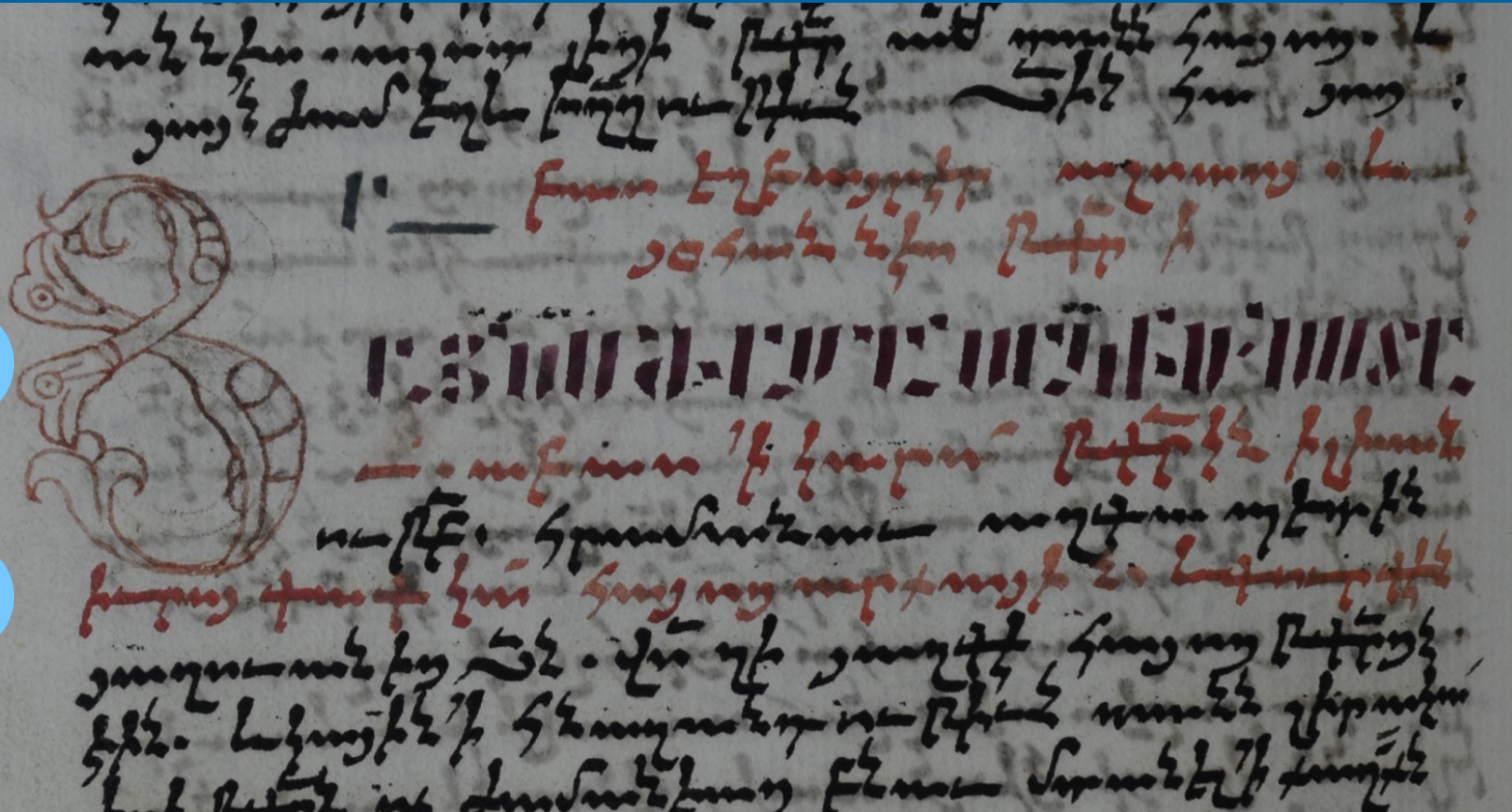
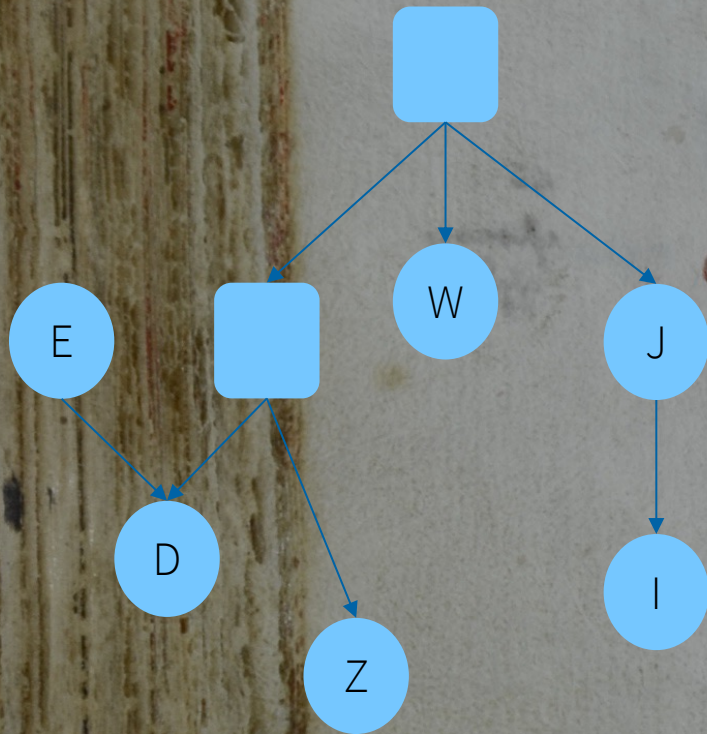




# The Stemma of the *Žamanakagrut'iw*n

Comparing and combining classical and computational approaches

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## Rethinking the 2009 stemma

- Chronicle, like other Armenian traditions, contains quite a surprising amount of information about their copying from colophons and the like
- Unlike many other traditions, most of the variation is surprisingly boring => difficult to apply classical methods of Lachmann/Maas
- Since 2010 we have got our hands on many more manuscripts and transcribed / collated much more text
- So we want to revisit the stemma I created in 2009, on the basis of fewer manuscripts, less text, and less experience

