

# DEMOCRITUS ON ETHICS AND ECONOMICS

by

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"It is ideas that make history not history that makes ideas"

L. VON MISES

Recently, in the literature of the history of economic thought we notice a revival of the presentation and interpretation of the economic ideas of the ancient Greek philosophers. This can be proved by the article of S.T. Lowry on the "Recent Literature on Ancient Greek Economic Thought" (1979). However, most of the general and special essays on this subject are restricted mainly on the analysis of the ideas of the Socratic philosophers, i.e. Xenophon, Plato and Aristotle. Of course, we can find, in this huge body of literature, a lot of references on the ideas of Hesiod, Aristophanes, Thucydides, etc., but very few references on the ideas of other thinkers, such as Democritus. Besides, the few references on Democritus' views, are represented in a condensed and epigrammatical way, without leaving room for the scientific evaluation of his economic ideas. Democritus, is mainly known as "the father of atomic theory"; however, the main purpose of the present article is to show that his ideas on economics also deserve a place in the "Pantheon" of the economic thinkers. They constitute, as we are going to see, the "missing link" of the pre-Aristotelean tradition on economic thought, many ideas of which, through the Socratic philosophers and the schoolmen of the Middle Ages, were still alive during the 18th and 19th centuries<sup>1</sup>.

We are elaborating on Democritus ideas on economics to fill in a gap concerning the originality of some economic ideas which are of primary importance in the history of economic thought, the content of which was recently described by Backhouse (1985, p. 8) in the following words: "...the history of economic thought is concerned simply, or even primarily, with who first invented particular concepts. It is of course important to be as accurate as possible in ascribing priority in the development of economic ideas, but because economics, like any science, is a social activity, the date when an idea came into general circulation may be more important than the date of the earliest document in which the idea can be found. When forgotten precursors of later ideas are found, the main interest is often in why they were neglected, as much as in the ideas themselves".

As we know, the ancient Greek thinkers did not engage primarily on the economic phenomena; their economic ideas are developed only as a part of their "corpus" of philosophical and ethical teachings. Moreover, as Houmanidis (1980, p. 60) argues, the philosophical and ethical thoughts of any writer constitute the backbone on which he develops his own economic ideas. Thus, our treating with the ethical thoughts of Democritus is justified by those on economics.

Before starting our elaboration on the ethics and economics of Democritus, it is necessary to devote a few lines to the biographical and literary presentation of "the unknown man", as Burnet (1968, pp. 157-8) called him.

## *Life and Works of Democritus*

Democritus was born during 460-470 B.C. — a questionable time period (Sinclair, 1967, p. 91, ft. 2) — in Abdera, a city of Thrace. He was the child of a rich family and

inherited from his family a sum of 100 talents, a great amount of money for that time. He spent the greater part of his fortune on his theoretical and empirical education. He travelled to the famous centres of culture of the ancient world, Egypt, Arabia, Babylonia, Persia and probably India. Democritus, in a fragment of his writings which has been preserved but is of questionable authenticity (Burnet, 1968, pp. 158-9), mentions that he had also visited Athens, where no one knew him.

As he was not "a mere sightseer or tourist, nor a businessman, but a philosopher in search of knowledge" (Sarton, 1966, p. 252) he obtained more of an empirical than a theoretical background of knowledge (Marx, 1983, p. 75). Something which he himself also declared when he wrote about his travels (fr. 199)<sup>2</sup>.

Democritus was such an educated person as to deserve the admiration of ancient and contemporary writers. Aristotle, mentions that Democritus "had studied everything" (Papadopoulos, 1981, p. 8). F. Zeller, the famous author on ancient Greek philosophy, characterized Democritus as "superior to all earlier and contemporary philosophers in wealth of knowledge, and to most in acuteness and logical correctness of thinking" (Russell, 1975, p. 82). And as "a universal mind who embraced the whole of the philosophical knowledge of his time, and in this respect can be compared only with Aristotle" (Zeller, 1969, p. 65). Besides that, he was a voluminous author, "one of the great writers of antiquity" (Burnet, 1968, p. 157). However, he was writing "in a period when readers were still outnumbered by listeners. It is therefore not surprising that he compressed his ideas into gnomic formulations, for he can be pictured, like the poets who were his contemporaries, as composing under what we may call a form of audience-control" (Havelock, 1957, p. 126). Thrasylus classified the writings of Democritus into 13 (Diels, 1954, pp. 90-2) or 15 (Mullachius, 1883, pp. 372-7) tetralogies under five general categories — this caused his characterization as a "pentathlos philosopher": ethics, physics, mathematics, music including literature and language, and technical subjects. H. Spiegel mentions (1971, p. 13) that among Democritus' writings was included also a treatise on economics. But we could not verify the existence of such a treatise from the sources (Diels, 1954, pp. 90-2; Mullachius, 1883, pp. 372-7; Marx, 1983, 75, ft. 16-7) of the fragments of Democritus' writings. It seems more plausible to mention that Democritus has embodied some economic ideas in his works "On Cheerfulness", "On Valour" or "On Virtue", "On Ethical Memorandum" and "On Agriculture".

It is a great loss for humanity that Democritus writings have not been preserved throughout the ages. Perhaps, this is due to the Epicurean philosophers who did not wish them to be saved and "probably did not care to multiply copies of a writer whose works would have been a standing testimony to the lack of originality that marked their own system" (Burnet, 1968, p. 157). Or, because Democritus philosophical and ethical beliefs were never used as a background for the development of ideas by the authors of the Middle Ages (Papadopoulos, 1981, p. 17).

