Information Management through Elementary Data Clusters – New Observations on Pridianum-type Roman Statistical Documents

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Abstract: *The topic of this article is the comparative analysis of the data structure of the extant pridianum-type documents from the Roman Empire. The pridianum is a report on the status and the changes of a cohort, which was compiled once or twice a year. Though we don't have any contemporary sources on the data recording methods of the Roman army, with the analysis of these documents we can discover some regularities referring to conscious recording of statistical data. These regularities in the macrostructure of documents also can help us to get more information about fragmentary documents.*

Keywords: *Information history, Military records, Pridianum, Roman empire, Statistical documents*

I. INTRODUCTION

All of our information about data being recorded in the Roman Empire came from primary sources: papyri, tables and inscriptions. In my paper I will present a small part of a research with a purpose to examine the data structure of these records. The aim of this research among others is finding similarities and regularities in the records and discovering some conventions, in order to gather new information about the methods of recording data in the Roman Empire.

The main objective of the first phase of the research was the methical grounding of a comprehensive study on the macro and microstructure of these documents. The latter stages will demand the analysis of significantly more documents.

II. THE PRIDIANA

The topic of my paper is the comparative analysis of the extant documents of a certain type. This type is the *pridianum*, a report on the status and the changes of a cohort, which was compiled once a year – twice a year in Egypt (Fink, 1971). Four *pridiana* and another *pridianum*-type document are extant from the Roman Empire, but one of these, the ChLA 501 is not suitable for the analysis, because only the first lines of this document are intact.

The earliest of the four documents is from the end of the first century AD from Vindolanda, a Roman fort in Northern Britannia, its tablet number is 154. It is accessible at the Vindolanda Tablets Online database. This is not a *pridianum*, just a *pridianum*-type document, as the article of Bowman and Thomas (1991) states: *it is perhaps more likely to have been an interim report compiled for the commanding officer.*

The CPL 112 or RMR 63 papyrus, published by, among others Fink (1971), was written in Moesia in the Balkans between 100 and 105 AD.

The PBrook 24 papyrus, published by Thomas and Davies (1977), is very fragmented, but on the basis of its content it can be doubtlessly classified as a *pridianum*. It was written in Egypt around 215 AD.

The BGU 696 or RMR 64 papyrus is from the middle of the second century AD from Syria. It is the *pridianum* of the *cohors I Augusta praetoria Lusitanorum equitata.* We only have the first section of this papyrus, which informs the reader of the arrivals of new soldiers in a regular structure.

The four documents of the same type came from different times and places, so with their analysis we can draw up some universal statements about the *pridiana*.

III. STRUCTURE

Analyzing the data structure of the documents I have sorted them observing two criteria:

1.   Graphic structure (primitive tables or simple text)
2.   Regularity

Three of the four examined documents are regular, graphically structured documents: the British, the Moesian and the Egyptian documents, while the fourth document has some regularity and is slightly structured, but not as much as the other three.

These documents demonstrate that data recording personnel of the Roman Imperial Age often made an effort to graphically structure the data. These so-called tables could be very useful regarding the handling of these documents.

A. The Tab. Vind. II. 154

In the British document a graphically structured section (line 5-27) follows a four line long introduction that details the date, the name of the cohort, the prefect's name, the net number of the soldiers and the number of centurions. Following the *ex eis absentes* (of whom there are absent) expression the graphically structured section begins. This so-called table consists of two graphically separated columns and the second column always contains a number.

This section divides the cohort in two parts: absent and present soldiers and the latter has two subgroups, one detailing the sick, and one detailing the healthy people. There are three kinds of lines in this document: status-describing lines, summing lines and detailing lines. These indented lines inform us, if there are any

centurions in a single category (for example in line 7-8: at Coria 337 / including centurions 2).

B. The PBrook 24

The PBrook 24 can be divided in three sections: the first one elaborates the arrivals of new soldiers, the second contains data about deceased or permanently departed soldiers and sums the actual manpower of the cohort, while the third one details the temporarily absent soldiers' numbers and the causes of their absence. The document contains the same three line-types as the previous.

Though this document is not as regular as the British or the Moesian, it has some eye-catching regularities. For example if a single detailing entry occupies two lines, the second one is always significantly indented.

