

## Dialectics of the Arabic Number in Balance

**Dr. Hatem Nayel A. Al-Dmour**  
Assistant Professor

**Dr. Mohammad Mousa Naser**  
Assistant Professor

**Prof. Dr. Abdel Raouf Zuhdi**

**All of the three doctors are professors at the Middle East University, The Faculty of Arts**

### Abstract

*Between every now and then, calls appear calling for discarding & effacing the original orient Arabic Number (9, 8, 7, 6, 5, 4, 3, 2, 1, 0) for the interest of the Ghibari Number picture used in Europe and the Arab Maghreb (1, 2, 3, 4, 5, 6, 7, 8, 9). And that call for that change started moving in the assemblies, academies and magazines. And those callers forgot the well known Arabic Number is common among Arabs and Moslems since it had been used, and a thousand million Arabs and Moslems write with it, and there is no necessity urgent to change it whatever were the causes and drives, and whatever the Arabism of the Number cleared. Therefore, this research came to scrutinize the historical texts and manuscripts and depend on what had spread in some countries, and do discuss them to prove the originality of the Arabic Number, urging researchers to scrutinize the matter and get certain of it, and repel the opposing calls of the Orient Arabic Number and defend it.*

### The Arabic Numbers in Writing & Arithmetic's:

Numbers writing and arithmetic's started with numbers since the emergence of writing for the first time, that is at about the year 3500 B.C., and it was said that Babylonians were in the forefront of nations who were concerned about this science. And continuous excavations had proved that they were practicing numbers writing and profits arithmetic's, especially in the commercial works in Babel. They used the system of sixties, which consists of sixty symbols to indicate to numbers from 1-60. And they used cuneiforms, horizontal and vertical; the one in the form of (V) and the ten in the form of (<) (Matloub, 1982, 10) (Tougan, 1954, 28). And the ancient Egyptians developed this system in land-surveying to estimate taxes. They also were following the decimal system and it is counting by ones, tens and hundreds. And they had written numbers at the form of the vertical lines, wrote the ten at the form of horseshoe, and the thousand at the form of the lotus flower, but the Greeks had important additions, for they had abundantly taken from the Egyptians, and were at contact with the Babylonians and used the first letters of numbers words, meanwhile the Romans used vertical lines adjacent to each other to symbolize to the numbers, such as one I, two II, five V, and the ten X and so on. And the Indians shared as well and the Indian Athlete name cannot be forgotten (Arya Banata, one of the Fifth Century Scientists, and Brahma Jobta) one of the Seventh Century scientists (Tougan, 1954, 20).

But about the Arabic Numbers, it had become certain that the arithmetic numbers in general were not known in ancient times, and the best effort of one self was to approximately estimate the amount by increase or decrease estimation; for he had not been able to differentiate between thirty and three, forty and four, etc., and most of what had been known of numbers were (1 & 2) and what surpassed that, he expressed that saying “abundant”, no wonder any civilization could not have advanced without the numbers science. But this manner did not last long, for Arabs before Islam did search for a science that fits their social needs of enumeration, selling, buying and booties’ division and matters of measure and weight. Therefore they knew arithmetic’s that is in harmony with their needs, but they did not have symbols that concern them. For in south of the Island of Arabia it was indicated to the first four numbers by vertical sticks, like the Hieroglyphic Language or similar to the cuneiform nails. But the numbers’ five, ten, hundred, and thousand’ were indicated to by the first letter of their names, and it is known as the back line about 100,0 B.C. approximately, but the rest evidences of what had been written in this writing are not enough to show the detailing scientific features (All – Aali, 1971: 8/226).

