

SHORT BIOGRAPHY FOR MENAHEM ROSEN

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My relations in France (in Israel, I have no relations anymore).

With Nanterre University Paris X: Jacques Bidet, Prof. of Philosophy.

With CEPREMAP, Research Center in Economy, Paris:

Dominique Levy and Gerard Dumesnil.

In physics: My old Friends, Michel Soutif and Bernard Dreyfus in Grenoble (France).

My works:

My main specializations: From my beginning in Atomic Physics:

Formal Logic and Methodology of Sciences.

And Dialectical Logic, developed from Kant, Hegel and Marx.

My representative works: 2 books:

- 1) Problems of the Hegelian Dialectic, Kluwer, Dordrecht 1992.
- 2) Structure, Systeme et Theorie du Sujet, dir. by T. Andreani and M. Rosen, L'Harmattan, Paris 1997.

Many articles:

- 1) Identite, difference et contradiction dialectiques selon Hegel, 1985.
- 2) Le proble du commencement dans la Philosophie de Hegel, 1989.
- 3) Expliquer et comprendre, discussion autour de Wright, 1997.
- 4) La Raison dans l'histoire selon la *Critique de la raison dialectique* de Sartre: L'histoire a-t-elle un sens? 1997.

Is the Mathematical Method adequate to the study of Economic Life?

Marcel Rozemblum

My paper has 3 parts :

- 1) A general reflection on Mathematics.
- 2) A Methodological discussion on Mathematics and Economy.
- 3) A discussion about 5 categories developed in Mathematical Economy.

Focusing on Methodology, I had no room to summarize "The denial on uncertainty" and the "Model of Perfect Competition" in Part 3. I apologize.

1. A general reflection on Mathematics:

a) First principles:

I understand that " $1+1=2$ " is a nonsensical formula;

Only entities can be added, existinf things in some sense, for ex.: potatoes or tables.

But numbers and figures can also be added.

Then we must write: $1 \text{ nb.} + 1 \text{ nb.} = 2 \text{ nbs.}$

We can generalize: $1x+1x=2x$.

This time the addition makes sense. Here the Mathematician wants to say: **whatever x is** ?but this is false, for there are *non additive* entities.

I give a concrete ex. of mistakes made by nae calculators:

Before some election, according to the plls two ecological Parties expected to receive each one **8%** of the voices. These very smart persons said: if we unify into one Party, we will obtain **8+8=16%** of the voices. They immediately began to quarell about the name of a future Minister...

One day before the election, some colleagues asked me: what do you think about all this? I reflected a while and answered: **8+8=8 !**

This is the sum obtained by the unified ecological Party.

During a few days, my colleagues were very admiring. Then they forgot.

Bu I did not forget that lesson given by Human Reality.

b) Conditions of additivity:

In Arithmetic, then, we have to add some thing to an other thing. But there things must be "additive". That means: they can be added one to the other.

Conditions of additivity:

1) The 2 things have to be in an *external relation*. In other words, they can exist one *independently* of the other, like 2 chairs or any physical body.

2) As far as *non physical things* are concerned, the question is more difficult.

Ex.: Can we *really* add one idea to another idea? Can we count their number? I

find here *a process of living things* which develop one from the other, with no definite separation between them, like water flowing in the river.

You can add 2 ideas, but then they are no more living things, but dead, rigid entities which do not correspond to the intention of their producer: *a thinking Human Being...*

?If I am right, *mathematization* or *formalization* may transform the treated object, from a living Being to an inert, non Human Being...

(p.3) When we have to do with *inner constitutive relations*, when Human life is discussed, things become very complex, difficult to understand.

2. A Methodological discussion on Mathematics and Economy:

a) Obviously, Political Economy is a two-dimensional discipline : Politics and Economy ?while Mathematics is a *quantitative*, one dimensional activity. That is why Mathematics requires univocity and exactitude ?what, I believe, cannot be reached in the study of Social reality, and in Economy in particular.

For ex., see Marx's *Das Kapital* :

There is general agreement upon the fact that Marx has written an excellent book on Political Economy, and this with almost no help of Mathematics, but with the power of a very creative thinking. Now, what is thinking?

Generally speaking, to answer see the history of Occidental Philosophy (I apologize: I don't know Chinese Philosophy). Particularly, the study of Greek Philosophy and, in Continental Philosophy, the study of Kant, Hegel and Marx.

b) On the interdependence of the Economic variables :

The Economist Bernard Guerrien writes :

"What happens in one sector of Economy has necessarily some influence on what happens in other sectors" (let us call this *inner constitutive relations*).

The Neoclassics, by taking into account mainly the activity of the particular Individual, succeed in *making invisible* this *organic* dimension of Social economy ?BR> a *multi-dimensional Being*.