C. The CPL 112

The CPL 112 is also a regular document. Two columns are extant, but the first 19 lines of the first one are almost completely destroyed. The most that can be said is that at the end of lines 12-19 there are dates and city names. This section probably contained information about the date of arrivals into the cohort and the origin of these soldiers. After line 21 the text details the actual number of the cohort on the 1st of January, then the arrivals between January and September, and the last entry of the first column sums the number of the cohort. There are also detailing lines after the summarizing lines.

The second column can be divided in three parts; all of which have a headline. The first one informs of lost soldiers, the second of temporarily absent soldiers, who are outside the province, and the third of *intra provinciam* absent soldiers. The numbers are always on the right-hand side, as in the previous two documents. This papyrus has also detailing lines and summarizing lines.

D. The BGU 696

The first 18 lines of this document contains an introduction of the *pridianum* that is similar to the first lines of the British document. This section is followed by the enumeration of soldiers who arrived at the cohort between the 1st of January and the 31st of August. The order of data is strict: 1. Origin, 2. Rank and number of simultaneously arriving soldiers, 3. Detailing line (if needed), 4. The *centuria* or *turma* of the soldier (not always represented), 5. Starting year of soldiering, 6. Name, 7. Date of arriving. If more than one soldier arrived simultaneously, the last four elements are repeated. If the fourth and the fifth are the same, only two last two are repeated.

The order and the disclosure of the data is regular, but their arrangement seems to be random. After analyzing it, the document contains some more regularities in structure, thus it can be classified as a graphically structured, but not strictly a regular document. These regularities are, for example: the number of arriving soldiers being always represented on

the right-hand side, the more or less consequent use of line breaks, and the conscious use of two different styles of writing, the latter is confirmed by Fink (1942).

IV. MACROSTRUCTURE

If we try to compare the macrostructure of the *pridiana* we cannot use the BGU 696 document, because its remaining part contains only the first two elements of the fourteen.

With the CPL 112, the Tab. Vind. II. 154 and the PBrook 24, we have an opportunity to draw up a universal picture of the macrostructure of the *pridiana*. It is not a problem that the British document is not specifically a *pridianum*, just an interim report, because its content is parallel with the other two documents' similar sections. At first glance, the following are common in the three documents: summarizing lines, detailing lines and the representing of numbers on the right side of the document. The following table shows the sections of these documents:

	TV II 154	CPL 112	PBrook 24
1. Earlier net number	-	I 26-28	?
2. Arriving soldiers	-	I 29-34	I 1-18
3. Summarizing the 2.	-	I 35	?
4. Net number (with the lost)	-	I 36-II 2	?
5. Lost soldiers	-	II 3-11	II 1-6
6. Summarizing the 5.	-	II 12	II 7-9
7. Arriving stragglers	-	II 13	-
8. Actual number	3	II 14-16	II 10-12
9. Temporarily absent soldiers (see below)	4-16	II 17-37	II 13-III 18
10. Summarizing the 9.	17-18	II 38-40	?
11. Summarizing the present	19-20	II 41-43	?
12. The out-of-service soldiers	21-24	II 44-	?
13. Summarizing the 12.	25	?	?
14. Summarizing fit soldiers	26	?	?

Table 1. The macrostructure of *pridiana*

I used question marks, where the part of the document is lost, and dashes, where the given section does not appear in the document. The detailing lines don't appear in the table, as the use of these is not as consequent, as the other elements'.

All of the differences between the extant parts of the documents can be adequately explained, so the similarities become even more striking. The first difference is the lack of the first seven elements in the British document. One possible explanation is very simple: the net number of the cohort did not change since the last interim report. As we cannot say anything about the interval between the recording of two interim

reports, it is a mere supposition, but if the speculated time was short enough, the explanation is acceptable.

The second difference is in the section of temporarily absent soldiers. The CPL 112 document divides this section in two parts: absent soldiers, who are outside the province, and *intra provinciam* absent soldiers. This difference can be explained as well, if we think about the size and the location of the provinces. The CPL 112 is from Moesia, what was much smaller than Egypt, so it is more likely that a soldier was sent to another province from there, than from the Egypt. The same can be said about Britannia: if someone would be sent to another province, he would have to cross the sea, so it is not probable that someone was sent to another province from there.

The third difference is the lack of the entry about stragglers on two documents. The explanation of this is much more simple: if this kind of event didn't occur, this element had been skipped.

