DIE GRUNDLAGE DER "WISSENSCHAFT DER ERBETEILUNG ZWISCHEN DEN ERBEN" UND ÜBER DIE BEDEUTUNG DES "WILLENBUCHS" AL-KHOREZMI

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Abstrakt: Der Artikel ist die Grundlage der Theorie und Praxis der Erbteilung zwischen Erben. Die Arbeit erfolgte auf der Grundlage von Quellen, d.h. nach arabischen mittelalterlichen Handschriften (Übersetzung), sowie einer historischen und vergleichenden Analyse von Büchern über die Testamente von Muhammad al-Khwarizmi, Abu Hanif ad-Dinovari, Abd-al-Hamid al-Qadi, Ibn Turk al-Khuttali, ibn Harris al-Khububi (X-XI Jahrhundert), Sirajiddin as-Sajovandi (XII Jahrhundert), an-Nasafi (XIII Jahrhundert), Nasriddin an-Tusi (XIII Jahrhundert), Said Juratoni (XIV Jahrhundert) und andere.
Schlüsselwörter: Abhandlung, Manuskript, Mittelalter, Algebra, Arithmetik, Geometrie, Erbe oder Erbin, Testamente, Gleichungen, Vermögensaufteilung, Algebra- und Al-Muqabala-Methode, Linienmethode, Flächenmethode, Dinar- und Dirham-Methode, Vergleichsmethode, Regel von zwei falsche Bestimmungen.

THE BASIS OF THE "SCIENCE OF THE DIVISION OF INHERITANCE BETWEEN HEIRS" AND ABOUT THE SIGNIFICANCE OF THE "BOOK ON WILLS" AL-KHOREZMI

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Abstract. The article is the basis of the theory and practice of the division of inheritance between heirs. The work was done on the basis of sources, i.e. according to Arabic medieval manuscripts (translation), as well as a historical and comparative analysis of books on the wills of Muhammad al-Khwarizmi, Abu Hanif ad-Dinovari, Abd-al-Hamid al-Qadi, Ibn Turk al-Khuttali, ibn Harris al-Khububi (X-XI century), Sirajiddin as-Sajovandi (XII century), an-Nasafi (XIII century), Nasriddin an-Tusi (XIII century), Said Juratoni (XIV century) and others.
Keywords: treatise, manuscript, medieval, algebra, arithmetic, geometry, heir or heiress, wills, equations, division of property, algebra and al-muqabala method, line
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method, area method, dinar and dirham method, comparison method, rule of two false provisions.

Introduction.

The development of mathematics and mathematical education was influenced by various conditions, one of which is the theory and practice of the division of inheritance between heirs. In this article we will try to give a short message about the foundations of the science of the division of inheritance, about the emergence and further development of the theory of inheritance, about its study in the madrasah as a scientific subject, about its influence on the development of mathematics.

When the Arabs completely conquered Central Asia, and the capital of the Arab caliphate moved to the city of Baghdad (762), general Muslim legislation was imposed on the peoples conquered by the Arabs, in particular, laws were established on the division of property between various heirs.

The basis of this law for full-fledged people is the surah “women” of the Koran [1], ayats 11-12 and 176, where five cases are singled out, which can be classified as follows.

1. Heirs-children. The son's share is twice the daughter's;

2. Heir-husband. If the wife dies and there are no children, then the husband receives half of the inheritance. If there are children, then he - ¼ of the inheritance.

3. Heiress-wife. If the husband dies and there are no children, then she receives ¼ of the inheritance. If there are children, then she receives 1/8 of the inheritance.

4. Heirs - parents. If a woman or a man dies and there are no children, then the mother of the deceased receives 1/3 of the inheritance, the father receives the rest. If at the same time there are brothers and sisters of the deceased, then the mother receives 1/6 of the inheritance, the father receives the rest. If there are children of the deceased, then each 1/6 of them will get it as inheritance.

5. Heirs brother or sister (heirs on the side line). They have the right to receive an inheritance in the absence of the parents of the deceased. If there are children of the deceased, the heir or heiress receives 1/6 of the inheritance. If the number of heirs is more than one, then they receive 1/3 of the inheritance. If there are no children of the deceased, then the heir receives the entire inheritance or the heiress receives half of the inheritance. If the number of heirs is more than one, then 2/3 of the inheritance is given to them.

