

## **A Novel Comparative Study of the Dating of Bulgarian Parchment Manuscripts**

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### **Abstract:**

There is an ongoing scholarly debate on the exact time and speed of replacement of parchment with paper. There are three different hypotheses about the time of change: the first one based on Sobolevskij research suggests that paper completely replaced parchment as early as in 14<sup>th</sup> century; the second one put forward by Hunter is that parchment was still widely used during the 15<sup>th</sup> century; and the third one dates the change as late as 16<sup>th</sup> century. Nowadays it is relatively easier to gather mass evidence on the writing materials using digital catalogues of European manuscripts; this allows to apply quantitative methods on a larger scale studying the process of replacement of parchment by paper on the wider European context. In this paper we present a statistical study based on the data within an electronic catalogue of manuscripts including 823 Bulgarian manuscripts currently stored in Bulgaria. We then extend our study with more than thousand parchment manuscripts from the Delorez's Codicology, 45 volumes of documents in Dubrovnik archives and over 1000 parchment manuscripts from the Bodleian and British libraries. This study is based on the manuscript dating provided in the catalogues. Our basic conclusion is that while there is rare evidence of any Bulgarian parchment manuscripts dated after 1350, and this is in controversy with manuscript collections from libraries in Central and Western Europe.

**Keywords:** parchment, paper, mediaeval manuscripts

### **1. The Scholarly Debate on the Spread of Paper**

According to the Pliny the Elder's Natural History xiii.21, the parchment has been invented in the 2<sup>nd</sup> century BC in the town of Pergam in Asia Minor. Another point of view (see Bogdanov (1978), p. 53) claims that the Latin word "pergamēn" – parchment comes indeed from the name of Pergam, but because of the fine quality of the parchment produced in this town. The parchment has been widely used at least until the end of the 14<sup>th</sup> century.

Scholars agree that paper had replaced parchment at a great extent, almost totally, before the end of the 16<sup>th</sup> century. However, among the specialists there are different opinions about the time when the paper became the basic writing material.

***The Slavic palaeography suggests this happened in the period 1350-1400.***

E.g. the famous Russian Slavic palaeographer Sobolevskij (1908) wrote: “14<sup>th</sup> century was time of battle between parchment and paper. The paper, which is more convenient in many respects, and, which is most important, cheaper, took over.” Approximately the same vision was expressed by Shchepkin (1999): “parchment is indicative of 11<sup>th</sup> -14<sup>th</sup> centuries, latest to the beginning of the 15<sup>th</sup> century”. Sobolevskij (1908) pointed out the important detail that all paper used in South Slavic and Russian manuscripts in the 14<sup>th</sup> and 15<sup>th</sup> centuries is of Western origin.

A large group of scientists date ***the decline of parchment in the 15<sup>th</sup> century.***

A typical example is the opinion of Hunter (1970, p. 153): according to him, in the earlier times the paper was more expensive and less durable than the parchment. Stutermeister (1954, p. 11) states: “In the course of the 15<sup>th</sup> century vellum (the finest/highest quality parchment) was gradually superseded by paper. Some later manuscripts would use a mixture of vellum and paper. Usually a vellum sheet would form the outer, or the outer and inner, leaves of a quire while the rest were paper”.

A third group of specialists shifts ***the decline of the parchment to a century later, namely to 16<sup>th</sup> century.*** “Parchment was itself largely replaced by paper ***in the sixteenth*** century (with the rise of printing), but remained in use for certain high-grade books”, states the British Library Catalogue of illuminated manuscripts (see

<http://www.bl.uk/catalogues/illuminatedmanuscripts/welcome.htm>).

The analysis of these opinions shows an anomaly: in Eastern Europe, where all paper was imported from the West, according to Sobolevskij (1908), prevails the opinions for an early (in the fourteenth century) “triumph” of the paper over the parchment, while in the West, where papermaking was concentrated, and therefore this gradual change should have been finished at least several decades earlier, the specialists provide a later dating.

Below we describe the main details and the results of our quantitative study, which aimed to compare the time of decreased parchment use in Bulgaria and in the Central and Western European countries.

