pared to the rate of replacement of either species by the other, then the two complete competitors may, in fact, continue to coexist for a long period of time.

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If one thinks of a corporation as an individual, Gordon Tullock's criticism is justified. But this "model," though sanctified by a century's evolution of U.S. legal theory, is not the only possible one. One can also think of a corporation as an aggregate of individuals competing with other aggregates engaged in the same line of business. We assume no interbreeding of the aggregates ("mergers"). The equivalent of biological reproduction may be taken to be the hiring of new personnel. The limit of possible income is the limit of consumer demand for the goods or services of the kind offered. If there is free competition and no ecological differentiation, the most efficient aggregate will necessarily displace all others.

A tendency toward this sort of displacement is seen also in the competing of any two "species" of cells within the same individual whenever there is a breakdown of the poorly known cybernetic controls that keep the various kinds of tissues within bounds. See, for instance, G. Crile's review of the cancer problem [*Perspectives in Biol. and Med.* **3**, 358 (1960)]. Within a multicellular body that must meet certain stringent demands of the external environment, the exclusion principle cannot, of course, be worked out to its conclusion; the multicellular envelope dies first.

Werner G. Heim's remarks point up some important points which were scarcely more than hinted at in the last section of my article. We now know of many competing species, or competing alleles within a species, that manage to coexist because their relative competitive efficiencies change with the seasons, and the seasons always change. N. W. Timofeef-Ressovsky [*Biol. Zentr.* **60**, 130 (1940)] has carefully described the seasonal alternation of genotypes in a beetle. Comparable studies have been made with other species by E. B. Ford in England and T. Dobzhansky and his students in this country.

In addition, our theory must take account of changes in the environment that are brought about by organisms themselves. M. J. Beijerinck's "enrichment culture" method [see F. Stockhausen, *Okologie, "Anhäufungen" nach Beijerinck* (1907)] is a direct application of the competitive exclusion principle to the problem of securing a nearly pure culture of the wanted species from a very mixed natural culture. But the method is limited by the fact that, in general, any species multiplying in a closed system will tend to make the environment less favorable for its own way of life, and thus more favorable for other forms. The result of a succession of such alterations is "ecological succession."

Facts such as these do not undermine the principle; rather, their explanation (when achieved) enriches the theory.

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Names for the Sun and the Moon

The Future Scientists of America Science Club of Bergenfield, N.J., propose [*Science* **131**, 380 (1960)] the proper names *Sol* and *Luna* as substitutes for the better-known *sun* and *moon* on the ground that the latter words are common nouns and not proper ones. While the argument is plausible, I think it should be pointed out that logical reasons can be adduced for *sun* and *moon*, that the question is not a scientific one but one of English usage, and that some of the assertions are too strong.

To my knowledge, no English-speaking person ever refers (excepting in poetic or heroic utterance) to "sun" or "moon"; it is always "the sun" or "the moon." Use of the definite article indicates the object without ambiguity, whether the names are capitalized or not. We see the same usage in the terms *the nation, the president,* and especially *the earth, the world,* and *the galaxy*. It is equally possible to speak of "a sun" or "a moon" or "a nation" (but not so easily of "an earth"), and every person moderately familiar with English understands what is meant. The logic of the matter is that the definite article is often as good as a special name and is almost always used in place of the latter whenever it is not ambiguous—for example, "the sky," "the ocean," and (in the family) "the newspaper" and "the car." Furthermore, there is nothing wrong with capitalizing *Sun* and *Moon* if anyone wishes to do so; it is done in some astronomical publications, for consistency with *Venus* and *Jupiter*, and to avoid very frequent use of *the*.

The experience of centuries has shown that usage cannot be governed by fiat. Educated persons are going to be guided by dictionaries, and dictionary-makers, by literary usage, not by pseudo-scientific jargon. It is not possible for a group of scientists to reform the language to the extent proposed, even if they should be generally agreed on the desirability of doing so. I urge all serious students of science to devote their energy to the subject, rather than to hopeless causes.

Sol and *Luna* cannot rightly be said to be established names, excepting perhaps in science fiction; the "reference material" available to Vincent Massaro is not entitled to as much regard as are standard dictionaries and encyclopedias. Fowler, in his *Modern English Usage*, calls *Sol* a sobriquet, "a thing to be avoided"; he does not mention *Luna*. The words *sun* and *moon*, at least when prefixed by *the*, do not convey a "vague notion" to "people throughout the world." Such exaggerations are better avoided when one is exhorting scientists, for they have an effect opposite from the one intended.

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The Future Scientists of America Science Club decided to differentiate our sun and our moon from other suns and moons by giving them special names—*Sol* for the sun and *Luna* for the moon.

There can be no doubt that it is necessary to have special names for our sun and for our moon. It is true that "sun" in general must be distinguished from the sun that is the center of our planetary system.

The Future Scientists of America attempt to introduce the word *Sol* as a name for our sun, and they overlook the fact that this is a word not only from the extinct Latin language but also from the very vital Portuguese and Spanish languages. Not less than 20 nations on the American continent speak Spanish or Portuguese, and their *sol* corresponds to the English *sun* in all respects. So, when a specialized alternative for the English *sun* is necessary, then it is just as necessary for the Spanish and Portuguese *sol*.

I think that new words introduced in science must be acceptable to as many nations as possible. This cannot be achieved by giving a frequently used word from one group of languages a special meaning in another. It must be confessed that such specialized definition has occasionally occurred in the past. However, it seems to me unique that such a popular and common word as the Spanish-Portuguese *sol* should be suggested as a stopgap in an international science such as astronomy.

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Massaro regrets the lack of proper names for the sun and moon of the earth. He recommends, for *international* use, the words *Sol* and *Luna* as proper names for these two bodies in our system, the words *sun* and *moon* to be retained as common names for the center of a system and a satellite in general. Unfortunately, Massaro considers the problem solely from the point of view of his own language, in which *Sol* and *Luna*, being different words from the common designations *sun* and *moon*, may easily be established in the usage suggested. But what about other languages? For instance, *sol* is the common name for sun in Danish, Swedish, and Norwegian, and the Russian common name for moon is *luna*.

Being no authority on the question myself, I should not have written this letter save for the fact that Massaro is not the only person to take such an attitude to linguistic qustions of international interest. Thus, in the recent discussion in *Science* on the problems connected with transliteration of Russian texts, the proposals advanced were largely based on English pronunciation, irrespective of the fact that certain letters or combinations of letters sound quite different in other languages. In deliberating such problems with a view to putting forth recommendations for international usage, those concerned would be well advised to consider carefully the suitability of their proposals in different languages.

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