

Howard T. Odum.

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Howard Thomas Odum (Sept. 1, 1924 – Sept. 11, 2002), usually cited as H. T. Odum, was an American ecologist. He is known for his pioneering work on ecosystem ecology, and for his provocative proposals for additional laws of thermodynamics, informed by his work on general systems theory. He collaborated with his brother Eugene throughout his life.

From CT.org...The following presents excerpts from a Wikipedia article on Dr. H.T. Odum. The summary almost seems a dis-service to an extensive, nationally appreciated career that covered many topics, multi-disciplines and a wide range of innovative thoughts and approaches. Holistic ecologic analysis was first practiced by Dr. Odum. Mixing biology with engineering and electricity was his...and much more. Read the full Wikipedia article and appreciate his many ideas through his prodigious offerings through books and articles.

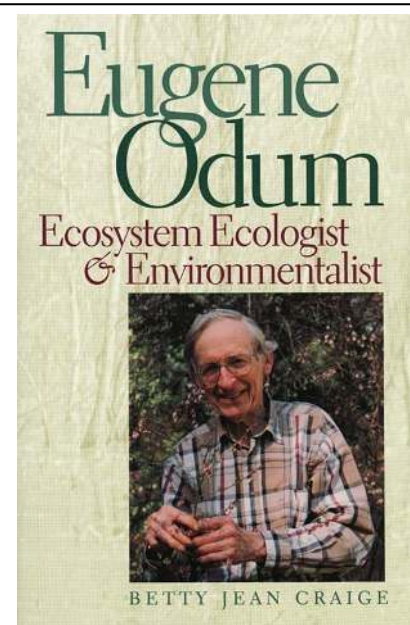
Biography.

Odum was the third child of [Howard W. Odum](#), an American sociologist, and his wife Anna Louise (Kranz) Odum (1888–1965). He was the younger brother of [Eugene Odum](#). Their father "encouraged his sons to go into science and to develop new techniques to contribute to [social progress](#)". Howard Thomas studied [biology](#) at the [University of North Carolina at Chapel Hill](#), where he published his first paper while still an undergraduate. His education was interrupted for three years by his [World War II](#) service with the [Army Air Force](#) in [Puerto Rico](#) and the [Panama Canal Zone](#) where he worked as a tropical [meteorologist](#). After the war, he returned to the University of North Carolina and completed his [B.S.](#) in zoology ([Phi Beta Kappa](#)) in 1947.

In 1950, Howard earned his Ph.D. in zoology at [Yale University](#), under the guidance of [G. Evelyn Hutchinson](#). His dissertation was titled *The Biogeochemistry of Strontium: With Discussion on the Ecological Integration of Elements*. This step took him from his early interest in ornithology and brought him into the emerging field of [systems ecology](#). He made a meteorological "analysis of the global circulation of strontium, [and] anticipated in the late 1940s the view of the earth as one great [ecosystem](#)."^[3]

While at Yale, Howard began his lifelong collaborations with his brother Eugene. In 1953, they published the first English-language textbook on systems ecology, *Fundamentals of Ecology*. Howard wrote the chapter on [energetics](#), which introduced his [energy circuit language](#).

They continued to collaborate in research as well as writing for the rest of their lives. For Howard, his energy systems language (which he called "energese") was itself a collaborative tool.^[4]



Eugene Odum

American biologist

Eugene Pleasants Odum was an American biologist at the University of Georgia known for his pioneering work on ecosystem ecology. He and his brother Howard T. Odum wrote the popular ecology textbook, *Fundamentals of Ecology*. The Odum School of Ecology is named in his honor. [Wikipedia](#) https://en.wikipedia.org/wiki/Eugene_Odum

From 1956 to 1963, Odum worked as the Director of the [Marine Institute of the University of Texas](#). During this time, he became aware of the interplay of ecological-energetic and economic forces. He taught at the University of North Carolina at Chapel Hill, where he was in the Department of Zoology, and one of the professors in the new Curriculum of Marine Sciences until 1970.

That year he moved to the University of Florida, where he taught at the Environmental Engineering Sciences Department, founded and directed the Center for Environmental Policy, and founded the university's Center for Wetlands in 1973. It was the first center of its kind in the world that is still in operation today. Odum continued this work for 26 years until his retirement in 1996.

Ecological modeling, A new integrative approach in ecology.

In his 1950 Ph.D. thesis, H. T. Odum gave a novel definition of ecology as the study of large entities (ecosystems) at the "natural level of integration".^[12] Hence, in the traditional role of an ecologist, one of Odum's doctoral aims was to recognize and classify large cyclic entities (ecosystems). However, another of his aims was to make predictive generalizations about ecosystems, such as the whole world for example. For Odum, as a large entity, the world constituted a revolving cycle with high [stability](#).

It was the presence of stability which, Odum believed, enabled him to talk about the [teleology](#) of such [systems](#). Moreover, at the time of writing his thesis, Odum felt that the principle of [natural selection](#) was more than [empirical](#), because it had a teleological, "stability over time" component. As an ecologist interested in the behavior and function of large entities over time, Odum therefore sought to give a more general statement of natural selection so that it was equally applicable to large entities as it was to small entities traditionally studied in biology.^[13]

Macroscope

Hagen has identified the systems thinking of Odum as a form of holistic thinking.^[40] Odum contrasted the holistic thinking of systems science with reductionistic microscopic thinking, and used the term "[macroscope](#)" to refer to the holistic view, which was a kind of "detail eliminator" allowing a simple diagram to be created.^[41]

General systems theory

Main article: [Systems theory](#)

Odum was elected the 30th President (in 1991) of the International Society for the Systems Sciences (ISSS.org). This was the professional society that earlier was named the International Society for General Systems Research. He presented many papers on the topic at its annual conferences as well as edited the last published General Systems Yearbook. The second, revised edition of his major lifework was retitled Ecological and General Systems: An Introduction to Systems Ecology (1994). Some of his energy models and simulations contained general systems components. Odum has been described as a "technocratic optimist".^[51] His approach was significantly influenced by his father who was also an advocate of viewing the social world through the various lenses of physical science.^[52] Within the processes on earth, H. T. Odum (1989) viewed humans as playing a central role: He said that the "human is the biosphere's programmatic and pragmatic information processor for maximum performance".

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