It is unnecessary to list the subjects Davitashvili covers, for he leaves almost nothing relative to the geological record untouched. He treats all major questions fully and gives ample illustrations. The analyses include such examples as an account of the sequential changes in the "Paratethyan" sea and their effects on the biota of successive times of high and low salinity. A parallel is drawn with the Permian, also a time in which there were alternating periods of high and low salinity and one which was followed by what many have considered to be an epoch of major extinctions. He outlines the evidence for a gradual change from the Precambrian into the Cambrian, with documentation from rather obscure parts of the record. The role of restricting ranges and information from studies of relicts are given special attention. Considerable space is devoted to birds.

From these studies, and comparable ones of other geological ages, Davitashvili reaches the conclusion, which is certainly sound from what he has to say of the evidence, that biotic factors involving competition among organisms are critical and that abiotic factors, even those induced by major geological changes, are secondary, being active only over limited areas. This he has found to be the case at all stages in geological history and to apply equally to all groups of invertebrates, vertebrates, and plants.

Although hints of Davitashvili's devotion to dialectical materialism appear at places in the book, they are not obvious. His conclusions are cast within this framework, however, and with this background it seems impossible that he should have reached any others. It is important to understand this to evaluate the book. The work of Davitashvili and other dialectical-materialist evolutionists is not unique in this respect, however, for the conclusions that a scientist comes to depend on the assumptions, conscious or unconscious, with which he begins. This is particularly the case in the study of extinction, where the data are indefinite and difficult of interpretation and the events can be reconstructed only according to some fundamental framework.

Dialectical materialism in evolution abrogates the possibility of catastrophism and establishes gradualism, with causal factors related to the inevitability of "spiral" progress in which the "negation of negation" is basic. This pattern is explicitly outlined by Davitashvili in "Problems of Methodology in the Study of Evolution of the Organic World." Beyond the systematic presentation and discussion of these problems and recommendations on ways they may be handled, the major value of this book for non-Russians lies in the fact that it makes clear what is involved in the application of the evolutionary elements of dialectical materialism to organic evolution. It must be recognized that there are serious students of evolutionary biology who approach the subject in this way, and the work of these persons should not be cast out without a hearing. Davitashvili himself makes a plea that the data accumulated in recent years by Michurinists, some of which he cites, at least be looked at.

One way in which the philosophical assumptions of this book and of others with a similar base are manifested is in the frequent use, in criticism of other studies, of such words as "metaphysical," "idealistic," "finalistic," "fixistic." Special meanings are attached to these words which must be taken into account. For example, Davitashvili uses the term "metaphysics" ("Problems of Methodology," chapter 7) "in the sense in which it is understood in Marxian dialectical philosophy—as a method of thinking contrary to the position of dialectics." The point does not need to be labored, for without full reading such a discussion cannot be very helpful.

There are some sharp contrasts in the ways of thinking revealed in the books reviewed here. Whereas microevolutionary processes, especially the genetics involved in the origin of variation, are held to be basic in the book by Timofeeff-Ressovsky, Vorontsov, and Yablokov, Davitashvili rejects genetics as a part of the science of evolution, although he acknowledges its significance as a field in its own right. What we see instead is adherence to classical Darwinism, which he continually affirms, and criticism of the post-Darwinian studies, which make up one side of the neo-Darwinian school of the authors of "An Outline of Evolutionary Concepts."

Why, one may ask, does Davitashvili reject genetics? This question is difficult and subtle, but to me the rejection seems related to the principles of dialectical materialism. He and others feel Darwin's work admirably demonstrated the necessity of the "inner" and "outer" duality, whereas genetics, which finds cause of change without dual negation, is necessarily "idealistic" and hence objectionable.

All three books treat progress in evolution as a major issue. Timofeeff-Ressovsky, Vorontsov, and Yablokov consider several ways in which the term "progress" may be interpreted. These are more or less traditional, and accord with much Western thinking. By some their discussion will be thought to leave serious questions unanswered. Davitashvili thinks the question of progress has been largely ignored by followers of the "synthetic" or "post-neo-Darwinist" theory. In his treatment progress is basic and inevitable, a major principle, essentially *the* principle, upon which interpretation of evolution is to be based. Progress is a law of nature, and organic evolution is one of the clearest examples of its operation in the natural world. Further, evolutionary progress can be understood only on the basis of the methods of dialectical materialism (pp. 121–22 in "Problems of Methodology"). Only in the study of human development do other laws, those of social evolution, come to contribute to total understanding.

Viewed together, these three books strongly contrast the way of thought of two very different schools. Without arguing the merits of one or the other, which would require judgment concerning the basic premises, I think it is important that students of evolution, regardless of their convictions, be aware of the implications of these two ways of thought. In addition, of course, an understanding of the relationships of these views to still other ways of viewing the panorama of life, such as catastrophism, to which both schools take strong exception, is important to round out our efforts to understand the organic world.

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Folk Architecture

House Form and Culture. AMOS RAPOPORT. Prentice-Hall, Englewood Cliffs, N.J., 1969. x + 150 pp., illus. Cloth, $4.50; paper, $1.95. Foundations of Cultural Geography Series.

What factors can best account for the great variety of house forms among so-called "primitive" and "folk" societies? In this suggestive essay containing

numerous sketches, footnotes, and an extensive bibliography, architect Amos Rapoport tells us that practically everything can and does influence house form, but that the primary determinants lie in the sociocultural realm.

