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ON PROPERTY THEORY AND VALUE THEORY

*David P. ELLERMAN**

Introduction

The theory of value and distribution is the battlefield where the neoclassical defenders and the Marxian critics of capitalist production have engaged in a peculiar form of ritual combat. We shall argue that the basic issues are not value theoretic but property theoretic. Each of the principal contending 'value theories', marginal productivity theory and the Marxian labor theory of value, implicitly functions as a metaphorical theory of property — and the conflict is primarily at that property theoretic level. Once this is appreciated, it clears the ground for the development of the basic property theoretic issue in an explicit, non-metaphorical, and non-value-theoretic manner.

Value Relations and Property Relations

Value and property relations can be analyzed at a point in time (stock analysis) or over a period of time (flow analysis). Value theory is concerned with *value relations* which are specified by the amounts of value held as wealth (balance sheet) or received as income (income statement) by the various legal parties. Property theory is concerned with *property relations* which are specified by the real quantities of the various types of assets and liabilities (property rights and obligations) which are held by or acquired by the parties.

Market prices transform property relations into the corresponding market-value relations. If the quantities of real assets and liabilities held or acquired by the various parties are multiplied by the respective market prices and summed (the liabilities counting negatively), then the results are the *corresponding* value relations, i.e., the wealth held by or the income received by the parties. For example, over a period of time, a firm might use-up inputs K and L and produce the outputs Q. In terms of property rights and obligations, the firm acquires the assets

*) Economics Department, University of Massachusetts, Boston, Ma., U. S. A.

Q and the liabilities -K and -L. Those property relations are transformed into the corresponding value relations by the market prices, p per unit output and r and w per unit of the capital and labor services. The net income received by the firme is pQ-rK-wL.

For a given set of market prices, the transformation from property relations to value relations is a many-to-one transformation. A set of value relations could have come from many different sets of property relations. For example, suppose that Peter has two dollars, that Paul has four dollars, and that an umbrella costs six dollars. Peter could borrow four dollars from Paul and purchase the umbrella. Then Peter has a six dollar asset and a four dollar liability or debt, while Paul has a four dollar asset (Peter's I. O. U.). Alternatively, Paul could borrow two dollars from Peter and buy the umbrella. Or Peter and Paul could jointly purchase the umbrella with Peter owning one-third and Paul owning two-thirds of the umbrella — and so forth. These sets of property relations are quite different from one another, for example, in who controls the use of the umbrella or who reaps the windfall from an unexpected increase in the price of umbrellas. However they are all indistinguishable from the viewpoint of merely the value relations; they all yield a net worth of two dollars for Peter and four dollars for Paul.

Metaphorical Property Relations

The central apologetic strategy of neoclassical capitalist economics has two parts: (1) first the actual property relations of capitalist production are metaphorically interpreted in terms of a fictitious set of as-if property relations, and then (2) a part of neo-classical value theory, marginal productivity theory, is used as a metaphorical property theory to justify the as-if property relations. This strategy of obfuscating and evading the actual capitalist property relations has been quite successful because economists of all persuasions have focused their attention principally on value relations such as the distribution of income and wealth. The actual and the metaphorical property relations are indistinguishable from the merely value theoretic viewpoint since they yield the same value relations.

One basic metaphor is that of viewing a party's creditors as if they were the joint claimants or co-owners of the party's assets. A legal liability, which is a legal claim by a creditor against the debtor for certain future-dated assets, is metaphorically pictured as being a direct ownership claim by the creditor on an equally valued share of the debtor's present assets. When a debtor goes bankrupt (i. e., ceases to be a financially responsible legal party), *then* the creditor's claim against the debtor can fall directly on the debtor's assets. The as-if property relations interpret a creditor's claim against a non-bankrupt debtor as if it was already a direct ownership claim on a share of the debtor's assets.

An actual set and the corresponding metaphorical set of property relations can be illustrated by giving the relevant portions of the debtor's and the creditor's balance sheets.

Debtor

Assets	Liabilities
An asset of value A	An I. O. U. of value L
	Net Worth: A—L

Creditor

Assets	Liabilities
An I. O. U. of value L	
	Net Worth: L

These actual property relations are then viewed *as if* they were the following set of metaphorical property relations.

