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The stemma of the story of Sinuhe*

or: How to use an unrooted phylogenetic tree in textual criticism

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Abstract

When a stemma is constructed according to the traditional practice of textual criticism, one continually needs to make originality statements, i.e. decisions about which of two different readings is original and which is innovative. This kind of decision is hard to make and can be regarded as the major challenge in stemma building. This also means that numerous instances of textual deviations, namely those which do not allow for originality statements, must be left aside.

I support here the use of an alternative method, so far unused in Egyptology, which does not require originality statements during the first step of stemma construction. The result of the first step is an unrooted rather than a rooted stemma. Only in a second step, the unrooted tree is assigned an orientation. This procedure makes textual criticism easier, more objective, and more reliable at the same time. I exemplify this method by reconstructing a stemma from eight manuscripts of the story of Sinuhe.

Traditional stemma construction

Textual criticism is a method of dealing with texts transmitted in several manuscripts that display variant readings because of either copying errors or intentional text changes.[1] This method was established in the early 19th century in particular by Karl Lachmann, which is why I will refer to it as "Lachmann's method" from now on. Lachmann's method has been applied most often in classical and medieval philology as well as theology, but there have also been a number of applications by egyptologists, for the most part on the religious text corpora of the Coffin Texts and the Book of the Dead.[2]

The first step of Lachmann's method consists of exploring the genealogical relations of the manuscripts and graphically representing them as a rooted phylogenetic tree or family tree (*stemma*). To use the terminology of graph theory here, the stemma consists of *nodes*, each of which represents a manuscript (either an attested one or a reconstructed ancestor), as well as *edges* (lines that connect the nodes), each of which represents the process of copying one manuscript from another, which is where text changes were introduced. The tree is rooted: There is one node at the top (the reconstructed *archetype*),[3] and each node adds one or more changes to the whole subtree

* I wish to thank Jean Winand who provided valuable comments on an earlier version of this paper.

1 Contrary to what is sometimes claimed, the principles of stemma building are completely independent from the specific factors that cause textual changes.

2 See the recent comprehensive overview by Backes (2011), to which Werning (2011, specifically vol. I: 51-82) is now to be added.

3 The archetype is the common ancestor of the known manuscripts. Since many manuscripts have usually been lost, the archetype may be considerably younger than the author's original. The only

that depends from it, so that the changes (or "errors") accumulate towards the bottom nodes.

The fundamental assumption in stemma building is that all manuscripts that share a common error derive from a common ancestor which introduced the error. Put in terms of tree representation, all nodes sharing a common error, and only these, are to be located below one node which is assumed to have introduced that error. Each error thus helps to establish one subsection of the tree. By examining a number of different errors, a tree is successively constructed which is, hopefully, free of any contradictions.[4] After that, the textual history of the manuscripts can be read off the stemma, and conclusions can be drawn about the original text (archetype) located in the top node.[5]

To be somewhat more precise, the philologist needs to solve three tasks while constructing the stemma according to Lachmann's method:

(1) Finding text changes that are unlikely to be made by different copyists independently (the change must be, as I would put it, *unreproducible*).
(2) At the same time, the text changes should be so grave that succeeding copyists cannot easily have corrected them back into the original text (the change must be *uncorrectable*).
(3) Last but not least, the philologist needs to be sure about the direction of the changes. One can use only those textual differences for which it can be judged which of the variant readings is closer to the original and which one added an error. To use the terminology introduced by Jürgens (1995: 10) here, one has to rely on *digressions* (or *errors*, variants with known direction) rather than on *differences* (variants with unknown direction).

While all these three tasks involve some amount of subjective judgement on the side of the philologist, requirement (3), the originality judgement, is the most difficult one to fulfill. I would even say that it is almost unsolvable prior to the reconstruction of the stemma, at least in the field of Egyptology.[6] What philologists try to do here is to look for changes:

- which are obvious misunderstandings or deteriorations of a text,

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way to go further back than the archetype is by internal reconstruction, e.g. by the emendation of implausible passages, but this is beyond the task of stemma building.

