

# Economics as Social Physics (Part I)

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## 1. Introduction

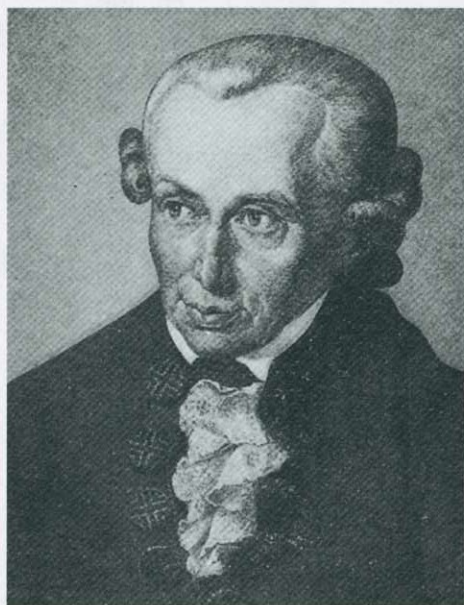
The first discovery of every science is the discovery of itself. Awareness of the presence of a set of interrelated phenomena that give rise to "problems" is evidently the prerequisite of all analytic effort. And in the case of the social sciences, this awareness shaped itself in the concept of natural law. (Joseph A. Schumpeter, *History of Economic Analysis*, Oxford University Press, 1954, p.107)

As we can learn in the textbook of modern economics, what we call neoclassical economics consists of three analytic tools, methodological individualism, optimizing hypothesis, and equilibrium analysis. More concretely, according to this economic theory, the demand function of a commodity we can observe in the actual market is the direct consequence of the consumer's optimizing her economic decisions (she maximizes her utility subject to the budget constraint), and the supply function of a commodity is the direct consequence of the producer's optimizing her economic decisions (she maximizes her profit subject to the technology constraint). The actual economy in which we live everyday is the continuous succession of general equilibrium, where the demand and supply are exactly equal in all of the commodity markets. In other words, the doctrine of modern economic theory analyzes our economy into the three conceptual frameworks, methodological individualism, optimizing hypothesis, and equilibrium theory.

Of course, we are tempted to think that this doctrine of modern economics was epistemologically shaped by formalizing the daily observations on economic phenomena,

in quite the same way as the doctrine of classical physics was shaped. But Schumpeter's ideas are utterly different from our ordinary thinking. According to Schumpeter, "The first discovery of every science" or "the prerequisite of all analytic effort" does not consist in the innocent experimental observation of a set of interrelated phenomena. Rather, it consists nowhere but in "the discovery of (science) itself", "Awareness of the presence of a set of interrelated phenomena that give rise to 'problems'". At first glance, Schumpeter's idea seems quite curious to many people. Is the formula "The first discovery of every science is the discovery of itself" nothing but a tautology? But of course, Schumpeter's idea is not a mere tautology. What Schumpeter said is that the formation of "awareness" and "science" which can extract a sphere of "economic phenomena" separately from "total experiences" was needed in advance, in order for an independent sphere of "economic phenomena" to be recognized and shaped from "total experiences". These ideas are quite natural for those who have read Kant. The phenomena which human beings can experience presupposes the awareness which forms and enables the phenomena itself. Like a famous saying of Hegel, the observation of existence (economic phenomena) does not render the awareness (science) possible, but the awareness renders the discovery of existence possible. It is very important for us to realize that Schumpeter's formula "The first discovery of every science is the discovery of itself" has these suggestive meanings.

But, if so, how and when was the



I. Kant (1724-1804): his works include *Critique of Pure Reason*

"awareness" itself which constitutes "the prerequisite of all analytic effort" shaped in the case of economics? Where was the origin of the awareness itself which made the discovery of independent experiences - economic phenomena - possible? According to Schumpeter again, in the case of the social sciences including economics, this awareness found its origin in the concept of natural law, or the philosophy of the enlightenment, in which the concept of natural law played a central role in every science. In other words, the doctrine of modern economics was epistemologically enabled by the famous philosophy of the enlightenment.