Assets	Liabilities
The share (A—L)/A of the asset	
	Net Worth: A—L

Assets	Liabilities
The share L/A of the asset	
	Net Worth: L

> Corresponding to the dollar value of every asset — tangible or intangible — there must necessarily be an exactly equal total amount of *claims or ownership.* The value of a $ 40,000 house is exactly matched by somebody's claim to its ownership consisting, say, of $ 25,000 owed a creditor and $ 15,000 owned by its owner. [Paul Samuelson, *Economics*, 10th ed. (New York: McGraw-Hill, 1976), p. 120].

The interpretation of liabilities or debts as if they were joint claims on the debtor's assets could be called *liabilities cancellation.* There are no liabilities in the metaphorical property relations, only jointly claimed assets. The negative value of liabilities cancels part of the positive value of the assets in the determination of net worth or equity. The metaphorical property relations are obtained by interpreting this value cancellation as if it were also an ownership cancellation which left the debtor as owning only an 'equity share' of the assets.

Liabilities cancellation can also be applied to the flow of assets and liabilities, i.e., to income statements. Kelvin Lancaster uses an example where an individual borrows $ 10,000 at 6 percent from a bank which, in turn, had borrowed the $ 10,000 from a depositor at 5 percent interest. The individual buys a machine for $ 10,000 which never wears out and which yields 2000 machine-hours a year. Each year the individual sells the 2000 machine-hours at $.50 each for an income of $ 1000. The individual also has a liability of $ 600 a year (6% of 10,000) to the bank which, in turn, has a debt of $ 500 a year to the depositor. The net incomes of the machine owner, the bank, and the depositor are, respectively, $ 400, $ 100, and $ 500. By construing these value cancellations as ownership cancellations, one might say that, from the merely value theoretic viewpoint, it is *as if* the bank and even the depositor owned proportionate shares of the machine.

> If we like, we can consider the real "ownership" of the machine is split between the individual having physical possession, the banker and the depositor, in the ratio of 40 percent: 10 percent: 50 percent. [Kelvin Lancaster, *Modern Economics*, (New York: Rand McNally & Co., 1973), p. 336].

It should be noted that neither Samuelson, Lancaster, nor any other reasonably careful neo-classical economist would make the demonstrably false assertion that these metaphorical property relations are the actual ones, e.g. that a creditor actually owns a L/A share of the debtor's assets. These economists are using a device that is quite familiar to lawyers, the *fiction*.

> By fiction, in the sense in which it is used by lawyers, understand a false assertion of the privileged kind, and which, though acknowledged to be false, is at the same time argued from and acted upon, as if true. [Jeremy Bentham, quoted in: C. K. Ogden, *Bentham's Theory of Fictions*, (Paterson, N.J.: Littlefield, Adams & Co., 1959), p. cxvi]

It's in this sense that the as-if property relations, obtained by liabilities cancellation, are used as a fiction. From the viewpoint of value theory (i.e., "Economics" narrowly construed), it is *as if* they were the actual property relations.

Marginal Productivity Theory as a Metaphorical Property Theory

The most important use of the fictious property relations is in the treatment of production. The input suppliers, who are creditors of the firm, are metaphorically pictured as if they had claims on shares of the product, shares which are equal in value to the value of their inputs. In the previous example of a firm that produced the outputs Q with the inputs K and L, the suppliers of each input, such as the labor L, are pictured as having the claim on a share or fraction wL/pQ of the product Q. Hence, the application of liabilities cancellation to production yields the familiar *pie-shares* or *distributive shares* picture of production property relations.

Once the pie-shares image of production has been established as the framework of analysis, the next step is to develop a metaphorical property theory to 'justify' the size of the fictitious 'share of the product' going to each factor supplier. John Bates Clark developed marginal productivity theory both as a part of value theory (a theory of input demand) *and* as a metaphorical property theory.

