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Una entrevista con Nicholas Georgescu-Roegen

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En Noviembre de 1991, un colega americano y yo fuimos a visitar a D. Nicholas Georgescu-Roegen a su casa de Nashville. El había sido profesor de la Vanderbilt University y ya estaba retirado. Vivía en una casa tipo chalet americano enorme y lo más curioso era que tenía toda la casa llena de libros abiertos y desperdigados por muchas mesas, lo que denotaba su intenso trabajo. Aún vivía su mujer, muy discreta, no tenía buena salud. No me termino de imaginar al gruñón de D. Nicholas sin la ayuda de su mujer ya que realmente se veía que la necesitaba, y estaban solos en aquella casa perdida en una urbanización dispersa.
Hacía unos años (1986) que yo había publicado la Teoría del Coste Exergético y me di cuenta que utilizar el Segundo Principio para aproximarnos conceptualmente a la Economía obtenía unos resultados que filosóficamente ya estaban descritos por D. Nicholas Georgescu-Roegen a principios de los 70 en su libro La ley de la Entropía y el Proceso Económico, cuya excursión intelectual fue la opuesta, acercarse desde la Economía al Segundo Principio.
Siempre consideré que la Termodinámica era esencialmente una Teoría Económica de la Naturaleza y trabajé en ello creando una extensión lógica del Segundo Principio que incluyera las ideas de coste y de irreversibilidad, y con ellas los conceptos de propósito, eficiencia y causalidad. Lo hice con mis colaboradores al viejo estilo Carnotiano, fijándonos en "mejorar las máquinas térmicas", pero nuestra sorpresa fue que D. Nicholas, desde el campo totalmente opuesto de la Economía ya había criticado a este cuerpo de doctrina porque no incluía (ni incluye) el concepto de irreversibilidad y sí en cambio el concepto de total sustitutibilidad del capital por recursos naturales. Jocosamente, Herman Daly se refiere en esto al truco de magia de hacer un pastel sólo con cocinero y cocina pero sin ingredientes.
Georgescu-Roegen es el padre de la Economía-Ecológica, en el que la Termodinámica, y con ella el Segundo Principio juega un papel fundamental. Nosotros (unos cuantos ingenieros termodinámicos de todo el mundo) contribuimos a crear la Termoeconomía que es una herramienta para la mejora y optimización de los sistemas energéticos y que se basa en la aplicación sistemática del Segundo Principio utilizando las ideas de coste y eficiencia. Era evidente la conexión.
Por ello me decidí a conocerlo personalmente. Ya no estaba para muchos ajetreos cuando fui a visitarlo a su casa, y como se sabe murió en 1994. Jacques Grinevald protestó amargamente porque su muerte pasó desapercibida. Yo estaba en Estados Unidos cuando murió y debo decir que el New York Times dio una reseña, desde luego no fue lo que merecía pero con el tiempo su figura se irá agrandando. Ha sido uno de los grandes pensadores del siglo XX.
La entrevista que le hice no pretendía ser una interviú periodística, sino simplemente ser utilizada para mi uso exclusivo y personal. Estaba yo interesado en conocer su opinión sobre temas que me inquietaban como consecuencia del desarrollo de mi propia teoría. Y al menos a mí me sirvió. No recoge lo escrito todo lo que hablamos, sobretodo de algunas experiencias vitales que tuvo visitando España y Latinoamérica. No obstante recoge su opinión sobre su pensamiento, y esto era lo importante. Se ha

transcrito del inglés sin traducirlo al castellano porque así sus opiniones pueden ser mejor difundidas y están menos manipuladas. Puede que sin pretenderlo, éstas sean algunas de sus últimas palabras. Hasta siempre D. Nicholas.

Agradecimiento
Lidia Ranz fue quien transcribió la conversación desde la cinta al papel. No fue un esfuerzo menor ya que la grabación no era de calidad. Quede aquí mi agradecimiento.

