

BALTO-SLAVIC PHONOLOGICAL DEVELOPMENTS

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Elsewhere I have proposed the following relative chronology of early sound changes (1989a: 42-47, 2005a: 115-118):

- (1) Neutralization of the opposition between palatovelars and labiovelars after **u* and **s*, yielding a palatovelar before **i* and a plain velar elsewhere (cf. Steensland 1973: 34, Kortlandt 1979: 58). This development belongs to the Proto-Indo-European period (stages 1.2 and 1.3 of my chronology).
- (2) Rephonemicization of the opposition between fortis (“voiceless”) and lenes (“voiced aspirates”) as an opposition between voiceless and (plain) voiced stops. This was a shared innovation of all Indo-European languages except Anatolian and Tocharian and therefore belongs to the dialectal Indo-European period (my stage 2.1). The (lenes) glottalic stops (traditionally called “plain voiced”) became preglottalized voiced at this stage (cf. Kortlandt 1978a: 110).
- (3) Retraction of **s* to **ʃ* after **i*, **u*, **r*, **k* in Balto-Slavic, Albanian, Armenian, and Indo-Iranian. The highly specific character of this sound change points to a common, dialectal Indo-European development (my stage 2.2).
- (4) Depalatalization of the palatovelars before resonants unless the latter were followed by a front vowel, e.g. Slavic *slovo* ‘word’, Greek κλέος, but Lith. *klausyti* ‘to listen’ (cf. Kortlandt 1978b). This development was common to Balto-Slavic and Albanian and can therefore be dated to the end of the dialectal Indo-European period (my stage 2.3).
- (5) Development of the palatovelars into palatal stops (“satemization”), e.g. **k̑* yielding **ć*, which must evidently have been more recent than the depalatalization before resonants. The occlusive element appears to have been preserved before **w* in Polish *dźwięk* ‘sound’, *dzwon* ‘bell’, Ukr. *dzvin*, *dzvir* beside *zvir* ‘beast’, Mac. *dzvonec*, *dzver*, which shows that the palatal stops survived into Early Slavic.
- (6) Rise of the lateral mobility in Balto-Slavic accent patterns. Here belong e.g. the rise of final stress in Lith. *duktė* ‘daughter’, *piemuō* ‘shepherd’, *sūnūs* ‘son’, *duodās* ‘giving’ and the retraction of the stress in acc.sg. *dūkterį*, *piemenį*, *diėvą* ‘god’, as opposed to Greek θυγάτηρ, θυγατέρα ‘daughter’ (cf. Kortlandt 1977:

320f. and 2008a). These developments can be dated to the beginning of the Balto-Slavic period (my stages 3.1 through 3.4).

(7) Raising of final **-om* to **-um* (stage 3.6). This development was more recent than the substitution of the pronominal ending **-od* in the nom.acc.sg. form of the oxytone neuter *o*-stems (stage 3.5). It is reflected in the Prussian ending *-on* < **-um* < **-om* in numerals and participles, e.g. *dessimton* ‘ten’, *mien Ismaitinton bhe perklantiton smunentien* “mich verlornen vnnd verdampften Menschen”, neuter *billiton* (20×), *(po)dāton*, *(po)peisāton*, *pogalbton*, *poquoititon*, *prolieiton*, also acc.sg. *deickton* (3×) ‘thing, place’, *niainonton* ‘nobody’, *muisison* ‘larger’, *pauson* ‘because’, *enterpon* ‘useful’, pronominal gen.pl. *stēison*, *steison*, *tennēison*, *tenneison*, *noūson*, *nouson*, *iouson* (together 88×), Lith. gen.pl. *-ų*, Slavic acc.sg. and gen.pl. *-ъ*, also thematic aorist 1st sg. *-ъ* < **-um* < **-om*, which remained distinct from 3rd pl. *-ǫ* < **-ont*, so that the raising of **-om* to **-um* must have been earlier than the Balto-Slavic loss of final **-t/d* (cf. Kortlandt 1978c: 287-290). The stem vowel of the *o*-stems was restored in Lith. acc.sg. *-ą* and in the Prussian nominal paradigm, where it was generalized and extended to the *ā*- and *u*-stems (cf. Kortlandt 1988: 93f. and 1998: 125f.).

(8) Loss of final **-t/d* (stage 3.7).

