

Primary Mathematics Study on Whole Numbers

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THE NUMBER LINE: A “WESTERN” TEACHING AID

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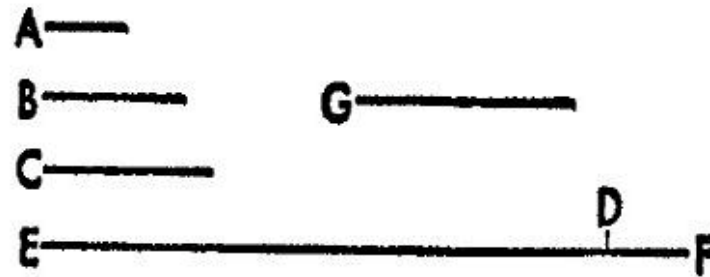
Didactical Phenomenology of Mathematical Structures
(1999)

Modern textbooks start measuring much earlier than tradition allows, but unfortunately this kind of measuring is not yet sufficiently integrated with the operations on natural numbers.

The device **beyond praise** that visualises magnitudes and at the same time the natural numbers articulating them is the number line, where initially only the natural numbers are individualised and named (p.101).

Euclid

Magnitudes are represented
by straight lines For instance:
Prime numbers are more than



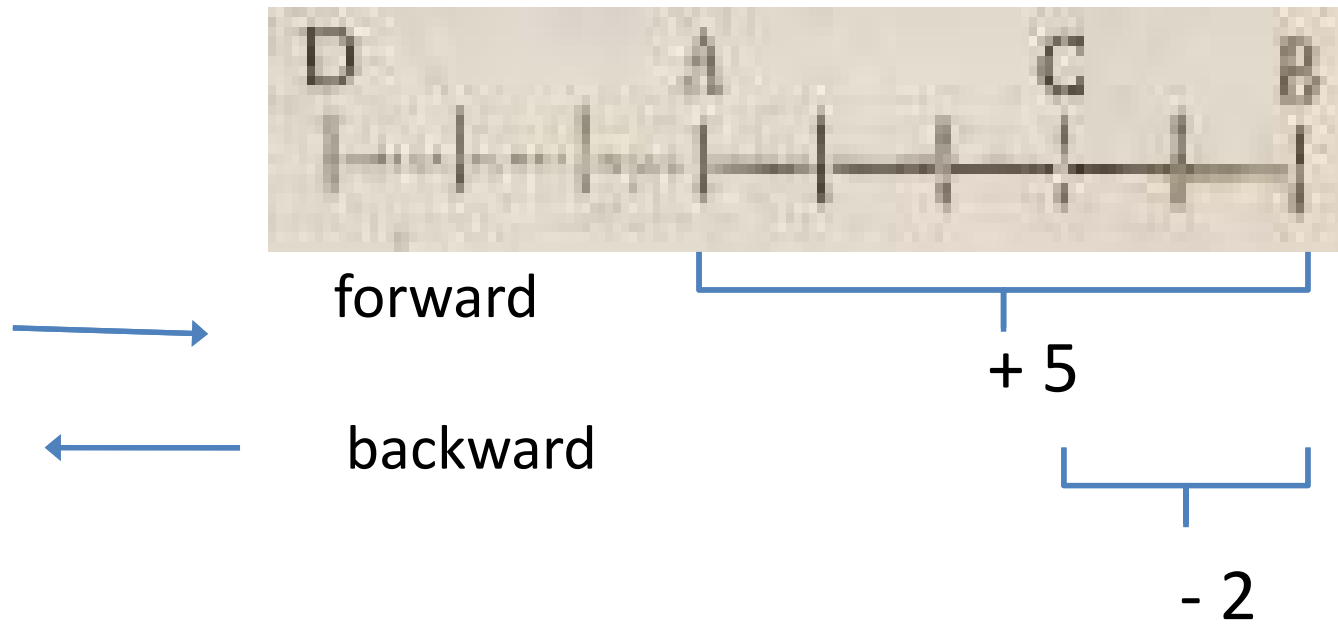
*The line functions as a variable
because nothing is known
about the real size of the
number it represent*

(R. Netz, 1999)

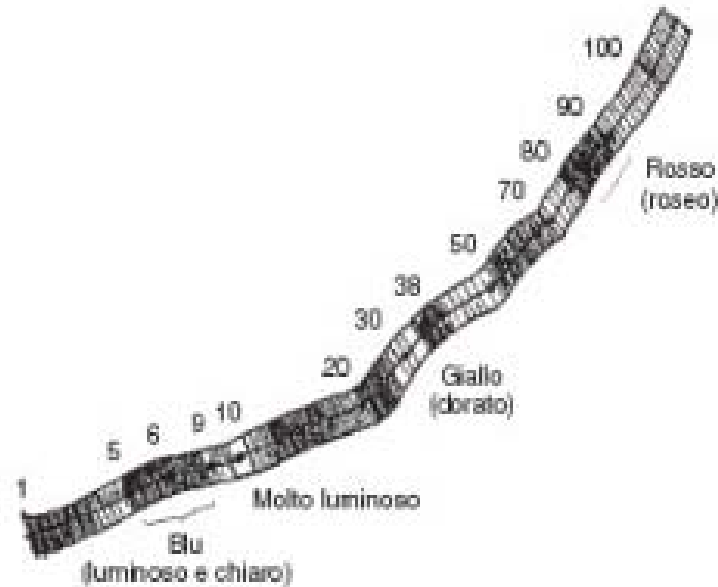
John Wallis
(1685)

The first number line with unit marks dates back to John Wallis

(origin)



Mental number line



There are neurocognitive studies on the evidence of a mental number line, but the universality of mental number line is controversial.

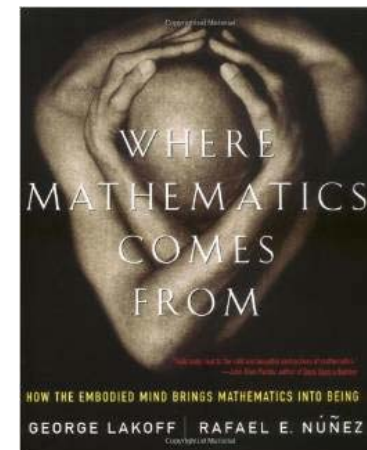
The conceptual metaphor of number line (embodied cognition)

Projection from a domain
(the spatial experience of
motion along a path)

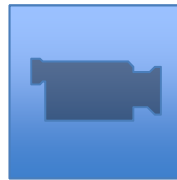
to another domain

(the arithmetic of whole
numbers).

Very recent findings show that
number processing is influenced
by body movements.



Many didactical examples in Western countries:
Hopping to construct the multiples of five



A long history
Possible advantages
why not in China?