## **2. Chronological Distribution of the Bulgarian Mediaeval Manuscripts**

There are hundreds of Bulgarian manuscripts, which have survived and are being kept currently in different collections (basically in libraries, museums and monasteries). They were created during different periods in the past.

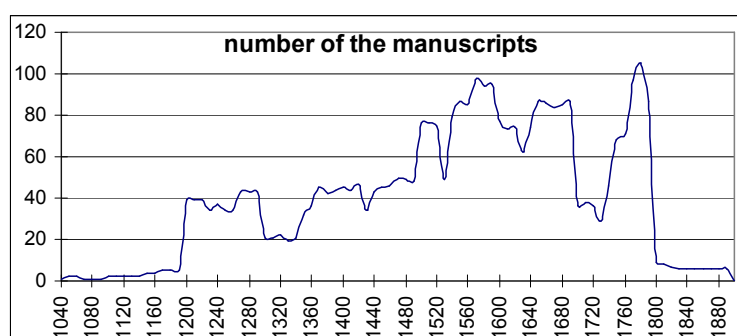
How does their quantity vary from one time interval to another? Which is the

period in our past from which the greatest number of manuscripts survived? It is not easy to give a precise answer to such questions. The paper of Tabov, Velchev, Dobрева and Sotirova (2004), presents an approach for obtaining approximate results in this direction for the Bulgarian manuscripts. Using quantitative data on the Bulgarian manuscripts, being stored in our national repositories, we constructed an *appropriate function of the chronological distribution* of the extant Bulgarian manuscripts. Its graph, obtained by standard computer software tools (Microsoft Excel), provides a good visual presentation of the function. This method follows the ideas of the *volume function* introduced by Fomenko (1981) and Fomenko and Rachev (1980). It is also similar to the function *chronological distribution of information in historical texts*, introduced by Tabov (2003).

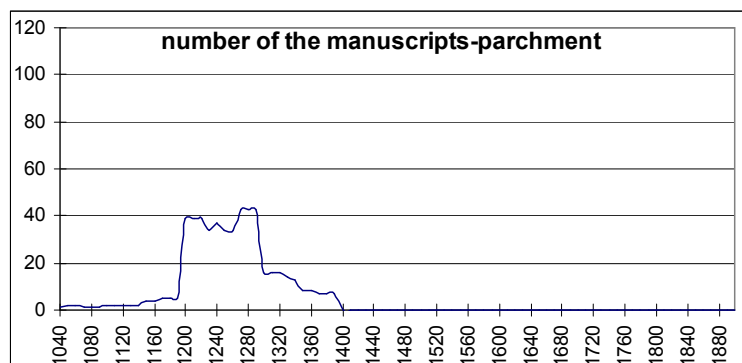
We collected data on 823 Bulgarian manuscripts based on the catalogue of Ikonomova, Karadjova and Hristova (1982). They are spread over the period between 900 and 1900. We should stress here that we rely on the dating made by specialists and given in the catalogue of Ikonomova, Karadjova and Hristova (1982).

The graph of the chronological distribution of these manuscripts is presented in **Figure 1**. Since the number 823 of the manuscripts included in our study is large enough – perhaps about 10-20 % of the number of all extant old Bulgarian manuscripts, the same graph could be used as the chronological distribution of all extant old Bulgarian manuscripts since it gives a good approximation of the whole.

After extracting from the above 823 manuscripts only those of parchment, we constructed similarly a respective chronological distribution: of the extant old Bulgarian parchment manuscripts within our experimental sample (**Figure 2**). It is not surprising that smaller amount of objects survived from earlier time periods. In cases where we find a decline of the volume in later time periods compared to earlier ones, we should seek for a significant historical or cultural reason.



**Figure 1.** Chronological distribution of the extant old Bulgarian manuscripts.



**Figure 2.** Chronological distribution of the extant old Bulgarian parchment manuscripts.

The careful study of the two graphs highlights a number of anomalies, we discuss below two of them.

