ter or worse than art, or perhaps other sciences, at revealing basic needs, functionality, or the nature of the contrived versus the objective (*1*). Concepts of the natural seem to have been used historically to control what is thought to be possible (*2*). This is not to claim an unbridled relativism, but to remain skeptical of the contrary position (*3*).

Brennan is right, that *noting* that something might be different from what it seems does change things. Clarke shows how that noting seems to be involved in the confusion between the ordinary everyday attitude and the scientific (or philosophic) one (*4*). I conclude that many scientists' concept of *tree* is not the one they would use in the laboratory, but the one that they use on their outdoor walks. Probably it is true that only God can make such trees; of course that is exactly what I ignored in my article, although I hope to do justice to the problem in future work.

The virtue of the trees in the Shenandoah National Park is a result of the protective acts of the Department of the Interior, which were part of a deliberate design decision. If there are any pines among those forests, however, that design decision also resulted in the production of photochemical smog due to α-pinene, which is emitted from pine trees (*5*).

Hyde and Joni Mitchell may be right, "[t]hat you don't know what you've got [t]ill it's gone." But the greatest waste in the United States today is probably not of natural resources, but of human resources, as seen in poverty and unemployment.

John Krutilla has kindly informed me of an error in my reading of his work (*6*). This can be corrected by deleting the bracketed expression "[for the reversion rate]" from the quote beginning on page 451 of my article.

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References and Notes

1. For a discussion of the relationship of art to basic needs, in past and present, see L. Steinberg, *Other Criteria* (Oxford Univ. Press, New York, 1972), p. 55.
2. Perhaps the most extreme, but well-thought-out, view is to be found in M. Heidegger, *Being and Time*, translated by J. Macquarrie and E. Robinson (Harper & Row, New York, 1962), p. 100. The "figurator" question needs to be carefully stated if it is to be part of ordinary activity; *ibid.*, p. 409.
3. The concept of "forms of life" as hinted at in L. Wittgenstein, *Philosophical Investigations* (Macmillan, New York, 1958), section 23, is probably the appropriate one here.
4. T. Clarke, in *Philosophy in America*, M. Black, Ed. (Cornell Univ. Press. Ithaca, N.Y., 1965), pp. 98–114; *J. Phil.* **69**, 754 (1972).
5. L. A. Ripperton, H. Jeffries, J. Worth, *Environ. Sci. Technol.* **5**, 246 (1971); L. A. Ripperton and D. Lillian, *J. Air Pollut. Contr. Ass.* **21**, 629 (1971).
6. J. V. Krutilla, C. J. Cicchetti, A. M. Freeman III, C. S. Russell, in *Environmental Quality Analysis*, A. V. Kneese and B. T. Bower, Eds. (Johns Hopkins Press, Baltimore, 1972), pp. 69–112.

Warburg Theory of Carcinogenesis

In the article by D. H. Koobs about the relation between energy metabolism and cancer (13 Oct. 1972, p. 127), the name of Otto Warburg is not mentioned. This is strange in view of two aspects of the article. In the brief historical review, the fact that Warburg was already studying the energetics of cancer in the 1920's is not noted. Koobs suggests a theory in which a reduction in oxygen tension could lead to carcinogenesis. The resemblance of this theory to the old Warburg theory, in which irreversible injury of respiration leads to cancer, is not noted (*1*). Either Koobs is unaware of the Warburg theory, or else he does not cite it because of its present unpopularity. One may not agree with Warburg's conclusions, but it is only fair to give credit where it is due.

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Notes

1. The relevance of the Warburg theory of carcinogenesis to modern cancer research will be discussed in an article by A. E. Smith and D. H. Kenyon, *Oncology*, in press.

I felt that the presentation of Warburg's theory, so widely known, would have been distracting; evidently its absence has distracted Smith and perhaps others. It does seem rather clear, however, that a reduction in oxygen tension which may lead to genomic derepression, changing the emphasis of energy metabolism, is a process which hardly resembles an "irreversible injury" to respiration. In fact, ascites cells growing under oxygen tensions too low for their normal counterparts to survive, continue to produce mitochondria having no apparent defects (*1*).

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1. J. B. Chance and B. Hess, *Science* **129**, 700 (1959).

Field Ion Microscopy

Ottensmeyer, Schmidt, and Olbrecht (12 Jan., p. 175) describe a technique for extracting images of sulfur atoms (atomic number $Z = 16$) from dark field electron micrographs of sulfur bearing molecules. They state that the lighter atoms have only been resolved with certainty by the dark field method. The authors imply that the application of the other techniques, field ion microscopy and scanning electron microscopy, are thus restricted in their application to studies of lighter elements. Such an implication is probably related, in the field ion case, to a very early literature citation dealing with that technique (*1*). It thus seems appropriate to note some of the recent advances in field ion studies of the lighter elements.

While field ion microscopy (FIM) is still in the development stage when compared to scanning electron microscopy and transmission electron microscopy, FIM even now can be used to image the individual atoms of the crystal lattice of light materials such as aluminum ($Z = 13$) (*1*) and beryllium ($Z = 4$) (*2*). Such images are *not* projected from films deposited on a heavy metal substrate, for example, aluminum over tungsten, but are generated from needle electrode specimens produced from bulk material. Furthermore, while it is necessary to use the more advanced methods of FIM practice (closely controlled cryogenic temperature levels, ultrahigh-vacuum background pressures, argon-ion imaging gas, channel plate image intensification) for observing aluminum, materials such as iron ($Z = 26$) and commercial iron alloys (steels) have been routinely studied with much less elaborate arrangements (*2, 3*).

Gradually, as more results become available, FIM is being recognized as a tool for surface studies and for atomic scale microscopy. The results also demonstrate the wide range of materials which can be studied by the technique.

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3. E. W. Mueller and T. T. Tsong, *Field-Ion Microscopy* (American-Elsevier, New York, 1969); S. S. Brenner and S. R. Goodman, Sixteenth Field-Emission Symposium, Mellon Institute, Pittsburgh, 1969; J. A. Clum *et al.*, *ibid.*; M. H. Richman, Seventeenth Field-Emission Symposium, Yale University, New Haven, Conn., 1970.