4 If contradictions are found, they may indicate several things: Either, certain manuscripts were copied from more than one ancestor (*contamination*, for which see below). Or, the philologist did not select his textual changes well, so that he included changes which could be introduced independently by more than one copyist, or which copyists who encountered that error in their exemplar succeeded to correct back into the original text. As such complications are met, the task may be reformulated in a more modest way so as to construct not a tree void of contradictions, but a tree in which the number of contradictions is minimized. Conversely, it may happen that more than one tree can be reconstructed because not enough errors were found to decide on a particular tree.

5 The methodology of how to draw conclusions on the archetype by means of a stemma is not discussed here since I am not attempting that in the present paper. The principles are rather self-evident and are discussed at length in the literature on textual criticism (e.g. West 1973).

6 A large part of West's (1973) book deals with how to identify corruptions in Greek and Latin classical texts. I am not in a position to assess how reliable such judgements really are in classical philology, but our knowledge of the Egyptian language is clearly not sufficient to make decisions of a similar kind.

- which are obvious omissions or repetitions (e.g. by aberratio oculi),
- which seem to be motivated by the models of younger linguistic strata of the language,
- or finally, one applies the rule of thumb to consider the lectio difficilior as primary, assuming that copyists tend to introduce readings that are easier than what they found in the original (so-called *banalisation* or *trivialisation*).

I believe that all such judgements must be suspected as highly subjective and unreliable, at least much more so than judgements on the first two requirements.

Stemma-like phylogenetic trees are used in other sciences as well, for example to represent the evolutionary connections between organisms in biology or to represent the relationships of genetically related languages. The originality judgement is the hardest requirement to fulfill in historical linguistics as well. It is necessary, in view of a lexical or grammatical difference, to decide which of the variant forms is innovative and which is inherited. Historical linguists use the phrasing that genetic groupings must be based on "common innovations" rather than on "common retentions". In practice, this decision is extremely difficult to make in the absence of historical records, which is the major reason why no phylogenetic tree of even such a well-known family as the Indo-European languages has so far been agreed upon.

Constructing an unrooted tree

In order to overcome this obstacle, I would like to advocate the use of another method which is not new but has never before been discussed in Egyptology. This method, which I call "Greg's method" after its inventor, was applied e.g. by Greg (1927), Dearing (1974), Dees (1976)[7], Salemans (2000) and Wattel (2004), among whom Salemans provides the most accessible presentation and is the best reading to start with. I will only use the core idea of the method as already established in Greg's original work. Some refinements and elaborations introduced by the subsequent authors are certainly helpful in more complex cases but need not be taken into account for my present purpose.

Greg's method of tree reconstruction simply omits the third requirement, namely the originality judgement of variant readings, and uses only the first two requirements in selecting textual differences. As we drop the third requirement, the result will be an unrooted tree rather than a rooted tree. The unrooted tree still shows relationships between manuscripts but makes no assumption about the directionality of edges, nor does it indicate where the archetype is located. The representation in form of an unrooted tree can be rotated or mirrored without any change in its meaning. After an unrooted tree has been constructed, the root of the tree may be identified in a second step, as will be described below.[8]

7 With no reference to Greg; this seems to be an independent discovery.

8 Dees (1976: 485) describes the procedure as follows: "on ne considérera, dans une première phase, que les structures non-orientées, en nombre beaucoup plus réduit; la deuxième phase consistera à choisir, dans l'ensemble exactement déterminé des orientations possibles, celle qui convient. Il est vrai que cette dernière opération peut être très délicate, mais on sait au moins quelles sont les alternatives à considérer."

Consequent to this, many more variants can be exploited in Greg's method than in Lachmann's method because no originality judgement is required. One specific requirement of Greg's method should be noted, however. The Lachmann-like stemma reconstruction can be based on text passages attested in three or more preserved manuscripts, provided that a directionality judgement is made.[9] In contrast, Greg's method must be based on text passages with at least two variant readings each of which is attested in at least two manuscripts.[10] That is, only text passages with four witnesses, at minimum, can be exploited.[11] This also becomes evident by considering the graphical representation of nodes in an unrooted tree (see figure 1): While three nodes have one single representation in an unrooted tree, distinct groupings of nodes in an unrooted tree only become possible with four nodes.[12]