Democritus spent the greater part of his life living in peace, with frugality and always laughing — he was called the "laughing philosopher" (Gomperz, 1969, p. 368; Guthrie, 1965, p. 409; Avtzis, 1969, p. 13) - in the city where he was born earning the great esteem of his fellow citizens. He died at an old age, over a hundred years old, without leaving behind a compact philosophical school which survived as that of Plato did in Athens (Windelband-Heimsoeth, 1980, p. 117). However, the philosophers Methodoros of Chios, Anaxarchus of Abdera and Nausiphanes, have been considered as Democritus' successors in the short-lived school of Abdera (Zeller, 1969, p. 69).

Democritus, as we can observe from the titles of his writings, had investigated a

huge scientific field, from physics, nominalism and ethics to astronomy, mathematics and poetry. Only a few fragments of this huge literature, about 300, have come down to us<sup>3</sup>. Moreover, of his ethical writings, only a few things, are preserved; they were found in the writings of Aristotle, Diogenis Laertius, Stobaios, etc. For the purpose of the present article, we must feel ourselves lucky and not unfortunate as Kirk and Raven (1957, p. 404) believed for "the considerable number of fragments that have survived ... are nearly all taken from the ethical works" of Democritus. Because, basing ourselves on these ethical fragments of Democritus, we are in a position to derive some very interesting conclusions on his ideas concerning economics. Before proceeding to his special references on the various phenomena of economics it would be more proper to present his philosophical and ethical thoughts first.

### *Scientific Materialism and Spiritualist Ethics in Democritus*

Democritus, as a student of Leucippus followed and enlarged the "cosimothory" of his teacher, the core of which stands on the dogma that everything that exists consists of atoms and vacuum. Democritus, as one of the first materialists, considered that the universe was made up of two parts: the plenum (full) or matter and vacuum (void) or empty space<sup>4</sup>.

Besides his significant contribution to the development of atomic theory, he concentrated his mental powers on the field of ethics, approaching in this way the philosophical reputation of his contemporary Socrates. T. Sinclair (1967, p. 65) says that Democritus "general ethical outlook was similar to that of Socrates in its emphasis on character and duty and on the barrenness of the pursuit of bodily pleasures". Moreover, Democritus could separate (Jaeger, 1969, p. 295) "natural philosophy from ethics: he expounded his own ethical teachings in the old-fashioned form of 'parainesis', moral exhortation, not as a branch of theoretical knowledge". The ethical "parainesis" (exhortation) of Democritus has led contemporary authors to almost contrary views about the significance of his thoughts. For example, Zeller (1969, p. 68) declares that Democritus was "the founder of a thoroughly idealistic system of ethics". And Sinclair (1967, p. 65) says that he "made contributions to the study of ethics and politics and it may well be that his work in this sphere was of more value". On the contrary, Guthrie (1965, p. 492) maintains that "the fragments themselves do not suggest that Democritus offered any continuous or systematic exposition of ethical theory". However, it is true that the ethical ideas of Democritus have deserved the favorable comments of many famous writers of antiquity. They have also been proved to have been very influential on Aristotle's and Plato's treatment of ethics<sup>5</sup>.

The fragments of Democritus which contain significant economic observations and "parainesis" (exhortation), probably belong to his ethical analysis. Some of them - though considered as non-authentic (Guthrie, 1965, pp. 490-1; Gomperz, 1969, p. 368) or as expressing the common ethical teachings of that time in line with the Socratic tradition (Robin, 1967, p. 120), are very valuable. Thus, in our study we are going to use all the available fragments of Democritus, leaving aside for the specialists the proof of their authenticity.

### *Rational Calculus in Democritus' Ethics*

Democritus followed the empirical method not only for the verification of his conclusions, but mostly for the establishment of his theories. He deeply analyzed

"objective and subjective" phenomena following two die-turns; first "In reality we know nothing for truth is in the depths" (fr. 117), and second, everything depends on "causality" or "necessity". On the principle of "necessity" he adopted the statement of his teacher Leucippus who declared that "nothing occurs at random, but everything for a reason and by necessity" (Kirk-Raven, 1957, p. 413). In his own words Democritus mentioned that "The whirl or vortex is called necessity because it produces the necessary (mechanically and theoretically determinable) collisions and unions of atoms" (fr. 68) (see Kirk, Raven, 1957, p. 405; brackets added). Democritus used the notion of necessity in his ethical writings to demonstrate the tie of men's free will (Guthrie, 1965, p. 415, ft. 3). Thus, this notion can also easily include the economic principle of necessity which mostly depicts human struggle with the forces of nature. As is known, this struggle is due to the generative faculty, the multiplicity of needs and the aspiration and the motivation of the human beings. For Democritus, the existence and the emergence of the dual relationship between cause and necessity are due to the continual movement of atoms from which everything spiritual or bodily consists of. This movement of atoms produces a dynamic motion to: a) the soul which "is corporeal, but made of the lightest atoms (like fire) and the most mobile (spherical in shape for greater mobility)" (Sarton, 1966, p. 254); b) nature (Robin, 1967, p. 116); and c) human society which is in continual, moral, and material progress. Diodorus the Sicilian, presenting some ideas of Democritus' "cosmogony", namely his ideas on the creation and the social development of the world and society, said that he attributed it mainly to the fulfillment of economic needs because "in everything, necessity was the teacher of men" (Diels, 1954, p. 136). Moreover, the Abderetean philosopher conceived the existence of the many and various material wants as the main cause for some significant economic phenomena, as the division of labour and resources, becoming thus a predecessor of this economic principle as we shall see later on. The materialistic determinism of Democritus could have been extended to the interpretation of the individual's economic actions. Unfortunately, it is not possible to find any such treatment in his fragments. But, examining the fragments thoroughly we find some very interesting ideas concerning the rational behaviour of individuals on the way to the fulfillment of economic needs<sup>6</sup>. Specifically, he attributed the rational economic behaviour of individuals to the comparison between pleasure and pain. He maintained that man must always pursue his "eudemonia" which is derived from the well being of his household (fr. 140), or his "happiness" which appears, as Aristotle said, with the movements of his soul (*Nicomachean Ethics* 1098a, § 15-20; 1099a, § 5-15; 1199b, § 30-5). Democritus believed that "Happiness is a property of the soul, as is unhappiness" (fr. 170) and "The criterion of the advantageous and disadvantageous is pleasure and displeasure" (fr. 4,188) (Voegelin, 1957, p. 300). For Democritus, "the best thing for a man is to pass his life so as to have as much joy and as little trouble as may be" (fr. 189). For the achievement of this end, the individual must be in a position which enables him to balance between the various kinds and degrees of pleasure.