And when Islam appeared and its teachings spread in the Islamic countries, an economic prosperity bloomed accompanied by a great scientific activity, and this what had been urged by Islam and the Holy Qur’an. And it was provided in the Quran what indicated to numbers, and mentioned numbers by words, and different forms came in His plain verses, and from the units is the Al-Mighty’s saying: “When the Unbelievers drove him out; he had no more than one companion”. (Tauba “Repentance” or Baraat Sura, Verse 40). And from the tens His saying: “But if he cannot afford it, he should fast three days during the Haji and seven days on his return, making ten days in all “(Baqara sura, verse 196), and His saying “If thou ask seventy times for their forgiveness, God will not forgive them” (Tauba Sura, Verse 80). And from the hundreds his saying: “So they stayed in their cave three hundred years, and (some) add nine (more) (Kahf, or the Cave Sura, Verse 25), and from the thousands his saying: “we (once) sent Noah to his people, and he tarried among them a thousand years less fifty” (Ankabut, or the Spider Sura, Verse 14), and his saying: “The angels and The Spirit ascend Unto Him in a Day the measure where of is (as) fifty thousand years (Alma’arij, or the Ways of Ascent Sura, Verse 4), and this matter makes the Arabs think in these numbers and effort seek research in them to be aware of them and their usages.

The Arabs knew two ways of counting, they are:

1. Words counting: by their complete letters, if they wanted to express number (4) they had written four, and the number (100), they wrote a hundred and so on.
  2. Sentences counting: it is a way used by Arabs in the Pre-Islamic Period as indicated by the Annamarah Stone found in Annamarah in Houran, and it is assured by Abrahah Ashram’s wording engraved on the famous Ma’reb Dam (Al-Hameedah, 1975, 78, 82) and using the sentences counting continued until the beginning of the Abbasid Age. And this way had depended giving their Alphabetical letters stable numeral values, if they wanted indication to a certain number, they would have written the indicative letters to it; so number (1) was indicated by the letter (a), and number (2) indicated by the letter (b) and so on. And if they wanted to express the number (24), they would have indicated it by (Kd) and the number (309) by (Sht) and so on. The following table explains the digital or numeral values for each letter of the Alphabetical letters (a b c d ... e f g ... h i j ... k l m n ... o p q r ... s t u v ... w x y ... z ...)
- they are twenty eight letters: the first nine letters for units, the second for tens, the third nine letters for hundreds, and only one letter, it is the Ghein for thousands.

Letter	Value	Letter	Value	Letter	Value
a	1	k	20	u	300
b	2	l	30	v	400
c	3	m	40	w	500
d	4	n	50	x	600
e	5	o	60	y	700
f	6	p	70	z	800
g	7	q	80		900
h	8	r	90		1000
i	9	s	100		
j	10	t	200		

(Ya) for example was equal to (11), and the word (Dum) equals (44), and the word (Bugh) equals (1002), (Jugh) equals (1003), and (Gugh) equals (1100) and so on, and it seems that their using of letters did not make them think of the zero at that stage of the Arabic numbers life, and they had used the utterance of the zero to mean nothing, and so it does not mean a counting number (Al-Aali, 1971: 8/222-223).

And the decimal System is clear in this division, except the zero, for they had laid the letters on units consist of nine numbers each. The first nine letters bear the units (ones) the second nine bear tens, the third nine letters bear hundreds, and the last letter bears the thousands. This division appeared amongst Arabs at the stage that did not witness any contact with the Indians, and it clearly seems that the decimal System is not taken from other nations, but it is original known by Arabs at their environment. And if Arabs had taken it from the Babylonian system, so it is not considered far away for Indians to take it from the Babylonians like the Arabs inspite that some researchers indicate that the Indian Numbers arrived to the Monks Schools in the Two – Tributaries valley in the year 622 A.D., but the ancient people did not indicate to that, but most of them followed the Indian concept (Matloub, 1982: 10).

And appears that Arabs faced difficulty in using sentences counting; for this system does not meet their counting needs from division and multiplication and else. And also faced difficulty in using the current Roman Numbers. And (Husten Bunks), teacher of mathematics said in his book (Modern Mathematics): “One can use the Roman Numbers in case of addition, but if attempted to do multiplication and vision operations, hereby the Arabic Numbers are distinguished, for they make time, matter, and accurate counting operation available for us” (Qasem Ali, 2000: 270).