According to the principle of Islamic law, heirs can be divided into the following categories:

1. Heir by prescription (Farzgir) (The share of which is indicated in the Qur'an - father, grandfather (on the father's side), mother, grandmother (on the father's side), husband, wife, brothers (with the same parents), son's children, sisters (with by the same parents).

2. Heirs on the side of the father (Asaba) - whose share is not indicated in the Qur'an - son, son of a son, brothers (with the same parents), brothers (on the side of the father), uncle (on the side of the father), etc.

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3. Heirs on the mother's side (Zavul-arhom) - relatives not belonging to categories 1 and 2 - children of the daughter of the deceased, grandparents (on the mother's side), sister's children (with the same parents), sister's children (on the father's side), uncle (on the mother's side), aunt (on the mother's side), aunt (on the father's side), uncle's children, etc.

In addition, any person to whom bequeathed by will can be an heir. Such an heir is called a "testamentary heir".

Notes: All categories of heirs participate in the division of the inheritance after the issuance of the debt and share of the heir under the will.

Now about the shares of each heir

1. Heir-father.

a) If there are children or a grandson of the deceased, then he receives 1/6 of the inheritance.

c) If there is a daughter or daughter of a son, then he receives 1/6 of the inheritance as an heir by prescription. At the same time, he participates in the division of the inheritance as an asaba.

c) If there are no children of the deceased, then he, as the heir of the asab, receives the entire inheritance.

2. Heir - grandfather. The grandfather has the right to receive an inheritance in the absence of the parents of the deceased

a) If the mother of the deceased lives with the father of the deceased, then he receives 1/3 of the inheritance after the issuance of the share of the husband or wife. If he lives with his grandfather, then he receives 1/3 of the entire inheritance.

c) If the grandmother of the deceased lives with the father of the deceased, then he does not receive anything. If with grandfather, then he also receives inheritance.

Note: The grandfather, like the father, puts a ban on the inheritance of the brothers of the deceased.

3. Heiress - mother.

a) If there are no children of the deceased, then she receives 1/3 of the inheritance.

c) If there are children of the deceased or there are more than one brother or sister, then she receives 1/6 of the inheritance.

c) If his father, husband or wife of the deceased is still with his mother, then she receives 1/3 of the inheritance after the issuance of the husband's or wife's share.

4. Heiress - grandmother. Grandmother has the right to receive an inheritance in the absence of the parents of the deceased

They receive 1/6 of the inheritance.

5. Heir - husband.

a) If there are no children of the deceased, then he receives half of the inheritance.

b) If there are children, then he receives 1/4 of the inheritance.

Notes: If the number of men is more than one, then they share the share of the inheritance equally.

6. Heiress-wife.

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a) If there are no children of the deceased, then she receives ¼ of the inheritance.

b) If there are children of the deceased, then she receives 1/8 of the inheritance.

Notes: If the number of wives is more than one, then they share the inheritance equally.

7. Heiress-daughter.

a) If she is the only one, then she receives half of the inheritance.

b) If their number is more than one, then they are entitled to 2/3 of the inheritance.

c) If there are brothers, then they receive according to the principle "the share of the son is twice the share of the daughter."

8. Son-son (grandson). They have the right to receive an inheritance in the absence of the parents of the deceased.

a) If the daughter and grandson of the deceased remain, then the grandson receives the remainder from the daughter.

b) If she is one, then she receives half of the inheritance.

c) If their number is more than one, then they are entitled to 2/3 of the inheritance.

Example: If there is a daughter, granddaughter and sister from the deceased, then half of the inheritance is due to the daughter, 1/6 of the inheritance is due to the granddaughter, 1/3 of the inheritance is due to the sister.

Note: If there are two daughters of the deceased, then the granddaughter does not inherit.

9. Heiress-sister (with the same parents). The sister has the right to inherit in the absence of the daughters of the deceased

a) If she is alone, then she receives half of the inheritance.

b) If their number is more than one, then they are entitled to 2/3 of the inheritance.

c) If there are brothers, then they receive according to the principle "the share of the son is twice the share of the daughter."

d) If there is a daughter of the deceased, then the sisters participate in the division of property as the heiress of the asab.

e) If there is a son of the deceased, then they do not participate in the division of property

10. Heirs - sisters (on the father's side).

a) If she is alone and does not have a sister (with the same parents), then she receives half of the inheritance.

b) If their number is more than one, then they are entitled to 2/3 of the inheritance.

c) If there is a sister, then she receives 1/6 of the inheritance.

d) If there is a daughter or granddaughter and a sister of the deceased, then the daughter receives half of the inheritance and she receives the remainder of the inheritance.