As far as I understand, If in Economy the various sectors are reacting one upon the other, *any causal, deterministic method has to be rejected*. The basic science can no longer be *Mathematical Physics* but rather *Biology* (as an analogy), a Science which studies the living organisms. We will no longer talk about *cause and effect*, but rather about *action and reaction* which, together, form interaction (or interdependence. See, for ex., in *Keynes* the frequent use of medical language : diagnosis, symptom, remedy, or on the Economist working as a dentist. As for *Marx*, he does not hesitate to speak about life and death ?for ex. in the expressions "living labor" and "dead labor".

The Neoclassics believe that it is possible to deal with Human Reality as if it were composed of atoms and electrons. If it were so, then we could affirm that we have to do with *inert Matter*.

But Not ! Human Reality knows how to revolt when abuses are going to far...

c) On some main categories examined in B. Guerrien's book :

Let us point out four ideal, unreal categories, used by the Mathematicians :

Perfect Competition, Complete system of markets, Full information, Intertemporal approach.

(p.4) Here, explicitly Mathematics presents its Categories as *perfect, ideal norms* we should get closer to as far as possible. So that, leaving the Marxist *Sein* (Being), we fall again into a Kantian *Sollen* (what should be), a world we cannot reach.

This is the place for evoking the Hegelian "*inverted world*" :

Instead of *looking for* some Theory adequate to the understanding oh Human Reality, Human Reality *is distorted* in order to make it adequate to a pre-existing Mathematical model.

As a result, we do not find a *Science with no presuppositions*, what Marx tried to

realize, but some *point of view* which does not ask questions about the legitimacy of its own approach.

d) Real relations being too complex, the Neoclassics use various strategies to overcome this difficulty :

Simplifying :

In Human life nothing is simple because, for us, *limited* Human Beings, every Human life is complex, rich in many determinations. It is this richness that should be developed and not eliminated.

An ex. of Mathematical simplification in Economy : *Everything is one (or two)*, household or firm. In the calculations of the Neoclassics, they are understood as if only one type of household, of firm, existed.

Another ex., *Uncertainty*, so typical of our Human life while in Mathematics it is quite rare. Consequently, the Mathematicians decide to neglect that notion. From there on the Economic framework, supposed *intertemporal*, will allow any calculation, not only concerning *the present* but even *our future* ? a strange assertion...

Generalizing :

The Neoclassics assume : let us posit that all the Individuals are identical : everyone wants to become wealthy, but only a few chosen succeed.

And what about intellectuals, artists, peasants, workers, etc.? Are they all the same ?

After all these operations of simplifying and generalizing, the objective is reached : the new Mathematical Economy is considered as *universal, valid* and, from this perspective, not subject to criticism.

Formalizing :

In this way, the essential role of Mathematics in the studies of Nature is transformed into the *rigidity* of the Neoclassics in Social Science.

The price to pay for : the loss of concrete Human Reality, together with its interesting ambiguities and its richness of determinations and surprises.

Separating, isolating :

in Social Sciences, in principle it is not possible to isolate the determination (on *inner constitutive relations*).

From a methodological point of view, in the study of Economic life we really have to do with an *organic reality* : reality of *interdependence*, where the different variable reacts one upon the other ?where only a *comprehensive* vision seems to be fruitful (see *Marx* and *Keynes*).

(p.5) In short, I think that *Economy* is not a Science of Nature, univocal, but a *Social Science of Human life*, ambiguous and multi-dimensional.

e) About Physicalism :

1. According to Physicalism, we have to base the knowledge of Human Reality on a Theory concerning *elementary particles*, or which considers *particular Individuals as constitutive atoms*.

For *Popper* and *Carnap*, the Physicalist Thesis says that *there is One Unified Language* allowing to describe concrete objects, as well as their movements in space and time.

What I understand as a Unification of Science *under the leadership of Physics*. In this way, the Method of Classic Physics should supply the Paradigm to be imitated. Classic Physics being Mathematical Physics, the Mathematical Method is justified in claiming, for itself, the leading role in Social Science, in Economy for ex.

And any other way to Human knowledge would not be valid, in particular the works of *Marx* and *Freud*.

2. Why that Thesis is false, insofar as Social Sciences are concerned.

We have already seen that a *Natural object* (a material thing) is essentially not a *Social object* (a living subject).

a) *We cannot isolate* Social Phenomena. To us, they appear as *innerly related* to their Social context. Or outside his human environment, an Individual is nothing.

b) *How could we clearly distinguish* an essential Phenomenon from an accidental perturbation ? And, for the Mathematical Method, Life appears as a Perturbation disturbing the Scientist : *an inverted world* !

c) *Quantitative* studies are not sufficient. They must be completed by *qualitative* descriptions ?the essence in Social Science.

As for the notion of *ideal gaz* and the *neglect of friction*, generally they introduce in

Physics a very slight error : 1 or 2%, no more. You cannot compare this with the Hypotheses in Mathematical Economy, which transform entirely its categories with the help of "idealization and perfection".

1. Methodological Individualism (M. I.).

It is a Method which consists in explaining Economic Phenomena on the basis of Individual behaviour. For the Neoclassics, it means deducing laws or making predictions from the choices made by the Rational Individual.