The Clarkian property theoretic interpretation of marginal productivity (MP) theory can be illustrated by considering a competitive firm with outpus $Q = f(K,L)$ for inputs K and L. If MP_K and MP_L are the marginal products of the capital and labor services, then profit maximization requires that those inputs be demanded up to the point where $p \cdot MP_K = r$ and $p \cdot MP_L = w$. A full-blown competitive general

equilibrium requires constant returns to scale which implies that $Q = K \cdot MP_K + L \cdot MP_L$.

The property theoretic version of MP theory interpretes the marginal product MP_L of labor as the product of the 'marginal unit' of labor. Then each of the L units is viewed as the 'marginal unit', so the L units of labor are viewed as producing and thus justifiably claiming $L \cdot MP_L$ units of output. Similarly, the capital services K are viewed as producing and thus justifying the capital owner's claim on $K \cdot MP_K$ units of output. Since $Q = K \cdot MP_K + L \cdot MP_L$, economists can metaphorically assert:

> This distributes 100 per cent of Q, no more and no less, among all the factors of production. [Samuelson, *Economics*, p. 544]

The income wL distributed to Labor (= the workers) is the market value $p \cdot L \cdot MP_L$ of the share $L \cdot MP_L$ of Q supposedly produced by the workers (since $w = p \cdot MP_L$). Similarly, the income rK distributed to Capital (= the K suppliers) is the market value $p \cdot K \cdot MP_K$ of the share $K \cdot MP_K$ of Q supposedly produced by the capital. In other words, the share wL/pQ of the product claimed by Labor in the pie shares metaphor is equal to the share $L \cdot MP_L/Q$ of the product supposedly produced by the labor, and similarly for capital. Since the as-if property shares equal the as-if productive shares, each factor is viewed as getting what it creates.

It is this use of MP theory as a metaphorical property theory — and not simply as a descriptive theory of input demand — that gives the theory a central role in capitalist apologetics.

> When a workman leaves the mill, carrying his pay in his pocket, the civil law guarantees to him what he thus takes away; but before he leaves the mill he is the rightful owner of a part of the wealth that the day's industry has brought forth. Does the economic law which, in some way that he does not understand, determines what his pay shall be, make it correspond with the amount of his portion of the day's product, or does it force him to leave some of his rightful share behind him? A plan of living that should force men to leave in their employers' hands anything that by right of creation is theirs, would be an institutional robbery — a legally established violation of the principle on which property is supposed to rest. [John Bates Clark, *The Distribution of Wealth*, (New York: Macmillan and Co., 1899), pp. 8-9]

By showing that the as-if property shares equal the as-if productive shares, Clark and modern neoclassical apologists hope to show that under competitive capitalism;

> the law on which property is supposed to rest — the rule, "to each what he creates" — actually works at the point where the possession of property begins, in the payments that are made in the mill, ... [*Ibid.*, p. 9]

Given a reasonable approximation to competitive conditions, it is argued, marginal productivity theory shows that each man gets what he produces. [Milton Friedman, *Price Theory: A Provisional Text*, (Chicago: Aldine, 1962), p. 196]

The Whole Product

The pie-shares or distributive shares metaphor is false as a description of property rights in a productive enterprise. Two or more parties do not have claims on shares of the product. One party, such as the employer in a capitalist firm, owns *all* of the product. Economists are, of course, aware of these 'bare legal facts', but they feel compelled to metaphorically picture the product as being shared in order to account for the factor incomes. But the facts do not need to be 'improved upon', by metaphorical reinterpretation, to account for the factor incomes.

Property can take either a positive or a *negative form*, i. e., assets (property rights) or liabilities (property obligations). When economists refer to the "product", they refer only to the positive product, the assets produced as outputs. But there is also a negative product. In order to produce the output-assets, it is necessary to incur the liabilities for using-up the inputs. The fact that accounts for the factor incomes without resorting to the pie-shares metaphor is the fact that the one legal party which appropriates all of the positive product also acquires all of the negative product, i.e., also holds all the liabilities for the used-up inputs. Hence, instead of being the claimants of a share of the positive product, the input suppliers are only the creditors of the one party which acquires all of the positive and the negative product.

In order to describe the actual property relations of production, it is necessary to expand the usual concept of the 'product' to include the negative product (input-liabilities) as well as the customary positive product (output-assets). We will call this bundle of property rights and obligations, the *whole product*, so the "whole product" = "positive product" + "negative product" = "output-assets" + "input-liabilities". In a productive enterprise, one party appropriates the whole product of production.