### **The Arabic Numbers Drawing:**

Some sources ascribe the Arabic Numbers to India, and some of them indicate that the first contact between Arabs and Indians was during Al-Hajjaj’s conquest of Sindh in the year 92H – 710 A.D., and Abi Ja’afar Al-Mansour’s Conquest of Kabul and Kashmir in the year 143 H – 760 A.D., and Indians had numerous forms of numbers. The Arabs, as said, chose a group of them, cultured them, and consisted of them a group of numbers we call them the Indian Numbers today. The Arabs used them in the Arab Orient, especially Baghdad, then developed a little until they became the numbers used now in Sham, Egypt, Iraq, and the Island of Arabia, yet Al-Khawarizmi had invented another group of numbers known as the Arabic Numbers today, but they did not obtain large spread. And afterwards were used by the Arabs in Andalusia and Maghreb, and from there spread into Europe. Then spread all over the whole world. But the oriental way used by Baghdad Arabs, it is as follows:

1. The Indian Numbers: 9, 8, 7, 6, 5, 4, 3, 2, 1, 0 = (0, 1, 2, 3, 4, 5, 6, 7, 8, 9), and this is the correct drawing of the Arabic Numbers.
2. The Ghibaria Numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9. And these numbers were called Al-Ghibria, because they were written by the finger or by a pen of reed on aboard or a desk covered with a thin layer of soil. Al-Khawarizmi had designed those numbers on the basis of the number of angles (acute or right) included by each number. The number one includes one angle, number two includes two angles, and number three includes three angles etc. And the following figure clears the original forms of the Ghibari Arabic Numbers, with putting a dot at every angle:

1 2 3 4 5 6 7 8 9

Then happened some amendment on these forms and became at the current and well known form.

Sources mention that the Indian numbers were seen in a manuscript dated in the Hegira Fourth Century, and the historian, Al-Ya'aqoubi: (D. 292 HI 905 A.D.) ascribes laying these numbers to one King of India (Al – Ya'aqoubi: 1358 H: 1/66), and Al-Ig Leeds, called them letters of India, Ibn Annadeem ascribed them to Sindh, Ibnel Yasamin had considered the dust counting in the punch of India people works, and Naseerel Deen Attousi mentioned that they are ascribed to India, but the Arabs did refine and purify them, and consisted two series of that: the first are the Indian or Oriental numbers, and the second Al-Ghibaria (Dusty) numbers. The first are oriental numbers and also called the Indian numbers, and they are used in the Arab Orient (East), and the second are Al-Ghibaria (Dusty) numbers and are called the European numbers too. And they are used by the people of Maghreb and Europe. So, it is wrong to call Al-Ghibaria the original Arab numbers, and call the Oriental numbers an outsider Indian, because they both are taken from one origin and it is India and both numbers became Arabic (Habeb: 2011: 10).

And sources mention that the Arabic Numbers amongst Moslems refer to the year 154 H/ 771 A.D. when an Indian astronomer arrived to the court of the Abbasid Caliph, Al-Mansoor, accompanied by a famous book in Astronomy and Mathematics, it is (Sindhanta) by its writer (Brahma Jobta), which he laid in about the year 6 H./ 628 A.D. and used the nine numbers, and Al-Mansoor had commanded the book to be translated into Arabic and a book to be composed at its approach explains the movement of planets to the Arabs. And he entrusted this deed to the astronomer, Mohammad Ibn Ibrahim Al-Fazzari (180 H./ 796 A.D.), who composed a book at its approach, called it (the Great Assindh Hind) and in it transferred the idea of numbers from the Indians and laid the forms on which they are. This mentality with which Al-Fazzari enjoyed, opened the way in front of the Mathematician, Mohammad Ibn Mousa Al-Khawarizmi, died after the year 232 H./ 847 A.D., and had rewritten the book, "the Great Sindh Hind" and added many things to it, and composed two important books, they are: the Book of Algebra and Opposition, and the Book of Arithmetic's, in which he paraphrased the system of Indian Figures and Numbers, and it seems clear that arithmetic development which happened amongst Arabs in the shadow of Islam pushed them to think in another way, easier than the way of sentences counting. They had found that Indians had got rid of symbols and letters and laid a form for every number to indicate to it and acquire its value from the rank it is put in as the rank of units, tens, or hundreds, or thousands (Matloub: 1982: 11-13).