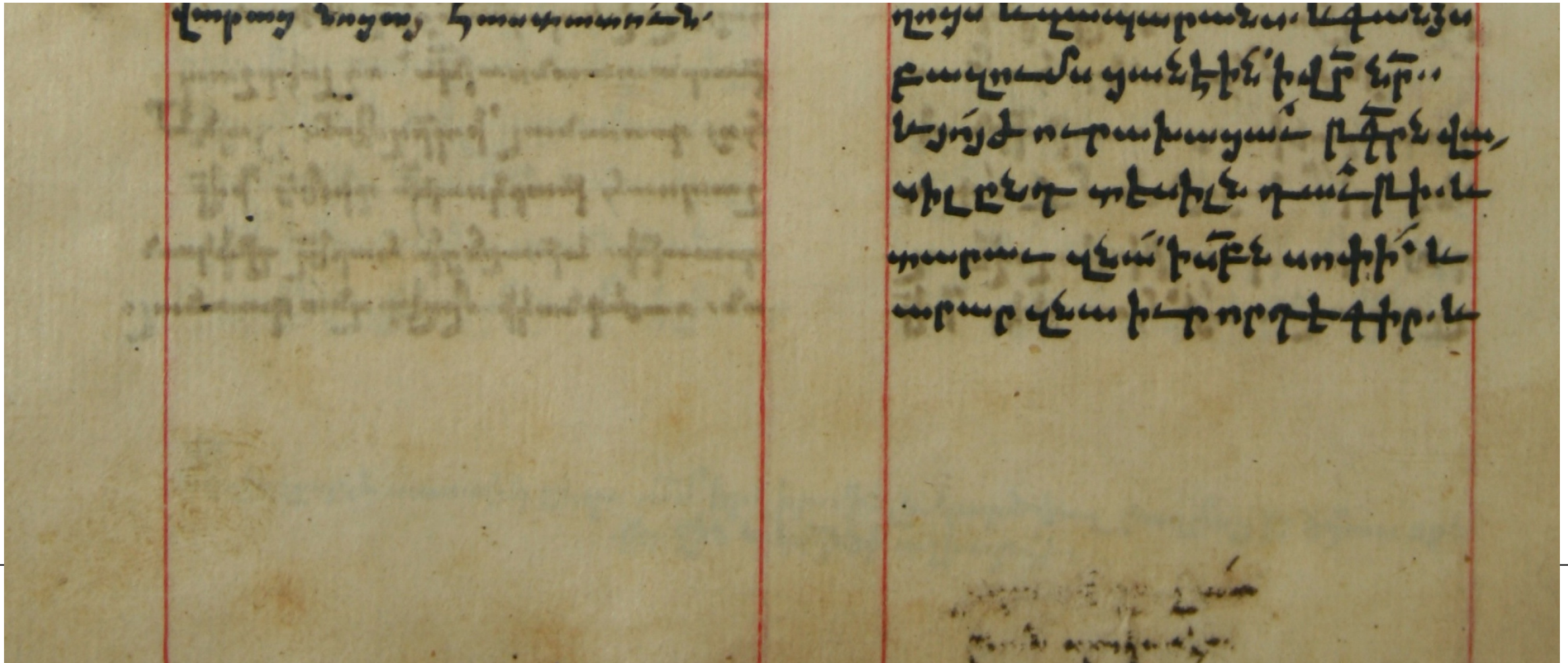


## Taking the best of both worlds

- Tatevik: (mostly) paratextual analysis of the manuscripts, to determine stemmatic relationships
- Anahit: phylogenetic analysis of the text using a variety of different algorithms and meaningful subsections of the text, with point-by-point comparison to Tatevik's results
- Tara: trying to make sense of all this information!



## What the manuscripts tell us





## What the manuscripts tell us

- Three obvious groupings based on where the text ends: halfway (951–1097), a little farther (to 1111), and the whole way (to 1162)
  - Group 1 (to 1162): mss A, B, Bz644, E, F, K, M3380, M8232\*, O, V, X, Y
  - Group 2 (to 1111): mss G, M2855, V243, V246
  - Group 3 (to 1097): mss C, D\*, M2899, M5587, M6605, H, I, J, L, V, Z
- Fragments to place:
  - Bz430 (two prophecies placed in the years 1021 and 1036)
  - M1775 (out of order: 972–1036 and 951–972)
  - M6686 (1065–1069, most of which a confession of faith)
- Sizeable chunks missing from all but manuscript A



## What the manuscripts tell us

- Text decoration:
  - Group 3 has characteristic highlighted headings and ornamented initials; some also have margin ornamentation (e.g. in logo) and some (e.g. C, H, L) even share margin miniatures
  - Group 2 MSS have no decorative elements at all; however, aside from M2855 they are all 19th century
  - Group 1 has only simple decoration: e.g. highlighted initial letters, marginal chapter numbering in a subset



## What the manuscripts tell us

- Companion texts in the MSS:
  - Group 1: usually either alone or preceded (once followed) by Mesrop Vayoc‘jorec‘i’s “History of Nerses the Great”
    - Subset (E, F, M3380) also preceded by Armenian “Questions of Athanasius of Alexandria and Answers of Cyril of Jerusalem”
  - Group 2: oldest MS (M2855) also follows “History of Nerses the Great”; others are standalone
  - Group 3: usually copied with several other characteristic text; tends to follow treatise “On Wine and Drunkenness” and precede the history of T‘ovma Mecopec‘i describing the Mongol period
- ...we can already see some implications for stemma groupings!



## What the texts tell us

- Clearer subdivision of the text in group 3 than in the others, with extra text (often even highlighted in red) such as brief royal genealogies
  - Some of these are contained in a very few MSS of group 1!
- Some omissions of short passages in group 1 that appear in groups 2(?) and 3
- Larger omissions of passages (not according to year boundary) in all MSS except for A

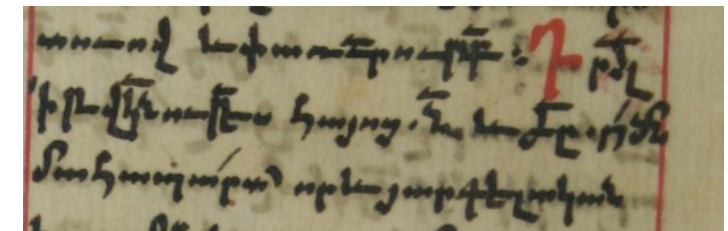
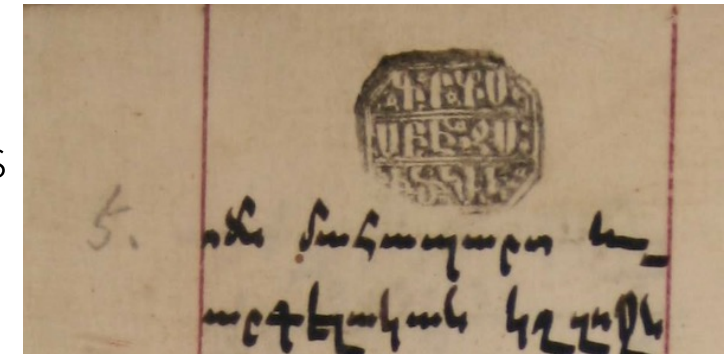
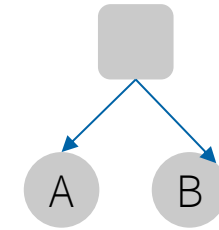