Democritus considered that the factor of chance had very little influence on the process of achieving an ultimate end. Especially when this end had been chosen by wisdom, reasoning, knowledge and acuteness (fr. 119). However, it is possible, as Aristotle recognized (*Eudemian Ethics*, 1247b § 10), that the effect of an action may not coincide with the end in pursuit, especially when chance played a central role and its extent was beyond human reasoning<sup>7</sup>. Democritus, accepting such a situation, declared that this would depend on unpredictable circumstances and would be ephemeral or short lived (fr. 58, 176, 197, 210).

We could not find in Democritus' writings any exact notion or principle such as the neoclassical one concerning the rational use of limited resources for the achievement of multiple ends. We did find however a lot of references concerning the general principle of hedonistic economic calculus.

Democritus, on the division of income between consumption and saving, said: "it is a useful thing for someone to know when he must save, suffer hunger or spend much" (fr. 229). But he has connected this rational economic behaviour of individuals on the division of income with ethical virtue and the moderation of wealth and not with speculative actions.

In general, the ethical philosophy of Democritus, which is based upon subjectivism, could be expressed by the dictum of Protagoras: "man is the measure of all things" (Plato, *Cratylus* 386a). It is known that this ethical and philosophical position was held by the Epicurean philosophers<sup>8</sup>, al-

though they did not confess its originality, and by the utilitarians of the 19th century — mainly by J. Bentham.

### *Ethics versus Economics*

Democritus considered that the ultimate end of an individual is the fulfillment of a powerful incentive: the pursuit of "eudaimonia" or "superior pleasure" as Aristotle called it (*Eudemian Ethics*, 1214a, § 5-10) accepting its motive power (*Rhetoric*, 1360b, § 1-30; 1364, § 20-5). "Eudaimonia" or "pleasure" for Democritus, is attributed to the equilibrium of the "psyche" (soul) and is attainable only through the moderation, wisdom, and education of individuals. Thus, Democritus believed that the economic actions of individuals must always have, as an end, a moderate (fr. 102) and not an extreme (fr. 3) and unsatiable material reward (fr. 285)<sup>9</sup>. Moreover, man must evaluate his economic actions according to "the limit between the Beneficial and non-beneficial which consists of pleasure and pain" (fr. 188). Plato had called this limit "divine intention" (*Laws*, 792D), while Aristotle called it "norm" (*Ethics Nicomachean*, 1105a, § 1-10).

Democritus identifies these two meaningful contemporary economic and analytical words, namely pleasure and pain, with goodness and evil (Boas, 1961, p. 53). Aristotle, more accurately in his explanations, defined goodness as a useful and pleasant thing and evil as a harmful and unpleasant one (*Nicomachean Ethics*, 1104b, § 35-40). These two fundamental notions which have been put forward first by Democritus and later by the Epicureans, as is known, have gotten their central position in the process of human actions by J. Bentham. He established his utilitarian principle or the principle of the greatest happiness (J.S. Mill, 1971, p. 257) on the same ground as Democritus did, namely, on the continual struggle between pleasure and pain. The "core" of Bentham's theory of utilitarianism stands in his often quoted paragraph: "Nature has placed mankind ... under the control of two sovereign masters, pain and pleasure. It is for them alone to point out what ... we shall do". (Sir Leslie Stephen, 1968, p. 237). The resemblance of this idea to the corresponding one contained in the writings of Democritus does not need any comment. However, besides this, Democritus insisted upon the moderation of wealth, which is the product of pain, as a necessary element of human pleasure. This shows a strong parallel to the equilibrium position in Jevons' theory of wages. As we know, according to the neoclassical principle, the *homo oeconomicus* acts to choose a subjective equilibrium level of pleasure and pain. W.S. Jevons, in his monumental work, *The Theory of Political Economy* (1871, pp. 109-12), adopted this idea and showed that the

equilibrium wage rate is produced through the cooperation of two opposite feelings exercised upon workers. The first one has a positive effect which arises from the utility which the worker receives by the use (consumption) of his reward. While the other one has a negative effect which is produced by the "pain" which the worker suffers during his work day. On the other side, there is no parallelism between the Democritean principle of man's motive power and the classical and neoclassical one which is explained through the profit and material utility motive.