And no matter that Qadri Tuqan says: "The Indians had numerous forms for the numbers, the Arabs refined some of them and formed two series of that, one of them both was known as the Indian numbers, used by the people of this country and most of the Islamic and Arab countries, and the second was known as the Ghibari Numbers. Its usage spread in Andalusia and Maghreb countries, and by Andalusia ... these numbers were enrolled to Europe and were known as the Arabic Numbers" (Matloub: 1982: 14).

But that taking was not literal, because the picture of the Indian numbers clearly differs from the forms of the Arabic numbers, and Dr. Aa'dnan Al-Khateeb viewed that the break of the Arabic numbers was pictures of the Arabic Al-phabetical letters and not the forms and symbols, which the Indians used, as some

researchers claim, without evidence, and they were not performed on numeration of angles included by the picture of every letter, thereupon, the claim of the Ghibari Numbers are the original Arabic, and the familiar numbers in both worlds, the Arab and Islamic are Indian, failures, and it is claim that did not appear lest they both Arabic (Matloob: 1982: 14).

The Ghibari number used in the Arabic Maghreb and Andalusia transferred to Europe by “Jerbier”, who lived in the period (318 – 394 H.) after he had been taught the Ghibari number and Decimal system by Moslem Scholars in Andalusia. That was in about the year 366 H., by a manuscript called “Fejelyanis” kept now at Madrid Library, and includes a description of the numbers from ‘one to nine’ without the zero, and this is the form of numbers in it, and they were written from (right to left), and we notice that the form of (the two, the three, the four, and the five) is different from their pictures, used now in Europe, and at the countries of the Arabic Maghreb. This indicates that these numbers, when entered Europe, they modified them due to their letters in roundness and returned them to us misshapen after that. This form represents a stage of the Ghibari number before being transferred to Europe, and we notice that the mentioned numbers were provided in the manuscript, transferred to Europe and they are different in form as it is now (Habeeb: 2011: 11).

It had been assured the Orient Numbers are the origin and they were common anciently and modernly and were used in the public manuscripts and in manuscripts of arithmetic’s, from that is the book “Raising the Problem in the Area of Forms” by Ya’eesh Ibn Ibrahim Ibn Yousef Al-Andalusi (722 H./ 1380 A.D.), and the book of “Summarizing the Key” by Jmsheed Ibn Mas’oud Ibn Mas’oud Ibn Mahmoud Al-Khashi (882 H./ 1429 A.D.).

The numbers used by foreigners are Arabic in origin, and most of their pictures were provided in some books of Andalusia and Al-Maghreb, and from what Ibn el Yassamin (601 H./ 1204 A.D.) mentioned, and had said: “I know that the drawings which all the number is composed, and they are called “Dust Forms” ... but people here are on the first manner, and if you reconcile with yourself to replace them or make the opposite of them it will excused, and the face of labour is on its condition never be replaced (Matloob 1982: 15-16).

And Arabs and Moslems did think in the originality of the number used by the foreigners except after the French Language had entered some Arab countries and found some of those who deal with them. And the German Orientalist (Honke Zeegred) says: “All civilized nations today use the numbers learnt by all from the Arabs, and without those numbers the Telephone Guide or Price – List had never been found today ... this people had respected us by granting us this un estimable favour, when we called the figures of our numbers the name of “the Arabic Numbers” (Honke Zeegred: 84).