An interview with Nicholas Georgescu-Roegen

Nicholas Georgescu-Roegen was born in Constanza, Romania, in 1906. He tells us that despite his second name, which was Romanised, he has Greek roots.

Nicholas Georgescu_Roegen: When my father was born in the nineteenth century (1850) when he was over there, there was a special kind of arrangement. Family names at that time did not exist in Romania. People were named according to where they were from; the upper classes had the names of the places where they had their fields. The other case was almost like that of the Jews.
The Romans had a family name. The Ancient Greeks didn't. It was something like that. My grandfather's name was Athanasius, but his first name was George. And when my father went to school he had to be listed in the register and so the teacher asked him- "What's your name?" and he said "Stavros" "Yes, but what's your family name?" and he said "I don't know what that is." -Well, what's your father's name, then?". "George" -"Very well, then, you're Georgescu!"- a romanisation. So that was how it was. I should have been Nicholas Athanasius, because I'm half Greek, but it isn't -and that's why.

Antonio Valero: You have always encouraged the study of the Ancient Greeks as a way of reflecting on our modern society. Do you believe that Greek thinking has determined our way of thinking, of understanding our present society?

Nicholas Georgescu-Roegen: You know, the British think (and also our American colleagues) bigger and bigger. But if the Greeks had not made us think about the cause, the "proximate cause", the First Cause, we would still be in the same situation as the Indians or the Chinese. Either contemplative, like the Indians, or simply registering facts without asking why. That's why they invented the compass.
Aristotle talks of four types of cause. All of them explain what a thing is, what it is intended for, how it was made, why it was made. I believe the Greeks have given us this view of the world so we can not nowadays ask one single question which has not been asked and found in Aristotle or Plato. There is no single question.
I've just finished reading a book about the future of the human being. The problem which preoccupies many people - physicists, chemists, astronomers - is the future of the universe. They have always talked about this, but now the question has become "why?". Because they say that there is more matter in the invisible universe than in the visible. And now they are trying to get knowledge of the invisible matter - i.e. matter which cannot be seen. And the way they go about that is by asking questions and trying to suggest why?, why?. The Chinese language, the old Chinese doesn't have the word "why?". They knew only for what purpose. As I said, without the Greeks we would still be a contemplative community or society.
One of my colleagues, one day, he says (and I said to him "that's very interesting, because that idea has something to do with what Aristotle said"): "I've never read Aristotle", so I asked him why. That was the wrong word because his answer gave him away. He said "Why should I read Aristotle? He lived twenty five centuries before me. I live now". I talk about it in one of my papers. I get my assistant and ask how far

back the references go of a man who is publishing today, and it will be in the eighties, in 1985 or 6, say. He's in the New Wave. He's not been pushed by, and he's making it. That is the idea. And this is particularly true because it reflects this type of broker business philosophy.

Antonio Valero: In the Promethean Condition of Viable Technologies you propose in the end that conservation is the only solution.