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e) If a deceased woman left a husband and a sister, then the husband receives half of the inheritance and she the rest of the inheritance.

f) If there is a sister (with the same parents) and she is alone, then she receives 1/6 of the inheritance.

g) If their number is more than one, then they are entitled to 1/3 of the inheritance.

11. Heirs-children of the mother. They have the right to inherit in the absence of children or children of the son or father or grandfather of the deceased.

a) If he (she) is alone, then he (she) receives 1/6 of the inheritance.

b) If their number is more than one, then they are entitled to 1/3 of the inheritance.

12. Heirs - asaba. They share equally the remaining part of the inheritance after the issuance of the share of heirs of the 1st category. If he (she) is alone, then he (she) receives the entire inheritance.

13. Heirs - on the mother's side (Zavul-archom). They have the right to receive an inheritance in the absence of heirs of the 1st and 2nd category.

Example: A deceased woman left a husband, a daughter's daughter and an aunt (on the mother's side and an aunt's daughter (on the father's side), then the husband receives half of the inheritance, the daughter's daughter receives the rest of the inheritance. An Aunt (on the mother's side) and aunt's daughter (on the father's side) from paternal line receives nothing.

Example: If the daughter of the aunt and the daughter of the aunt's son are left from the deceased, then the aunt's daughter receives the entire inheritance. If there is an uncle's daughter (on the father's side) and an aunt's daughter (on the mother's side), then the uncle's daughter receives 2/3 of the inheritance and the aunt's daughter 1/3 of the inheritance.

Example: If the uncle's daughter (on the father's side) and the aunt's daughter (on the mother's side) remain from the deceased, then the uncle's daughter receives the entire inheritance.

Now about the history of the emergence and further development of the theory of inheritance will be discussed.

In the 9th century, a higher educational institution (madrasah) was organized in Baghdad, the main task of which was to train lawyers, government officials, merchants and some other categories of workers. The specifics of the work of these specialists often required certain knowledge of the theory of property division. Therefore, the issue of division of inheritance was included in the madrasah as one of the main scientific subjects, since the task of division of inheritance is reduced to solving a linear equation, or indefinite equations, or a system of linear or nonlinear equations, or quadratic equations. With the positions of the persons participating in the division of the inheritance changing places, i.e., in other words, a change of fate, the problem is reduced to the problem "On the division of the stake", which played a significant role in the emergence of probability theory. This required scientists to create a special teaching aid. In this regard, in the 9th century, prerequisites appeared

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for the emergence of mathematical methods for the division of property and the simplest mathematical calculations associated with them.

In Baghdad, Muhammad al-Khwarizmi, Abu Hanifa ad-Dinovari, Abd-al-Hamid al-Kadi, Ibn Turk al-Khuttali and other scientists dealt with this issue. But only al-Khwarizmi was the first to write an algebraic treatise, about half of which is occupied by a book on wills. The volume of this section shows how important the author attached to it. Essentially, almost all problems are reduced to solving a linear equation with one unknown. Sometimes we are talking about uncertain conditions, and in the only case a system of two linear equations with two unknowns is solved. This title solves 9 types of problems (60 problems in total) using algebraic and arithmetic methods related to wills [2,19-34], [3,54-82].

Despite the fact that the mathematical substantiation of the theory and practice of the division of inheritance in the works of al-Khwarizmi was not complete, thus opportunities and prerequisites were created for the further development of the general theory of this issue.

In the X-XI century, Abu Ali al-Hasan ibn Harris al-Khububi dealt with this issue. In his treatise “The Book of Research on Algebra and Al-Mukabala”, he considered 16 problems, each of which was solved by five methods (the method of algebra and almuqabala, the line method, the area method, the dinar and dirham method, the method of two false positions, the method of comparison, coinciding with the first method) [4], [5].

In the XII century, these issues were dealt with by Sirajiddin Abu Tahir Muhammad ibn Abdurashid as-Sajovandi. His treatise The Law of Inheritance of Sirajiddin (written in 1203) was one of the most widespread in practical Muslim inheritance law. In his writings, al-Sadzhovandi gives a mathematical formula for each type of division of inheritance, offers different problems and solves them algebraically. He believes that with the help of algebra one can solve any problems and shows the necessary methods and types of tasks according to wills [4], [5], [6].