Is seems there are no more differences between the macrostructure of these documents, but we can't state that with confidence as two of the three documents are fragmentary. On the grounds of what we have, we can draw up a more accurate hypothetic picture on the macrostructure of the *pridiana:*

1. Earlier net number
2. Detailing and summarizing of arriving soldiers
3. Net number (with the lost)
4. Detailing and summarizing of lost soldiers
5. Arriving stragglers
6. Actual number
7. Detailing and summarizing of absent soldiers
8. Summarizing the present soldiers
9. Detailing and summarizing of out-of-service soldiers
10. Summarizing of present fit soldiers

The first five elements appear only if the net number of the cohort changed since the last report. The second section, the third and the fourth section, and the fifth section only appear when soldiers arrived, became lost or a straggler arrived respectively. If it is necessary, the seventh section is divided, and soldiers absent inside and outside the province are represented separately.

This structure is not weakened by the extant part of the fourth *pridianum*, the BGU 696. This part contains the first two of the ten aforementioned elements, but we don't have any reason to suppose that the whole document did not record all of these sections. After an introduction, the line 14 of the first *columna* informs us about the previous net number of the *cohors I Augusta praetoria Lusitanorum equitata*, the next three lines are detailing lines, while the second section starts at line 19 and covers the whole extant part of the document.

In his book, Erdkamp (2011) presents a sketch of the structure of *pridiana* that he calls "Summary of structure of ideal *pridianum*." His description can hardly be accepted, because at many points it doesn't match with the extant *pridiana* and with the structure demonstrated above.

V. RECONSTRUCTION

Finally I would like to present possible further results of this kind of research. If we discover regularities in the macrostructure of documents, it may help us acquire information about fragmentary documents.

For example it could act as a base of finding out the original length of the fragmentary PBrook 24 *pridianum*. In their article, Thomas and Davies (1977) discussing the document state that *"All three columns are incomplete at both top and bottom, and the loss here is much harder to estimate."* I wish to draw up a hypothesis determining the length of missing sections on the grounds of the CPL 112 and Tab. Vind. II. 154 *pridiana*. This reconstruction is very hypothetical, but in my opinion we can make very close estimations with the help of the regular structure, the other *pridiana* and a bit common sense. In the table the extant parts are written with roman typeface, and the lost parts with italic.

col. I		col. II		col. III	
Introduction	*5*	*Net number with the lost*	*3*	*Absents*	*8*
Earlier net number	*3*	*Lost soldiers*	*5*		
Arriving soldiers	18	Lost soldiers	9	Absents	18
		Summary	3		
		Absents	3		
		Absents	*16*		
Arriving soldiers	*10*			*Summary*	*3*
				Presents	*3*
				Out-of-service	*4*
Summary	*3*			*Fit soldiers*	*3*

Table 2. Hypothetic reconstruction of PBrook 24

Before the entry about arriving soldiers only the earlier net number of the cohort is missing, and the detailing of arriving soldiers certainly started at the first extant line of the document, because there is a kind of headline: *accesserunt*. Before that there was an introduction that in my opinion was short like in the British document, otherwise the entry about lost soldiers would have been too long. On the grounds of that about eight lines lost from the top of the second column, in my opinion here was the entry of net number with the lost soldiers that in my opinion was three lines long. Because that was followed by a so-called headline for the detailing of the lost soldiers, probably the summary of arriving soldiers was in the bottom of the first column.

The following part of the reconstruction is mainly affected by the missing part of the end of the document. We may presume that the detailing of absent soldiers

ended in the last extant line of the document, because this section is already forty-five lines long, so it is not probable that it continued any longer. This is followed by its summary and the last three mandatory elements.

With this reconstruction one column of the document is thirty-nine lines long, and this is an acceptable length based on the length of other documents. As I already said, this kind of reconstruction is very insecure, and is just a hypothesis, but it is also a good example for the possible results of analyzing the data structure of these ancient documents.

VI. CONCLUSION

Though the time and place of these documents' birth are far from each other, we can discover striking regularities between them. The interval between the oldest and the newest documents is nearly one hundred and fifty years, and they came from four different places: one from Britannia, one from the Continental Europe, one from Africa and one from Asia. The fact that, despite this distance, there are strong similarities between the documents implies that we can suppose something in the background of the *pridiana*. This may be the centralised briefing of their format, or the emission of a pattern demonstrating that, or maybe the military management sent a guide to the cohorts describing the methods of statistical data's recording.

The choice between these alternatives could be only a guess. However it looks like certain that the empire and the military leadership ensured that the recording of the *pridianum*, maybe the most important document-type of the army, produce perspicuous and manageable documents, and that could be crucial to the administration of the nearly half a million soldiers of the Imperial Roman army.

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