Nicholas Georgescu_Roegen: Do you know why I proposed conservation? Because there's some bad weather coming?... some snow, and I wont be able to go to the grocer's? Because I have to live for three or four days with what I already have in the pantry? Because I should eat a little less than usual every day? No. That's not my idea.
My reason is this -In the past there have been similar crises. At one time there was a wood crisis, such a big crisis that people tried to economise. And in England and even in Norway there are rules and restrictions attached to the cutting of trees. And coal wasn't considered until the 16th century in Europe. The Chinese had it earlier and they used it to make oils. So they knew about it, but it was a very difficult thing to get. You scrambled over the water and there was the mine. All mines have plenty of water in them below the ground, so what do you do? Well, to get at the coal you have to take out the water, so hundreds of horses were used to drain it from the mines - the power of animals was used to get at the coal. And the coal has, say, a kilogram of energy in it so it is not worth using the energy of the animals to get the water out and thereby get at the coal. Then Prometheus' second gift arrived - the steam engine.
Now, you see, at that time there was a change. We know that there have been crises in the past very similar to those we face nowadays. And we know that there was a solution. A Promethean solution. Now, the Economy postponed the real catastrophe for some years. My idea is that with conservation we gain time and in gaining time we make it more probable for a third Prometheus to arrive. If it is to arrive. We don't know what is to come next. This way we increase our chances. If not, what's going to happen? We have to go back to where the steam engine found us. That means going back to the "wooden age". But how do we get back to that? That's the problem I'm talking of. Because you have to share your food with the animals. And there are already too many of us. If we just stopped now there would be some kind of catastrophe, with people who have nothing invading other places and so on. So, in order to slide down slowly from the energy of the steam engine to the energy of wood and perhaps the energy of the winds and the tides and running water which are also solar, though they are called indirect. In order to slide back to the time of Plato, of Charlemagne, of Galileo, we need a slow change that will avoid the catastrophic shake-up of humanity. And this is my reason for conservation. I'm not saying, oh, conservation, conservation, which people think means going without for a few days, not eating everything today. It's not that. Because that would be stupid. One of my colleagues asked me a stupid question - he said "Oh yes, conservation, conservation, but how can you be sure that humanity will even continue to exist in the next thousand years?".
Do you know Eskilos, in Antigone? When the messenger comes to tell him that Antigone has buried her brother, that's bad news, so he came and said "I don't want to bring bad news. Nobody likes to be the bringer of bad news".
And another thing. There are economists who don't like my theory and they say "What sort of time scale are you thinking in? 500 years? 1000 years? 2000? 3000?" They want to fit me into a time scale, to be more precise than anyone possibly can be. I said "I'm talking about the flowing future, the future that is subject to change. Change that I am not able to predict. I can't say it will happen next year or the year after. I only know that things will go in one direction or the other and I'm simply saying here that we're at this crossroads, and that at this crossroads our best option is conservation. Nor is it as simple as I say in my papers. The question isn't to start saying "Oh, Georgescu's going to start conserving". Conservation is

to be applied for just the reason I've come to work with it. I could give you a list of articles on conservation written by engineers. But there is another way to talk about conservation and this is conservation from the point of view of entropy. You can say "Well, there are certain mechanisms, boilers, for example, which exist in order for things to be the way they are, and with a few small modifications we can make them more useful, improve their efficiency". Most of New York, for example, is heated by steam that comes from plants. That's an example of how you can do it. You make the system more efficient because everything remains the way it is. But this is technological conservation. And I'm talking about entropic conservation, in which the conservation of materials is implicit.
I formulated the fourth law which has not been accepted. Why not? I don't know. No one has attacked it. No one has said it's OK. Some Italians have written to me and I haven't had time to answer them. One paper has accused me of trying to present my Law, the Fourth Law, as something new when actually it is a known fact. That was Mr A, and then Mr B comes along and says "No, in fact it's wrong". So someone says it's true but it's been known since the time of Tutenkhamen and another one says it's not known at all. It's new but it's wrong. So in the end I don't know whether what I'm saying is something new or something wrong, or what?

Antonio Valero: Do you agree that recycling is one of the solutions?

Nicholas Georgescu-Roegen: Yes, but not maybe what most people mean by recycling. You know what I said about recycling? What can you recycle? You can only recycle the "carbojunk" That means that you can recycle the matter that is still available but not in a useful form. Broken glass, for example. You can recycle the glass, you can recycle the material, but when a glass breaks you can't recycle that glass. There are some small molecules that you can't recycle. So you can recycle, of course, but there are some people who maintain that you can recycle completely.

Antonio Valero: And what about production?

Nicholas Georgescu-Roegen: I have written about this too. Production means time. I was in Rome, at a meeting of the Association of Italian Economists and I noticed how people who have worked on conservation and discuss the problems of the conservation of energy confuse the ideas of flows and resources. A lot of people talk about the problem of resources. But what is output a function of? Labour, machinery, capital and natural resources. In Economics we can make this substitution - you can have a farm with more capital and less labour or more labour and less capital. Or more land and less capital or more capital and less land. This is the substitution. So they say "If you reduce the resources you can increase the capital". But what matters is not substitution but complementarity.