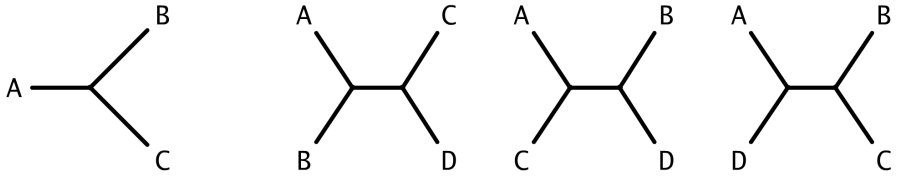

Figure 1: All possible unrooted trees of sizes 3 (left) and 4 (right)

I impose two restrictions on the trees here and throughout this paper with the aim of limiting the combinatorial number of possibilities to be considered:

(1) I assume that no preserved manuscript is the exemplar from which another manuscript represented in the tree was copied. In terms of tree representation, this means that preserved manuscripts are always represented as terminal nodes rather than internal nodes.

(2) I assume that no more than two manuscripts represented in the tree were copied from the same exemplar. In terms of tree representation, this means that the tree is bifurcating, i.e. no more than three edges connect to a node.

These are reasonable restrictions that greatly simplify the construction and handling of the trees without the danger of introducing any major damage to the reconstruction.[13]

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9 At minimum, one needs to find two manuscripts A and B sharing a common error against a third manuscript C which preserves the genuine text. Provided that the variant reading of A and B is judged secondary, there is sufficient argument for grouping A and B together against C.

10 Singular readings can never reveal genealogical relationships, neither in Greg's nor in Lachmann's method of textual criticism. Greg (1927: 19) states: "Since every manuscript contains variations from its immediate source, any reading supported by one manuscript alone may have originated in that manuscript, and such a reading therefore cannot, without further analysis, throw any light on the relation of the manuscripts of the collateral group".

11 Greg (1927: 21) calls this fact the "ambiguity of three texts".

12 In a tree with four nodes, the possible groupings are [AB][CD], [AC][BD] and [AD][BC]. A grouping such as [AB][CD] implies that either in [AB] or in [CD], but we do not know which, a text change was introduced. —— With larger trees, the number of possible groupings rises quickly: For n terminal nodes, it is $(2n–5)! / ((n–3)! \cdot 2^{n–3})$.

13 If one of these restrictions should be mistaken for a given instance of manuscript transmission, this would only introduce a local fault into the reconstructed tree: (1) If it should indeed have occurred that a preserved manuscript served as the exemplar of another manuscript, our reconstruction

The procedure of constructing an unrooted tree by Greg's method can now be described as follows: We collect text passages

- attested in at least four manuscripts,
- with exactly two[14] variant readings each of which is attested at least twice,
- where neither of the variant readings could easily have been created from the other more than once independently (the difference is *unreproducible*),
- and where the distance between the variant readings is so substantial that none of them could easily have been corrected back into the other by succeeding copyists (the difference is *uncorrectable*).

The last two points may be summarized by saying that only *significant* variants must be used.

An unrooted tree is then drawn and each textual variant is assigned to an edge so that all manuscripts on either side of that edge agree with one another regarding their readings of the variant.[15] It should be ensured that there are no contradictions,[16] and also that the tree is the simplest possible tree to fulfill these principles.

In the present case (and presumably in most applications in Egyptology), the number of nodes is so small that the right tree can be easily found without either a formal procedure or software assistance. It is helpful to start off with a few manuscripts, and then to insert more and more manuscripts into the tree where they fit in. Only as the size of the tree grows, and in particular in the more challenging event that no perfect tree but only a tree with a minimal number of violations can be constructed, a strictly formal procedure or a software package will be required to determine the optimal tree. Formal algorithms for this very purpose are widely discussed in literature.

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would contain one edge too much on which no text change took place. (2) The second assumption is reasonable considering the fact that only a fraction of all manuscripts has survived, which makes it improbable that three (or more) manuscripts derived from exactly the same exemplar have been preserved. But if this should be true, we would reconstruct a locally imprecise tree with one level of nesting too much ([[AB]C] or [A[BC]] at a place where the real structure is [ABC]). — Since only local errors can possibly be introduced into the tree by these two limitations, it is practical to make these assumptions during the tree construction and eliminate the errors in a terminal refinement step after the basic layout of the tree has been established. I will not discuss this in detail here.