Democritus developed his idea on equilibrating actions through pleasure and pain to show that there is a common ground in all human decisions. However, in one of his fragments he extended this notion to cover the individual's action also in regard to the pleasure and pain of labour (fr. 243). Of course, he did not develop any notion on the "equilibrium" of "fair" wage rate, as he was living in a serf society where the free citizens of a State obtained all the necessities of life without much work effort. He insisted that: "Everything that the human body needs can easily be obtained by everyone without trouble and hardship. On the contrary, the human body does not desire everything that requires trouble and hardship and makes life painful, but all those are the result of distorted thought" (fr. 223).

### *The Theory of Value*

The parallelism between Democritus and the neoclassical thought extends beyond their philosophical ground and on the subjective theory of value. According to Democritus, the value of a commodity depends upon its utility and scarcity. The element of utility on the evaluation of a thing is produced by the quality of it. Democritus distinguished the qualities of a thing into objective or primary and subjective or secondary qualities. (Win-delband-Heimsoeth, 1980, p. 130). The second qualities are the most decisive determinants of the usefulness and evaluation of a thing. Thus, Democritus developed the idea of the subjective element in the objective qualities of things <sup>10</sup>, which was developed in full extent later on by Berkeley and D. Hume (Gomperz, 1969, p. 321).

Democritus in one of his fragments declares that: "By convention there is sweet and bitter, hot and cold, by convention there is colour; in truth there are atoms and void" (fr. 125). According to this statement, it is obvious that Democritus was in favour of the subjective evaluation of human actions. And in extension, he was in favour of the subjective theory of value (Gordon, 1975, p. 15; Spiegel, 1971, p. 13). He considered that "nobody must desire a pleasure unless it is useful and serviceable" (fr. 74) <sup>11</sup>, and added that things have a use value only if they fulfil a "nice" and "good" purpose (fr. 207). The meanings of "nice" and "good" for Democritus as also for Socrates, are connected with the proper situation of the "psyche" (soul) rather than with material pleasures (fr. 34, 40, 267). Besides, Democritus gave, in a clear-cut way, the direct relationship that exists between the useful value of a thing and the degree of utility which derived from its consumption. However, the degree of this utility is estimated differently by different individuals. He argued (fr. 69) that "Good and truth are the same for all men, but the pleasure is different for different people". In other words, Democritus considered that moral values could be explained in an objective way, but the economic decisions only in a subjective way. As we know, the subjective theory of value which was first produced in the writings of Democritus received a more scientific elaboration in the hands of Aristotle <sup>12</sup>. Thus, E. Kauder (1953, p. 638) is not very accurate when he writes that "Today we recognise that the analysis of subjective elements in economic valuation starts with Aristotle".

In regard to the direct relationship which exists between the degree of utility and the available volume of goods, namely the Walrasian principle of rarete, Democritus' thoughts are very interesting. In a philosophical way he declares that "of all the pleasures, the sweetest are those which rarely take place" (fr. 232). Moreover, he tackles the problem of economic scarcity (Spiegel, 1971, p. 13) saying that "if only a few goods are desired, these will seem to be many, because a restrictive demand makes poverty equivalent to wealth" (fr. 24A).

Besides that, the Abderetean philosopher, recognized the notion of diminishing utility when there is a satiation point in the consumption set. He mentioned in his various fragments:

"The most pleasant things become unpleasant if moderation does not prevail" (fr. 233).

"When the passion of wealth does not find satiation it becomes worse than the greatest poverty because the stronger the desires are, so are the privations" (fr. 219).

"Moderation increases and enlarges pleasures making them stronger" (fr. 211).

It is obvious that Democritus relates the "maximization" of utility not with a maximum but a moderate consumption. Because he conceived that the element of pain which accompanies every effort for an increase in wealth has a negative effect on the utility derived by the consumption of this wealth.

#### *The Measurability of Pleasure and Pain*

Democritus, as we have mentioned, weighed human action in accordance with the opposite feelings of pleasure and pain; an idea which was adopted to a full extent by Protagoras (Plato, *Protagoras*, 1975, p. 354-5) "who was some twenty years senior to him" (Sinclair, 1967, p. 64). The notion of "weighed" actions has produced a great question. Is it possible to measure the intensity of human feelings and connect them with different economic actions? Or to put it differently, can we transform quality relations into quantity ones? Such a fundamental question deserves an answer, and as we have known from D. Bernoulli's time (1738) till now, the economists have been engaged in solving this problem, which has its roots in the Democritean philosophy.

Democritus has considered one of the fundamental achievements of science, the transformation of all the relationships of quality into ones of quantity. He believed that in every distinct case it must always be shown which one of the quantity definitions of absolute reality is produced by the quality situations of apparent reality (Windelband-Heimsoeth, 1980, pp. 127-8). Thus he emphasized that pleasure and pain could be measured because they depended on the mechanical movements or on the equilibrium position of the "psyche" (Snell, 1981, p. 309)<sup>13</sup>. Again, he recognized only the moderate and not the extreme movements of the soul as a precondition for happiness: "Cheerfulness", he declared (fr. 191), "comes to man through moderation in enjoyment and harmony of life; excess and defect are apt to change and produce great movements in the soul"<sup>14</sup> (Sarton, 1966, p. 253). Again, "symmetry in all things is good; I do not like, said Democritus, the more or less than normal"<sup>15</sup> (fr. 102).