The foreign number is Arabic, but it is emigrant; but the familiar number had remained connected with the Arabic letter, and it is more deep rootedness, large spread, and tightly – contacting the Islamic – Arabic Heritage, and the most clear effect in treasures of the Arabic – Handwriting.

And the scholar (Hazza’ Ibn Ieed Ashamiri) views that the Orient Arabic Numbers are not taken from an Indian origin, but they have a relation with the ancient pan – Arabism numbers like Al Himyariyyah, Phinigiyyah, Al-Irmiyyah, and At-Tadmuriyyah, for the modern Arabic Numer (1) is perfectly what corresponds it in Al-Himyariyyah, At Phinigiyyah, At Irmiyyah, At Tadmuriyyah, and Nabatean, and the Arabic Number (2) is perfectly its form in Al-Tadmuriyyah, and the Arabic Number (3) is the Irmic itself, and became clear that the Orient Arabic Numbers have a connection with the modern Arabic letter, for the letter number (1) is a straight line, participates in the straightness of many Alphabetical letters used like (Al-Alif), and number (2) its pure straight line takes the picture of letters (ba, ta, and tha), and number (3) takes many of the letter (sien), and number (4) takes the picture of letters (ien, ghein), and number (5) is like the (ha’) alone, number (6) takes the picture of the overturned (lam), number (7) takes the picture of (lam Alif),

number (8) is its opposite, and number (9) as a (ta') over turned, and he viewed that the Orient Arabic numbers with their current drawing and engineering of their hand writing is an accurate adjustment of handwriting was accredited in the age of Caliph Abu Ja'afar Al-Mansoor, where he entrusted Mohammad Ibn Ibrahim Al-Fazzari (180 H./ 796 A.D.) to lay them, and so they are called Baghdad's Numbers, ascribed to the place of their drawing (Dr. Mohammad Younis Al-Himlawi) supported him in this view and said: "When we talk about these modern numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 the matter does not relate to an invention with age of dozens of years, but we are in front of an invention by (Mohammad Ibn Mousa Al-Khawarizmi) and the date of its invention refers to the year 204 H., where he provided it in his manuscript (Al-Getra and Opposition), "and he says: "These numbers had escorted our civilization at a regular connected way, since the date of its invention in Baghdad till our day, to a period exceeds twelve centuries. So, most of our nation's heritage had been written in them", and said: "the system of the Arabic Number consists of three elements: the first of them: confined to ten forms only, the second: origination the system of digits to form the bigger numbers from the nine (ones and tens) and the third: trend of increasing the value from right to left, and it is the same direction of the Arabic handwriting. The one form of the singular number from zero to nine acquires its value from its drawing and another value from its place.

Our Arabic numbers are a part of the tissue of our Arabic Language, it is homogeneous and also identical with letters of our language at an absolute and complete form. But the Western numbers used in Europe, which appeared first in Andalusia after the appearance of our original Arabic numbers of more than three centuries and a half. They are not homogeneous in themselves and not identical in an acceptable with letters of the Arabic Language. This means that the Arabic numbers are born from one civilization, it is the Arabic civilization, opposite to the Western numbers, and the measure degree of belonging of the original Arabic numbers and the Western numbers to both Arabic letters and Indian Language letters and Latin letters, and they partially belong to the Arabic letters and the Latin letters. Our original Arabic numbers are completely and only belonging to our Arabic letters, meanwhile the Western numbers are partially belonging to the Arabic letters and the Latin letters at the same time", and mentions: "some literatures and some products are full of claim that our Arabic numbers have an Indian origin without assurance, opposite to the manuscripts we have and assure the Arabic origin of our numbers. And the modern computer studies disproved the lie of the Indian origin of the original Arabic number. To clarify the scientific pioneering of Arabs in the issue of the system and form of the original Arabic number, which is the most prominent of human mind achievements. The orientalist called the system of the Western numbers, the elements of the Arabic System inspite of that they are of European form, the subjugation and not the development of our original Arabic number came to fit the Latin letter in the time of the daily skirmishes with the Europeans, thereupon the saying does not show proper that Arabs are the people who subjugated that form to fit the Latin letter!

