy plays in language change quite opaque. It is necessary to consider the mechanisms of language change more carefully. Assuming a standard derivational architecture of grammar as in (29), it seems natural to suggest that children do not directly see the grammar, which at its essence is a mental construct. What children see is a finite set of form-meaning pairs (i.e., the interfaces), based on which they build their own phonology and semantics (which already involve certain levels of abstraction), based on which they further build their morphosyntax (i.e., those in border: syntax, PF syntax or morphology in a DM sense, and LF/covert syntax), which is totally abstract:



The implication, then, is that a (morpho-)syntactic reanalysis possibly does not occur by itself, but is triggered, indirectly, by a phonological or a semantic reanalysis. As illustrated in (30), the innovative grammar (Grammar II) and the older grammar (Grammar I) are not directly connected. They are in most cases similar, since (i) Grammar I produces Output I and Grammar II is a ‘best’ explanation of it, and (ii) Output II and Output I need to be mutually intelligible. But Grammar I and Grammar II are not necessarily exactly the same: they in fact never are, assuming that each individual grammar is unique. It is not even a logical necessity that they be similar (it is only necessary that Output I and Out II are similar). A (step of a) historical ‘change’ of a language is any of the differences observed between Grammar I and Grammar II.



In other words, syntactic changes do not happen independently; they should be viewed as the result of the ‘reanalysis’ of form-meaning pairs. A phonological/semantic change would lead to a syntactic

a morphosyntactic change, but not vice versa. In other words, morphosyntactic changes are secondary to phonological changes (or more generally, interface changes).

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