The first one is related with the decline of the graph in Figure 1 about 1280-1290 and its relatively low level in the period 1290-1360, compared to the earlier period 1200-1280. This behaviour of the graph seems to be in contradiction with the natural expectation, that the Tartar invasion and pillaging in the Bulgarian lands in the period 1260-1290 influenced negatively the production of manuscripts, while the economical and cultural growth in the next several decades stimulated it.

The second anomaly is closely related with our investigations on the parchment manuscripts.

The graph in **Figure 2** shows that the peak of use of parchment as a writing material for the Bulgarian manuscripts was in the interval 1200-1280, and that among the extant Bulgarian manuscripts written after 1400 any parchment manuscripts are relatively rare exception. This picture leads to *the conclusion that in Bulgaria by the year 1400 parchment was superseded by paper*.

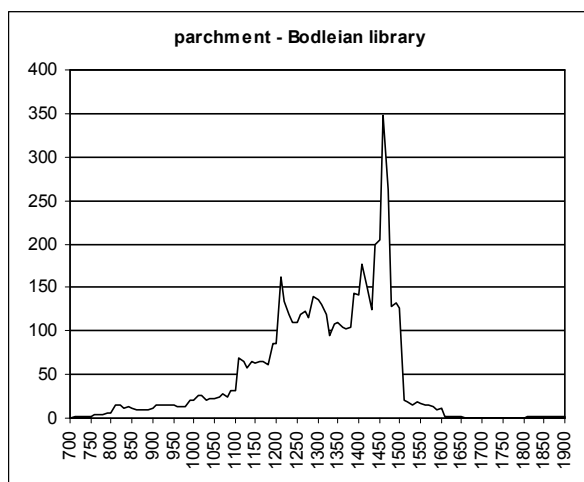
### 3. Chronological Distribution of the Mediaeval Parchment Manuscripts in Central and Western Europe

#### Data from Delorez' Codicology

In the second volume of his Codicology A. Delorez provides a list of 15<sup>th</sup> century manuscripts on parchment, dated from 1406 to 1491; altogether it contains data on more than thousand such manuscripts. According to him by the end of 15<sup>th</sup> century handwriting of manuscripts stopped almost completely following the already widely-spread printing. However, the list of parchment

manuscripts in his monograph illustrates the *intensive use of parchment as a writing material during the 15<sup>th</sup> century*.

### Parchment manuscripts in the Bodleian Library



**Figure 3.** Chronological distribution of the old Parchment manuscripts in Bodleian Library

The chronological distribution of the old parchment manuscripts in the Bodleian Library of Oxford University (see **Figure 3**) supports the hypothesis that *the use of parchment as a writing material attains its maximum in the 15<sup>th</sup> century*.

### Parchment manuscripts in The British Library

The command “search” in the Catalogue of illuminated manuscripts of The British Library (in August 2008) returned the following results for the number of the manuscripts from the respective intervals of time:

- 22** manuscripts for the period 1000-1100
- 118** manuscripts for the period 1100-1200
- 189** manuscripts for the period 1200-1300
- 240** manuscripts for the period 1300-1400
- 437** manuscripts for the period 1400-1500
- 60** manuscripts for the period 1500-1600
- 4** manuscripts for the period 1600-1700

From these results it is clear, that the majority of the illuminated parchment manuscripts in The British Library originates from the 15<sup>th</sup> century; in fact, about 1/3 of all illuminated parchment manuscripts in the Catalogue comes from this century. This is yet another argument which supports the statement that in Western Europe the production of parchment manuscripts had its peak in the 15<sup>th</sup> century.

#### Parchment manuscripts in Dubrovnik archives

Spisarevska (2000) presents information about Bulgarian history from the archival findings in Dubrovnik archives. In connection with this she describes the documents in these archives used in her study: they consist of volumes 62-106 of the series Diversa Cancellariae, for the period 1450-1515. According to Spisarevska, each of these volumes contains 300-400 sheets, *written usually on parchment and rarely on paper* (Spisarevska (2000), pp. 9 and 17). This example shows that in the beginning of 16<sup>th</sup> century parchment has been preferred by the merchants and lowers as writing material for documents.