And (Ram Lando) mentions in the originality of the Arabic number in an essay entitled (The Arabs Remarkable Deeds in Both Sciences of Mathematics and Astronomy) published in the Magazine of the Arab World, where he said: "the first book, in which numbers used was in the year 260 H./ 874 A.D. and was printed in the Islamic countries, and after two years of issuing the Arabic book, a similar book appeared in India the Arabic numbers were also used in it", (Dr. Basheer Al-Turki), the editing director of "Science Journal" added in an essay entitled: "the Arabic Numbers" saying: "It was evidenced that the used numbers today in the Whole World either they were 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 or were 1, 2, 3, 4, 5, 6, 7, 8, 9, they are all originally Arabic and (Dr. Karl Bweir) says in his book (History of Mathematics): "If Arabs did not discover the Arabic numbers, Mathematics would have been at its cradle now, but one could by their favour invent and know all nature", and the author (Donald Merk) in his book (Mathematics for Students Social Sciences): "The Arabic Numbers used now all over the World have three characteristics: easiness and beauty

of usage, easiness of understanding, and their distinction with a logical nature, by which they surpass the Roman numbers”.

### **The Arabic Numbers and Need of Orient to Return to use them:**

Attempts to unite using number in the Arab World did happen, from them “the seminar of uniting the Arabic Numbers, held in Tunisia under the patronage of the cultural administration of the League of the Arab States in 1963), but it is a pity it did not work to return to these numbers, which stuck to Arabs what ever was their truth of roots ‘origin and part’, they spread in the West, in this field (Dr. Hameed Al-Hashemi) mentions that return to using the Arabic numbers due to countries of the Arab Orient, they have a great significance in many sides, some of them: uniting in this side with the Arabic Maghreb, who uses the Arabic as a formal language, the like of which is the Orient, and it is correspondence with the majority of the countries of the world, that use those numbers and confess the contribution of Arabs in inventing and origination of them. And it is a return and reconciliation with an Arab achievement and immortal in heritage cannot be left, in addition to that what this operation of using makes available of economic significance, time and finance through the disengagement of dualism in using both forms of numbers; (Indian and Arabic) in the countries of the Orient, especially in fields of writing plates of cars, plague signs, notice boards, advertisements and guiding signs on roads and means of media and else. And consequently they offer other facilities in additional variety of fields, such as running the educational operation, especially in fields of arithmetic’s and mathematical sciences, and easiness of learning reading time on the classical and digital watches, numbers of athletic teams players and common numbers of electronic apparatuses & so on. And disengagement of this dualism by using on type it is the (Global) Arabic, means saving finance through decreasing the areas of usage, time, ink, and colours, and time through the operation of changing programmes of writing in the computer and else.

### **The Arabic (scientific) Academies:**

As a result of what has preceded, the Arabic (scientific) Academies in Cairo, Amman, and Baghdad and the Union of the Linguistic Arab Academies had refuted the repeated calls to change the Orient Number for the interest of the Ghibari Number used in the Arabic Maghreb and Europe since fifty years and till now, and had provided studies, all resulted in sticking to the original Arabic Numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, so we stuck to the Original Arab c Number form, and in it conserving the Arabic Language itself and conserving the communication of the ancient Arab Heritage with our present time, and keeping our identity. So, our Arabic Number are more fit to our Arabic letters, and more belonging and sticking to it along ages, as more efficient than the Western numbers, and sticking to the original Arabic form of numbers is sticking to the Arabic, which is one of the most important elements of our identity, but the Western numbers used in Europe, and conjugated and not developed of our original Arabic numbers to fit the Latin letter. So, the studier of history says: being accepted at those who rejected the Arabic letter was a preliminary step to reject the Arabic itself”.