Consider the production process where the labor L used-up the capital services K in the production of the outputs Q. If the labor L was not analytically treated as a commodity used-up in production, then the whole product in terms of commodities is the list or 'vector' (Q,—K). If labor is taken as an input commodity (as in capitalist production), then the whole product is (Q,—K,—L). Any two lists or vectors, with the same number of components, add together by adding the corresponding components. For example, the whole product (Q,—K,—L) is the sum of the *positive product* (Q, O, O) and the *negative product* (O,—K,—L). If the price list is (p, r, w), then the market value of the whole product is the profit $\pi = pQ - rK - wL$. In the pie-shares metaphor the analogue to the whole product is the "residual share"; $Q - (rK/pQ) \cdot Q - (wL/pQ) \cdot Q = [1 - (rK/pQ) - (wL/pQ)]\, Q$.

The party pictured as claiming the residual (the "residual claimant") in the pie-shares metaphor actually claims the whole product.

The metaphorical and the actual property relations can now be precisely compared. If Capital, the party supplying (O, K, O), hires Labor, then Capital will additionally appropriate the whole product (Q,—K,—L). Hence the value accruing to Capital is the value of (O, K, O) + (Q,—K,—L) = (Q, O,—L) i. e., $rK + \pi = pQ - wL$. Labor sells (O, O, L) and appropriates no share of the product (positive, negative, or whole), for an income of wL. Those are the actual property relations. The metaphorical property relations picture Capital as claiming Capital's share (rK/pQ)Q plus the residual of $[1 - (rK/pQ) - (wL/pQ)]\, Q$ with the same market value $rK + \pi = pQ - wL$. Labor is pictured as claiming Labor's share (wL/pQ) Q with the market value wL. The actual and the metaphorical property relations yields the same value relations; the income of $rK + \pi$ to Capital and wL to Labor. Hence, from the value theoretic viewpoint, it is *as-if* the pie-shares picture was true.

The Pons Asinorum

The descriptive or prescriptive analysis of property relations requires a property theory — not a value theory with a metaphorical property theoretic interpretation. Any serious non-metaphorical development of property theory implies crossing the bridge from the pie-shares analysis of as-if poperty relations to the whole product analysis of actual property relations. But this pie-shares-to-whole-product bridge is the *Pons Asinorum* (asses' bridge) of property theory. A major difficulty in crossing this bridge is in grasping the concept of *liabilities* — so that property relations can be understood in an algebraically symmetric manner. It is this conceptual difficulty that is responsible for the widespread practice of metaphorically cancelling liabilities so that property relations can be pictured as only involving (jointly claimed) assets. A similar difficulty was encountered when negative quantities were first introduced into mathematics. How could one make sense out of a "negative five apples"? Negative numbers were considered as merely formal entities used for computional convenience. Ironically, negative numbers were eventually accepted as being meaningful only after some mathematicians, such as the thirteenth century Italian algebraist Fibonacci, showed that they could be interpreted in commercial arithmetic as denoting liabilities.

In technical terms, the acquisition (in-flow) of a liability is defined as being the disacquisition (out-flow) of an asset or good. For example, consider a bilateral exchange of goods wherein Peter transfers three oranges to Paul in return for five apples. By the above definition, this bilateral transfer of assets can be equivalenty described as a unilateral transfer of both assets and liabilities; the transfer of the assets + 3 oranges and the liabilities — 5 apples from Peter to Paul. Or it could be equivalently described as the Paul to Peter transfer of — 3 oranges and + 5 apples.

In addition to being transferred, the property rights to assets must be created or initiated in the first place, and they must be eventually terminated. When new commodities or assets are produced, the initiation of the legal title to those assets is called *appropriation*. When assets are consumed or used-up, the termination of the legal title to those assets is the orignal meaning of the word *"expropriation"*.

