
Irrigation in Egypt

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My volume *Early Hydraulic Civilization in Egypt: a study in cultural ecology* (University of Chicago Press, 1976) deals with irrigation agriculture, which provided the economic base for the first civilizations in the Near East. Social scientists have long been concerned with the apparent relationships between irrigation farming, social stratification, and urbanization, but the ecological framework of an ancient hydraulic society has never been systematically examined.

I analyzed the archeological and historical record of settlement, land use, environment, and technology in Egypt from late prehistoric times until the close of the pharaonic era. The evi-

dence shows that hunting and gathering activities remained important long after agriculture was adopted; that artificial irrigation was introduced slowly, as an improvement on natural floodplain irrigation, and that pastoral activities remained preeminent into the Old Kingdom; that lift irrigation on a modest scale was begun in the New Kingdom, and that irrigation of higher ground was impractical until the waterwheel was introduced in Greek times; that settlement of the larger natural flood basins, which required advanced technology and massive labor, remained thin until the Greco-Roman period, creating persistent population gradients within the alluvial lands.

Despite a governmental system of grain redistribution in the New Kingdom, the impacts of Nile flood invariably were so great as to keep population levels well below carrying capacity and to threaten the viability of the national economy in times of recurrent ecological stress. Water legislation was already immutably established in oral tradition before the 1st Dynasty, when a multi-tiered economy and complex social stratification are apparent in the urban sector. But irrigation of natural or artificial flood basins continued to be organized at the local level, and competition for water was never an issue on the free-flooding alluvial lands. It is therefore not surprising that the Old Kingdom bureaucracy cannot be linked to irrigation control. Consequently, although the political infrastructure of Egypt was probably linked to natural flood entities, irrigation did not generate social stratification, managerial bureaucracy, nor a despotic political superstructure.