

## NICHOLAS GEORGESCU-ROEGEN, ECONOMIST OF INTERNATIONAL FAME

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**Rezumat.** *Articolul prezintă o sinteză care îl caracterizează pe marele om de știință american de origine română N. Georgescu-Roegen, personalitate de seamă a culturii economice mondiale, de la nașterea căruia au trecut 100 de ani.*

**Abstract.** *The article presents a synthesis which characterizes the Great American scientist of Romanian origin, N. Georgescu-Roegen, a great personality worldwide economic culture, and from whose birth it passed 100 years.*

**Key words:** Nicholas Georgescu-Roegen

### 1. Introduction

Today we cannot talk about the role of Romanian culture in Europe and in the world without talking too about great American scholar of Romanian origin, namely Nicholas Georgescu-Roegen, since whose birth we celebrated 100 years on February 4, 2006.

He graduated mathematics at Bucharest University in 1926, then presented his doctorate paper in economy, statistics specialty, at Sorbona University in 1930 and continued post-doctorate studies with Karl Pearson during 1930-1932 at London University College, as well as with J.A. Schumpeter among 1934-1936 at Harvard University in Boston.

### 2. Why do we say that Nicholas Georgescu-Roegen is an exception personality of world economic culture?

Nicholas Georgescu-Roegen is a scientific personality known in the whole world. He developed a wide professional activity in Romania as ex deputy director at the Central Statistical Institute in Bucharest, during 1932-1938, economic adviser at the Ministry of Finances, Bucharest, during 1938-1939, delegate of Romania at the Committee for peaceful change, the League of Nations 1938, director of the Trade Office Bucharest, 1939-1944, general secretary of Romanian side in the Commission of armistice Bucharest, 1944-1945.

Professional activity continued after 1945 abroad, as consultant of Ford Foundation, Brazil, 1964, adviser of the Austrian Social Democratic Party, 1976,

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member of the Committee of Mineral Resources and Environment [COMRATE], National Academy of Sciences, during 1973-1975 and member of the Office of Technologies Task Force, during 1977-1978.

He developed a rich didactic activity, both in Romania and abroad. In Romania, he was a teacher of mathematics at the High School I. M. Angelescu in Găești (1925-1926), Military High School Dealu Monastery (1926-1927), High School Mircea the Old, Constanța – his native town – 1927, as well as a teacher at the Bucharest University and Statistical School Bucharest during 1932-1946. After leaving Romania, he continued his didactic activity as a reader and associated researcher at the Harvard University (1948-1949), economy professor at Vanderbilt University in Nashville – Tennessee (1949-1969, as well as in 1976), associated reader at the Statistical Institute, India (1963), at Ford (Brazil) (1964), and at the Institute for Advanced Studies, Wien, Austria (1982). At the same time, he acted with notable results as an associated professor (Rockefeller) Japan (1962-1963), (Ford) Sao Paulo – Brazil (1966), (AID) Brazil (1971), Accra – Ghana (1972), Florence – Italy (1974), Ottawa – Canada (1975), Facultés des Sciences Economiques, Université Louis Pasteur, Strasbourg – France (1977-1978), West Virginia University (1976-1978), Technische Universität, Wien – Austria, at the University of Austin (1979).

Scientific fame at international level of Nicholas Georgescu-Roegen was materialized in several **academic distinctions and titles**. Thus, he was chosen member of Art and Science American Academy (1973), honorable member of Romanian Academy (1991), member of Econometry Society (1950), member of ex Social Sciences Academy (1946), of the National Institute of Sociology (1960), of International Statistical Institute (1970), of the Toscana Sciences and Letters Academy La Colombaria (1977), honorable member Phi Beta Kappa (1976) and of the Applied Econometry Association – France (1977) etc. At the same time, he was eminent associate of Atlantic Economic Sciences Association (1979), researcher with Rockefeller grant, USA (1934-1936) and Fulbright grant, Italy (1958-1959), beneficiary of subsidy provided by the National Science Foundation (1969) and member of Guggenheim Foundation (1958-1959). He received *Earl Sutherland* prize for research achievements (1976), eminent professor Harvie Branscomb (1967), member of the Edition board of *Romanian Encyclopedia* (1935-1947) and of *Econometrics review* (1951-1968), main associated researcher at the Australian Institute of Marine Science, Cape Ferguson, Australia (1979), scientific adviser at the *Economia e Ambiente* (1985), member of the Honorable Committee of *International Review of Sociology* (1985) and of the Consultative Committee International Journal of the Unity of Sciences (1987) etc.

The strong scientific personality of Nicholas Georgescu-Roegen was recalled by researchers and scientists in the whole world, in over 40 books and articles. We

remind here only few of authors, such as Willi Meyer, Nicholas Wade, Stefano Zamagni, Jacques Grinevald, Constantin Negoită, Peter Bell, Mercedes Bresso, Iosif Constantin Drăgan, Richardo Crivelli, Egon Matzner, Philip Mirowski, Paul Samuelson, Giulia Caraguso, Jeremy Rifkin, Preston Cloud, Hugo Cartesins etc. We also remind you the jubiliary volume „Evolution, Well-face and Time in Economics: Essays in Honor of Nicholas Georgescu-Roegen”, by Anthony M. Tang, Fred M. Westfield and James S. Worley, in 1976.