Antonio Valero: What can you tell us about your professional relationships?

Nicholas Georgescu-Roegen: Listen - three or four times my old professors, my old colleagues have treated me in a most incredible way. Once I presented a paper at the International Economics Association in Rome. Only invited speakers were allowed and you had to submit your paper at least a month in advance for distribution. You personally didn't present your paper. In your discussion you had to summarise and say what you thought was good about it and what was bad. My reporter was an economist from Israel, Potemkin. My paper was the first paper, the opening paper of the Congress. The previous evening we were put together in the same hotel and had dinner together. Potemkin sat opposite me at table and talked about all kinds of things - paradise, hell, nice girls, bad men... this was his conversation. And he had to present my paper the next day. He got up and he said "I cannot summarise or present the content of Professor Georgescu's paper because it is based on a fantastic mathematical error" and then he sat down.

The conference was on agriculture in the developing countries. Most of the agronomists and economists there knew nothing of mathematics. The only one there who knew mathematics was his assistant and this man, who was there to report on someone else's paper, stood silently on the platform behind him during our exchange of views.
Before I got home I received a letter from the secretary of the Congress in which he said "Here is a copy of a letter from Professor Potemkin - Dear Mr X, having arrived home and read Professor Georgescu's paper, I now realise that he was right and I was wrong, and as wrong opinions should not be put down in black and white I would like to withdraw my comments from the proceedings". And I had to approve this because otherwise the secretary could not accept it. What do you think I did? I let him take it out. What I would have done is this, see. I would have met you, I would have talked about the problem. I would have known I would be presenting your work to two hundred people so I wouldn't simply have stood up and said "Nicholas, I think you are wrong".

Antonio Valero: Do you think that humanity's great theories and discoveries are the results of individual geniuses or of the collective mind?

Nicholas Georgescu-Roegen: People don't produce innovation and invention. The Community does. The Community is like a balloon, and when it's about to burst along comes somebody like Newton. If Newton hadn't existed somebody else would have come along because the idea came to Newton's mind as if he were some kind of interpreter. Someone asked the question - what would have happened if Newton, instead of having the mind of Newton, had had the mind of Kepler? And if Kepler had had the mind of Newton? I wrote a paper on this subject. Were they unique minds? The best argument against this idea is that there aren't you can't talk so much of "people" as of "discoveries". Many discoveries have been made at the same time and I asked why it should be that this is so. Because some are like the answers to mathematical questions. The professor sets a mathematical problem, say - find the solution to this differential equation. Naturally, if the problem is set and it is a problem that preoccupies society, then many people will try to solve it and there would be at that time, or maybe within periods of fifty or a hundred years, the same discoveries made.
Well, I would say that, in that case, how should we see the Law of Gravity? You can look at it as a kind of power that emerges in a uniform manner in the whole of space, the further away from a body you are, the less force there is. Nowadays we see that this led Newton to what we consider his great discovery - gravity. I have given other interpretations in the past, and for other things such as optics, etc. I put it forward as an example of the kind of theory I have about cosmology. If two things are quantitatively measurable and directly connected, the relations between them are linear. There are only a few cases in which linearity works in this way, giving a kind of qualitative residue. If you're an engineer, then you know Hookers Law, which is linear. And any lack of linearity is the residue - the qualitative residue; the phenomenon involves a quality. This is why we have so many different forms of measurability.

Antonio Valero: And what about value and cost?