Protagoras, a disciple of Democritus (Lowry, 1981, p. 813), followed and enlarged these views of his teacher. Moreover, he connected the intensity of the soul's movements with the ordinal ordering of the different degrees of utility and pain, namely between greater and smaller, more intense and less intense (Plato: *Protagoras*, 356a-b). S.T. Lowry (1981, p. 816) mentioned that Protagoras gave four basic elements of hedonic calculus: "(1) forgoing present pleasures to avoid greater future pains; (2) accepting present pains to enjoy greater future pleasures; (3) forgoing

present small pleasures for greater future pleasures; and (4) accepting small present pains to avoid greater future pains". We have no document to confirm that Democritus gave a similar analytical treatment on the order of various degrees of pleasure and pain, as Protagoras did. Only in his fragments 231 and 286 did he give a direct relationship between the various rate of material wealth and the corresponding degrees of happiness. He considered that a moderate rate of wealth produces great happiness, while a high rate of wealth produces great pain.

### *The Concept of Time in Democritus*

There is another element in Democritean philosophy that shows a meaningful relationship to the contemporary subjective philosophical explanation of economics: the element of time. G. Shackle (1967, p. 106) emphasized the direct correspondence of economics with the element of time, declaring that "for the individual mind, only one element is actual, the moment-in-being, the present... It follows that economics must be concerned with the essence and nature of the moment-in-being of the individual person". This necessary inclusion of the element of time in social science, has been put forward a long time ago by Democritus who rejected the subjective meaning of time in his physical scientific explanations and embodied it in his ethical system (Marx, 1983, p. 107). The Greek philosopher declared that "Pleasures that do not happen at the right time do not offer happiness" (fr. 71). Thus he relates the rate of utility in relation to the time when the corresponding need is fulfilled. Moreover, he recommended that a person must "turn his mind into the attainable good and content himself with the present one" (fr. 191). In fragment 295 of his writings, we find a very strong parallelism to the theory of time preference in economics. He says, "The old man was once young, but the young man does not know whether he will ever attain old age. So a good which someone enjoys is now more valuable than a future and uncertain good" <sup>16</sup>. As we know, the Austrian economist, E. Bohm-Bawerk, based his theory of interest or "agio" on the positive time preference of individuals. In his well known treatise *Capital and Interest* he justified his axiom on the positive time preference of individuals, mainly on psychological and secondarily on technological reasons. He argued that the first reason is that "we systematically undervalue our future wants and also the means which serve to satisfy them" (1959, vol. II, pp. 268) because: (1) "we feel less concerned about future sensations of joy and sorrow simply because they do lie in the future", (2) there is the "fragmentary nature of the imaginary picture that we construct of the future state of our wants", (3) there is the possibility of a "failure of will power" of individuals, and lastly (4) there is the "consideration of the brevity and uncertainty of human life" (vol. II, pp. 268-70). The above second justification of Bohm-Bawerk was adopted by A.C. Pigou for the establishment of his theory of value. Pigou, says (1960, pp. 24-5) that "everybody prefers present pleasures or satisfactions of given magnitude to future pleasures or satisfactions of equal magnitude even when the latter are perfectly certain to occur", because of the "defective telescopic faculty" of the individual<sup>17</sup>.

Comparing the above quoted statements, from the writings of Democritus, Bohm-Bawerk, and Pigou, we can easily recognize the great resemblance of the ideas contained. More specifically, it seems that Democritus established his idea of positive time preference basing it on psychological grounds, as Bohm-Bawerk and Pigou did almost twenty three centuries later. Moreover, Democritus conceived the elements of attainability and uncertainty of pleasures as drastic elements in his psychological explanation of positive time preference; something which has also been adopted by



Bohm-Bawerk and I. Fisher for the establishment of their theories of interest<sup>18</sup>.

### *Justice in Exchange*

The elements of wisdom and knowledge, for Democritus (fr. 211, 185), not only created but also increased "true" human happiness. Thus, every one expected the opposition of the philosopher to the "chrematistic" actions of individuals<sup>19</sup>. This is because Democritus had often insisted on the superiority of spiritual and moral pleasures as opposed to material ones. Besides, he had emphasized the equilibrium of the soul as the basic source of pleasure and not the affluent consumption of material things. He argued that "Happiness doesn't reside in cattle or gold: the soul is the dwelling-place of one's good or evil genius" (fr. 171). Moreover, he stood against the material motive of human behaviour as is the capitalistic profit motive, because he believed that "He who is the slave of money can never be righteous" (fr. 50). Democritus was a defender of the economic self-sufficiency of individuals and the State, as Plato and Aristotle were. He was against overconsumption or the wasteful use of goods (Kanelopoulos, 1985, p. 67). Thus, he put as the highest limit of self-sufficiency only the consumption of the absolute necessary goods for life. He said that "service abroad teaches self-sufficiency; barley bread and a straw mattress are the pleasant medicines for hunger and fatigue" (fr. 246). Every economic transaction of individuals as also every other form of transaction, for Democritus, must be based on justice (fr. 62, 217): "Justice is to do what should be done; injustice is not to do what should be done, but to evade it" (fr. 256). In these fragments there is no reference to the notion of the "fair rate" or "fair price" in the market exchanges of goods. But, from his overall opposition to the accumulation of wealth it is obvious that he condemned economic exploitation among individuals and rejected the profiteering function of the market<sup>20</sup>. Moreover, he argued that "In every man, the desire for wealth is perpetual; when it has not been acquired, it corrupts men, when it has been acquired, it worries men with its concern, when it has been lost, it sorrows men" (fr. 25B). In other words, Democritus was against the capitalistic behaviour of individuals because such a way of action will produce a "strong movement in the soul" and will decrease the degree of pleasure. Besides that, as K. Polanyi (1968, p. 80) maintains, the market mechanism as an institution was still unknown to Aristotle because he had no comment on the important questions arising from a market economy. Thus, if such a view well justifies the ignorance of Aristotle in regard to the market mechanism, it will also be a strong explanation for the corresponding ignorance of Democritus, who lived in a less economically developed city than Aristotle did.