1. The strong aspect of M. I. is that it has a defined starting-point, the Individual, to whom the Theory can ascribe different characteristics and objectives.

2. The main weak point of M. I. consists in the fact that, except for Robinson (a story), **there is no individual behaviour outside the Social context.**

a) Every Individual is the fruit of his education. When isolated, he remains a wild animal.

(p.6) b) Inversely, every society exists only thanks to the activity of his individual members.

Hence some interaction between Society and Individuals ?B> inseparable in principle, the one existing through his other.

What is the fundamental position of the Neoclassics :

Society is composed of a multitude of Individuals, differing only by their tastes and their initial endowment, everyone being motivated by his own interest.

Here I do not recognize the Individuals I use to meet : men, women, young or old.

In order to attain their results, the Mathematicians need different justifying Hypotheses. In my work I examine three of them: the *denial* of uncertainty, *Perfect Competition* and the *Microeconomic foundation* of Macroeconomy.

The examination of these Hypotheses show to us abstract categories, so-called perfect, highly idealized. Is it still spoken about us, about our difficult world ?

It seems that the criterion of appraisal of a Theory is no more its capacity for explaining the examined object, but its capacity for being well examined by Mathematics.

The aim of the models is to deduce laws or regularities ?the specific task of any

Science. However, here the matter is individual behaviour ! And the interactions between individual decisions are so complex that we can doubt if such laws exist.

Conclusion :

Interactions between Social frame and Individuals are very complex. And the concept of Individual is difficult to grasp : we cannot precisely determine in what extent he is a Natural Being (egoist) and in what extent he is a Social one (educated).

2. Holism.

Definition : A position asserting that it is fruitful to study any object from a global point of view. I understand : **a global perspective on a living Being, constituting a Totality non analysable.**

For to analyse a living Being is to cut it into little parts. In other words, to kill it.

Now, I think that **Economy is, first of all, economic life**, a global living Being busy with producing Wealth, distributing and consuming it.

However, there are some people who want to see **Economic life as a given matter** that you can examine as you examine movements of bodies on Earth.

For me, surprising but True !

1) We can say that the Biologist adopt a Holistic approach when he studies organs without examining, at that level, the activity of its cells or molecules.

That means that, in Biology, you can distinguish three levels of Being, **without reducing** the upper level to the lower one.

2) In Social Science, for the Neoclassics the particular Individual constitutes the lower level to which the upper one has to be reduced ? a bad habit, I think, for Institutions must also be examined for themselves.

(p.7) If I am right : In Social Sciences, studies will be contextual, and it will be necessary to distinguish between different levels of Being. At every level, a specific method may be defined.

Holism shows that the characteristics of Individuals have to be explained from their social context. For experience teaches that Human Beings are not only Natural Beings : they are educated in some culture which determines them partly. Even Mathematical thinking is also a kind of acquired culture.

To sum up, what makes the essential difference between different Theories dealing with Social life ? It is these Collective Beings, households and firms for the Neoclassics, Social groups and classes for Marwists.

3. About the "Microeconomic foundation of Macroeconomy".

As in Physics Microphysics is supposed to found Classic Physics, thus Microeconomy is supposed to found Macroeconomy. But who says that Microphysics **really** founds Classic Physics ? Indeed, elementary particles obey to another logic than the material bodies grasped by our senses. This explains the entire difference between a *probability* Mecanics of Quanta and a *determinist* Mecanics of material bodies moving in space and time.

In Economic Science, the Mathematicians propose a procedure which consists in explaining the relations in Macroeconomy from the Rational choices made by the Individuals (studied by Microeconomy).

They assert that research in the Microeconomic foundation is the only way to render coherent the behaviours described by the equations in the Macroeconomic models. However, the interactions between many individual behaviours are so complex, that research in this Microeconomic founfation is made by **reducing** to the minimum the number of Agents, rarely more than two or three.

I understand that we find there not only **simplification**, but even **impoverishment** of the examined object : we are not far from the *Robinsonnades* discredited by **Marx**.

As a way out, the Neoclassics claim that every type (Representative Agent) represents a great number of identical Agents. Is this a real solution ? For :

- a) If the Agents are identical, why should they exchange ?
- b) If the Agents are different, then the problem of coordination arouses.

Given a society **reduced to** two or three Representative Agents, the research for Microeconomic foundation essentially consists in telling Fables, whose form depends on the characteristics attributed to the Representative Agents.

As any Fable, the "microeconomic founded models" have their moral : here propositions of Political Economy. But how can we take them seriously, only because they are said to be microeconomic founded ? For if these propositions are valid, it is

not as a moral of a Fable, but as a lesson learnt from a past economic experience.

General conclusion:

Indeed, Mathematical Economy finds its place in Social Sciences, thanks to the originality of its point of view ?but, in my opinion, perhaps not an exclusive position.

For the Economist, to resolve its problems, will always have to return to concrete experience, neither simplified, nor generalized, nor formalized, and nor isolated.

But we know that *criticizing is easier than doing.*