After al-Sajovandi, many other mathematicians and jurists dealt with this issue, such as al-Nasafi (XIII century), Nasriddin al-Tusi (XIII century), Said Juratoni (XIV century) and others.

But although these authors added in their works some new methods for solving problems in the field of the mathematical theory of the question of inheritance, their method basically coincides with the methods of al-Saggiovandi.

This is explained by the fact that the work of al-Sajovandi is the main guide on the issue of inheritance. Therefore, most mathematicians in the middle Ages only commented on it and added some concepts to it. For 5 centuries, one can count 50 commentaries on the work of al-Sajovandi. The presence of various comments in the work of al-Sajovandi is caused by many reasons, the most important of which are external and internal trade relations, the existence and change of various units of measurement, changes in currency and monetary relations, the development and improvement of mathematical calculations.

In the historical and scientific literature, "The Science of the Division of Inheritance" was not covered for a long time. It was believed that from a

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mathematical point of view, it is of no interest, and the restrictions that are placed in the conditions were considered by many to be arbitrary.

For example: in all Latin translations and adaptations of al-Khwarizmi's work "The Book of Wills" is missing. This important circumstance was first noted in 1911 by L. Karpinsky [7]. Historians of mathematics also did not attach much importance to the Algebra section of al-Khwarizmi for a long time.

For the first time, "Books on Wills" was studied in 1917 by Yu. Rushk, and then by G. Vileitner and S. Gandts [8]. They argued that al-Khwarizmi did not act arbitrarily, but in strict accordance with the Muslim rules of inheritance [9].

Mathematical analysis of the problems on the division of inheritance, given by al-Khwarizmi, was given by the famous mathematician and historian of mathematics H. Wieleitner, who devoted a special article to these problems written in 1916, but published only in 1922 [12].

G. Vileitner notes the importance of the "Book of Wills" not only from a legal, but also from a historical and mathematical point of view, and names the reason why this section of al-Khwarizmi's treatise remained unexplored. He sees it in the fact that the problems of dividing the inheritance "are not easily accessible and require weeks of work to figure them out." At the same time, in his opinion, they are of interest both to the historian of mathematics and to the modern teacher expounding the theory of fractions. Therefore, G. Vileitner gave a detailed overview of all nine types of inheritance tasks considered by al-Khwarizmi. In conclusion, he noted that since no earlier Arabic sources of this kind are known, it is possible that it was al-Khwarizmi who initiated the use of algebra in the division of inheritance in accordance with canon law, many of whose issues were developed by the well-known jurist Abu Hanifa who lived somewhat earlier (690 -767). G. Vileitner writes that from al-Khorezmi "a chain of mathematical processing of such problems stretched through the centuries", and insists on the need to study them. He notes in particular that it is not yet known whether al-Khwarizmi relied on earlier examples; it is not clear what improvements were made by his followers; finally, whether anything from this branch of Arabic algebra was transferred to the Latin West, and if so, how, these questions undoubtedly deserve attention [9,247 p.].

S. Gandz says that those to whom this essay was intended knew these rules from school and concludes that “He did not dream that the ulemmas ('ulama-scholars (ar.) from London and Heidelberg) would study his book. Even less could he dreams that these ulemmas will be so stupid (foolish) that they will undertake to study algebra without first understanding the law of inheritance”[8,328 p.].

The issue considered by us in this article undoubtedly played a significant role in the history of mathematics and was one of the important sources for the development of science and mathematical education in the countries of Islam. In the literature devoted to the history of science and culture, this issue is little covered, there are a lot of unexamined manuscripts in this area. Therefore, we set ourselves the task of investigating them to the best of our ability, which, we hope, will to some extent fill the history of science with new data.

Research methods used in the article include:

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1. Historical and scientific analysis used in the history of mathematics;
2. Source analysis that meets the requirements of Oriental studies.

The practical value of the work

1. For further research on historical and mathematical source studies, the history of the exact sciences of the Near and Middle East.
2. When compiling textbooks on the exact sciences and their history.
3. When developing the relevant sections of the cycles of lectures, books on the history of culture and science of Central Asia.
4. During additional classes for students of higher and secondary specialized educational institutions.
5. When preparing and holding student scientific conferences of higher educational institutions, in optional classes for students of lyceums, senior classes of secondary schools and vocational schools.

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