(9) Hirt’s law: retraction of the stress if the vowel of the pretonic syllable was immediately followed by a laryngeal, e.g. Lith. *dúona* ‘bread’, *výras* ‘man’, *dūmai* ‘smoke’, Vedic *dhānās*, *vīrás*, *dhūmās*, also Slovene dat.pl. *gorām* ‘mountains’, loc.pl. *goràh*, where the stress was retracted from the ending to the vowel before the stem-final laryngeal (stage 4.1). The stress was not retracted if the laryngeal followed the second component of a diphthong, as in Latvian *tiēvs* ‘thin’ < **tenHuós*, or preceded the syllabic nucleus, as in Russian *pilá* ‘(she) drank’ < **pHiláH*. The stress was not retracted to a lengthened grade vowel, as is clear from *vṛddhi* formations, e.g. SCr. *mēso* ‘meat’ < **mēmsóm*, *jāje* ‘egg’ < **Hōuióm*. It follows that the laryngeals were still segmental phonemes at this stage. The retraction under discussion was more recent than the rise of final stress in Lith. inst. *sūnumì*, *sūnumis* because accentual mobility was preserved in SCr. *sîn* ‘son’, where the stress was never retracted in the numerous trisyllabic case forms of the *u*-stem paradigm. Hirt’s law was also more recent than the substitution of the pronominal ending in the oxytone neuter *o*-stems (stage 3.5) because neuters with retracted stress did not join the masculine gender, e.g. SCr. *jāto* ‘flock’, Vedic *yātám*.

(10) Dissolution of the syllabic resonants into a vocalic and a consonantal part, the former of which merged with **u* after the labiovelar stops and with **i* elsewhere (stage 4.2). This distribution was reshuffled under the influence of apophonic relationships. The labiovelars subsequently lost their labialization. The loss of the syllabic resonants was more recent than Hirt’s law because the stress

was retracted in Latvian *il̥gs* ‘long’, *piļns* ‘full’, SCr. *dŭg*, *pŭn*, Vedic *dīrghás*, *pūrṇás*. It was also more recent than the dialectal Indo-European loss of the laryngeals before word-final nasals, e.g. in Lith. acc.sg. *rañkq* ‘hand’ < **-ām* < **-aHm* (cf. Kortlandt 2005b: 153f.).

(11) Winter’s law: dissolution of the preglottalized voiced stops into a laryngeal and a buccal part (stage 4.3). The former merged with the reflex of the Proto-Indo-European laryngeals and the latter with the reflex of the lenes stops. Winter’s law was more recent than the loss of final **d* (8) in view of the Slavic neuter pronoun *to* < **tod*. It was more recent than Hirt’s law (9) because the stress was not retracted in Latvian *pēds* ‘footstep’ < **pedóm*, *nuōgs* ‘naked’ < **nog^wós*, *duōmu* ‘(I) give’ < **dodHmí*, where the broken tone reflects final stress. It was probably more recent than the loss of the syllabic resonants (10) because it was blocked in the cluster **ngn* which arose as a result of the latter development in OCS. *ognjv*, Lith. *ugnīs* ‘fire’ < **ṅg^wnis* (cf. Kortlandt 1979: 60).

(12) Retraction of the stress from final open syllables of disyllabic word forms unless the preceding syllable was closed by an obstruent (stage 4.4). This retraction was more recent than the loss of final **-t/d* (8), as is clear from Lith. gen.sg. *vilko* ‘wolf’ < **-ōd* and SCr. aor. 3sg. *něse* ‘carried’ < **-et*. The stress was regularly retracted from final vowels, as in Ru. *pílo* ‘(it) drank’, and diphthongs, as in Lith. dat.sg. *vil̥kui* ‘wolf’ < **-ōi*, *gálvai* ‘head’ < **-āi*, but not from syllables which ended in a fricative, a nasal, or a laryngeal, e.g. Lith. gen.sg. *aviēs* ‘sheep’, gen.pl. *vil̥kŭ* ‘wolf’ < **-om*, nom.sg. *galvà* ‘head’ < **-aH*, Ru. *pilá* ‘(she) drank’. It follows that word-final nasals and laryngeals were still ordinary consonants at this stage. The retraction was more recent than Hirt’s law (9) because the accentual mobility in Ru. *dalá*, *dálo* ‘(she, it) gave’, which must have arisen at this stage, presupposes an earlier end-stressed paradigm. If the word contained a full grade root vowel at the time of Hirt’s law, retraction of the stress would have prevented the rise of accentual mobility. Thus, we have to assume that the full grade replaced earlier zero grade at a stage between Hirt’s law and the retraction in *dálo*. The retraction was more recent than Winter’s law (11) because the laryngeal feature of the preglottalized stops merged with the reflex of the Proto-Indo-European laryngeals at a stage between Hirt’s law and the retraction. This can be deduced from the retracted stress of Ru. *éla* ‘(she) ate’, *séla* ‘(she) sat down’, which must have arisen from an analogical extension of Hirt’s law. This retraction cannot have been phonetic in view of Lith. *édq̄s* ‘eating’, *duodq̄s* ‘giving’. The analogical development must have been earlier than the retraction under discussion because the stress was not retracted in Ru. *pilá* ‘drank’, *dalá* ‘gave’. In particular, it must have been earlier than the introduction of full grade in the root syllable of the latter form.

