

CHAPTER 8. CONCLUSIONS

It has long been recognised that the design of Egyptian funerary stelae evolved over the centuries, and there have been many accounts of the characteristics and features included in the stelae of different periods. Bennett, in 1947, appears to have been the first to use the text of a stela to assign to it a date of origin. Others have subsequently used their specialist knowledge and different criteria for the same purpose. But I have not found any attempt to bring together the many characteristics and internal features of stelae to assign dates to them.

Perhaps this has been because of the large amount of data required, perhaps because of the relatively few stelae that are specifically dated within the text, perhaps because the facility to analyse the data has not been available. The approach that I have taken requires both the statistical techniques and the power of the computer to apply them. Even with these facilities, dating is not certain but is subject to statistical error.

Twelfth Dynasty Decision Tree

The development of the Twelfth Dynasty Decision Tree takes into account all of the data gathered from all seventy dated stelae used in the analysis; it extracts a much smaller number of features and characteristics that are significantly correlated with the periods during which the stelae were made. These significant features must be examined in the order given in the decision tree to produce a valid estimate of the date of origin of a particular stela. Provided that the stela did, in fact, originate in the Twelfth Dynasty, one can have at least 80% confidence in the estimated date.

Because the effectiveness of the decision process was then tested by reference only to the same stelae, taking the features in their order of statistical significance, it might be felt that the test was biased towards success. But the decision tree is completely free from the cartouche, the feature that dated the stelae in the first place. It is not simply a reversal of the steps taken in the statistical analysis, and the test did not lead to every one of the test stelae being assigned to its exact period of origin; a number of stelae were assigned to the period immediately before or immediately after their period of origin.

Two of the seventy stelae - CG20026 and Rio 627 - from different periods that are not consecutive reached the same end point; this is obviously wrong, and can be considered as a statistical error, which is perfectly acceptable in this number of stelae. That the other sixty-eight stelae were assigned either to the period in which they originated, or to a period immediately before or after, indicates the success of the approach.

When the test stelae were selected, four of them (because I found the publications after the analysis was complete) were dated by cartouches strictly in accordance with the accepted conditions. Two of these - Manchester 3306 dated to the reign of Senusret III, and Louvre C4 to the reign of Amenemhat II - gave consistent estimated dates of origin, one - Guimet 11324 - could not be tested because of damage and one - Qena - gave inconsistent results.

The test stelae also included three in Group 3 with cartouches, though not within the strict conditions; nevertheless, they gave estimates consistent with the cartouche dates - Arabah E11 to Amenemhat III, Berlin 1204 and Geneva D50 both to Senusret III. Thus, of seventy-six internally dated stelae (the three just cited, the three of Group 5 and the seventy used in developing the Twelfth Dynasty Decision Tree), only three gave inconsistent results, well inside the expected statistical limit.

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Evolution of Design of Stelae

That the design of stelae was evolving through time is attested by many, as the Literature Survey (Chapter 1) and Chapter 2 show. It is because of this evolution that dating by statistical analysis of the features is possible. But the particular features in any one stela might all belong to a specific period or they might include features left over from a previous period or individual new features. These 'old' or 'new' features could lead to the assignment of an individual stela to a period earlier or later than its known date of origin.

The usefulness of the Twelfth Dynasty Decision Tree is limited to stelae originating in the Twelfth Dynasty. It was developed from a sample of stelae from that dynasty, and its development and presentation are the main objectives of this study. To avoid gross errors in estimating the date of origin of an undated stela, it requires the support of a means of estimating whether or not an undated stela originated in the Twelfth Dynasty.

Preprocess Decision Tree

The Preprocess Decision Tree was devised to provide this support by estimating whether an undated stela originated in the Twelfth Dynasty. It depends on only a small number of features derived from the summary of the Literature Survey. It brings together a large body of information provided in descriptive form by a number of investigators over a period of at least forty years. But, because it is not based on data gathered on a stela by stela basis, the results that it provides cannot be used with the same confidence as those from the Twelfth Dynasty Decision Tree.

However, because the stelae used in the tests were carefully (though randomly) selected, and because the estimated dates derived are viewed with due caution, the Preprocess Decision Tree forms a valid part of this study. Its use with the Twelfth Dynasty Decision Tree has helped to provide the support required in estimating the dates of origin of these test stelae. This Preprocess Decision Tree was used with all the test stelae and eliminated all those internally dated to dynasties other than the Twelfth. Processing these stelae through the Twelfth Dynasty Decision Tree amply demonstrated the need for the preprocessing.