And also the Council of the Islamic Jurisprudence Academy of the Islamic World Union assured in its seventh round held in the year 1404 H. on the decision of the Council of Great Scholars Association in the Saudi Arab Kingdom in its 21<sup>st</sup>. round held in Riyadh between 12-17 Rabee’ Al-Akher of the year 1403 H., including that “it is not allowed to change the drawing of the Arabic Numbers currently used, to the drawing of Numbers used the Western World, for the following reasons:

1. What change – callers mentioned was not proved that numbers used in the West are the Arabic Numbers, but the well known is that the past certifies the usage of the present numbers in different conditions and fields makes them Arabic Numbers.

2. The concept has bad results and harmful effects, so they are one step of alienation steps of the Islamic community.
3. Also it will be a preliminary step to change the Arabic letters, and use the Latin letters instead of the Arabic, even at the long run.
4. All copies of the Holy Qura'n, paraphrasing's, dictionaries, and composed books use the current numbers in enumeration, and using the European numbers does not enable the coming generation get benefit of that heritage easily.
5. It is unnecessary to follow some Arab Countries, were used to using the drawing of European numbers.
6. Taking the number as developed by foreigners is a disguise of the Arab Islamic Heritage, and that will lead to deprive the new generations from it, and not in the interest of Arabs and Moslems, and will also lead to spend great amounts of money for re-printing books with the new numbers. And the great danger in that is to take the European letter to get in harmony with the number, that is a new imperialistic call, and more dangerous of that, the picture of the Arab Islamic heritage will shake amongst the Arab and Islamic states.

### **Recommendations:**

The study recommends the educated people, researchers, and thinkers to deal with calls calling to employ the European letter in the scientific research and assure in the future studies that the Arabic Number is original and developed with the Arabic letter and became sticking to it, and it is a must to conserve this time – honoured inheritance.

### **List of Sources and References**

1. Abdel Fattah Mohammad Habeeb, **The Arabic Numbers and to what they returned, a lecture delivered on Monday in the Great Lectures Hall in the Islamic University in Medina, 12/5/1431 H.**
2. Ahmad Fahmi Abu Kheir, **Mathematical Sciences and their transference to Europe**, Cairo, 1930.
3. Ahmad Matloob, **the Arabic Numbers**, Baghdad, 1982.
4. Al-Ya'aquoubi, **Al-Ya'aquoubi History**, An – Najafel Ashraf, 1358.
5. Gadri Hafez Tuqan, **The Scientific Arab Heritage in Mathematics and Astronomy**, Cairo, 1941.
6. Hazza' Bin Ieed Ashamari, **The Arabic Numbers are on origin from origins of the Arabic Handwriting**, Riyadh, 2000.
7. Ibnel Yassamin, **The Arabs Vaccination**, two pages of it published in the Magazine of the Maghrebi Arabic Tongue, Vol. 10, part 1, 1973, pp. 232-233.



8. Jawad Ali, **The Detailed in the History of Arabs Before Islam**, Beirut, 1971.
9. Jemsheed Ghayyathel Deen Al-Kashi, **Key of Arithmetic's, Verificated by Ahmad 8 ed Al-Dimirdash and Dr. Mohammad Hamdi Al-Hanafi**, Cairo, (D.L.).
10. Mohammad Younis Al-Hamlawi, **Our Original Oriental Arabic Numbers**, within the Paper of Translation into Arabic, No. 1<sup>st</sup>., 2000.
11. Qasem Ali Asaad, **the Arabic Numbers, within Al-Ahmadeyyal Journal**, Issue of Research House for Islamic Studies and Revival of Heritage in Dubai, No. 3, 1999, pp. 261-305.
12. Salem Mohammad Al-Hameedeh, **Arabic Numbers Across History**, Baghdad, 1975.
13. Zeegred Honke, **Sun of Arabs Brightens on the West**, 3<sup>rd</sup>. ed., Beirut, 1979.