

---

---

## TEXT AND ITS CULTURAL INTERPRETATION

I. Alimov

### SCIENTIFIC AND TECHNICAL THOUGHT OF OLD CHINA IN “MENG XI BI TAN”

Among many other Chinese scholars the great Song scientist-encyclopaedist Shen Kuo (Shen Gua, 1032—1096) stands detached — thanks to vast circle of scientific interests and thanks to the contribution he made to the treasury of Chinese culture. The large-scale figure of Shen Kuo has long since become the object of intent study; tens of works are written about his work and art; the achievements of Shen Kuo in rather diverse fields of knowledge are quite great and varied. Some number of works remained after Shen Kuo,

among which great importance is ascribed to his collection of *biji* “Meng xi bi tan” (“Notebooks from the Mengxi Garden”). Rather valuable evidences relating to the level of scientific-technical thought of China of the 11th century are contained here. And the news of which are described in modern science with the epithet of “for the first time” particularly by Shen Kuo. Below is given the translation of some of those important evidences, supplied with necessary annotations.

(44)

A concave mirror reflects objects — but all turned upside down. It is because between [the mirror and an object] there is a “limit”. The school of arithmetic calls it a “stopping point”. It is similar to being on a boat and rowing with a scull and the prop [for the scull] becomes [such] a “limit”. That's the way a black kite flies in the sky, and his shadow runs after it [along the ground] — but if a small window is placed between them and there would be a chink in it, then the black kite and the shadow will be diametrically opposite to each other: the kite to the east and the shadow to the west then, the kite to the west and the shadow to the east. And then if one were [to look] at the shadow, which has passed through the window chink and laid itself onto structures — then it will also be turned upside down, exactly as in the concave mirror.

If one were to bring his finger close to the cavity in the concave mirror, then its reflection would be a correct one; but as soon as one move [the finger] away a little — and one can't make out anything, take it a little further away — and [the finger] is upside down. The distance from where nothing can be made out is that very “limit” — as is the case with the window chink and scull prop; [it] is like *yaogu*, suspended at the belt of a drum,

where both ends are equivalent and in the middle there is a crosspiece is narrowed, and when one raises his arm [for a beat], its shadow jumps down, the arms goes down — but the shadow jumps up; it is rather evident.

The cavity in the concave mirror — if the sun reflection can be caught by it, then its beams will be directed inward — but take the mirror one-two *congs* aside, the beams will gather together in one spot at the size of a sesame seed and each unit [in it] will ignite itself. This will be similar to the narrowest spot of the drum suspended at the belt.

But is it indeed characteristic only of objects? It's the same for people: rare are such people for whom there is no “limit”. Take a look from a short [distance] — benefit and harm alternate each other, truth and lie oppose each other; from afar — a man makes an enemy for himself out of himself and turns his enemy into himself. Not to seek to remove this “limit” and to desire to see things not turned upside down at that — oh, so hard!

In “You yang za zu” it says: “The sails of a seagoing craft is like a shadow of a pagoda turned upside down”. Absurd words. A shadow turns only if [the light] passes through the window chink — such is the immutable order of things.