

# philippine studies

Ateneo de Manila University • Loyola Heights, Quezon City • 1108 Philippines

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*Philippine Studies* vol. 19, no. 4 (1971): 731–732

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Fri June 30 13:30:20 2008

## The Color of a Lunar Eclipse

VICTOR L. BADILLO

On 7 August 1971, at the relatively late hour of 3:44 in the morning, astronomy students who had kept an all-night vigil at the Diliman and Loyola Heights campuses were rewarded for their efforts with the spectacle of a *Raho-tambaga*. They saw a copper-red lunar eclipse, although it was probably more orange than red. Non-scientists may wonder at this, but red eclipses are quite frequent, while the black-and-grey lunar eclipse is a rare occurrence, having happened only a mere dozen times from 1601 to 1963.

As is known, a lunar eclipse occurs when the moon moves into the shadow of the earth. At totality, when the moon is entirely immersed in the earth's shadow, the moon is dark. But, except in rare instances, the moon does not really disappear. It is in fact visible to the naked eye and its reddish features are distinctly discernible.

In their ignorance, most peoples before the advent of modern astronomy explained the disappearance of the moon during its eclipse by saying that an animal was devouring it. When this happened, they created all sorts of loud noises to scare away the beast. Apparently, this worked: the moon managed sooner or later to reappear.

Among the peoples of India, the monster's name was RAHU, a word of Sanskrit origin. The Dayaks of Borneo used the same word but added a variation. They spoke of three Rahus, to wit: RAHO-BAHUANG, RAHO-TAMBAGA, and RAHO-AMBON.

If the moon during the eclipse is black or not visible, the devouring monster is *Raho-bahuang* (literally, bear eclipse). If the eclipsed moon appears reddish, the attacking monster is *Raho-tambaga* (copper eclipse). If the eclipsed moon appears grey, the menacing monster is called *Raho-ambon* (fog eclipse).<sup>1</sup>

It was Kepler around 1620 who first proposed the earth's atmosphere as an explanation for the red lunar eclipse. The earth's atmosphere, he claimed, acts like a prism and refracts or bends the

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<sup>1</sup> F. Blumentritt, "Diccionario Mitológico de Filipinas," 2nd ed., in W. E. Retana, *Archivo del Bibliófilo Filipino* (Madrid: Minuesa de los Rios, 1896), vol. 2, pp. 335-454, 511.

sun's light into the shadow. By the process called "Rayleigh scattering," it neutralizes the light of the blue rays. This is why the earth's shadow looks red to the naked eye. The brightness of the red light illuminating the moon varies with each eclipse because of the variable meteorological condition of the atmosphere. Even the red rays are weakened if heavy clouds and large amounts of dust are present along the paths through which the light must pass to reach the moon. Should this condition be fulfilled all around the world, a rare happening, the result is the common dark shadow.

A tribute is, therefore, due to the observational prowess of the ancient Dayaks. No doubt, others had observed the variety in lunar eclipses, but apparently had not enshrined their observations in their tribal traditions. One can also appreciate the significance of this lunar tradition with the help of the Spanish translations. BAHUANG means bear<sup>2</sup>, which in Spanish is *oso*. But it has always been rendered as *oro*<sup>3</sup>, which says the exact opposite, gold or bright instead of black or dark. RAHO-BAHUANG literally means, therefore, bear-Rahu, or dark Rahu. However, Blumentritt and Hardeland render this respectively as *eclipse de oso* and *Baren-Finsterniss*. That is, Rahu signifies either the monster or the eclipse, the cause or the effect. In Tagalog, LAHO is the animal or also the eclipse,<sup>4</sup> although present-day Tagalog deemphasizes the animal in the eclipse. One can note that familiar R-L shift in Tagalog. Incidentally, almost all the other Filipino tongues employ the Spanish word *eclipse*.

Though the ancients never sat down to settle the color of a shadow, their folk beliefs concerning lunar eclipses contained some substratum of truth.

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<sup>2</sup>A. Hardeland, *Dajacksch-Deutsches Worterbuch* (Amsterdam: Druck von C. A. Spin and Sohn, 1859), p. 453.

<sup>3</sup>Blumentritt, *op. cit.* See also Z. M. Galang, ed., *Encyclopedia of the Philippines* (Manila: Exequiel Floro, 1950), Vol. 10, pp. 219-97. Blumentritt's first edition, serialized in *La Solidaridad* between June 1893 and February 1894, does not contain this passage.

<sup>4</sup>S. Laktaw, *Diccionario Tagalog-Hispano* (Manila: Imp. y Lit. de Santos y Bernal, 1914), pp. 532-33.