(13) Rounding of **e* to **o* before intervocalic **w*, e.g. Slavic dat.sg. *synovi* < **-euei*, nom.pl. *synove* < **-eues* (cf. Kortlandt 1979: 57). This development was more recent than the satemization which affected *slovo* ‘word’, Greek κλέος.

(14) Development of **eu* to **iou* before consonants (cf. Pedersen 1935), e.g. in Slavic *ljudije*, Lith. *liáudis* ‘people’. This sound change must have been more recent than the restoration of the front vowel in the cardinal *devyni*, Slavic *devět* ‘nine’, replacing **nowin* < **H₁neun* on the basis of the ordinal **neuno-*, which was subsequently replaced by **newino-*, later **newinto-* on the basis of the new cardinal **newin* (cf. Hamp 1976). The vocalism of Lith. *naūjas* ‘new’ and *kraūjas* ‘blood’ is a resyllabification of **nowios* and **krowiom*, as is clear from Sanskrit *návyas*, *kravyám*, Old Irish *nuë*.

(15) Prussian *newints* ‘ninth’ shows that the substitution of *de-* for *ne-* in Lith. *devyni* and Slavic *devět* belongs to the dialectal Balto-Slavic period.

(16) Loss of final **-r*, **-n* after a long vowel, e.g. Slavic *mati* ‘mother’, *kamy* ‘stone’, Lith. *mótė*, *akmuō*, Greek μήτηρ, ἄκμων. This development was more recent than the Slavic raising of **ē* and **ō* before the final resonant (stage 5.1) and therefore belongs to the dialectal Balto-Slavic period.

(17) Rounding of **a*, **ā* and merger with **o*, **ō* (stage 5.2), rise of nasal vowels (stage 5.5), rise of *x* < **š* (stage 5.7), rise of *s*, *z* < **ć*, **ź* (stage 5.8), vowel raising in the original endings inst.pl. **-ōis*, acc.pl. **-ons* and **-aHns* to **-ū*, later *-y* (stage 5.9), and unrounding of **o*, **ō* to **a*, **ā* (stage 5.12). These developments were limited to Slavic, perhaps with the exception of the early rounding of **a*, **ā* and their merger with **o*, **ō*, which was shared by Prussian and may therefore have been a dialectal Balto-Slavic innovation.

(18) Monophthongization of stressed **ei*, **ai*, **oi* to **ē* in East Baltic (stage 3.1 of Kortlandt 1977: 323). As a result of this development, the vowel system changed from triangular to quadrilateral and thereby entailed a shift in the ablaut relations. In unstressed syllables, **ā* and **ō* merged, e.g. Lith. *dovanà* ‘gift, present’ and gen.sg. *-o* < **-ōd*. At the same time phonemic length was lost in diphthongs, e.g. dat.sg. *meřgai* ‘girl’, *vil̃kui* ‘wolf’, inst.pl. *vilkaĩs*. Short **o* was unrounded and merged with **a*.

(19) Rise of nasal vowels in East Baltic, e.g. Lith. *kąsti* ‘to bite’, *kęsti* ‘to suffer’ (stage 3.2 of Kortlandt 1977: 324). At the same time, the glottal stop which continued the Proto-Indo-European laryngeals and the laryngeal feature of the pre-glottalized stops became a feature of the preceding vowel and developed into a broken tone. At a later stage, retractions of the stress resulted in rising and falling tone movements in the East Baltic dialects (cf. Kortlandt 2008a).