> This word primarily denotes a voluntary surrender of rights or claims; the act of divesting oneself of that which was previously claimed as one's own, or renouncing it. In this sense, it is the opposite of 'appropriation'.
> A meaning has been attached to the term, imported from foreign jurisprudence, which makes it synonymous with the exercise of the power of eminent domain, ... [H.C. Black, *Black's Law Dictionary*, 4th ed. rev. (St. Paul: West Publishing Co., 1968), entry under "Expropriation", p. 692]

The "expropriation of assets" is commonly understood today to mean the compulsory transfer of assets to the government under its power of eminent domain. Since we will be concerned with the "expropriation of assets" not in that derived sense but only in its original sense as the opposite of "appropriation of assets", we will avoid the expression in favor of the equivalent expression "appropriation of liabilities".

In production the inputs are used-up and the outputs are produced. Hence, from the property theoretic viewpoint, production involves the expropriation of the input-assets and the appropriation of the output-assets. We saw previously that the bilateral transfer of assets could be equivalently described as the unilateral transfer of both assets and liabilities. Similarly, the two-way creation and termination of assets in production be equivalently described as the one-way creation of both assets and liabilities. For example, the expropriation of the input-assets (O, K, L) and the appropriation of the output-assets (Q, O, O) could be simply described as the appropriation of the input-liabilities (O,—K,—L) and the output-assets (Q, O, O), i. e., the appropriation of the whole product (Q,—K,—L).

The depth of property theoretic analysis in orthodox economics can be gauged from the lack of any symmetrical treatment of the appropriation of assets together with the appropriation of liabilities (i.e., the expropriation of assets). This is in spite of the fact that mathematics is 'pointing the way'. Mathematical economists *do* use whole product vectors in the modern mathematical treatment of production, where those vectors are variously called "input-output vectors", "activity vectors", or „production vectors" [See for example: Gerard Debreu, *Theory of Value*, (New York: John Wiley & Sons, 1959), p. 30 and pp. 37-38]. But, as in the early mathematical use of negative numbers, these vectors are used as a formal mathematical convenience without any recognition that they have a direct property theoretic interpretation in terms of the appropriation of assets and liabilities. In the philosophical literature, one can occasionally find a discussion of asset appropriation, but even that is usually taken to mean only an original assignment of property rights to unowned natural objects. It is, of course, well known that property rights are transferred in exchange, but there seems to be little recognition that property rights are also constantly being created as well as terminated in ordinary production and consumption activities. Aside from the formal mathematical use of whole product vectors, orthodox economics has yet to cross the *Pons Asinorum* from the pie-shares picture to the whole product analysis of production property relations.

The Laissez Faire Mechanism of Appropriation

The question of who is to appropriate a liability (or expropriate an asset) arises whenever an asset is consumed, used-up, or otherwise destroyed. A civil trial for the legal imputation of the liability for property damages is an example of an overt or explicit legal assignment of a liability. If the accused party is found guilty, then a damage payment for at least the value of the destroyed property is made to the previous owner. That payment in effect transfers the legal title to the guilty party, where the title is terminated. But these trials are infrequent, while commodities are constantly being consumed, used-up, or destroyed in production and consumption. When no law is broken so that the Law (the legal authorities) does not intervene to hold a trial, then there is a laissez faire or invisible hand mechanism that automatically takes over. That is, when the Law does not intervene to reassign the liability for a used-up asset, then that liability is automatically left in the hands of the last legal owner of the asset. If other appropriable assets are produced as result when the commodities are used-up, then the legal party that voluntarily appropriated the liabilities would have the legally defensible claim on the new assets. Hence we have the

Laissez Faire Mechanism of Appropriation

> If no law is broken, let the costs of an activity lay where they have fallen ("Laissez faire le coût"), and then let the party, that bore the costs, claim any appropriable positive results of the activity.

It is this invisible hand mechanism which governs the appropriation of assets and liabilities in any lawful economic activities of production and consumption.

In capitalist production, the employer's appropriation of the whole product is a laissez faire appropriation. The employer already owns or buys all the inputs such as the capital services as well as the peculiar input, labor services. The employer bears these costs when the inputs are consumed in production so the employer voluntarily appropriates the negative product (= input-liabilities). Then the employer lays claim to the positive product (= output-assets). In that manner, the employer legally appropriates the whole product (= positive product + negative product).

