

# SCIENCE

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# LETTERS

## Ice Age "Venuses"

The Grimaldi Ice Age figurines referred to in *Random Samples* of 18 February (p. 923) were shown in 1914 to George McCurdy of the Peabody Museum at Harvard University by the daughter of the excavator, L. Jullien. In 1939 they were offered for sale to the American Museum of Natural History, who sent photographs to the Peabody Museum. Hallam Movius bought the most important of these for the Peabody. It is important, not because it is a "masterpiece," but because it is the only Ice Age carving depicting two females, one side pregnant, and the other not, thus confirming the presence of both concepts in Ice Age female imagery (Fig. 1). The long archaeological argument



**Fig. 1.** Grimaldi steatite figurine, three-quarter (left) and rear (right) view, from (1, p. 809) (Courtesy A. Marshack).

as to whether pregnancy and nonpregnancy were depicted appears to have been settled by my analysis of the figurine published in 1986 (1). The remaining Grimaldi figurines are patently "crude" carvings. It was likely for this reason that they were not purchased earlier.

Early in the 20th century, museums and collectors were primarily interested in purchasing obvious "masterpieces." The best of the Grimaldi figurines had been purchased early in the century for the Musée des Antiquités Nationales in France. Such "masterpieces" had long shaped archaeological theories concerning the quality and meaning of the so-called "Venus" figurines.

The new set of Grimaldi figurines may, therefore, be important precisely because of their ostensible "poor" quality. There are

many classes and types of female imagery with different apparent meanings and uses, and one class, patently "crude" and often relatively quickly made (but not works in progress), was apparently produced by less skilled carvers for short-term, or even one-time, ritual use (2). The "masterpieces," on the other hand, often show evidence of long-term curation, use, and reuse.

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## References

1. A. Marshack *L'Anthropologie* 90, 807 (1986).
2. ———, *Proc. Prehist. Soc.* 57, 17 (1991); *The Roots of Civilization* (Moyer-Bell, Mount Kisco, NY, 1991), p. 282.

I have read with some amusement the speculations concerning the purposes of the 20,000-year-old "Venus figurines." It seems to me that the simplest and most obvious explanation for them has been overlooked, namely, that they are the Epipaleolithic equivalent of the centerfold.

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## The Meaning of Models

Three cheers for Naomi Oreskes, Kristin Shrader-Frechette, and Kenneth Belitz for their much needed critique of "verification, validation, and confirmation of numerical models . . ." (*Articles*, 4 Feb., p. 641).

Two points require amplification. First, the impossibility of "verifying" or "validating" models is not limited to computer models. All theories invoke auxiliary hypotheses and rely on imperfectly measured data. Any nontautological theory (that is, any theory that refers to the world) is underdetermined and thus unverifiable, whether it is embodied in a large-scale computer model or consists of the simplest equations. The differences between traditional, analytic theories and large simulations are differences of degree only. Large-scale models, because they require estimation of many more parameters and boundary conditions, have been the focus of the