HS 211: Introduction to history and technology of ancient India.

Indo Chinese Trade In Ancient Times

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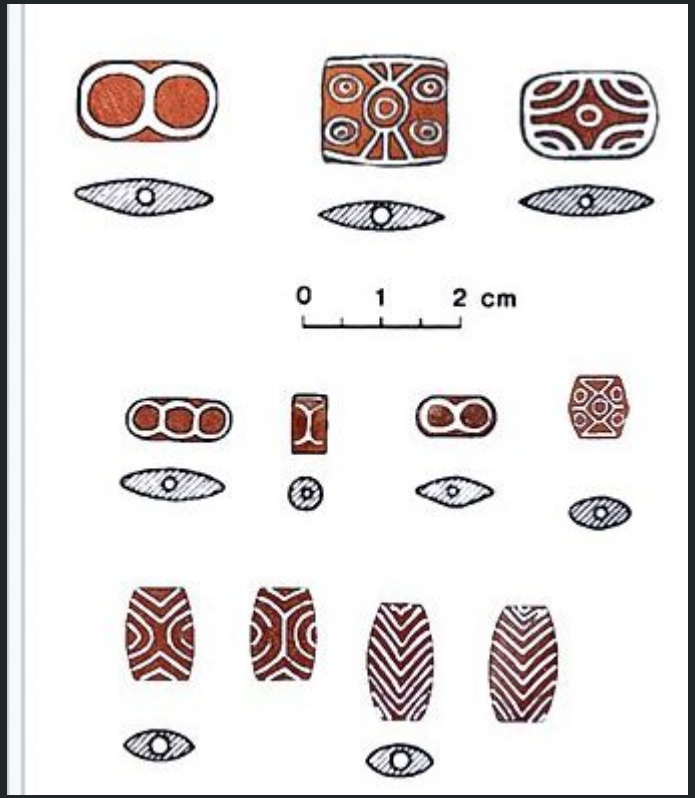
Earliest trade between India and China

- India and China were the two most GDP owning countries in the world in ancient times. Exchanges between them were quite low before 1st century C.E.
- There are evidences of trades through north-eastern region of India in early times but the exchanges were very low.
- Emergence of silk routes in China(1st century BCE) and India(1st to 3rd century CE) enhanced the trade and religious exchanges between both the countries.

Earliest Evidences

- The earliest evidences of indo chinese trade have found in the form of Harappan etched beads from china.
- In some written literature we find some evidences of early contact between two civilizations.
- In Mahabharata there are references to the Cinas and their wealth of gold, silver, gems, textile, fabrics which clearly is similar to what we find in ancient china. In the similar timeline Qin Dynasty ruled china.
- Chanakya (350-283 BCE) in his Arthashastra also refers to chinese silk as “cinamsuka”.
- The first chinese record between India and China dates back to 2nd century BCE.



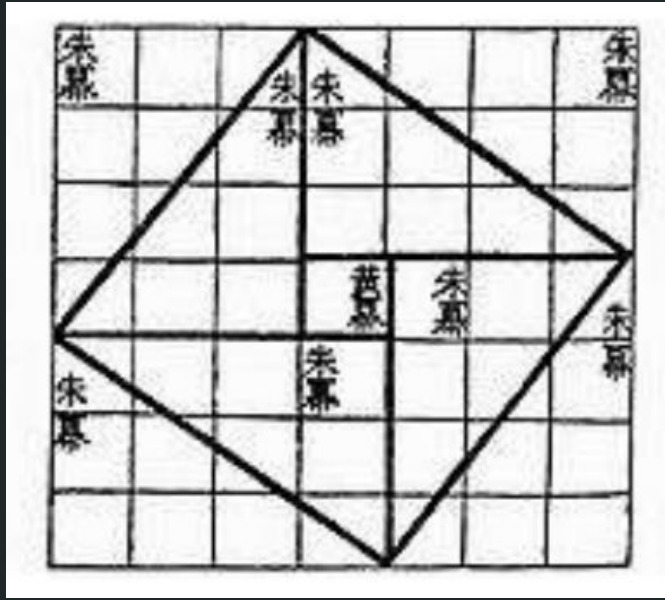
Etched Harappan beads found in China

Were there any influence of Indian science and mathematics on China and vice versa

- China as a whole in 2nd century AD was influenced by buddhism.
- This spread of buddhism in China increased the overall trade, religious and technological exchanges easier and influenced mathematics and sciences of both the regions.
- In the next couple of slides we will discuss has Indian mathematics of ancient times affected chinese mathematics in any way?
- Here we will compare some aspects of mathematics emerged in both the civilizations and compare it with each other.

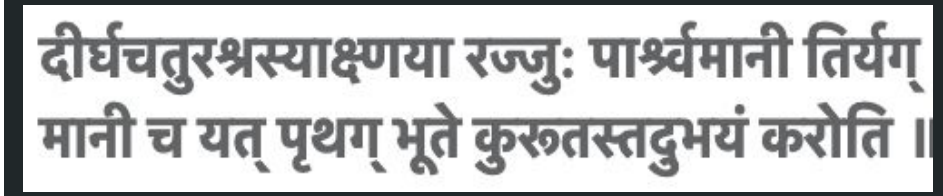
Pythagoras theorem and China

- One of the oldest mathematical text written by Zhou Bi Suan Jing describes pythagoras theorem in the following figure. (500-200 BCE)
- Taking the side lengths in increasing length as a,b and c the final expression we get if we relate these side lengths is pythagorean relation.
- DId they learn it from India or was it their own independent construction?



Pythagoras theorem and India

- Relation between Three sides of triangle has also been described in ancient Indian text named “Baudhayana Sutras”.
- However in Baudhayana sutras it is no mentioned geometric figure
- The statement described is not as state forward as in case of geometrical interpretation by Zhou Bi Suan Jing.
- Other than India and China, in Babylon also there are evidences of some pythagorean tabulates.



Pythagoras equation described in phrases.
It essentially means,

A rope stretched along the length of the diagonal produces an area which the vertical and horizontal make together.

Calculated value of Pi in ancient China

- Another great discovery of ancient china is very precise calculation of Pi.
- Zu Chongzhi (435-500 AD) was an Chinese mathematician who found the value of Pi correct upto 7 decimals between (3.1415926 and 3.1415927).
- As in those times there were not enough calculating instruments and calculation was very rude, this great mathematician calculated values of Pi correct upto 7 decimal places which is a huge achievement of china in mathematics.

An imaginary image of Zu Chongzhi

Source: http://en.chinaculture.org/library/2008-02/01/content_26294.htm

Calculated value of Pi in ancient India

- In contemporary time of Zu Chongzhi, Great Indian mathematician and astronomer Aryabhatta calculated the value of Pi as 62832/20000 = 3.1416. Which is correct upto 4 decimal places.
- Long before Aryabhatta in the time of the Mahabharata also there is a description of pi as 3.
- Fascination for Pi had been in every culture.
- In 1340 AD Madhava got the correct value of Pi upto 11 decimal places which is another great achievement.

An imaginary statue of Aryabhatta in Pune University

Source:https://www.alamy.com/stock-photo-statue-of-aryabhata-at-iucaa-inter-university-centre-of-astronomy-95929147.html

Discussion and Conclusion

- Though the discoveries were in the same timeline I think that all of them were individual and were not influenced much by other discoveries.
- Value of Pi does not coincide with each other for long time so may be they were trading but there was not much trade of mathematics.

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