**Publication activity** of the great scholar was materialized in over 25 books and major studies and over 225 articles issued in editions and prestige reviews respectively. We remind you only few of books representative for his main preoccupations: Fixed Coefficients of Production and the Marginal Productivity Theory (1935), The Pure Theory of Consumer's Behavior (1936), The Theory of Choice and the Constancy of Economic Laws (1950), Some Properties of a Generalized Leontief Model (1951), The Aggregate Linear Production Function and Its Applications to von Neumann's Economic Model (1951), A Diagrammatic Analysis of Complementarity (1952), Choice and Revealed Preference (1954), Limitation, Limitativeness and Economic Equilibrium (1955), The Nature of Expectation and Uncertainty (1958), Economic Theory and Agrarian Economics (1960), Analytic Economics: Issues and Problems (1966), The Economics of Production (1970), The Entropy Law and the Economic Process (1971), Energy Analysis and Economic Valuation (1979), An Emigrant from a Developing Country (1988), Nicholas Georgescu-Roegen about Himself (1992) etc.

Regarding his huge scientific work, as well as the wide work generated and inspired from his ideas, reasons and demonstrations, we can state that we face a high titan who hallmarked and brought a precious contribution to the development of world economic culture.

### **3. Economist Nicholas Georgescu-Roegen and his original ideas**

This great economist had several original ideas, because his own life philosophy was *an original philosophy*. Thus, he stated that „you do no philosophy when you also reflect over practical issues of a community or over quantum mathematical structure, but only if you approach with full free spirit the issues which cannot be tested at a test joke.”

He was the man who built philosophy as any other man, putting often questions about things, their nature and relations among them and human spirit, but he went further, „putting questions about questions”.

Georgescu-Roegen thinking was influenced by the events he lived, the stormy life he had, living in Romania under four dictators and during three worlds, giving him a paretian type vision over human society. As mathematician, he studied

Vilfredo Pareto papers and concluded that he was the greatest economist mathematician who ever existed.

Being very interested in facts adequate analytic representation, Roegen considered that utility neoclassic theory needed a fundamental postulate, according to which „within a continuous move from non-preference to preference, related to a given panel, they should pass through an indifference point against that ‘panel’.

Thus, he stated for the first time the necessity of binary indifference postulation, which was later adopted by many other authors.

Through his doctorate dissertation in Sorbonne (1930), Roegen conceived a mathematic method which can discover cyclic components hidden in chronological economic series, concluding that economic phenomena are not governed by mathematic equations.

Being interested in the study of business cycles, he met by chance Joseph A. Schumpeter – person who, both directly and by his papers, had decisive influence both on his later thought, and papers.

Basic sources of his own philosophy are Joseph A. Schumpeter and Karl Pearson. Out of Pearson famous paper „Grammar of Science” and his courses, Roegen took two philosophical principles:

a) stochastic form is not a marginal form, but the only way to represent natural laws (which contradicts with old epistemology), deducing that not simple event but randomly represents an essential factor of phenomena;

b) for us nature consists only in what we can perceive and beyond that there are but hypothetical abstractions, about which meta-physicists can say anything with absolute certainty, because nothing can be controlled (which starts from mankind cosmological condition). Therefore, what we consider laws of nature, aim not the explanation of phenomena but their bypass.

Thus, Georgescu-Roegen philosophy is in essence „machianic” (being inspired from Ernest Mach philosophy and taken over by Karl Pearson), namely a special type of epistemology concerned not with knowledge science or cognitive process as such, but with the issue of adequate analytical representation of relations among facts.

On his opinion, economic science developed a wide literature and under continuous increase based on pure mathematical exercises, which do not correspond absolutely to any facts, even physical ones, and if you start only with mathematics, you can fall into the trap and you cannot even think at epistemology issues.

Thus, we notice that Roegen fully acquired Albert Einstein conviction namely „science without epistemology is primitive and confuse!”

Epistemology issue, which draw his attention when he met Leontief system was: „why we should include only one structural component in analytical representation of a process, when we know that many such components exist?”

Therefore, he elaborated „substitution theorem”, according to which, under balance conditions, each branch must operate with only one specific network within its technological horizon.

Roegen launched the idea that business cycles are not „cyclic” and concerned with how we can represent analytically these cycles.

Thus he reached the conclusion that inflection points of business activity are relaxation phenomenon when the laws of a phase (upward or downward phase) suddenly changes leading to another phase.

Georgescu-Roegen noticed a serious epistemological discrepancy between the two models of production in fashion during 1948-1949, Neumann and Leontief models.

Thus, Neumann model takes into account only stocks and it cannot be seen what happened between the beginning and end of the process and Leontief models takes into account only flows and it cannot be found which of the two processes is more efficient. A production function including only funds or flows is something absolutely absurd and standard production theory teaches us exactly reversely.