The central purpose of this essay is to elucidate this interesting recognition attributable to Schumpeter. Kant wrote that famous book *Critique of Pure Reason*, because he thought that the possibility and the limit of transcendental recognition can be



made clear, exactly not by the mere affirmation nor negation but by the elaborate disclosure of the epistemological origin of it. Kant's concept of "critique" means this attitude, which wish to fix the possibility and the limit of recognition at the same time by disclosing the epistemological origin of it. Quite in the same way, we think that the possibility and the limit of modern economics can be made clear, exactly not by the mere affirmation nor negation but by the elaborate disclosure of the ideological origin of it. In other words, the final purpose of this essay lies in explaining what phenomena the concept of natural law enabled or disenabled economics to consider historically and epistemologically and its implications for future economic analysis.

## 2. The Philosophy of the Enlightenment

As Cassirer pointed out in his book *The Philosophy of the Enlightenment*, the essential feature of the philosophy of the enlightenment is its placing the fullest confidence on "the reason" and "the science", showing the greatest respect on "the rationalism". But at the same time, as Brown pointed out in his book *The Nature of Social Laws*, the other essential feature of the philosophy of the enlightenment is its succeeding Protestant natural theology that both nature and society were designed and created by a Divine Legislator, God. In other words, the most important characteristic of the philosophy of the enlightenment is its strong will to found Protestant natural theology "rationally" and "scientifically". In fact, Newton wrote in the preface to the second edition of *Principia*.

This most beautiful system of the sun, planets, and comets, could only proceed from the counsel and dominion of an intelligent and powerful Being. (Isaac Newton, *Mathematical Principles of Natural Philosophy and His System of the World*, University of California Press, 1934, p.544)

The business of true philosophy is to

derive the nature of things from causes truly existent, and to inquire after those laws on which the Great Creator actually chose to found this most beautiful Frame of the world. (ibid, p.27)

This seemingly inconsistent project produced the following new ideas in the history of Western thought. First, the philosophy of the enlightenment produced the idea that there are scientific laws of society just as there are scientific laws of nature, because nature and society were both designed and created by Divine Providence. According to this idea, the physical laws of nature and the moral laws of society are all of the same intentional character, simply the same rules, natural laws and moral laws are nothing but two different applications of the same universal laws. Second, this philosophy of the enlightenment produced the idea that both natural sciences and social sciences study the same object, the design plan of the Universe created by God, because nature and society were both designed and created by God. According to this idea, natural science and social science are respectively merely one branch of the unified science which studies the common rule of the Universe, Natural Law, natural sciences study the natural field of the Universe on the one hand, social sciences study the social field of the Universe on the other hand. Of course, many people may doubt whether the philosophy of the enlightenment has something to do with the epistemological origin of modern economics. But we can show in the following that nothing but this philosophy of the enlightenment epistemologically enabled economics to introduce the analytical tools for natural sciences such as methodological individualism, optimizing hypothesis, and equilibrium analysis.

## 3. Methodological Individualism

The method Newton adopted when he analyzes the scientific rules of nature is the famous analytical-

synthetic procedure, which decomposes a seemingly simple event given in perception and observation into its constitutive elements analytically and reconstructs it from its constitutive elements synthetically. In fact, what Newton sought to do is not only to interpret the three laws of Kepler as the results of observation but also to derive these laws from their presuppositions and to show that they are the necessary result of the concurrence of these presuppositions. And as we explained earlier, if the scientific rules which dominate nature and the scientific rules which dominate society are the same rules, or if natural science and social science are respectively merely one branch of the unified science which study the common rule of the Universe, Natural Law, we are naturally inclined to think that we can adopt the analytical tools for nature i.e. Newton's analytical-synthetic procedure as the analytical tools for society and economy. The first characteristic of modern economics is its adoption of the analytic-synthetic procedure, which decomposes the macrocosmic movements of our economy into the microcosmic behaviors of its constitutive individuals such as consumers and producers and reconstructs it from the microcosmic behaviors of its constitutive individuals. The epistemological origin of the methodological individualism in modern economics is already clear. The mode of thought which enabled modern economics to introduce the methodological individualism was that philosophy of the enlightenment, which created the analytical mechanics on which modern economics was founded.