14 Passages with three or more variant readings are better ignored. Normally, only one textual change occurs at a time. If we find three or more variant readings of one passage, there must be a history of nested changes that cannot be recovered from that passage alone, and the attempt to use it can lead to wrong stemmatic decisions (see the detailed argumentation in Salemans 2000: 49-52 and 78-80).

15 This is a simplified formulation of the "maximum parsimony" principle in phylogenetic trees. By this principle, the tree that requires the fewest mutations is preferred.

16 Which would indicate either contamination or a poor selection of variants, see note 5 above.

Orienting the tree

Finally, in order to create a real stemma from the unrooted tree, we need to locate the root (the archetype) in one of its edges and suspend the tree from this point.[17] We say that the tree is being *oriented*. The number of possibilities of orienting a tree is given by the number of its edges (which is 2*n*–3 for a tree with *n* terminal nodes). We have seen above that there are 3 possible unrooted trees of size 4. Each of these 3 trees has 5 edges and can consequently be rooted in 5 ways (see figure 2).

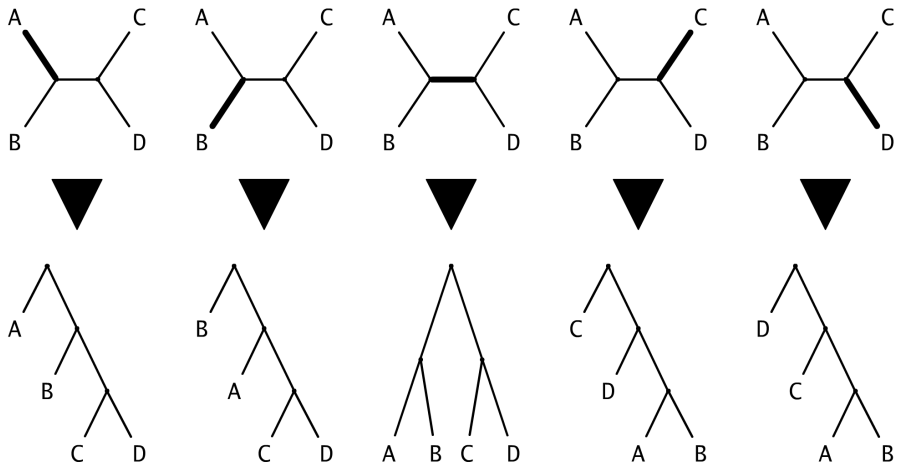

Figure 2: The 5 alternative ways of orienting an unrooted tree of size 4 ([AB][CD])

Obviously some assumptions about the directionality of textual change must be brought in at this point, just as was needed in Lachmann's method.[18] Nevertheless, both methods differ significantly. In Lachmann's method, the whole construction of the stemma is based exclusively on directed changes. In Greg's method, we start off using undirected changes, so that many more textual differences (namely the undirected ones) can be exploited for constructing the tree. This makes tree building easier, feasible also for shorter manuscripts, and more reliable at the same time. Only in the final step, a small number of directed changes (possibly only one or two, at any rate much less than in Lachmann's method) need to be found in order to orient the unrooted tree. The evidence for locating the root may be of various kinds. Textual passages attested in less than four manuscripts, which have no value for establishing

17 In agreement with what was said above (see note 14), I am assuming that none of the preserved manuscripts is identical with the archetype. In the rare occasion that this should be the case, a node rather than an edge would have to be identified as the root.

18 Greg (1927: 53) puts it as follows: "Its scope [= of his method] is admittedly restricted, since, without the notion of originality, which has to be imported from outside, it can lead to no definite results".

the unrooted tree, may be used now.[19] In fact, even extralinguistic factors, such as the age of manuscripts, might be considered in this step.

