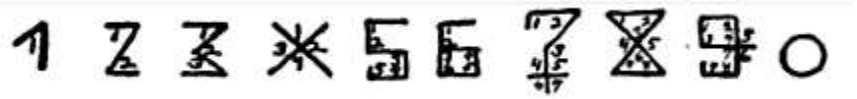
About "number of angles" theory for Phoenician numbers

Emir Habul

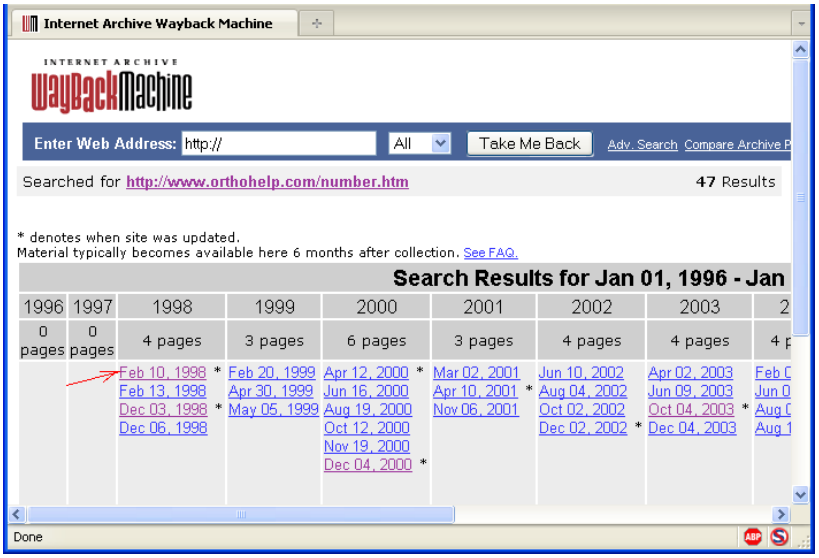
A French writer, P. Voizot[1], entertained the theory that originally a numeral contained as many angles as it represents units. He did not claim credit for this explanation, but ascribed it to a writer in the Genova Catholica Militarite.

[1] P. Voizot, "Les chiffres arabes et leur origine," La Nature, 1899

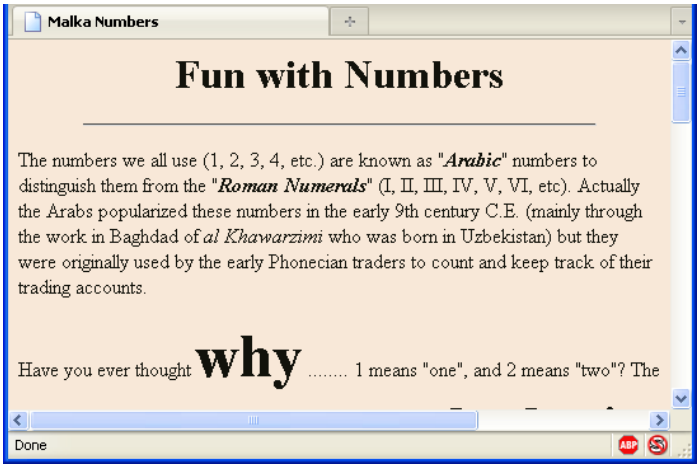


Source: “A history of mathematical notations” by Florian Cajori
http://books.google.com/books?id=7juWmvQSTvwC&printsec=frontcover#PPA64,M1

Phoenicians are mentioned by Jeffrey S. Malka (Orthopaedic Surgeon) in 1998.



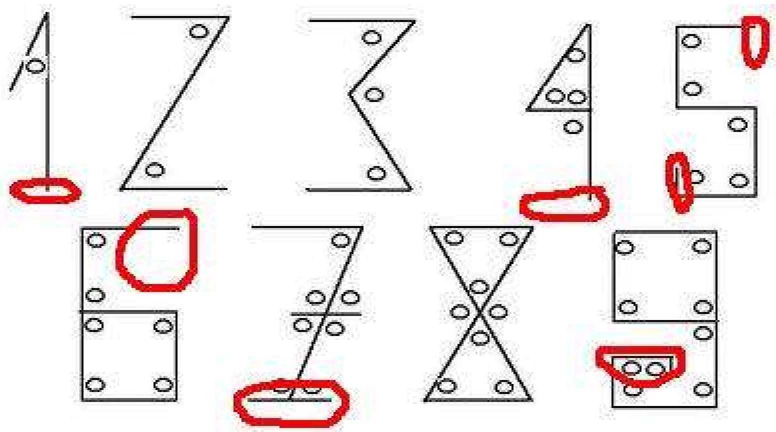
Author is talking about this topic with humor by calling this “Malka Numbers” and with heading “Fun with Numbers”. This page is popularly quoted on the internet.

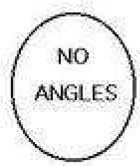


This already has been disproven online at many places

1. http://forum.tayyar.org/f7/logic-behind-arabic-numbers-35116/
2. http://en.wikipedia.org/wiki/Talk:Arabic_numerals/Archive_1
3. http://mathforum.org/library/drmath/view/61467.html

In the picture, symbols have been doctored in a way to fit the theory; some parts which are arbitrary are marked as red.