These property relations (the appropriation of the whole product) also determine the *power relations* at the point of production. A party laissez faire appropriates the whole product by first acquiring the ownership of all the inputs (including labor) to be consumed in production. Since any party has the legal right to control its use of its own property (within the constraints of the law and the input contracts), the input-buyer or hiring party has the legal rights of discretionary managerial control over the production process.

It should be carefully noted that there is *no* "right to the fruits" — no *ius fructus* — in the bundle of rights which constitute the ownership of property. That is a superficial and incorrect inference from observing the operation of the laissez faire mechanism of appropriation. When that mechanism is operating (i. e., when no law is broken), then the owner of the inputs appropriates the positive product, so it is easy to jump to the conclusion that the "right to the fruits" must be a part of the ownership of the inputs. But one can see that the appropriation is a consequence of the laissez faire mechanism and not a part of the property rights structure by considering a case where the mechanism is set aside. Suppose that person A steals or converts some of person B's property and then uses it to cause some damage to the property of a third party. Since a law was broken, the law (ideally) would intervene to impute the legal responsibilty for the liabilities to the person who was in fact responsible (A). The Law would enforce B's ownership right to the converted property, but the Law would not enforce B's alleged right to the (negative) results of the use of B's property — since there was no such right in the first place.

It should also be noted that the capitalist's appropriation of the whole product does not automatically follow from the "private ownership of the means of production". When the laissez faire mechanism is in operation, then in order to legally claim the positive product, it is necessary and sufficient to own and thus bear the costs of the inputs used up in production such as the services of capital and labor. If any party, other than the owner of the capital goods (= means of production), hired or rented the capital (i. e., bought the capital services) and bought the other inputs, then that party would appropriate the whole product. From the legal viewpoint, it is a matter of which way the hiring contracts are made (e. g., whether Capital hires labor or Labor hires capital). Hence the relevance of the ownership of the means of production lies in the fact that it is typically that owner who has the bargaining power to make the hiring contracts in his favor.

Since the identity of the whole product appropriator (= the firm) is determined solely by the hiring contracts, there also is *no* "ownership of the firm". In capitalist corporate law, there is, of course, the shareholder's "ownership" of the corporation. Firstly, these so-called "ownership rights" are really membership rights that are called "ownership rights" because the membership rights are legally marketable [for a more detailed analysis of corporate law, see the unpublished paper: "On the Legal Structure of Workers' Cooperatives"]. It is because the membership shares are bought that they are viewed as "ownership shares". Secondly, it is only the hiring contracts that determine whether or not the corporation is the legal party that appropriates the whole product of the production process that utilizes the corporation's capital goods. If the corporate capital is hired out, instead of the labor being hired in, then the identity of the firm (= whole product appropriator) changes hands. But that involves no sale in the

"ownership of the firm" — just a rearrangement of the hiring contracts. Since the firm can change hands without any sale in the "ownership of the firm", it follows that there was no such ownership right in the first place. The shareholders would still have their so-called "ownership rights", which are only their membership rights in capital-supplying corporation, i.e., a 'capital union' [for a more detailed analysis of the "ownership of the firm", see "Some Property Theoretic Aspects of Orthodox Economic Theory" forthcoming in: E.J. Nell (ed.), *Growth, Profits, and Property: Essays in the Revival of Political Economy*, Cambridge: Cambridge University Press].

Who is to be the Firm?

From the viewpoint of value theory, the fundamental question of political economy concerns the problem of income distribution. How is the income from the (positive) product to be distributed among the various suppliers of inputs? From the viewpoint of property theory, the fundamental question of political economy is the question of appropriation in production. Who is to appropriate the whole product of production? If we use the word "firm" as a technical term defined to mean "whole product appropriator", then the fundamental question takes the following canonical form: *Who is to be the firm?*

It is the different answers to this question which basically differentiate the various types of economic systems. *Capitalism* is the system where the owners of the capital being used in an enterprise may, by hiring the labor, legally appropriate the whole product of the production process. *Socialism* (in the conventional sense of "State socialism") is the system where 'Society' in its organized form, the State, appropriates the whole product of production. *Workers' self-management* is the system where all the people who work in a productive enterprise constitute the legal party ("Labor") that appropriates the whole product of production. Hence the question is; Who is to be the firm — Capital, the State, or Labor?