In fragment 78 of his writings we read that Democritus was against material wealth which resulted from unfair transactions<sup>21</sup>. However, he had considered as a fair and normal level of wealth only the set of the absolutely necessary goods of life<sup>22</sup>. Above this level, Democritus considered wealth as the effect of an incurable psychic disease like "gangrene" (fr. 281).

J. Spengler declares (1980, p. 82) that Democritus "did not define justice, except to say that it consisted in doing what should be done", and that (p. 83), "while he emphasized rewarding according to merit (fr. 263) he did not otherwise define justice in distribution or exchange in the extant fragments of his work". Spengler is right only to some extent, for reading carefully fragments 218, 220 and 221 of Democritus' writings, we recognize in them the following significant "thesis" for justice. He stressed the shameful behaviour of man concerning unfair wealth; he gave a direct correspondence between the decrease in man's virtue and the increase of unfair

exchange and he emphasized unfair exchange as a mark of the moral death of man. Thus, Democritus considered the elements of virtue and morality of man as the sufficient keys which ensure the establishment of fair market exchanges. Moreover, he recognized that the real value of wealth depends on its proper use. He said "Wealth without understanding is not a safe possession, depending for its value on right use" (fr. 77) (Trever, 1978, p. 15). Thus, Trever rightly mentions (p. 17) that Democritus "was the forerunner of the Socratics in his insistence upon right use as a criterion of wealth"<sup>23</sup>

Democritus neither examined the function of the market, nor the formation of prices and distribution of products. Only in fragment 279 of his writings did he occasionally say something on the precondition of equal advantages as a fair starting point for economic competition. In the same fragment he also recognized, as the main advantage of joint stock companies, the distribution of profits and losses to participants<sup>24</sup>.

### *Democritus on Production, Labour, Agriculture and Arts*

The economic ideas of Democritus do not end only with the previously mentioned subjects. He developed also very interesting ideas regarding the "technological" side of economics. One of his main contributions to the production side of economics lies in his idea on the division of resources. As B. Gordon states (1975, p. 14) "Democritus is the first in a long line of thinkers to argue the superior efficiency achieved by a division of resources". The Abderetean philosopher in fragment 154 of his writings argued that men have been taught by the different work done by various animals. Thus, men adopted and followed the animals division of labour and resources with the purpose of increasing their creative power<sup>25</sup>. The division of labour for Democritus was caused by the different physical inclinations and skills of men. Thus, he recommended (fr. 270) to the master of slaves to use everyone of them according to their proper abilities for the completion of a job. In addition, he relates the division of labor which takes place according to the physical and spiritual inclinations of individuals with their happiness; a relationship which had also been adopted by Plato (*Republic*, 370A-B). This caused him to declare that man must not engage in various works, but only in one with which he is satisfied (fr. 3). In other words, he emphasized the necessary connection which must be present between man the creator and the thing created. A connection that has been destroyed to a large extent since the time of the industrial revolution.

Upon the subjects of production and especially on agriculture, Democritus wrote a special treatise titled *On Agriculture*. In this work, Democritus gave a full description of the most productive way of cultivation of different crops. He also gave a lot of useful advises for the use of many different plants and animals<sup>26</sup>.

The increase of labor productivity, as we know, does not depend only on the optimum division of labor and on the available amount of other cooperating resources of production, but also on a direct relation to the degree of "learning by doing", which has recently been emphasized by K. Arrow (1962). On this last factor of productivity, Democritus' ideas are very amazing. He declared (fr. 242) that practicing, exercising, teaching<sup>27</sup>, experience, and vicissitudes, are more influential on the increase of labor productivity than the mere physical skills of individuals. Democritus argued that practical learning and theoretical teaching<sup>28</sup> in depth and not in extent, increased the production of the applied sciences (fr. 59, 65)<sup>29</sup>

In fragment 158 of his writings, Democritus maintained "men, thinking new

thoughts with the coming of each day, drawn on by their impulse toward one another as if by a cord drawn taut, proceed, some from one place, some from another, to their undertakings". Democritus argued that individuals were directed to technological inventions not only for material reward, but also for the fulfillment of their destiny which is the development of the human race. It is known that the development of the fine arts has as a precondition, the existence of a certain level of culture, the existence of specific talents among individuals, and finally a sufficient economic surplus which enables men to deliver themselves from the burden of heavy daily work.

In general, we can enumerate many factors derived from human history, which have been in different degrees influential on the development of the fine arts. The most important of them are:

- a) The existence of human feelings regarding the need to continue the human race (natural element).
- b) The existence of human feelings regarding the "subordination to the unknown" (religious element).
- c) The interrelationship among the various forms of knowledge (sociological element).
- d) The availability of leisure time which is a product of the economic surplus (economic element).
- e) The existence and the evolution of ideal types which is inherent in the inner field of individuals (psychological element).
- f) The individual's motive for immortality (individual element).

Of the above general preconditions for the development of the fine arts, Democritus emphasized only the fourth, namely the economic one. He believed that "Music is a new art. It did not emerge from necessity, but from luxury" (fr. 74). The degree of luxury and, in extenuation, the development of a fine art depends on the degree of economic welfare. On the other hand, a sufficient welfare level is synonymous of economic development. Thus, Democritus, recognizing such a connection, presents, in dark colors, the case of insufficient economic development or the situation involving general poverty, as he called it (fr. 287).