(20) In Slavic, the glottal stop which developed from the laryngeals and from the preglottalized stops was lost first in pretonic and post-posttonic syllables

(stage 5.3), then in the remaining posttonic syllables (stage 7.13), at some stage became a feature of the preceding vowel yielding a broken tone, and was eventually lost in stressed syllables yielding a short rising tone (stage 9.2). The glottalization had been preserved in Russian at the time of the earliest borrowings into Latvian, where it is reflected as a stretched tone, e.g. *miēsts* ‘hamlet’, *muōka* ‘torment’, *grāmata* ‘book’, *kalīps* ‘servant’, as opposed to the falling tone reflecting the absence of glottalization in *grēks* ‘sin’, *bēda* ‘care’, *strādāt* ‘to work’, *svēts* ‘holy’, *grēda* ‘pile’, *vēsts* ‘news’ (cf. Kortlandt 2008a).

Thus, I think that the developments (2)-(4) were dialectal Indo-European, (6)-(14) were Proto-Balto-Slavic, and (17)-(20) belonged to the separate Slavic and East Baltic proto-languages.

Ranko Matasović has recently presented a relative chronology of Balto-Slavic sound changes (2005) which is in partial agreement with mine. It is therefore appropriate to discuss the differences between the two. These are the following:

(i) Matasović dates the depalatalization of palatovelars before resonants (4) and the satemization (5) before the retraction of *s to *š after *i, *u, *r, *k (3) in spite of the fact that the latter was a shared development of Balto-Slavic, Albanian, Armenian and Indo-Iranian whereas the depalatalization before resonants was common to Balto-Slavic and Albanian (cf. Kortlandt 1978b: 242). He claims that Slavic *osv* ‘axis’ and *desnъ, desъnъ* ‘right’, as opposed to Sanskrit *ákṣas* and *dákṣiṇas*, Avestan *aša-* and *dašina-*, point to satemization before retraction of *s. This idea is unfounded because there is no reason to suppose that *čš should yield *x* rather than *s* in Slavic, where *š became *s* before consonants, e.g. *iskati* ‘to seek’, *voskъ* ‘wax’, *jasnъ* ‘clear’, *rěsnъ* ‘distinct’, suffix *-bškъ*, Lith. *ieškóti*, *vāškas*, *áiškus*, *ráiškus*, *-iškas*, cf. also Alb. *djathtë* ‘right’, where *th* is identical with the phonetic reflex of *k, and the different simplifications in SCr. *můškī* and Polish *męski* of the cluster attested in Russian *mužskój* ‘masculine’. For Lith. *vāškas*, Slavic *voskъ*, German *Wachs*, I have proposed to reconstruct *uoḱsko- (1979: 59).

(ii) Matasović thinks that the depalatalization of palatovelars before resonants (4) was limited to the position before *r, *l, *m followed by back vowels, e.g. Lith. *akmuō* ‘stone’, Sanskrit *ásmā*, and did not affect palatovelars before *w and *n, e.g. Lith. *šuō* ‘dog’, Sanskrit *śvā* < *kuōn, and Slavic *znati* ‘to know’ < *gnō-, Latin *-gnōscō*. In fact, these words reflect the antevocalic development of the palatovelars, cf. Greek κύων, gen. κυνός (Skt. *súnas*), Old Irish *cú* (Welsh *ci*, not ***pī*), Lith. *žinóti*, *pažinti*, *žénklas* ‘sign’, Slavic *zъnamъ ‘I know’ (cf. Kortlandt 1985a). There can be no doubt that the palatovelars were depalatalized before *w followed by a back vowel in view of Polish *kwiat* ‘flower’, *gwiazda* ‘star’, Czech *květ*, *hvězda*, Skt. *śvetás* ‘white’, Greek φοῖβος ‘bright’ (cf. Pedersen 1926: 74), Prussian *pecku* ‘cattle’, Skt. *paśús*, gen. *paśvás* < *pekъwos (cf. Kortlandt 1978b:

241). There are no decisive examples of palatovelars before **n* plus back vowel, but depalatalization must clearly have taken place in Lith. *gentis* ‘tribe’ beside *žéntas* ‘son-in-law’ and in Slavic **gǫsb* beside Lith. *žqsis* ‘goose’ (cf. Kortlandt 1985b: 119), as in Russian *žěltyj* ‘yellow’ beside *zóloto* ‘gold’ and *zelěnyj* ‘green’, Lith. *géltas*, *žélti*, *žālias*, which point to original depalatalization before syllabic resonants.