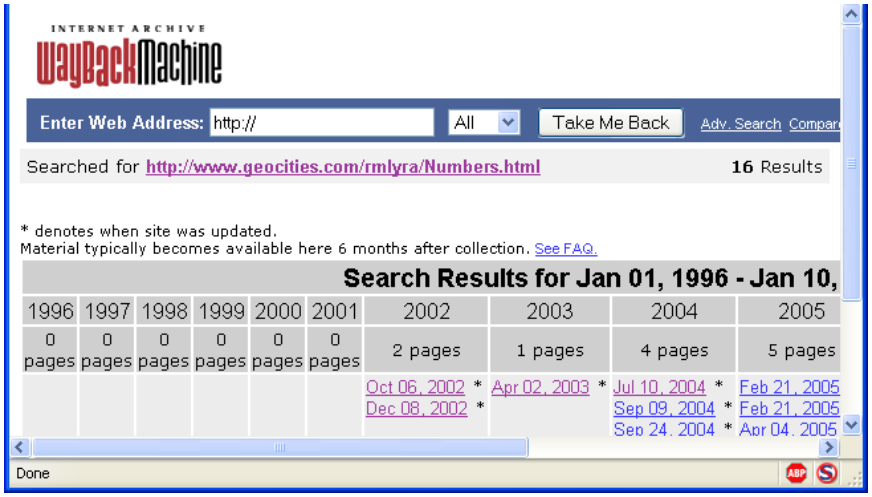




The number 0 was created hundreds of years <u>after</u> other numbers and letters. Furthermore, this theory assumes that <u>modern</u> numerals were available to an <u>ancient</u> civilization. Modern day Arabic numerals evolved from the Brahmi Numerals:

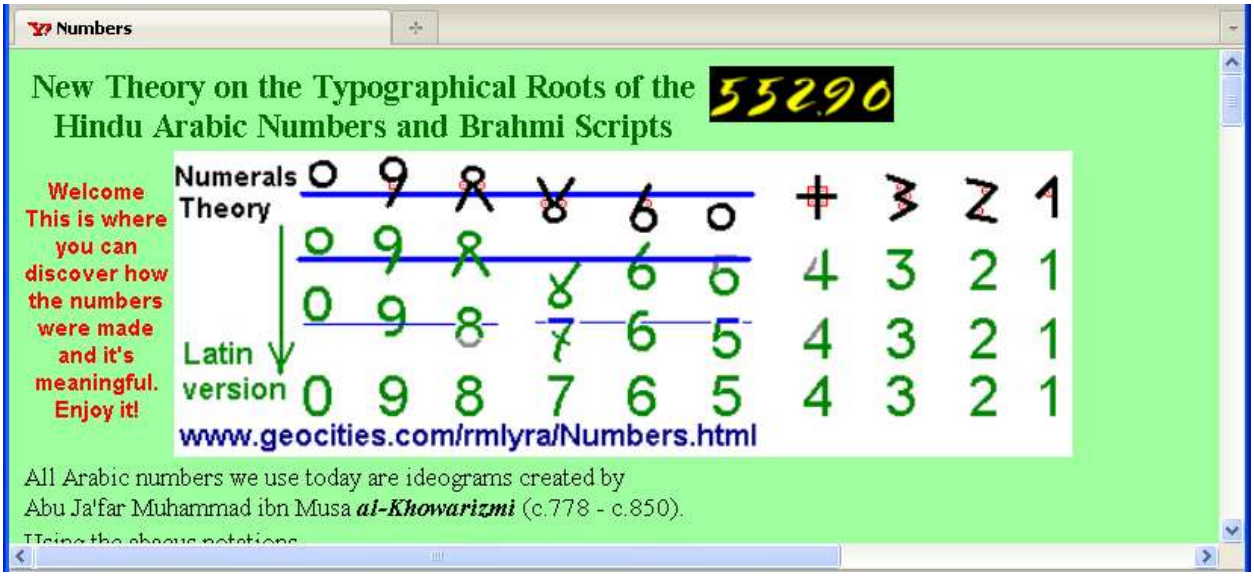
1	2	3	4	5	6	7	8	9
𑁒	𑁓	𑁔	𑁕	𑁖	𑁗	𑁘	𑁙	𑁚

As shown in the picture, **1** was meant to be one stroke, **2** with two strokes, **3** with three strokes etc. It is just with time, because people wanted to write numbers 2 and 3 faster, that the strokes become attached. Other numerals also evolved over time.



Idea about number of angles was recycled in 2002 by Roberto de Menezes Lyra (specialist in Thoracic Surgery – What is wrong with these doctors???)