### *Democritus on Social Institutions*

The Abderetean philosopher was a defender of democracy and of the equalitarian principle of society, but only for the free citizens of a State<sup>30</sup>. He believed so much in the superiority of democracy as to declare: "The poverty of a democracy is better than the prosperity which allegedly goes with an aristocracy or monarchy, just as liberty is better than slavery" (fr. 251).

A society functioning upon democratical principles, for Democritus, will be prosperous only if its citizens, and mainly the rich ones, show an altruistic behaviour<sup>31</sup>. He held "If the rich and influential (citizens) can bring themselves to lend to the poor and help them, herein lies pity, an end to isolation, friendliness, mutual aid, unity among citizens, and other blessings, such as no man can enumerate" (quoted by Freeman, 1946, p. 321; brackets added).

The altruistic behaviour of individuals is shown through the assistance which the strong and rich men offer to the weak and poor (Aristotle, *Rhetoric*, 1385a, § 15-25). This behaviour can be strengthened by the increase of friendship among the citizens, says Democritus (fr. 186)<sup>32</sup>. For

him, the basis of friendship, as Cole mentions (1967, p. 117), "is on agreement with regard to what is sympheron rather than syngereia". Besides, he stressed that "as

cheerfulness is the ideal for the individual, so homonoia is that of the state" (Sinclair, 1967, p. 65). The continuation of an existing homonoia among the citizens of a state required, as Democritus says, a moderate and not extreme economic inequality among citizens<sup>33</sup>. It is obvious that the economic inequality among individuals presupposes the existence of private ownership, a social principle which was defended by Democritus. In fragment 279 of his writings, he declared that: "Toil is sweeter than idleness, when men gain what they toil for or when they know that they will use it". As Gordon (1975, p. 14) mentions, according to Democritus "a society, organized in terms of private ownership of resources, will enjoy economic superiority over one where communal ownership prevails. The possibility of private ownership lends the stronger incentive for productive activity"<sup>34</sup>. Aristotle, following the steps of Democritus, became a defender of private ownership (*Rhetoric* 1361 a, § 10-15; *Nicomachean Ethics* 1134b, § 10-20)<sup>35</sup>. Plato also — while in his earlier work *Republic* (417 D-E; 543A) was against the existence of private property — in his later work *Laws* (679B-E) changed his mind and accepted the existence of private property but only to the extent of producing the necessary goods for living, namely, for a moderate material life.

### *Conclusions*

The pioneering ideas of Democritus presented herein regarding the science of economics, are many and significant, in spite of the almost total loss of his writings. Moreover, most of them were very influential in the development of the corresponding ideas of the Socratic philosophers, Xenophon, Plato and Aristotle.

Democritus' economic ideas are concentrated on the following special economic topics: (1) on the subjective theory of value and on the notion of diminishing utility; (2) on the rate of demand as a determinant factor of the scarcity of goods; (3) on the ordinal measurability of pleasure and pain; (4) on the conception of time preference; (5) on the value of wealth and justice

in exchange; (6) on the division of labour and resources; (7) on the relationship between "learning by doing" and labour productivity; (8) on the development of technology and the fine arts; (9) on the altruistic behavior of individuals; and (10) on the necessity of the social institution of private property.

In addition, his ethical, philosophical and political propositions, mainly his ideas on the behaviour of individuals in terms of pleasure and pain, the conception of subjectivity, the materialistic explanation of physical phenomena, his praises of democracy, etc. are without doubt fundamental for the further development of those subjects. Thus, we are not far away from truth if we recognize him as a real predecessor of many ideas, mainly in economics. Otherwise, if we cannot characterize his contribution in this way, lest we might overrate him, it is fair then to consider him at least as the ancient philosopher whose ideas proved most influential in the advancement of significant theories.

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*Notes:*

<sup>1</sup>On this see: DE ROOVER (1974); TAYLOR (1955); ROBERTSON-TAYLOR (1957).

<sup>2</sup>With the abbreviation of the word fragment (fr.) we refer to Diels' collection of Democritus' fragments. Whereas by "Fr." we refer to Mullachius' collection.

<sup>3</sup>From these fragments of Democritus' writings, 80 are questionable for their authenticity, especially the fragments numbered from 35 to 115 which are connected with the name of Democrates (SINCLAIR, 1967, p. 65, ft 1).

<sup>4</sup>For the atomic theory of Democritus see: ROBIN (1967, pp. 114-6); KIRK-RAVEN (1957, pp. 404-9); GOMPERZ (1969, pp. 327-331); GUTHREE (1965, pp. 389-99).

<sup>5</sup>Aristotle in his writings made a lot of references to the writings of Democritus. Plato, although influenced by Democritus' ideas, didn't make any valuable reference to his writings.

<sup>6</sup>Democritus declares that "there are two forms of knowledge, one genuine, one obscure. To the obscure one belong all the following: sight, hearing, smell, taste, touch. The other is genuine, and is quite distinct from this" (fr. 11). Thus, as BOAS rightly observes (1961, p. 39) "the rationalism of Democritus, ... included an attempt to show the causal relation between reality and appearance".

<sup>7</sup>ARISTOTLE, in his work *Rhetoric* (1369a, S 1-5), gave seven different causes of human actions without mentioning the economic one. However, in his works *Eudemian Ethics* (1217 a, S 45-50) and *Oeconomica* (1345a, S 25-30) he defines wealth as the sum of possessions which have been produced by the "chrematistic" actions of men.