## Specific relations between manuscripts

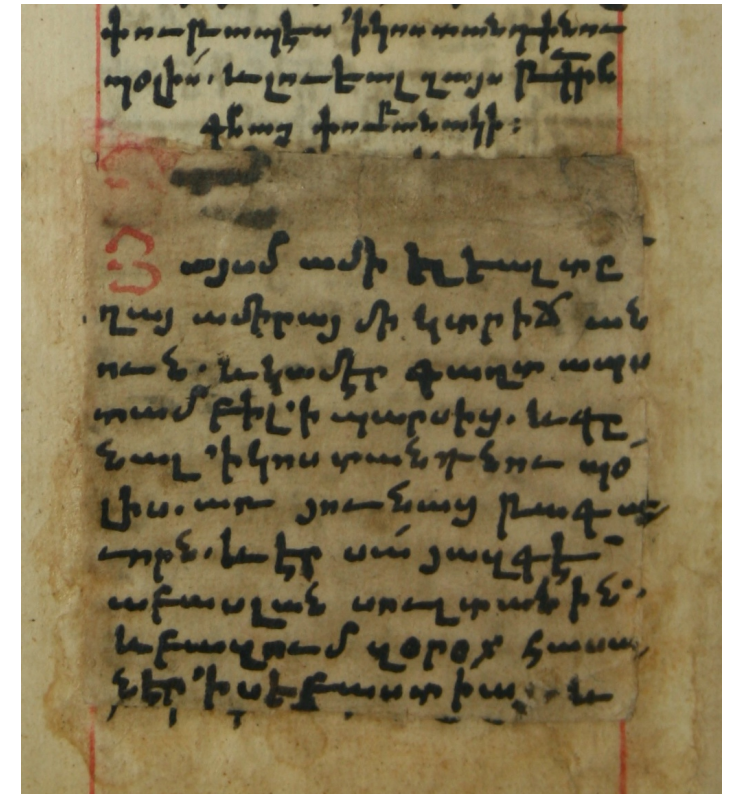
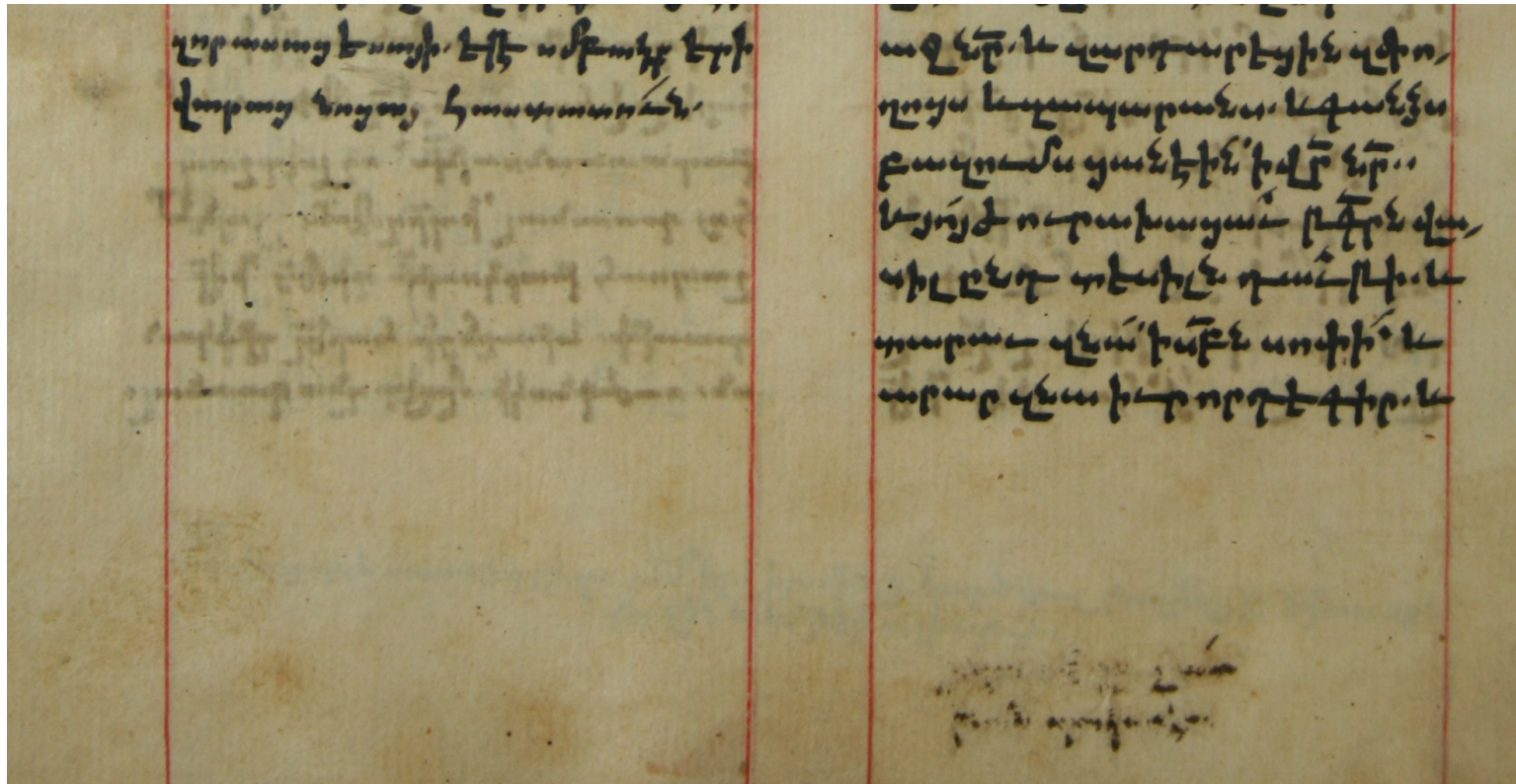
MSS A (copied 1689 near Lake Van) and B (copied 1623 in Aleppo)

- These share some characteristic omissions against all other groups
- They share certain marginal notes
- But B is missing the first eight pages of text (and knows it! These pages were left blank)
- ...and A does not show any evidence of a gap being filled in at the beginning.
- Question: do A and B actually belong with the rest of Group 1?