A note on statistical approaches

I wish to comment briefly on statistical approaches to constructing a family tree of manuscripts. There have been quite a number of authors who collected a large amount of variant readings and ran all their data through some clustering software, which produced a more or less impressive family tree, yet neither the exact algorithm by which the clustering was achieved nor the input data were provided in the publication.[20] Statistical algorithms certainly have their merits, but their field of application is where the real data are hidden behind lots of noise. The business of copying texts is not usually of that kind. I rather believe that the transmission of texts usually proceeds in a straightforward manner, and complications such as contamination[21] are the exception rather than the rule. I am supporting Salemans' (2000) position here, who prefers a rigorous selection of significant variants to the application of quantitative methods on the total of variant readings and concludes (p. 58): "We can only start thinking of contamination if we are sure that our method and the utilized variants are trustworthy." It is actually to be suspected that many cases of purported contamination that have been claimed by textual critics are in reality artefacts of poorly chosen variants, of misjudgements concerning the originality of variant readings, or of some other methodological failure in stemma building.[22]

In most cases, a consistent tree should be constructable based on a relatively low number of significant textual variants if they are well selected. Only a text whose history of transmission is highly disturbed would necessitate taking into account a great number of variants, none of them being particularly decisive, along with a statistical apparatus. But where this is the case, the resulting stemma, which will then be

19 Assume that an unrooted tree [AB][CD] as shown in figure 2 was established. Assume further that B and C contain a textual change that is judged secondary against A, while D has not preserved the passage. This will suffice to decide in favour of the leftmost orientation option shown in figure 2.

20 E.g. Barbrook *et al.* (1998), Hurtado (1981), Kubo (1976), Lai & O'Sullivan (2010), Spencer *et al.* (2003), van Staalduine-Sulman (2005), and several of the contributions in van Reenen *et al.* (2004), to name just a few.

21 Contamination means that a copy was made from more than one exemplar, which disturbs a reconstruction in the form of a tree. Conceivable scenarios of contamination include either that a scribe was aware of the existence of textual differences and copied from more than one exemplar in order to come closer to the original text (which has, admittedly, been common since the times of Renaissance philology), or – similarly – that he copied from one exemplar and later proofread and inserted corrections from another exemplar, or that he exchanged the exemplar in the course of copying because his first exemplar was lacuneous. This all may happen, but I do not believe that this is the way most Egyptian text copies were created.

22 In fields outside textual criticism, the use of statistical methods is far more plausible. This holds for biology (species do not separate in sharp splits but may continue to mix for a while after initial differences have developed), and even more so for historical linguistics (it is very common for genetically related languages to remain in contact and influence each other long after the genetic split). This contrasts with the transmission of texts, where genealogical splits are typically sharp ones. To be sure, I am far from opposing the introduction of statistical and other modern methods into the humanities. But I am arguing that the transfer of statistical methods from other disciplines to the specific field of textual criticism is not as justified as is commonly believed.

valid only in a statistical sense, would hardly be usable for any subsequent editorial conclusions.

The stemma of the story of Sinuhe

I have applied Greg's method to the story of Sinuhe.[23] 8 of the 30 or so manuscripts, namely AOS, B[24], B1, B3, C, Cl, G and R, provide a sufficient amount of overlapping text to be located within a tree. The others are ignored here as they are so short that only an imprecise location, if at all, could be achieved.

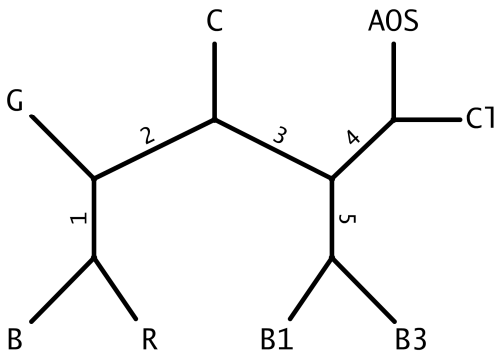

Figure 3: The relationships of 8 manuscripts of Sinuhe shown in an unrooted tree

This tree contains 13 edges, 5 of which are internal (numbered in the figure). Each of the internal edges needs to be justified by at least one textual variant, where all preserved manuscripts on either side of the edge have to agree with one another. I used the following variants for establishing the tree:[25]

Edge 1:

- *mšᶜ* B R : *mšᶜ ᶜšʾ* G[26] C AOS [R 11][27]
- *šm=s* B R : *šm=sn* G C AOS [B 5]

23 Based on Koch's (1990) edition, from where the sigla for the manuscripts are adopted.

24 Note that Koch's fragments Am to Aq physically belong to B (Newberry 1899: 18).

25 I acknowledge that my choice of variants that I consider significant, i.e. both unreproducible and uncorrectable, can be subject to debate, but these judgements are at any rate more reliable than the originality judgements required by Lachmann's method. Much more could be said about choosing variants and evaluating how "significant" they are. This is where the competence of the philologist has to come in whose task is, among other things, to decide whether a reformulation was trivial or not, whether two words sounded similar or not, or whether variant spellings indicated different word forms or not at a particular point in time. The focus of the present paper is not here but rather on the method of building a tree out of variants after a set of variants considered as significant has already been selected.