<sup>8</sup>MARX (1983) has mentioned that there is a sharp difference between the ethical philosophy of Democritus and Epicurus. Democritus, as he said (1983, p. 74), "established the sensible world on the subjective superficiality, while Epicurus on the objective phenomena". Using, the first of them "the category of necessity" and the latter "the category of chance" (p. 80). NICHOLS mentions a second difference on these two philosophical realms. He quotes that 1972, p. 15) "Atomism was a scientific hypothesis brilliantly summing up two hundred years of physical speculation... Epicureanism, on the other hand, while it accepted atomism as on the whole a true description of the structure of matter, was a philosophy of man and society". <sup>9</sup>This is also acceptable by ARISTOTLE (*Nicomachean Ethics*, 1125b, § 5-15).

<sup>10</sup>For the Democritean philosophy on the objective qualities of things see SNELL (1981, p. 107).

<sup>11</sup>The same argument holds PLATO in his work *Philebus* (S 44E).

<sup>12</sup>For the Aristotelean theory of value, see HOUMANIDIS (1982, pp. 82-3).

<sup>13</sup>Protagoras also accepted this idea (PLATO, *Philebus*, § 41D-E).

<sup>14</sup>ARISTOTLE also adopted this idea (*Rhetoric*, 1370, § 1-5).

<sup>13</sup>Plato considered the moderate material pleasure as an indicative measure of

wisdom *Philebus*, § 64E).

<sup>16</sup> See also BAILEY (1928, p. 205) and SPIEGEL (1971, p. 13).

<sup>17</sup> The weakness of comparability between different time preferences has been stressed by SCHACKLE who mentioned (1967, p. 19) that "The attempt to compare the individual's actual feelings at time  $t_2$  is for him impossible and does not make sense".

<sup>18</sup> Fisher considered the elements of risk, uncertainty and prediction as synthesizing the notion of "impatience" on which he developed his theory of interest (HOUMANIDIS, 1986, pp.

<sup>19</sup> For the Aristotelean notion of "chrematistic" behaviour of individuals see *Politics*, 1253b 10-20; 1256a S 10-20; 1256b § 40; 1257a S 5.

<sup>20</sup> Aristotle also, as LEWIS observes (1978, p. 71), rejected the function of the capitalistic market.

<sup>21</sup> This is also acceptable for ARISTOTLE who called the unfair wealth as "profiteering" (*Nicomachean Ethics*, 1232a S 15).

<sup>22</sup> For PLATO the moderate level of wealth must be produced only through fair action (*Laws*, 661B).

<sup>23</sup> It is a fact that XENOPHON in his work *Oeconomicus* (ch. I. 7-8, § 13-14 and ch. II S 2-3) and PLATO in his work *Laum* (727A) followed this line of Democritean thought but without mentioning its predecessor.

<sup>24</sup> ARISTOTLE has mentioned this advantage of the joint stock companies (*Eudemian Ethics*

1242b § 15-20). However, XENOPHON was the first writer of antiquity who elaborated more fully on the function of joint stock companies in relation to the element of risk and the amount of invested capital (*Poroi*, § 32).

<sup>25</sup> The principle and the effect of the division of labour, and its relation to the extent of the market, have been put forward by XENOPHON in his work *Cyropaedia* (ch. H. § 3-6). FOLEY in a very interesting article (1974) on the division of labour in ancient Greek thought makes no reference to the significant contribution of Democritus while he presents in full extent the ideas of Xenophon and Plato.

<sup>26</sup> LOWRY in his brilliant article (1965) about the ancient Greek thought on natural resources did not give any considerable emphasis on Democritus ideas.

<sup>27</sup> XENOPHON also emphasized the significant relation that exists between the degree of teaching and learning and the labour productivity (*Oeconomicus*, ch. VII, § 41; ch. XII § 4).

<sup>28</sup> PLATO argued that only through "learning and effort" we can increase labour productivity (*Philebus*, 56A; *Laws*, 643C). On the side of ethics, ARISTOTLE relates the function of learning and teaching with the virtue of men (*Nicomachean Ethics*, 1103a § 30-5).

<sup>29</sup> PAPADOPOULOS (1981, p. 176) mentions that Democritus as no one else of the ancient thinkers had emphasized the significant role of physical science and of technological progress in the evolution of human beings. And HAVELOCK (1957, p. 119) concludes that Democritus developed a theory of technology "as the vehicle of human civilization". While, VLASTOS (1975, p. 51) writes that "Democritus was an indefatigable investigator of natural and even technological problems, where data would necessarily be supplied by the senses".

<sup>30</sup> For the political theory of Democritus and his position on the notions of right and wrong between the social relations see HAVELOCK (1957, pp. 125-154).

<sup>31</sup> XENOPHON emphasized the necessary altruistic behaviour of rich men to the poor in a society (*Oeconomicus*, ch. XI, § 9-10).

<sup>32</sup> ARISTOTLE presents the various degrees of friendship under the exercising forces of



virtue, happiness and self interest (sympheron) (*Eudemian Ethics*, 1236a, § 35-40). Moreover, he considers friendship as a necessary element for the existence of justice in the different economic transactions (FINLAY, 1974, p. 32-3).

<sup>33</sup> PLATO considered the economic inequality between the citizens of a state as the source of harmful situations (*Laws*, 679B-C).

<sup>34</sup> The same idea is also expressed by SPENGLER (1980, p. 82, ft 48) and SPIEGEL (1971, p. 14).

<sup>35</sup> See also VINER (1960, p. 48).