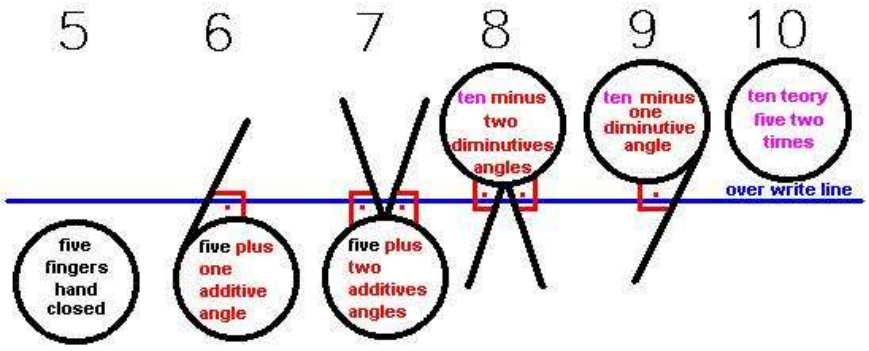
"New theory on the typographical roots of the Hindu Arabic numbers and Brahmi scripts"
http://www.geocities.com/rmlyra/Numbers.html



Another page by Roberto written about this theory is:
http://en.wikipedia.org/wiki/User:Robertolyra

This person has also spammed Wikipedia in Portugal language
http://pt.wikipedia.org/wiki/Algarismo_Ar%C3%A1bico
http://pt.wikipedia.org/wiki/Usu%C3%A1rio:Robertolyra

This new idea uses the original one for numerals 1-4 and for the rest it is using some theory related to abacus. It also states that numerals are created by al-Khowarizmi.



Here is excerpt from: http://en.wikipedia.org/wiki/Arabic_numerals

> "Despite evidence to the contrary, some folkloric explanations for the origin of modern Arabic numerals persist. While these hypotheses continue to propagate due to their seemingly well-constructed arguments, they were based entirely on speculation by individuals who, while genuinely intrigued by the subject, were either ignorant of the relevant archeological facts, or simply lived in an era preceding much of their modern rediscovery. One popular example of such myths claims that the original forms of these symbols indicated their value through the quantity of angles they contained."

Positive note

There are some scholarly papers related to the idea of number of angles.

Mark A. Changizi, Qiong Zhang, Hao Ye, and Shinsuke Shimojo "The Structures of Letters and Symbols throughout Human History Are Selected to Match Those Found in Objects in Natural Scenes", The American Naturalist, vol. 167, no. 5 May 2006

In this paper authors have quoted other researchers:

> "Human judgments of visual stimulus complexity have been found to correlate highly with the number of angles in the stimulus (Hochberg and McAlister 1953; Attneave 1957; Arnoult 1960) and figure 5b shows how this relates to the distribution for visual signs. Most of the signature peaks and troughs found in visual signs are absent (fig. 5b, left), and there are clear nonrandom trends for the residual around the regression line (fig. 5b, right)."

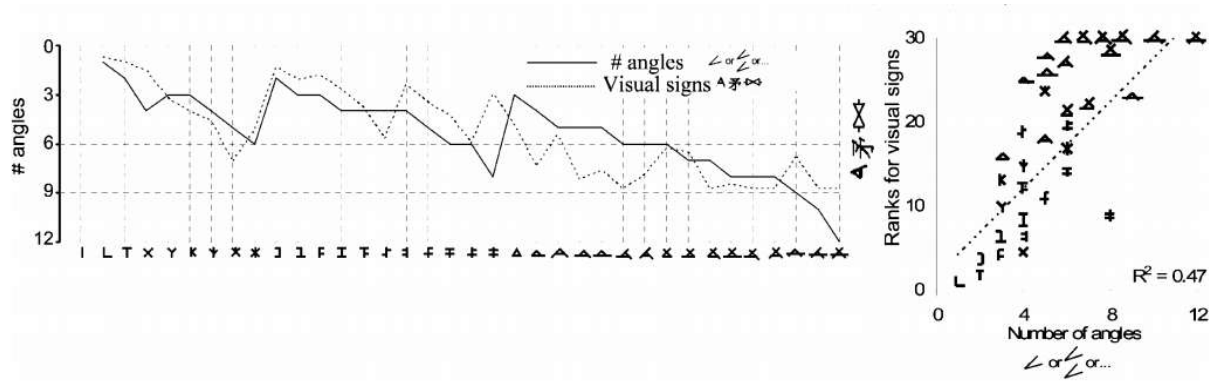


Figure 5b. Number of angles in each configuration. The plot of the frequency ranks for visual signs is again shown as a dotted line for comparison. On the right is the plot of the frequency ranks for visual signs versus the number of angles; the linear regression and correlation shown are for the three-segment configuration types. The distributions are highly significantly correlated.

Hochberg, J., and E. McAlister. 1953. A quantitative approach to figural “goodness.” Journal of Experimental Psychology 46:361–364.

Attneave, F. 1957. Physical determinants of the judged complexity of shapes. Journal of Experimental Psychology 53:221–227.

Arnoult, M. D. 1960. Prediction of perceptual responses from structural characteristics of the stimulus. Perceptual and Motor Skills 11:261–268.