

PROCEEDINGS PAPERS

WINTER MEETING OF THE AMERICAN AGRICULTURAL ECONOMICS
ASSOCIATION WITH ALLIED SOCIAL SCIENCE ASSOCIATIONS

New Orleans, December 27-30, 1971

PROCESS ANALYSIS AND ECONOMICS OF PRODUCTION

CHAIRMAN: FRED WIEGMANN, LOUISIANA STATE UNIVERSITY

Process Analysis and the Neoclassical Theory of Production

NICHOLAS GEORGESCU-ROEGEN

TO ABUSE a term is to use it without any attempt at explaining its meaning. In this sense, "process" has been abused in all sciences, but in none as much as in social sciences. Most curiously, in economics the greatest abuse has taken place where one would least expect it to happen, namely, in production theory. Neoclassical economists as well as the standard economists of latter days have never paused to describe the process of production in some operational manner so that you and I may know what they meant by the term. In comparison with our classical forefathers—who went to great pains to describe and analyze some processes of production, as Adam Smith, for example, did in his famous illustration of the pin factory—modern economists have found intellectual comfort in pure symbolism, so that they have gradually stopped considering even the traditional classification of the production factors.

Glaring evidence of the modern economist's craving for hollow symbolism is the fact that to this day Philip H. Wicksteed's presentation of the concept of production function constitutes the standard approach to the topic. "*The product being a function of the factors of production we have $P=f(a, b, c, \dots)$* ," Wicksteed [17, p. 4] said, and economists, generally, still define this fundamental concept in the same cavalier fashion.¹ If we have changed anything,

¹ This summary presentation of the concept of production function does not only characterize most textbooks—some widely used, e.g., Stonier and Hague [16, p. 219], Leftwich [11, p. 109], Samuelson [15, pp. 515ff]—but it also appears in the writings of some consecrated pundits of our profession, e.g., Frisch [3, p. 41] and Samuelson [14, p. 57].

NICHOLAS GEORGESCU-ROEGEN is Distinguished Professor of economics at Vanderbilt University.

we have replaced "product" and "factors of production" by the vapid terms "output" and "inputs," a substitution which only increases the reader's illusion that he is offered a cogent analytical definition. Now everyone can rest satisfied with the simple etymological translation: "input" is what we put in, and "output" is what is put out.

To be sure, symbolism has been the soul of science ever since man began to organize his knowledge about actuality. Yet symbolism, if not supported by an operational interpretation of each symbol (or at least of each primary symbol), silently but unfailingly leads the student away from the most arduous and most important task of any special science, that of bringing the human mind in closer contact with actuality. The neglect of clarifying even partially the concept of production function is all the more puzzling in view of the "practical" nature of the economic science as attested, in particular, by the immense number of works which only compute one gigantic "concrete" production function after another.² In any case, the omission is not a matter of purely academic interest only. On the contrary, as I have argued in a series of essays [6, 8, 9, 10, Ch. ix], it falsifies our understanding of the production process, a fact responsible for several important blank spots in neoclassical theory of production. One such blank spot concerns the fundamental difference between productive processes in agriculture (or other strongly seasonal activities) and productive processes in manufacturing. An-

² It is not only because of this neglect that the relevance of these production functions must be questioned. The other reason pertains to the current econometric practices which also involve a chasm between the nature of statistical observations and the stochastic axioms of multivariate analysis. For this last point see Georgescu-Roegen [7].