26 *ᶜšʾ* is destroyed in G but seems to be restitutable by considerations of space.

27 Read: In the passage R 11, the manuscripts B and R write *mšᶜ* but the manuscripts G, C and AOS write *mšᶜ ᶜšʾ*. The change (in whatever direction) must evidently have been introduced on edge 1. We can postulate the reading *mšᶜ ᶜšʾ* also for the manuscripts Cl, B1 and B3, which have not preserved the passage.

- *ḥmt* B R : *n ḥmt* G C AOS [B 7]
- Ø B R : *nṯr pn mnḫ* G C AOS [B 7]
- *jnbw ḥqꜣ* B R : *jnbw jtj=j* G C AOS [B 17]
- *wdi̯ ḥr* B R : *sḫm* G AOS [B 60]

Edge 2:
- *rḫ-st* R G : *rḫ=sn* C AOS [R 22][28]
- *njs.n.tw n wᶜ jm* B R G : *n njs.n.tw wᶜ jm=sn* C AOS [B 1]
- *ḫnw pn* B R G : *(ᶜ)ḫnw.tj* C AOS [B 6f.]

Edge 3:
- *Qꜣ-nfr-nfrw* R G C : ... *nfrw=f* AOS B3 [R 5]
- *sḥ/ᶜr=f* R G C : *sḥ/ᶜr=Ø* AOS B3 [R 7][29]

Edge 4:
- *ḏd=f n=j* B R B3 : *ᶜḥᶜ.n ḏd.n=f n=j* AOS Cl [B 31]
- *nfr ṯw ḥnᶜ=j* (and sim.) B R B3 : *nfr ṯw ᶜꜣ wnn=k ḥnᶜ=j* AOS Cl [B 31]

Edge 5:
- *ᶜḥᶜ.n ḏd* R AOS : *ᶜḥᶜ.n r/n=f ḏd* B1 B3 [B 36][30]

I noted two instances of variation which do not agree with my tree and might be interpreted as pieces of contradictory evidence. I am assuming here that they can have been introduced more than once independently and are not therefore the kind of significant variation we are looking for, rather than, based on these passages, to postulate an instance of contamination in the transmission of the Sinuhe manuscripts:
- *sḥri̯* R G B3 : *sᶜr* (and sim.) C AOS [R 7][31]
- *snḏ(.)n=f* B R C : *snḏ.n=j n=f* G AOS [B 11][32]

Our final task is to orient the unrooted tree into a stemma. This requires us to locate the ancestral node in one of the 13 edges of the tree. We are fortunate in that four earlier attempts at textual criticism of the story of Sinuhe have already been made, namely by Maspero (1908: i-xxxii), Gardiner (1916: 2-8), Kahl (1998) and Winand (*forthcoming*). Maspero and Gardiner applied Lachmann's principles on the few

28 This is a minor variation which, taken alone, would hardly suffice to establish a grouping.

29 The presence or absence of *=f* is a minor variation which, taken alone, would hardly suffice to establish a grouping.

30 B1 writes *ᶜḥᶜ.n n=f ḏd*, B3 *ᶜḥᶜ.n r=f ḏd*. I take the presence of an element between *ᶜḥᶜ.n* and *ḏd* as a shared feature of B1 and B3 against the other texts. My evidence for establishing the group [B1 B3] is, admittedly, weak.

31 B3 actually has *sḥri̯* which was later corrected in red into *sᶜr*. This correction alone shows that the textual change could easily come to the mind of an Egyptian scribe. *sḥri̯* "to remove (to heaven)" and *sᶜr* "to take upward (to heaven)" are similar in meaning and probably also in pronunciation. Cf. also Winand (*forthcoming*, p. 3 and note 14) on this passage.

