used to label the mature cognitive activity is applied to infant behavior. However, the described resemblances may be more apparent than real. Can the processes involved in an infant's cognitive *awareness* of objects be similar to those used by an adolescent, for example, who is attempting to understand and to reason through set theory? Surely this level of thought goes beyond sensory and motor acts and involves constructing, manipulating, and evaluating ideas. By assuming a comparability with sensorimotor cognition, the complexity of mature thought is trivialized.

This issue aside, Langer's descriptions of children's interactions with objects are the most detailed ever reported. They are singular in demonstrating the extraordinary attention, precision, experimentation, and organization young children bring to their activities. Langer complements his descriptions with a multilevel developmental model drawn from structuralism, information processing, linguistics, and mathematics, interpreted with his own slant. He calls his model recursive: higher forms of cognition emerge only when earlier forms reach a certain state of development, then both continue to grow. The model is also multidirectional in that logicomathematical cognition occurs separately but interactively with the development of physical (causal) cognition.

Even if Langer's perspective of logicomathematical thought is accepted, two important questions remain: Has he demonstrated sound empirical evidence for his views? Does his model of development make theoretical sense? The answer to both is "not yet." Methodological problems are serious. Although Langer's descriptions are detailed, they are based on too few observations per subject and too few subjects per group. It is difficult to determine whether the actions described are rare occurrences or commonplace and whether they are representative of the groups as a whole. Further, Langer's cross-sectional design is inadequate for his developmental model, which requires longitudinal data. Clearly, a larger study that tests hypotheses longitudinally is necessary.

Potential readers of this book need to be aware that a challenge awaits them. Langer writes in a highly specialized language and ignores virtually all the precepts of Strunk and White. If readers can surmount this hurdle they will find that Langer's premises and observations are not only provocative but suggest other questions about early development: Is control of attention, for example, a precondition for control of objects? Are children's seemingly rule-bound understandings of objects linked to their social understandings and interactions? What facilitates the transformations of the second year, and what hinders them? Langer's ideas will surely stimulate discussion and controversy about the second year of life and the meaning of early thought. Thus, despite its shortcomings, this is a book to read.

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Phytogeography

Floristic Regions of the World. ARMEN TAKHTAJAN. University of California Press, Berkeley, 1986. xxii, 522 pp. $60. Translated from the Russian edition, with revisions by the author, by Theodore J. Crovello. Arthur Cronquist, translation editor.

This book, rewritten from the original Russian edition of 1978, is, I believe, the best published floristic division of the world into such chorionomic categories as kingdoms, regions, provinces, districts, and their various intermediate categories. Each floristic unit is described, at least briefly, with listings of the endemic or nearly endemic families, a generous sample of the endemic and subendemic genera, and those larger families and genera that are heavily represented in the region or lesser chorionomic unit. The degree of generic and specific endemism is regarded by the author as a significant factor in the definition of phytochoria.

The author introduces each region and lesser unit with a selection of references. He describes the area included in each unit with consideration of the variant ranges and boundaries of other phytogeographers. Also for each unit he discusses the richness or poverty of the flora, the principal plant formations, the characteristic, and often relict, taxa, and floristic relationships to adjacent provinces, including enclaves of other floras. A few useful outline maps of northern continents or large regions are scattered in the text to delineate visually the floristic provinces and subprovinces. More such maps, especially for the austral continents, should have been included. Double-page world maps delineating floristic regions of the world are attached to the front and back covers.

The treatment of the various floristic regions is somewhat uneven, for the author naturally gives more attention to those areas with which he is most familiar. It should be noted here that Takhtajan is widely traveled and conversant with the floras of many parts of the world. The editor, Arthur Cronquist, has expanded the descriptions of the floristic regions of temperate North America, giving special attention to the dominant plant communities and the probable history of the flora. For those parts of the world with which I am especially familiar, North and Middle America, Australasia, and Indomalesia, I found the floristic classification and descriptions quite accurate and reasonably adequate.

Probably there are no two phytogeographers who would agree completely with any given floristic classification of the world. Although this book has caused me to modify considerably my own chorionomic classification of the world's floras, I would prefer somewhat different boundaries and ranks for the Pacific and Antarctic phytochoria. I would, for example, prefer to treat the Neozeylandic Region, or most of it, in the Australian rather than the Holoantarctic Kingdom. Likewise I would include the Fernandezian and most of the Chile-Patagonian regions in the Neotropical rather than the Holoantarctic Kingdom. But such classifications are rather subjective, and boundaries have to be rather arbitrary.

The 44-page bibliography, organized as "general" and by kingdoms, is fairly adequate for most parts of the world. I would have included additional titles, especially some of my own papers, but I may be a mite prejudiced here.

An appendix of 52 pages will be considered by many taxonomists at least as important as the text itself, for it is the latest version of Takhtajan's phylogenetic classification of the extant families and higher categories of vascular plants, with indication of the number of genera and species and the geographical distribution of each family. There have been some realignments and considerable increase in recognized orders and families since the last publications of his system. As a somewhat more conservative phylogenist, I wish that the author had applied to his taxonomic classification the splendid principles he enunciated in the introduction for his floristic classification: "Chorionomic inflation threatens to make the floristic system very cumbersome, difficult to visualize, and unfit for use."

The long and invaluable index was prepared by Mabel Cronquist. The book is singularly free of typographical errors and is attractively bound and printed. Briefly, I consider this book to be indispensable for every biological library and for the bookshelf of every taxonomist, ecologist, and biogeographer. I shall certainly assign it as a reference text for my biogeography course this term.

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