## Mystery of MS A and the missing passages

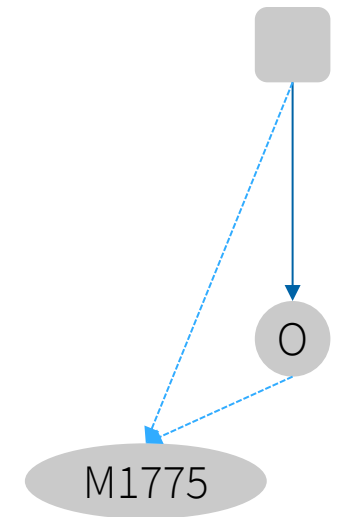




## Specific relations between manuscripts

MSS O (18th c.??, Varag) and M1775 (1671, place unknown)

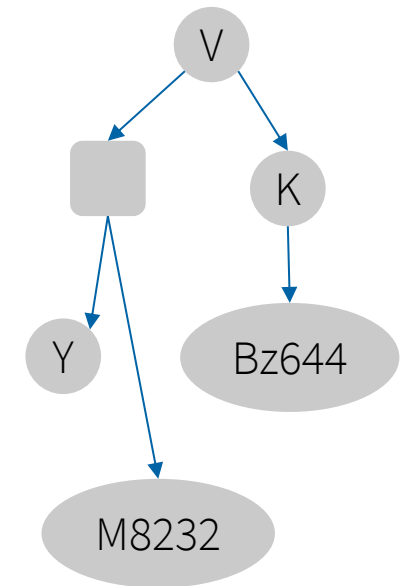
- MS O copied in at least four hands, date and place on the basis of notices added to the end of the manuscript
- Shared marginal additions and even shared corrections of misspellings
- M1775 cannot be an exemplar (on the basis of incorporation of marginal corrections complete with signs into the core text)
- ...so either they have a shared archetype, or O is misdated!
- After M1775 ends, O shares several features with MSS A and B, but perhaps not enough to imply an exemplar common to all three



## Specific relationships between manuscripts

MSS V (1590–1600, Aleppo?), Y (17th c., place unknown), K (1699, place unknown), M8232 (1709, Armavir), Bz644 (1775–1805, Livorno)

- Bz644 is known through a colophon to have been copied from K, which was recorded as being in Rome by 1772 and in Livorno by 1787
- Although K made the most substantial interventions in the text, it shares characteristic chapter numbering with V and Y (though K being K, has renumbered starting from a different point in previous texts)
- M8232 lacks the chapter numberings of the others, but shares phrase omissions and additions with Y; however not all of these are shared

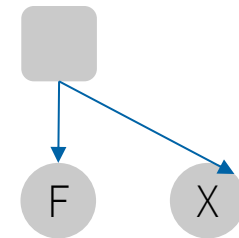




## Specific relationships between manuscripts

MSS F (1617, Lviv) and X (1669, Isfahan)

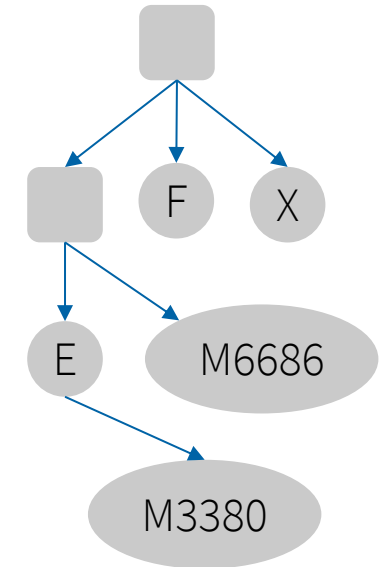
- F and J were copied by the same scribe, but are in different groups
- Both F and X have a large gap, missing the years 1065–1096
- Shared omissions / additions, but also independent ones
- X has paragraph divisions and omitted initials at their beginning, presumably for highlighting; F lacks these



## Specific relationships between manuscripts

MSS E (17th c.), M3380 (18th c.), M6686 (1582). Places unknown

- M3380 appears from all evidence to descend from E
- M6686 is one of our fragments; it shares peculiar marginal notes with E, but E would have to be much earlier to be an exemplar...
- The group as a whole shares the sequence of companion texts (preceded by “History of Nerses the Great”, followed by “Questions & Answers”) with FX, and shares some textual features, suggesting that these groups are connected

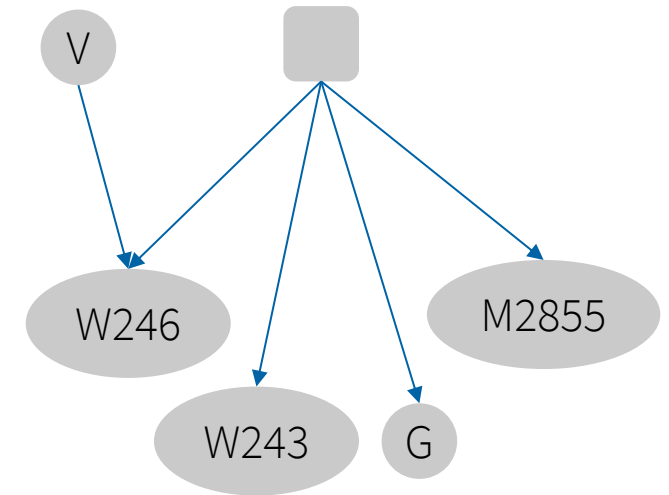




## Specific relationships between manuscripts

MSS M2855 (18th c., place unknown), G (1850–57, Constantinople), W243 (18th–19th c., unknown), W246 (19th c., unknown)

- This is group 2 – all end in 1111, all self-contained, no evidence of lost pages
- M2855 also contains “History of Nerses”, characteristic of group 1
- G and W243 share peculiar omissions
- W246 was corrected against V
- No good evidence to establish further hierarchy among these four





## Specific relationships between manuscripts

Group 3 and its subdivision

- Throughout group 3, text is divided into four characteristic sections, but no chapter numberings
- Interstitial text peculiar to all of group 3 is highlighted in the first subgroup
- Each subgroup has a characteristic shared colophon
- M5587 (first subgroup) shares some additions and omissions with the second subgroup, as we will see