32 *snḏ(.)n=f* is ambiguous between "(I) who feared him" and "while he feared (me)". The reading *snḏ.n=j n=f* "while I feared him" seems to be a secondary attempt at a clarification of the passage. The exchange is a minor one and may have been invented more than once.

manuscripts that were available at their time and largely agreed in assuming a stemma which, in modern representation, would look as follows:[33]

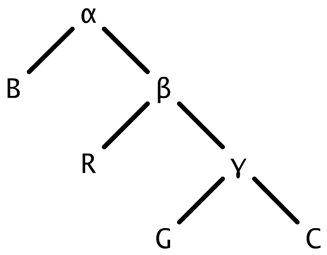

Figure 4: Stemma of four manuscripts as reconstructed by Maspero and Gardiner

These scholars locate the archetype (α) close to B and R, the two manuscripts which are the oldest and, at the same time, happen to be the best preserved (so that their localization within the stemma should be particularly certain). Even though Winand abandons the idea of a single archetype and assumes an "array of texts" at the origin of the written tradition, his stemma essentially agrees with that one shown in Figure 4. Only Kahl's (1998: 389) stemma differs somewhat in that he posits B, R and the remainder as three coordinate subnodes below the archetype. He does so because he sees conflicting evidence for the top of the tree and does not therefore dare to decide on a strictly binary branching.

For the time being, I decide here to accept the more or less consensual stemma of figure 4 without further reassessment, which allows us to orient our unrooted tree into a stemma as follows:

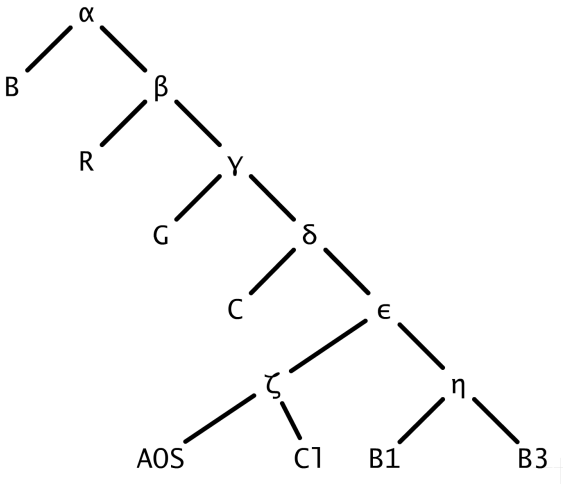

Figure 5: The stemma of the story of Sinuhe

33 In agreement with traditional usage, I mark hypothetical manuscripts by Greek lower characters.

This stemma perfectly agrees both with Winand's tree and with the lower part of Kahl's (1998: 389) tree, which were arrived at by a different method,[34] as also with external evidence: C, AOS, Cl, B1 and B3 are all ostraca found in the region of Thebes (mainly Deir el-Medineh), so that we may assume that the hypothetical manuscript δ was an early Theban witness of the text (the story itself, as to conclude from its context, may be of a more Northern origin).

The stemma does not mean that B is the best witness, as B may still be separated from the archetype by numerous changes even though no intervening node can be reconstructed. But the stemma does mean that wherever B agrees with any of the other texts, this reading should be preferred. This disproves several of the decisions by Foster (1993), who based his eclectic Sinuhe text on the witness R for the most part.

I wish to stop here. There are certainly still many conclusions to be drawn from the application of textual criticism on Egyptian texts, and I want to join Backes (2011) in encouraging more egyptologists to learn and use this technique than have hitherto done so. I am convinced that, if Greg's method is employed instead of Lachmann's original method, this will become much easier and more reliable than it used to be.

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34 Let me add here that our trees were arrived at independently, since I became aware of both Kahl's and Winand's studies only after my stemma reconstruction had already been completed. Both scholars include several shorter manuscripts for whose positioning I did not see sufficient evidence (Winand: B4, BA, DM1, DM6, H, S, UCL; Kahl: B4, Bdt, DM1, DM4, S, he does not include my manuscript Cl). While I see my results as independent confirmation of the basic outline of the previously proposed trees, I do not want to comment in detail here on the positionings by the other scholars that I could not confirm. Winands study is very elaborate and spends much effort on arguing which of two conflicting readings he considers the genuine one. Kahl relies in some places on what I would consider insignificant variations, such as orthographical differences.

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