The Preprocess Decision Tree was also used with stelae not expected to have originated in the Twelfth Dynasty. One of those - Cairo JE89507 - which, because of its landscape form would be expected to have originated earlier than the Twelfth Dynasty, was indicated to come from the time of Senusret I and so, possibly, a late example of the landscape format. Likewise, two of the stelae - BM236 and CG20598 - in which the *h₁tp-di-nswt* phrase had the format $\text{𓆎} \text{𓆏} \text{𓆑}$, which would be expected to be from a later time, was dated to the period of Amenemhat III and IV. The case for this being an early example of the change in the epigraphy is strengthened by the fact that one of the internally dated stelae incorporating the later format and used in the statistical analysis (CG20702) originated as early as the reign of Senusret III.

Dating of Test Stelae

All dates of origin of stelae that have no internal dating are estimates. That there are differences of opinion stated in various publications about the dating of a particular stela gives me confidence in the statements contained in this section. For example, stela Met12.182.1 from the Metropolitan Museum of New York is variously dated to the reigns of Amenemhat I, Senusret I and Amenemhat II by different writers, Hayes (1968), Simpson (1974) and Freed (1996).

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Of the forty-five test stelae described in Groups 2, 3, and 4 of Chapter 7, three have already been included in the discussion of the Twelfth Dynasty Decision Tree; one, Rouen AEG348 is too badly damaged to be tested by the decision tables, and five - BM580, CG20144, QC1112, CG20164, and CG20134 - have already been discussed in Chapter 7 as being unreliably dated.

Of the rest, the dating of twenty-one depends solely on the two decision trees, without reference to any other publication. Of these, fifteen stelae gave consistent estimates in the two decision trees and I accept as valid (though not necessarily all correct) dates of origin as follows:

Reign of Senusret I: CG20070, Leiden V108, UCD 1360, and CG20348.

Reigns of Amenemhat II to Senusret III: CG20024, CG20031, UCD1365, BM577 and BM561.

Reigns of Senusret II to Amenemhat IV: CG20104 and CG20155.

Reigns of Amenemhat III or Amenemhat IV: Clère, CG20045, UCD1361 and CG20210.

For the other six for which dating by the two decision trees was consistent, I accept the Table 6 datings as valid estimates, but with less confidence than those above, as indicated in the previous Chapter. They are:

Reigns of Senusret II to Amenemhat IV: QC1110, CG20370 and CG20284.

Reign of Amenemhat III or Amenemhat IV: QC1113, QC1111, and Frankfort 25

Twelve of the test stelae not yet accounted for were dated in other publications. Of these, the dates of three were consistent with both decision trees and the publications, as follows:

Reign of Senusret I: BM558.

Reigns of Amenemhat II to Senusret III: BM559, BM569.

Of the remaining nine stelae, dating by Freed (1996) or Simpson (1974) casts doubt on the Table 6 datings. The following six stelae are dated to the early part of the Dynasty by Freed or Simpson, but the Table 6 datings are:

Reigns of Amenemhat II to Senusret III: BM581, Matariya and CG20561. (BM581, being associated with BM572 and BM562 is certainly wrongly dated here.)

Reigns of Amenemhat III and IV: Met12.182.1, BM152.

Period from Senusret II to Amenemhat IV: Frankfort 19.

The Table 6 datings of the remaining three stelae, all dated by Simpson to the reign of Amenemhat III, are:

Reign of Senusret I: BM247.

Period from Amenemhat II to Senusret III: BM1213 and BM202.

In all, for these forty-five stelae

- one was too damaged to give a result from the decision trees,
- three were dated (though with some reduction in confidence) on the basis of cartouches,
- fifteen were dated with confidence on the basis of internal evidence alone,
- six were dated with less confidence because of some inconsistency between the two decision trees,

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- four were dated consistently by both decision trees and other authors,
- eight were dated by other authors differently from the decision tree datings,
- three were dated before or after the Twelfth Dynasty by the Preprocessing Decision Tree,
- the inconsistencies between the dating of five by the two decision trees was felt to be too great to be accepted.

Final Comments

The Twelfth Dynasty Decision Tree has been demonstrated to be a powerful tool in estimating the date of origin of a stela known to come from the Twelfth Dynasty. It meets the objective with which this study began. But it requires the support of a similar tool to ensure that stelae from other dynasties are not submitted to it.

The Preprocess Decision Tree can provide support in estimating whether a stela originated in the Twelfth Dynasty. But it is not sophisticated enough for such an estimate to have the level of confidence placed in it that can be attached to the other decision tree. To provide a tool giving that level of confidence would require a study far beyond the scope of this one, using internally dated stelae from a wide range of dynasties.