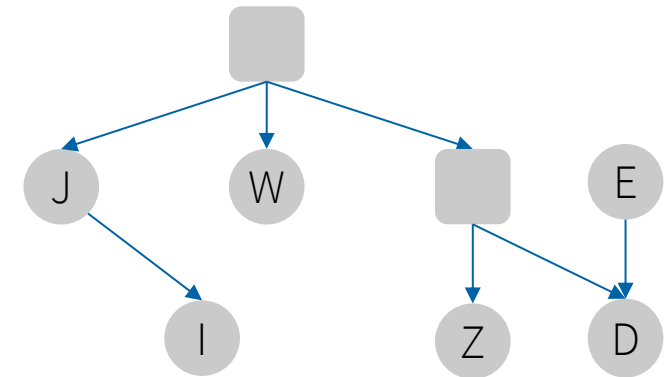




## Specific relationships between manuscripts

Group 3, first subgroup: MSS W (1601, Constantinople), Z (17th c., place unknown), J (1617, Lviv), I (1664, Tiflis), D (1647, Marosvásárhely)

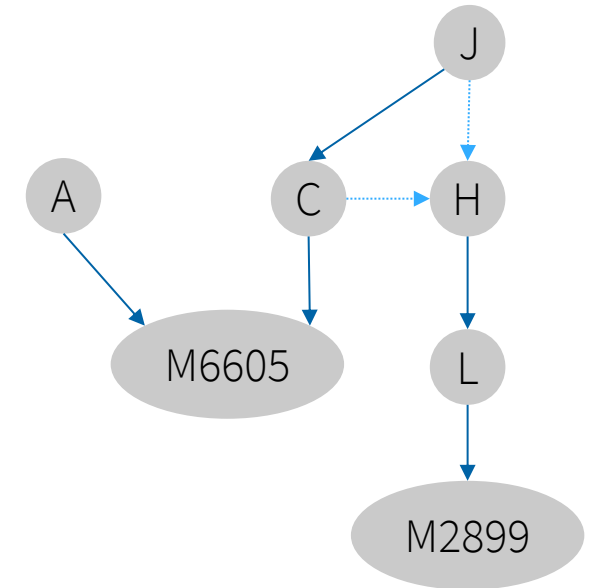
- Although W is the oldest, it has omissions which exclude its being the group exemplar
- I appears from evidence to be a descendant of J
- D and Z have affinities, but no descent relationship can be established
- Although D includes the characteristic colophon where the text of group 3 breaks off, the text continues in a second hand down to the year 1105
- Post-1097 text in D derives from E, based on shared marginal notes and on the knowledge that they were in Astrakhan at the same time



## Specific relationships between manuscripts

Group 3, second subgroup: MSS C (1651–61, Yovhannovank'), H (17th c., place unknown), L (1659–60, Dset/Sanahin), M2899 (19th c., place unknown), M6605 (1849, Moscow)

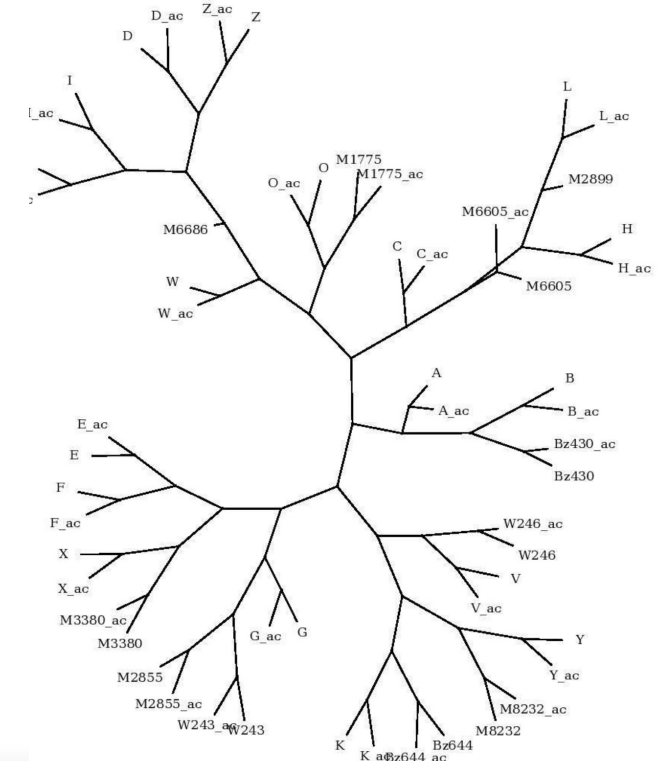
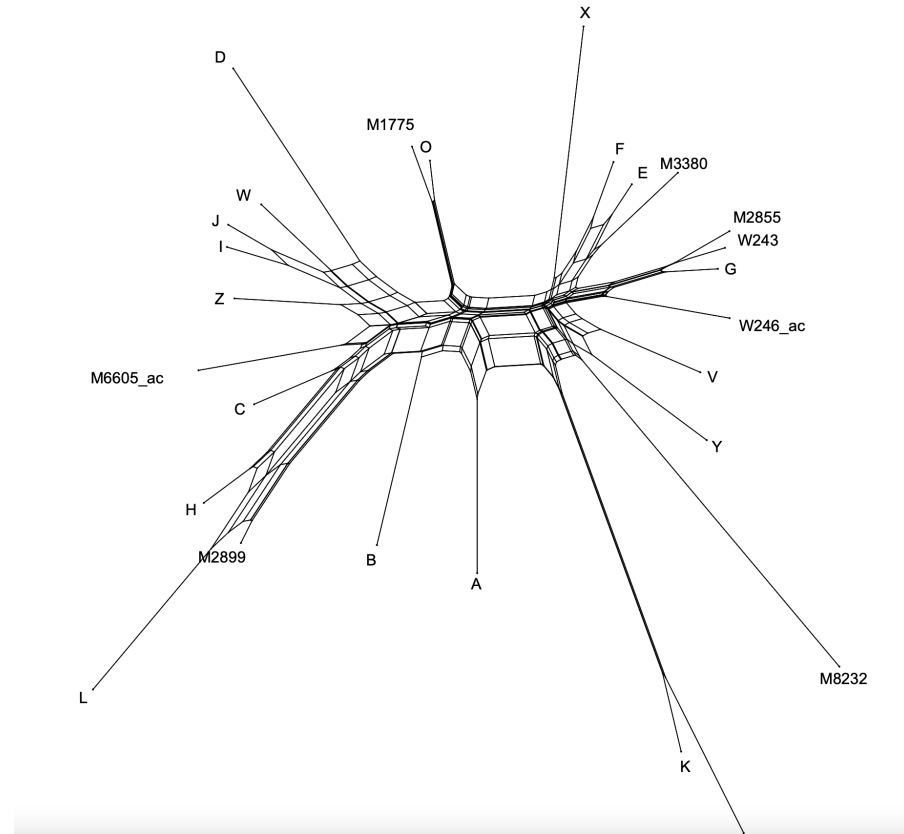
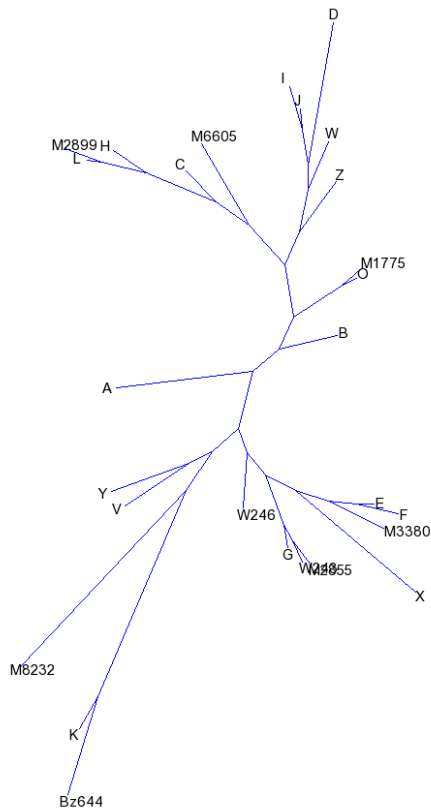
- Chapter numberings peculiar to this group appear in the three 17th c. MSS
- They all share omissions/additions peculiar to J; point of departure for second subgroup?
- Vagueness of dating makes it difficult to place these with respect to each other; could be C → H or a common exemplar, but not H → C
- Omissions and other features suggest H → L → M2899
- M6605 derives on this basis from C but was checked against A