(iii) Matasović has recently (2004) challenged the classic view that the phonetic reflex of the syllabic resonants is **uR* after original labiovelar stops and **iR* elsewhere (Vaillant 1950: 167-177, Stang 1966: 82). I have argued that the new proposal is mistaken and that we have to return to the classic theory, which remains unsurpassed (2007a). It follows that the delabialization of the labiovelars cannot have preceded the dissolution of the syllabic resonants into a vocalic and a consonantal part (10).

(iv) Matasović has an idiosyncratic view of Winter’s law (11). He claims that “vowels were lengthened before PIE voiced consonants in closed syllables” before the “aspirated stops” merged with the “voiced stops” in Balto-Slavic, concluding that the latter development was “independent of the similar processes in Celtic, Germanic, and Albanian” (2005: 151). This view cannot be correct (cf. Derksen 2002 and Kortlandt 2008b, also Dybo 2002). For Lith. *dubùs* ‘deep’, *gegužė* ‘cuckoo’, Slavic *kobv* ‘augury’ (rather than “destiny”), Matasović adduces Germanic cognates, which are inconclusive (cf. Lühr 1988, Kortlandt 1991). For Lith. *kadà* ‘when’ I refer to Derksen (2002: 11f.) and for *ligà* ‘disease’ to Dybo (2002: 503-505) while *smagùs* ‘heavy’ cannot be separated from *smagùs* ‘pleasant, cheerful, merry, lively’ and has nothing to do with Greek *μόγος* ‘tool, trouble, distress’. Lith. *pādas* ‘sole’ and Slavic *podv* ‘floor’ cannot be separated from Lith. *iñdas* ‘dish’, *iždas* ‘treasury’, *priėdas* ‘addition’, etc. and must be derived from **pod^hH₁o-*, cf. also *padėklas* ‘tray’, *padėti* ‘to put’, not from the etymon of Greek *πέδον* ‘ground, earth’ (cf. already Winter 1978: 439). Matasović objects to the “use of forms with a nasal infix, which, in [FK’s] opinion, blocked the operation of Winter’s law, to account for the lack of lengthening in forms where no infix is attested” (2005: 155). This is completely wrong. Polish *sięgać* (not “*sęgać*”) ‘to reach’ does not have an infixed but a radical nasal, cf. Sanskrit perfect *sasañja*, aorist *asañji*, infinitive *sañktos*, desiderative *sisañšati*, causative *sañjayati* of the zero grade root *saj-* ‘hang’, German *Senkel* ‘lace’, with regular operation of Winter’s law in SCr. *sėzati*, Czech *sahati*, also Polish *sięgać*, but loss of the acute before the nasal suffix which blocked Winter’s law in SCr. *sėgnuti*, Czech *sáhnouti* < **-ngn-*, as in Lith. *ugnìs* < *ungnìs*, Slavic *ognjv* ‘fire’. The unavoidable conclusion is that the radical nasal attested in Indo-Iranian, Slavic and Germanic was eliminated in Lith. *sėgti* ‘to fasten’, probably because it was reanalyzed as an inappropriate nasal infix. Matasović “fail[s] to understand how a form like OCS *xodv* ‘walk’ can be built on the analogy with the reduplicated

present **si-sd-o-*” (ibidem) but does not mention the preterit stem *švd-* ‘went’ (cf. also Kortlandt 1989b). Matasović disregards the evidence for preglottalized voiced stops in Latin (Lachmann’s law), Germanic (cf. Kortlandt 2007b), Greek (cf. Kortlandt 1983a), and Indo-Iranian (cf. Kortlandt 1985c: 192f.). He does not discuss the absence of evidence for “voiced aspirates” in Proto-Indo-European (cf. Kortlandt 2007c: 149-151). Perhaps most striking is his disregard of the fact that long vowels from Winter’s law did not merge with earlier long vowels in Balto-Slavic (cf. Kortlandt 1985b) and that glottalization was preserved until after the rise of the new timbre distinctions in Slavic, as is clear from Upper Sorbian *slódki* ‘sweet’, where the acute from Winter’s law lengthened the root vowel, as opposed to Polish *ślodki*. The glottalization has been preserved up to the present day in Latvian *pēds* ‘footstep’, *nuôgs* ‘naked’, as in British English *foot*, *naked* (cf. Andréson 1968).