## 4. Optimizing Hypothesis

Before the era of the philosophy of the enlightenment, many theologians and philosophers supposed that the soul which constitutes the human mind is utterly transcendent and independent from the matter which constitutes the human body. Therefore many



theologians and philosophers of those days assumed that we could predict the behavior pattern of the human body because of its belonging to the material nature while we could not predict the behavior pattern of the human mind because of its not belonging to the material nature. The reason why the theology and philosophy before the era of the philosophy of the enlightenment could presuppose the existence of the human innate sin (the original sin) or stress the human free will or deny the possibility of the social science which aims to find the regulated pattern of the human behavior is this famous dualism of mind and body that the mind and the body are entirely independent from each other.

On the other hand, after the era of the philosophy of the enlightenment, many theologians and philosophers came to think that the soul which constitutes the human mind is merely a part of the matter which constitutes the human body because human beings were designed and created by the Omniscient God just as material nature so belongs to material nature. Therefore many theologians and philosophers of those days assumed that we could predict the behavior pattern of the human mind just as the behavior pattern of the human body because both the mind and the body belong to the same material nature. The reason why the theology and philosophy after the era of the philosophy of the enlightenment could deny the existence of the human innate sin (the original sin) and the human free will with ease and stress the possibility of the social science which aims to find the regulated pattern of the human behavior is this famous monism of matter that the mind and the body are nothing but a part of material matter.

As Adorno and Horkheimer pointed out, the essential characteristics of the world image before the philosophy of the enlightenment was that it aimed to acquire the image of nature by comparing a human being to nature and reflecting the nature of a human

being to nature just as animism did, while the essential characteristics of the world image after the philosophy of the enlightenment was that it aimed to acquire the image of a human being by comparing nature to a human being and reflecting the nature of nature to a human being. Of course, this drastic transition from the dualism of mind and body to the monism of matter produced the following two consequences.

First, this world image came to explain various mental phenomena by resolving these phenomena to various



*G.W.F. Hegel (1770-1831), one of the greatest philosophers of modern Germany*

movements of matter, and produced the idea that nothing but psychology or physiology are the new foundations for the theory of human recognition. Still more, it produced the drastic idea that epistemology can be completely dissolved into psychology and physiology.

Therefore the psychology and ethics after the philosophy of the enlightenment brought about revolutionary change in the idea of the human "passion" and "desire". As we explained earlier, psychology and ethics before the philosophy of the enlightenment which derived many

philosophical propositions from the dualism of mind and body, thought that human passion and desire were the detestable and disgusting obstacles to all the operation of the mind which had to be overcome. If we are to be independent intellectuals, we must restrain all the sensual passions and desires in ourselves completely by the power of our reason. Any actions which indicate the triumph of reason over passion are ethically desirable actions. On the other hand, psychology and ethics after the philosophy of the enlightenment which derived many philosophical propositions from the monism of matter, came to think that human passion and desire are the original and indispensable impulse of all the operations of the mind. If we are to be independent intellectuals, we must behave freely as all the sensual passions and desires command. Any actions which indicate the triumph of passion over reason are ethically desirable actions.

Second, this world image came to think that human behavior conforms to the same rationality as nature does because the human mind belongs to the material nature. Still more, it produced the drastic idea that a human being in our economy behaves efficiently and rationally so as to maximize certain energy just as a particle in our world behaves efficiently and rationally so as to maximize kinetic potential energy (this proposition is called Hamilton's principle in analytical mechanics). A person who originally formulated this optimizing hypothesis that a human being behaves efficiently and rationally as to maximize her own satisfaction was the famous philosopher Leibniz, who founded the maximum-minimum principles in a mechanical world by inventing differential calculus, and the person who succeeded Leibniz's research program was a famous physicist Maupertuis, who invented the principle of least action.