## What the data tell us



## ...what *do* the data tell us?

- Do phylogenetic methods confirm or contradict Tatevik's findings?
- Where a contradiction arises, when (if ever) do we opt for the phylogenetic result?
- Do they provide any additional insight beyond what we could reconstruct from paratextual and coarse textual features?
- Is there one algorithm in particular that stands out as most or least likely to be accurate?
- Does NeighborNet in particular help to detect the conflation of exemplar that we have seen in our "traditional" investigation?

## Experiment design

- Three different methods used: Pars, NeighborNet, RHM
- One set of trees normalised on spelling, the other didn't
- Three levels of division of the text
  - A: the whole text
  - B: divided in half, at the break point for group 2
  - C: divided in five parts, break points in years 1016, 1076, 1097, 1129
- 48 trees in total produced, for comparison to each other and to Tatevik's conclusions



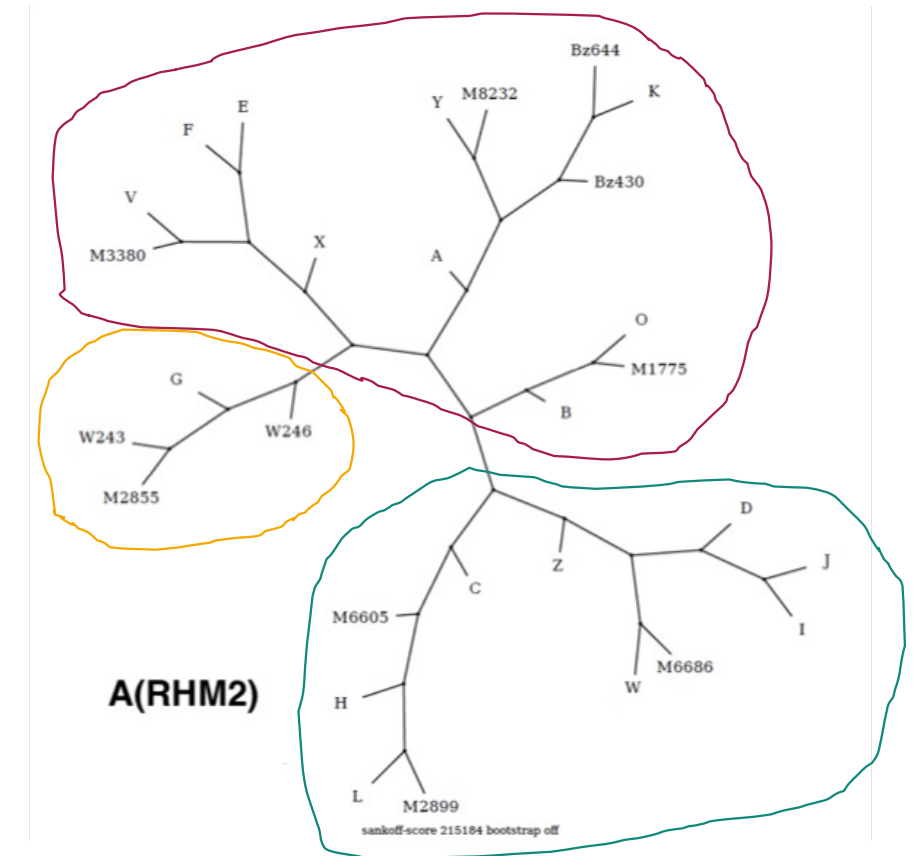
## Use of the different methods

- RHM doesn't return distance weights; can detect groups and individual MS closeness, but no attempt at exemplar detection is possible
- NeighborNet and Pars do return distance weights; we relied primarily on Pars for exemplar detection, though also considered NN results
- One of the questions we wanted answered: can NeighborNet actually be used to detect conflation in our witnesses?



## Groupings: confirmed or denied?

- Well, this is the easy part...
- Groups 1, 2, and 3 are almost always easily identifiable in the trees, with very few exceptions –
- Group 3 subgroups also generally very clear!
- But...