(v) Matasović dates the Slavic rounding of **a* to **o* (17) and the East Baltic unrounding of **o* to **a* (18) to the Balto-Slavic period because “it is more economical to assume that the merger of short **a* and **o* was a common Balto-Slavic innovation” (2005: 151). This presupposition does not explain why we find e.g. Lith. inst.pl. *vilkais* ‘wolves’ < **-ōis* with delabialization versus Slavic acc.pl. *ženy* ‘women’ < **-ons* < **-aHns* with raising of the rounded vowel. Similarly we have raising in Slavic *kamy* ‘stone’, Lith. *akmuō*, which shows that Slavic *voda* ‘water’ < **wundaH* must be compared with Prussian *wundan*, *unds*, Latin *unda* < **undn-* < **udn-*, not with Lith. *vanduō*, Latvian *ūdens* (with an acute from Winter’s law, cf. Kortlandt 1979: 61).

(vi) Matasović thinks that the Proto-Indo-European laryngeals were lost after resonants with “compensatory lengthening of the preceding syllable, which received the Balto-Slavic acute”, e.g. Lith. *árklas* ‘plough’ < **arrtlo-* < **H₂erH₃tlo-*, Greek ἄροτρον, Lith. *ilgas* ‘long’ < **(d)illgo-* < **d̥l̥Hg^ho-*, Sanskrit *dirghá-*, where the acute “could have been just a feature of vowels at this stage, presumably glottalization” (2005: 152). If we take the latter statement seriously, we have to reconstruct Proto-Balto-Slavic **ártlo* and **d̥ilgos*, cf. SCr. *rǎlo*, *dǔg*, without compensatory lengthening. This puts the loss of the laryngeals in East Baltic (19) and Slavic (20) well after the end of the Balto-Slavic period. Indeed, glottalization has been preserved until today in Latvian *ārkls* and was preserved until after the rise of pleophony (*polnoglasie*) in Ukrainian *moróz* ‘frost’, where the acute remained distinct both from the falling tone in acc.sg. *hólovu* ‘head’ and from the rising tone in gen.pl. *holív* of the same word. The inescapable conclusion is that the laryngeals were not lost in Balto-Slavic times. In fact, the late Balto-Slavic retraction of the stress from final open syllables (12) shows that the laryngeals behaved like regular consonants until the end of the Balto-Slavic period. There are no instances of acute *v̥ddhi* formations in Balto-Slavic (cf. Kortlandt 1985b: 121).

(vii) Matasović does not accept my Balto-Slavic raising of final **-om* to **-um* (7). Unfortunately, he does not tell his readers how he accounts for the Prussian ending *-on* instead of *-an* in *dessimton*, *ismaitinton*, *perklantiton*, *billiton*, *(po)dāton*, *(po)peisāton*, *pogalbton*, *poquoititon*, *prolieiton*, *deickton*, *niainonton*, *muisieson*, *pauson*, *enterpon*, *stēison*, *tennēison*, *noūson*, *iouson*, as opposed to the regular acc.sg. and gen.pl. ending *-an*, for the preservation of the difference between the Slavic thematic aorist endings 1st sg. *-ǔ* < **-om* and 3rd pl. *-ǫ* < **-ont* when final **-t* was lost (8), and for the merger of the pre-Hirt barytone neuter *o*-stems with the masculines in Slavic (cf. Illič-Svityč 1963: 119), Latvian (cf. Kortlandt 1982: 6), Lithuanian (cf. Kortlandt 1993), and Prussian (cf. Kortlandt 1983b: 183). Whether or not Matasović and others accept my views is of no interest to me. The only interesting matter is how they account for the evidence which I have adduced. There is no point in expressing an opinion without discussing the evidence.

I conclude that Matasović's considerations have given me no reason to change my opinion on any of the issues under discussion.

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