Nicholas Georgescu-Roegen: That is an extremely complicated question you have just asked. What do you think value is? You might think in terms of something that would make people generally happy, such as democracy, good schools, good universities, good friends. These are things which have a value because we want them. On the other hand, the question is commodity - either you work for something or you pay for it. This means that sometimes you make a trade-off of your own services for those of others. This you do in a market and this is the type of value Marx speaks of, and also the Neo-classicists.
But you will find that I am criticising the people who see energy as a value. Let's say you take some

caviar and some potatoes and you calculate the energy in both of them. One piece of caviar has 1.000 calories and the potatoes you could buy for the same price has an equal number. Engels was the first to complain about this. Engels said, in 1877, that there are people who have argued by measuring the physical force of work and then established how much money this should fetch per hour. This is my criticism of Karl Marx, who only attaches one value to labour and not to any kind of unskilled labour - rudimentary labour, such as a fellow who carries heavy things around a harbour. In the end, they say, you have to be able to measure the accumulated labour. That sounds all right, but I ask - if you establish that one unit of Georgescu's skilled labour is equal to twenty units of unskilled labour, that means the two are substitutable, and my question is: how many unskilled workers would you need in order to write Das Kapital? I would say that's better than Engels. It's a problem.
There are a couple of articles which show you just how absolute the principle is -how, if you accept the principle from the beginning, what kind of absolute you arrive at in the end. And this is worse than in Marx's case, where Marx was saying that labour is substitutable, whereas these people say the same thing about energy. At least Marx has a connection with people. Energy doesn't have this connection.

Antonio Valero: And what about purpose and efficiency?

Nicholas Georgescu-Roegen: I don't know how you can establish the connection between efficiency and purpose, because purpose is something that precedes action - a crime, for example, as the purpose of a criminal, or a dictator - it's not necessary to have a connection between the one and the other. So purpose is a general concept which is attached to something according to a group of people who recognise the existence - and importance - of purpose. Like myself, like many others. Purpose is a general thing and it's an aspect, an element, a part of any connected action. We can't say the moon's orbits have a purpose, but my studying it has a purpose. Two things are connected, and the connection disappears if you eliminate the mind - purpose and error. Nature doesn't make errors - people make errors. When you say 2+2=5, that seems perfect for natural science. An electron in your brain jumps and you write 5 instead of 4. It's an error. It's because of mankind that errors exist, because of man's activities, because their actions have a programme. My wife is European. She washes the dishes. I don't break them. She breaks them - because she is the one who washes them. Error and purpose are connected. Error is entirely due to purpose. The purpose is defeated.

Antonio Valero: Efficiency is a measure of what you want, of what your purpose is.

Nicholas Georgescu-Roegen: You want efficiency, but you also want food, you want to eat, you want to have a family, so you say that purpose is connected to all these activities. Efficiency is one aspect of our activities. Only one aspect. And that's exactly what I'm saying - great efficiency is desirable , but not always. Nowadays it's more efficient to go from New York to Paris by plane than by boat, but is it desirable? Would it not be better to go by boat and not enter into this kind of society? Primarily, there have been a lot of influences on the culture of our beliefs.
My philosophy is to find what is "there". You write the sentence "What is there?" (with a question mark). My philosophy is concerned with what is causally there, do you understand? I'm not interested in what is there in the sense of "What is there?", "What is in the house?". I'm interested in the house, what is another house and what do you mean by "there"? Some people think that "there" is over there and others think that it is in another place, so I want to find out, what is "there"?

Antonio Valero: For example, causality.

Nicholas Georgescu-Roegen: I believe in causality. I'm an Aristotelian. If there's no causality, there's no will. Causality means to say why, for what purpose, and then to say how. You make a statue of marble, or you make it of wood; but what kind of statue would be better made in marble, and what kind of statue would be better made in wood? Brancusi, one of the originals of abstract sculpture, said that every material has in it the type of sculpture that fits it. You take anything that is there as an artist does. You have to discover.

Antonio Valero: Here we leave Professor Georgescu in a room full of books, papers, notes, full of his philosophy. He died a few years after this interview. He was not in good health during his last years but his mind was as bright and sharp as ever, and his temper just as grouchy. Goodbye, Professor Georgescu-Roegen.

Figura: Nicholas Georgescu-Roegen con Antonio Valero durante la entrevista.

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Nicholas Georgescu-Roegen y Antonio Valero durante la entrevista

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