#### § 4. Contradictions and conclusions

The above brief analysis of randomly chosen quantitative information from the Central and Western parts of Europe about the survived old parchment manuscripts provide evidence in support of the following:

(1) Parchment has been used intensively as writing material at least till the end of 15<sup>th</sup> century.

In the same time the graph in **Figure 2** shows that in the Bulgarian lands the use of parchment after 1400 tends to zero, because, according to the opinion of the palaeographers, parchment has been replaced by paper.

However, it is well known that during the Middle Ages skin formed a great part of the Bulgarian export to Italy and other countries in Central Europe, since it was cheaper (see e.g. Spisarevska (2000)). From sheep skins the monks in the Bulgarian monasteries made parchment for their religious books. If paper was cheap enough to replace parchment for the Christian books in Bulgaria, it should be relatively much cheaper compared to parchment in the West, say in Italy, and

(2) Paper should supersede parchment there as well – at least by the year 1400.

The contradiction between (1) and (2) is evident; what could be the explanation for it?

It seems most probable that the roots of the controversy lie in the dating of the old Bulgarian parchment manuscripts. Therefore we suggest the **hypothesis** that *many of these manuscripts are dated incorrectly, and are made “older” by 2-3 centuries in average.*

Since this hypothesis is based on a relatively small piece of information about

the Western parchment manuscripts, to confirm or to reject it further investigations are necessary and will require thorough analysis of the individual manuscripts' datings.

## References

- British Library. *Catalogue of illuminated manuscripts*. Available: <http://www.bl.uk/catalogues/illuminatedmanuscripts/welcome.htm>
- Bogdanov I. (1978) *The Bulgarian Book across the Centuries*. Narodna prosveta, Sofia (in Bulgarian)
- Derolez, A., (1984). *Codicologie des manuscrits en écriture humanistique sur parchement*. T. I. Texte. T. II. Catalogue. Brepols – Turnhout.
- Electronic Catalogue of Medieval & Renaissance Manuscripts*. Bodleian Library. <http://www.bodleian.ox.ac.uk/dept/scwmss/wmss/online/medieval/>
- Fomenko, A., (1981). *New Experimental and Statistical Methods of Dating Ancient Events and Application to The Global Chronology of Ancient World*. Preprint Gos. Kom. Telev. Radiovesht. Vol. 3672 (1981), B07201 (9/XI-81), Moscow. (in Russian)
- Fomenko, A. and Rachev, S., (1990). Volume Functions of Historical Texts and The Amplitude Correlation Principle. *Computers and the Humanities*, Vol. 24, 187-206.
- Hunter, D., (1970). *Papermaking. The History and Technique of and Ancient Craft*. Dover publications, New York.
- Ikonomova, A., Karadjova, D., and Hristova, B., (1982). *Bulgarian manuscripts from XI to XVIII centiry, preserved in Bulgaria*. Catalogue, Vol. I, Nationa Library St. St. Cyril and Methodius, Sofia. (in Bulgarian)
- Pliny the Elder. *Natural History*. Loeb Classical Library.
- Shchepkin, P.N., (1999). *Russian Paleography*. Aspect Press, Moscow. (In Russian)
- Sobolevskij, A.I., (1908). *Slavic-Russian Paleography*. Sanct-Petersburg. (In Russian) <http://www.textology.ru/drevnost/sobolevsky.html>
- Spisarevska, I., (2000). Sources about Bulgarian history from Dubrovnik. (In Bulgarian)
- Stutermeister, E., (1954). *The Story of Papermaking*. R.R. Bowker Company, New York.
- Tabov, J., (2003). Chronological Distribution of Information in Historical Texts. *Computers and the Humanities*, Vol. 37, 235-240.
- Tabov, J., Velchev, A., Dobрева, M. and Sotirova, K., (2004). Chronological distribution of the Bulgarian mediaeval manuscripts preserved in Bulgaria. In: *Mathematics and Education in Mathematics*. Proc. Of the Thirty Third Spring Conference of the Union of Bulgarian Mathematicions, Borovets, April 1-4, 257-261.