For Roegen, the three classical production factors, of richardian type – earth, capital and labour force – are in fact „agents” which change flows of inputs in flows of outputs. Each production process is thus represented, not by an atemporal vector in space of goods, as in the standard theory, but by a curve in the same space, and within natural resources it introduced waste too, which are inevitable, but totally neglected.

Therefore, one process content can be represented analytically by a family of time functions, by a vector of functions such as:

$$[R_i(t); I_i(t), P_i(t), W_i(t); L_i(t), K_i(t), H_i(t)],$$

where alphabetic symbols represent, in order: natural resources, intermediate products, final products, waste and earth (land), capital and labour force.

Georgescu-Roegen is extremely reticent at epistemological level against differential equations, in order to demonstrate how economic growth can be implemented into an economy with problems in this direction, which would constitute the peak of disappointment.

Starting from the idea launched by famous biologist Alfred Lotka, namely our tools play the same role as our biological organs, Roegen noticed the amazing

analogy between exosomatic and endosomatic (biological) organs which evolve slowly, reaching the conclusion that exosomatism represented the starting point of economic process.

For him, man is an exosomatic animal and exosomatism is not only a blessing but it is the origin of inequities within society and among various societies.

Georgescu-Roegen concluded that one of the four laws of thermodynamics, *entropy law*, reflects the fundamental limits all living creatures have and that thermodynamics is physics of economic value. The origin of economic rarity, thus of economic value too, is found in entropic degradation of energy and compact matter.

Since animals became exosomatic, people found numerous production networks. However, only three of these networks made progress in our exosomatic development: agriculture, fire and steam engine discovery, which Roegen called *prometeic networks*.

In actual crisis, he looked for new prometeic networks and found them in the supra-generator reactor, which produces more fissionable fuel than it consumes (danger here being waste), as well as direct solar energy collection by means of some silicon cells, energy which is not enough to reproduce other cells.

Under these conditions, the only solution of mankind is to practice „*energy preservation*”. It supposes – on Roegen conception– the reduction of consumption, in order to decrease the rate of vital resources exhaustion (especially in rich countries, not in developing countries), as well as demographic growth stagnation (especially in developing countries).

Not being economic by trade, Roegen was able to see aspects which those economists by trade refuse to see these aspects which economists took as undisputable.

He noticed that in Romania sacred saint neoclassical principle regarding marginal prices was violated, because they do not maximize the national product itself. In the penury society, it should work more time even in case of zero marginal productivity and national income distribution should not be done based on marginal productivity, but according to some institutional norms (as in most of families).

Inflation – on his conception – is a phenomenon with the most perverse effects, is a keynesian hand, which steals from the pocket of many people, which are not able to take money as loans, with an interest advantageous rate, and to pay it later.

As a mathematician, he reached the conviction that „It is a limit in what we can do using numbers, as it is a limit in what we can do without their help.”, as Robert M. Solow stated that „Mathematic economy should be really something good if from one day to another its practice increases instead of decreasing”.

He also expressed his conviction that he did not know any other scientific discipline in which dialectics should be so necessary how most of mathematic economy sectors.

As any other genius, Roegen also found several „funny ideas”, related to its route against some currents. For instance, the idea that „all natural resources should be worldwide”, to prevent the possibility that increasing penury should lead to higher international existent inequities and finally, to begin some new wars.

Although he agreed with the extension of mathematic use in the economy and his model was Sir John Hicks, however, he was against the abuse of mathematics in this field of science. He stated that price formation by marginal criteria is the worst policy for an agrarian economy with overpopulation. He proposed the abrogation of all passports for international trips, to help people from underdeveloped countries to move freely there where are several opportunities to use their working hand, instead of bringing machinery and equipment in native countries.

He was against dogmatic neoclassic faith that the mechanism of price free formation is the only way to assure reasonable distribution of resources among all the generations and stated that interests of future generations are taken into account because we take care of our children, they take care of our children, and so on.

After stating that it is not possible to do anything by means of numbers, he dared to denounce the stupid request to be able to predict the future of economy using econometric models.

His rich life experience convinced him that when you fight against current, the results of this battle depend on the „position you go against current”.

Nicholas Georgescu-Roegen was born on February 4, 1906, he lived 88 years, of which 42 years in Romania, and died in 1994, his remains were to be back to the country in 1995.

All this life he was anxious to help his native country to become a place better for everybody. He had to run from Romania in 1948, because – according to communist principles – he went surely to prison, being accused of three main crimes: was servant of capitalists, as beneficiary of a scholarship Rockefeller and as president of Romanian Academy of Friendship with the United States, was tough defender of Romania’s rights as general secretary of the armistice commission and was member of National Council of Peasants Party.

For Romanians, Nicholas Georgescu-Roegen remains the builder of a new paradigm in economic science, also having an important contribution to economic epistemology.

He was a man advanced against his time, who mastered economic scientific and philosophical literature, in cultural space of various European languages. His scientific creation enjoyed a wide international fame, bringing all possible mental scientific titles.

As conclusion, we can state without mistake that Nicholas Georgescu-Roegen belongs to universal elite of Romanian origin, besides Cioran, Palade, Eliade, Brâncuși, Enescu, Eugen Ionescu and others.

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