But how could this optimizing hypothesis in economics obtain the same strict "validity" and



“universality” theoretically just as the Hamilton’s principle in analytical mechanics? What enabled the optimizing hypothesis to obtain the validity is “introspectionism” and to obtain the universality is the “universalism” of those days. First, what we mean by “introspectionism” is the following idea. The aim of social sciences is, of course, to study the regularity and pattern of the human behavior and society. But because what we call social scientist themselves are human beings, in order to study the regularity and pattern of the human behavior and society, it is not necessary for them to observe the thought and behavior of “the other” but sufficient to observe the thought and behavior of “themselves” and generalize this self-observation to the general principles. In other words, all we have to do is to introspect the thought and behavior of ourselves so as to understand the regularity and pattern of the human behavior and society generally. It is already clear that we can apply this introspectionism to the foundation of the validity of the optimizing hypothesis.

As far as I am concerned, I will naturally purchase some goods which maximize my satisfaction. And this must be valid for you and all human beings, etc. Second, what we mean by “universalism” is the following idea. For the introspectional method to be valid, it must presuppose that there is no essential difference between various races concerning the basic pattern of the thought and the desire. In other words, it must presuppose the fundamental uniformity between various races concerning the basic pattern of the thought and the desire. But what is at stake is that there emerged this hypothesis of universalism concerning the human nature in Europe in the era of the philosophy of the enlightenment.

It is also clear that we can apply this universalism to the foundation of the universality of the optimizing hypothesis. To sum up, “introspectionism” and “universalism” in the era of the philosophy of the



*J.A. Schumpeter (1883-1950) is known for his theories of capitalist development and business cycles*

enlightenment gave the satisfactory theoretical foundation for the optimizing hypothesis.

Taking account of what we have explained so far, we can elucidate that curious dual character of the optimizing hypothesis in economics. At first glance, the optimizing hypothesis in economics seems to possess the dual inconsistent character, “positive” and “normative”. More concretely, this hypothesis seems to wish to explain “positively” how a human being makes her economic decisions actually and at the same time command “normatively” how a human being should make her economic decisions prescriptively. But this curious character of the optimizing hypothesis in economics is the necessary consequence of the epistemological origin of economics, the philosophy of the enlightenment, which came to think that human behavior is governed (=“positive”) and must be governed (=“normative”) by the single natural-rational law because both society and nature are the creations of God. For that reason, the optimizing hypothesis can suppose that a economic agent behaves rationally so as to maximize her own utility (=“positive”) and must

maximize her own utility so as to behave rationally (=“normative”). Over again, at first glance, the optimizing hypothesis in economics seems to possess the dual inconsistent character, “hedonistic” and “rational”. More concretely, this hypothesis seems to think that human behavior is naturally based on the momentary “passion” or “desire” and at the same time is based on the permanent “rationality” or “calculation”. But again, this curious character of the optimizing hypothesis in economics is the necessary consequence of the epistemological origin of economics, the philosophy of the enlightenment, which came to think that the passion and the rationality are not already inconsistent elements. For that reason, the optimizing hypothesis can suppose that a economic agent behaves rationally (=“rational”) so as to maximize her own pleasure (=“hedonistic”).

The second characteristic of modern economics is its adoption of the optimizing hypothesis, which supposes that a economic agent behaves efficiently and rationally so as to maximize her own satisfaction. More concretely, modern economics supposes that a consumer maximizes her utility subject to the budget constraint and a producer maximizes her profit subject to the technology constraint. The epistemological origin of the optimizing hypothesis in modern economics is already clear. The mode of thought which enabled modern economics to introduce the optimizing hypothesis was that philosophy of the enlightenment, which created the analytical mechanics on which modern economics was founded. JTI

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