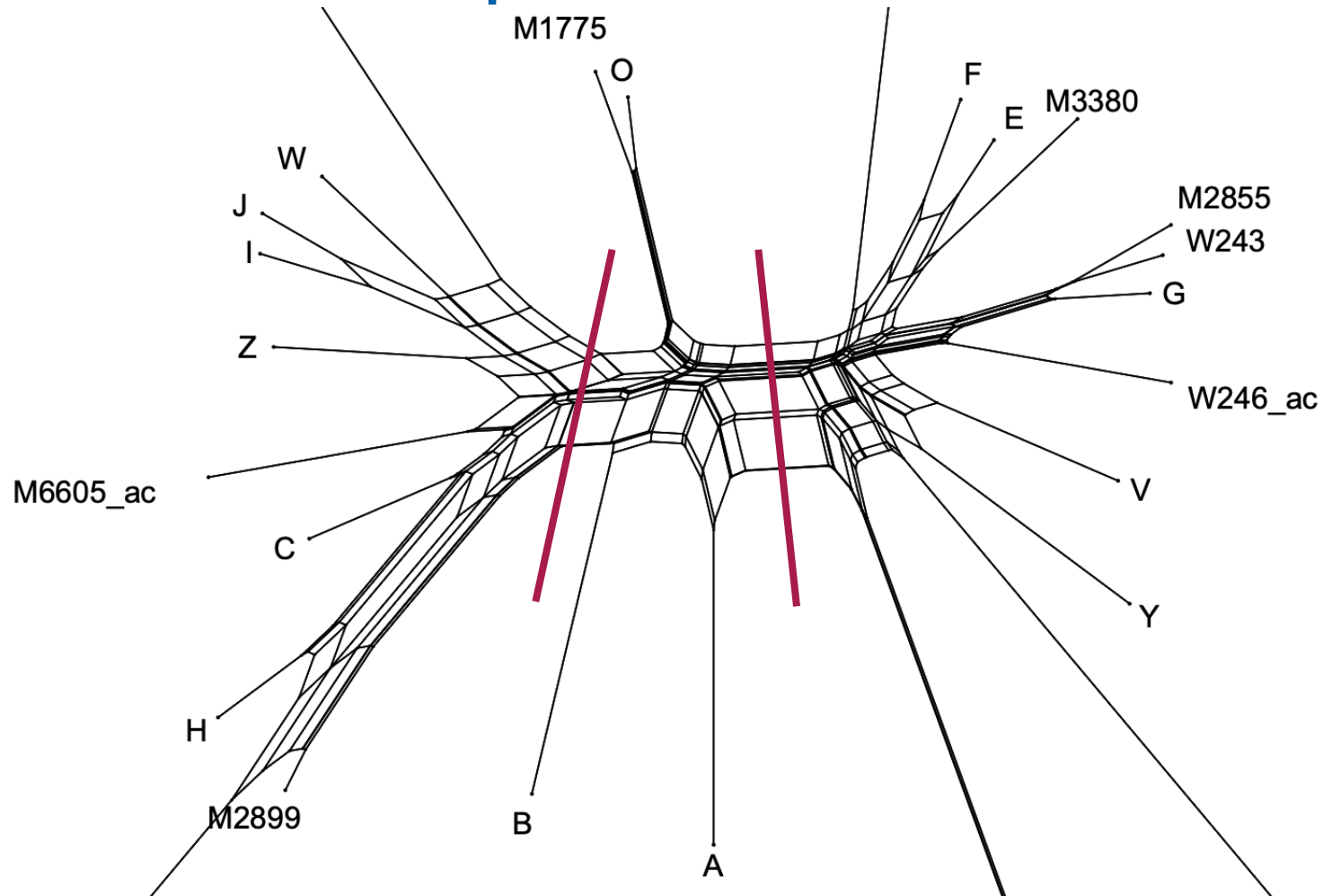


## A,B and the rest of Group 1

- What about A and B? Earlier analysis suggested that it was really unclear whether they actually belong with the rest of Group 1...
- Most of the RHM trees indeed put these two outside the main group, usually very close to each other and often close to the center of the network.
- The question then becomes, can we place them any more securely with respect to the three clear groups?
- In short, can we draw hyparchetype lines, and if so, where?



## A, B, O?? and the rest of Group 1





## What about manuscript O?

- Was written in four hands
- Most trees clearly agree that O and M1775 are very close
- ...but where does it belong with respect to the groups, or to A and B?
- The C series of the RHM trees suggest an interesting evolution...





## What about manuscript O?

- C trees of Pars tell a similar story...
- There is certainly a consensus that the M1775 fragment is closely linked to O; however, dating uncertainty in catalogues gave us more trouble than the phylogenetics would have.
- In Pars/C3 in particular, O is actually closer to E and M3380 than any others.
- Future work: separate O into sections according to hand, and see if we can find a pattern there?



## Specific copying relationships

- K -> Bz644 and J -> I: very clear
- J -> group 2, subgroup B: very little support in the stemma models
- C -> H -> L -> M2899: where we have complete data for L, Pars strongly agrees. NeighborNet again less clear
- E, F, X: these move all over all the trees with respect to each other. Strongly suspect confounding factor of large gaps
- E -> M3380: Pars frequently suggests the opposite, but this is impossible on dating grounds. Traditional analysis must be reviewed more carefully
- V -> K, M3380 separate: Most trees put K much closer to M3380, sometimes nowhere near V. Review needed for this one too.