Distinguishing between folk and monumental architectural traditions, Rapoport declares his interest in the work of the nonspecialists. Whereas monumental architecture is described as the work of men of genius, as self-conscious, imposing, and reflective of the culture of the elite, folk architecture is unpretentious, the work of non- or part-time specialists, and is more directly representative of the needs, norms, and world views of the common man. Within the broad classification of folk architecture the author further distinguishes primitive, preindustrial vernacular, and modern vernacular, each type representing greater specialization and sophistication than the one preceding it. (The last, modern vernacular, is mentioned only in passing and refers in part to an American folk idiom expressed by some tract homes, motels, and Doggie Diners.)

The purpose of this classification is to allow the reader to focus on what I might term the functionally equivalent features in the form of folk domestic architecture wherever it is presented. Obviously, to some cultural relativists there are no functionally equivalent features, especially if we exclude from consideration the monumental part of the built environment.

Initially the author is careful to avoid using the words "cause" or "determine": "One must be careful not to speak of forces *determining* form. We must speak of coincidences rather than causal 'relations' since the complexity of forces precludes our being able to attribute form to given forces or variables." Later, however, he freely uses both words when the occasion demands.

Single-factor theories from the physical determinist realm, which postulate as determinants such factors as climate, site, and materials, as well as those from the cultural realm, which find explanations in such factors as defense, technology, economics, or religion, are all reviewed briefly and dismissed as inadequate to explain the varieties of house form of the folk tradition. They do not sufficiently account for situations in which similar forms are found associated with radically different "forces" or, conversely, for situations in which similar forces or environments have very different forms linked to them. But when one attempts to prove the inadequacy of generalizations by presenting contrary examples the proof is subject to the total size of the data base from which they were drawn. Determinists would only have to show a dominant tendency in a more broadly based sample. To Rapoport, climate, materials, site, and technology are secondary shaping forces providing both alternatives and limitations for the expression of sociocultural patterns. There is nothing particularly earth-shaking about such a conclusion. Daryll Forde in 1934 made a similar statement concerning the effects of the perceived environment, in his book *Habitat, Economy and Society*.

Nevertheless, if we were to apply Occam's Razor and ask Rapoport to attempt to predict the general form of a house from his list of sociocultural factors he would probably ask us to provide facts concerning the following: the structure of the primary group, the way such a group makes a living, the social position of women, and the norms and attitudes about food, light, air, comfort, privacy, and social intercourse.

The theme of causality is presented mainly, I think, to allow the author to discuss his subject broadly, for neither the idea of "form" nor that of "cause" is explored to any depth, and the discussion of house form is remarkably diffuse.

In passing, I was unable to discover where the author got his descriptions of Eskimo, Mongol, and Paiute dwellings and I failed to find in the reference list a recent work he cites by Calhoun and Christian and another by Chombart de Lauwe. I enjoyed best the last chapter, "A look at the present," where I learned from a footnote that high-rise buildings now being built in Rangoon and Bangkok are required to have separate abodes in each unit for the guardian spirits.

Of the many objectives Rapoport set for himself in the beginning chapter, the last one listed seems to be the best accomplished: "to suggest some of the ways of looking at these forms in order to give a feel and the sense of the subject—and to awaken interest in it, and sensitivity to it."

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A Little-Known Continent

Biogeography and Ecology in South America. E. J. FITTKAU, J. ILLIES, H. KLINGE, G. H. SCHWABE, and H. SIOLI, Eds. Junk, The Hague, 1968–69. 2 vols. xxviii + 946 pp., illus. $20.80 each volume. Monographiae Biologicae, vols. 18 and 19.

In at least some biological respects South America is the least known continent. Parts of other continents may be less known, but all of South America is inadequately known. A summary of what is known of its biogeography and ecology is for this reason badly needed and quite difficult to provide. It is sad to report that the present two-volume, 29-chapter compilation better reflects the difficulty than fills the need.

The editors clearly intended to provide not critical reviews of selected topics for the specialist but more general and elementary summaries for the novice. Some statements in the introduction appear to imply that the intended audience is primarily South American, that the editors wish to provide the perspective of biogeography on a continental scale for workers whose view has been limited to their own country. If this was the intention, its execution must be given a mixed appraisal. Some chapters are very much better than others, but the good are far outnumbered by the poor.

These are multilingual volumes. More of the papers are in English than in German (several are stated to have been translated from German); only one is in Spanish and one in Portuguese. Summaries in alternative languages are usually but not always provided.

The coverage is broad, partly and deliberately overlapping. Ecology is understood in a rather primitive, descriptive sense and is touched upon only in chapters on ecological regions, climatology, soils, and conservation. Human effect upon South American biota is a major concern and in addition to many casual mentions is discussed in two chapters, one on conservation and one specifically on human ecology in relation to environment.

Biogeography is more fully covered. There is background discussion of geology, including continental drift, and of "geographical substance," and then strict biogeography: fossil floras, liverworts, cacti, the general fauna, "ground water fauna," the freshwater insects, Coleoptera, Arachnida, mites, mollusks, freshwater fishes, birds, and mammals. Many of the papers are so short as to tend to superficiality, however. (Special-