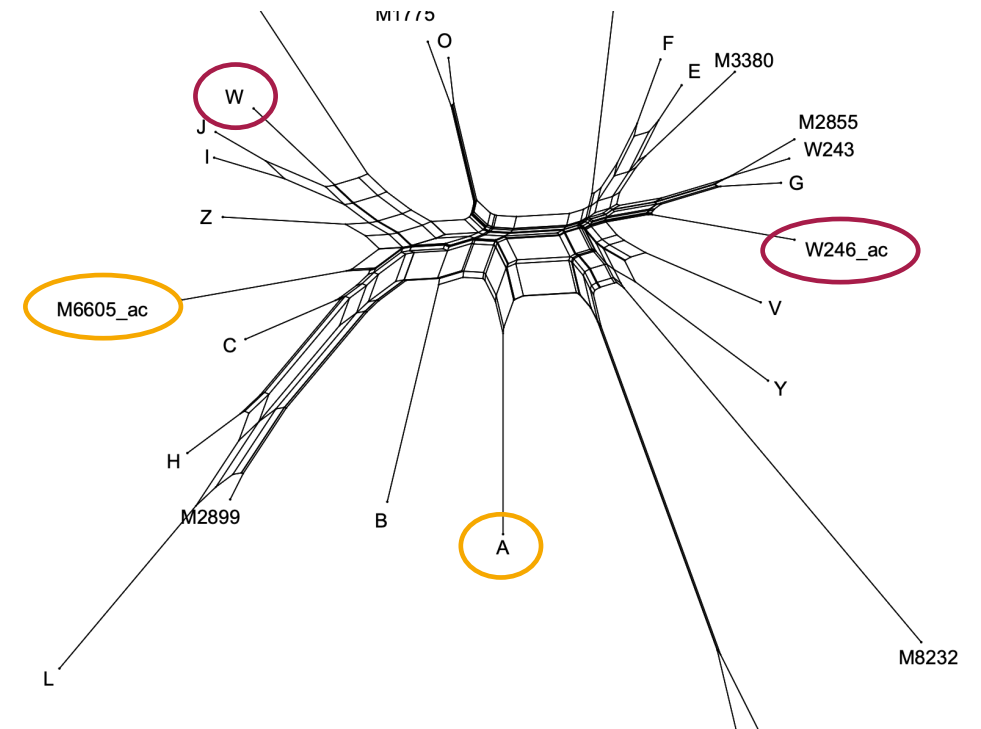
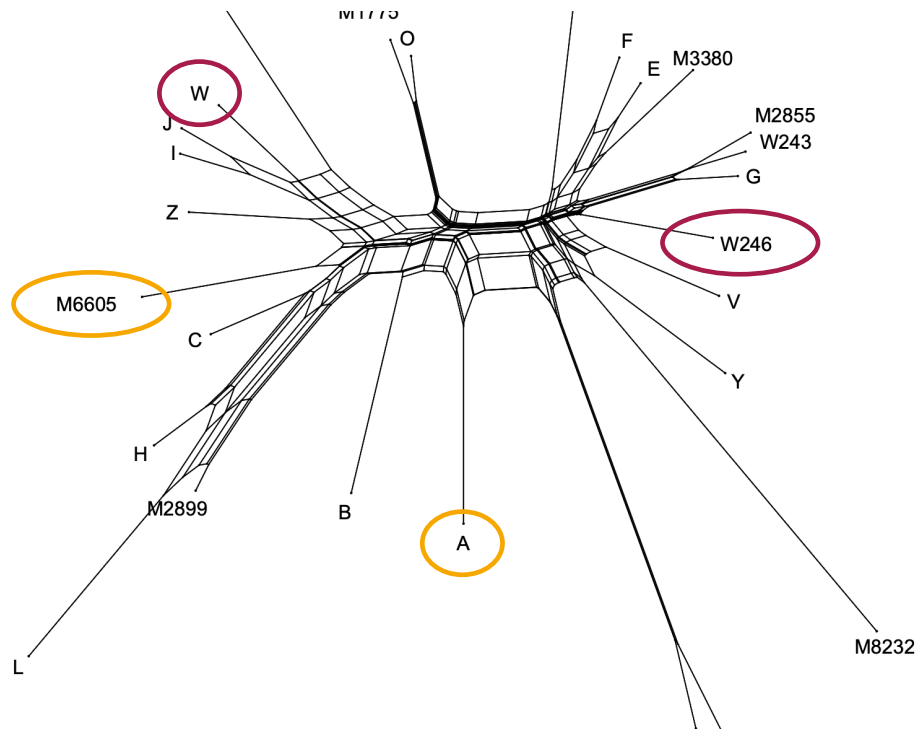


## Can we check conflation?

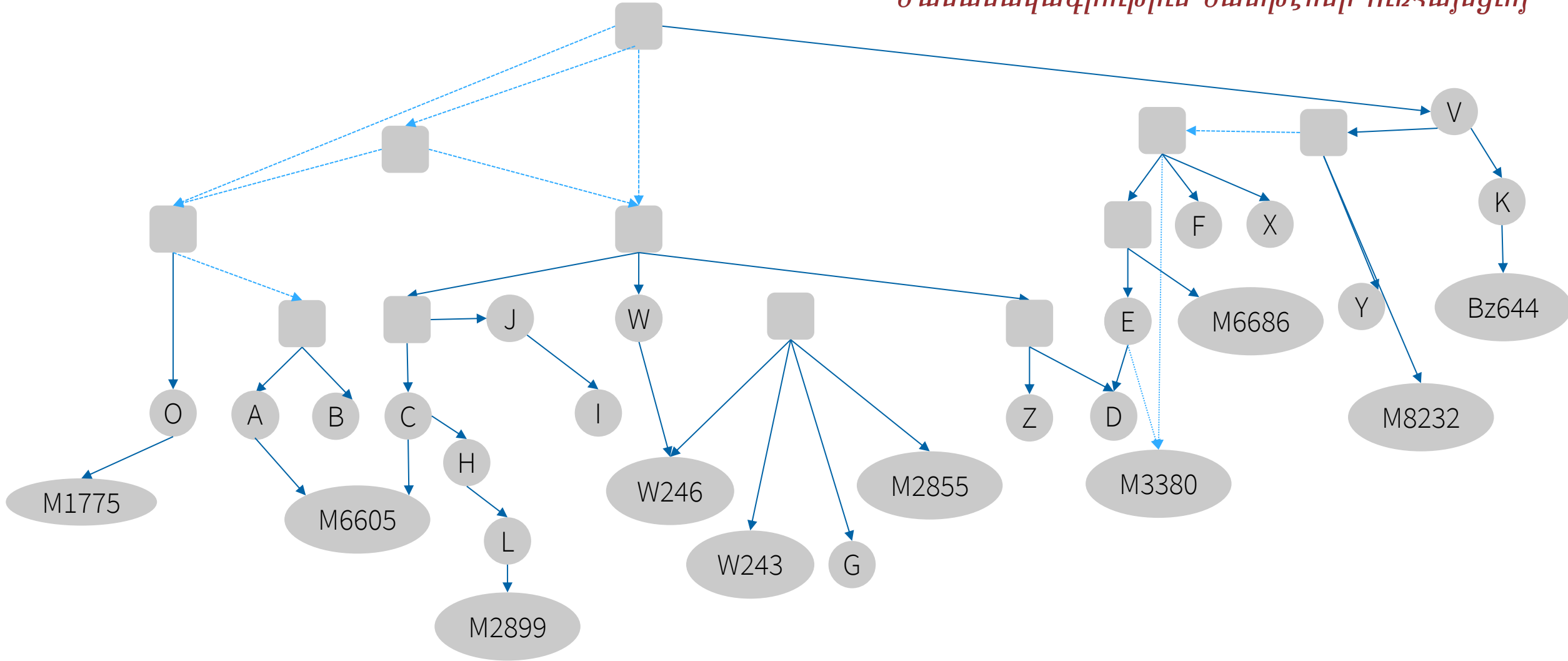
- Several notable instances:
  - M6605 (group 3, corrected against A/g1)
  - W246 (group 2, corrected against W/g3)
  - D (group 3, continued from E)
- Two of these are “simultaneous”, while the third is “successive”
- Since we record both pre- and post-correction layers, what can NeighborNet tell us about possible contamination?



## Can we check conflation?









## Conclusions

- A single whole-text tree gets you basically nothing but the general groups
- RHM tends to be more reliable at detecting stemma “neighbours”, but doesn’t express distance for exemplar detection
- Pars can be used for exemplar detection, the range of data must be thought about very carefully to avoid sizeable gaps
- We had no success at all with NeighborNet and detection of multiple exemplars
- ...which is unfortunate because conflation and correction could be much, *much* more sophisticated than we usually think about.



Thank you for your attention!