It is a question about property relations — not value relations such as the distribution of income or wealth. Naturally, the value relations will differ under the various systems, but that is a consequence of the differing structures of property relations. Capitalist economics makes no attempt to justify Capital's appropriation of the whole product. In fact, capitalist economics has not even developed the elementary property theoretic concepts needed to describe the actual structure of capitalist property relations. The strategy is to evade the actual property relations in favor of value relations and the as-if property relations that are 'derived' from the value relations. MP theory is then pressed into service to generate a metaphorical picture of production relations (i. e., each input as „producing" its marginal productivity) to justify the metaphorical property relations by showing that; as-if productive shares = as-if property shares. But two metaphors do not add up to a logical argument. A metaphorical defense of a metaphorical structure is only a diversionary exercise. It is the actual property relations of capitalist production that apologists should try to defend.

As only a price theory, the hotly debated neoclassical theory of value is not so much right or wrong as it is *irrelevant* to the fundamental question that divides capitalism, governmental socialism, and workers' management. Capitalism is not a particular type of price system. Capitalism is a particular type of property system; the system that allows Capital, by hiring Labor, to appropriate the whole product and thus to be the firm. The best of price theories would only be concerned with the market value of the assets and liabilities in the whole product, and would not determine who is to appropriate that bundle of property rights and obligations in the first place.

The Labor Theory of Property

The only serious normative theory of property rights and obligations that has ever been developed is the labor theory of property. The labor theory can be formulated in two quite different, but equivalent, vocabularies; as a theory of appropriation and as a theory of imputation. The proper formulation in either vocabulary requires crossing the Pons Asinorum, i.e., the treatment of property relations in algebraically symmetric (positive nad negative) terms. For example, in the traditional expression "fruits of one's labor", it must be realized that there are 'negative fruits' just as well as 'positive fruits'. That is, people, by their labor, use-up commodities just as well as they produce commodities. The labor theory of property is the principle that people should bear the legal liabilities for the commodities they use-up and that they should acquire the legal ownership of the commodities they produce. In short, people should legally appropriate the positive and negative fruits of their labor.

The imputation version of the labor theory is concerned with "responsibility" in the *ex post* sense of the question "Who did it?" — not with "responsibilities" in the *ex ante* sense of one's duties or tasks in an organizational role. A person or group of people are *de facto* or *factually responsible* for a certain result if it was the purposeful result of their intentional (joint) actions. *Imputation* is the assignment of *de jure* or *legal responsibility.* The fundamental juridical principle of imputation is that legal responsibility should be imputed in accordance with *de facto* responsibility. For example, the legal responsibility for a civil or criminal wrong should be assigned to the person or persons who intentionally committed the act. Since, in an economic context, intentional human actions are called "labor", we have the following equivalence.

The Juridical Principle of Imputation: People should have the legal responsibility for the positive and negative results of their intentional actions.

The Labor Theory of Property: People should legally appropriate the positive and negative fruits of their labor.

Since the juridical imputation principle is age-old and unchallenged, it is in view of this equivalence that one can understand that the labor theory is the only serious normative theory of property.

Workers' Self-Management

The labor theory of property answers the basic question of "Who is to be the firm?". In any productive enterprise, the production of the outputs and the using-up of the inputs are, respectively, the positive and negative fruits of the joint labor of the people who work in the enterprise. Hence, the labor theory of property implies that Labor (in the inclusive sense of all who work in the enterprise) should have the legal ownership of the produced outputs and should be legally liable for the used-up inputs, i.e., that Labor should legally appropriate the whole product. Since the actual production relations ("Who produces what?") are that Labor produces the whole product, the property relations should be that Labor appropriates the whole product. From the legalistic viewpoint, it is the firm, as a legal party, that holds those property rights and obligations. Hence, the labor theory implies that Labor should be the firm i.e., that all firms should be self-managed.

It should be noted that the ownership (legal or rightful) of the inputs does not determine who ought to appropriate the whole product. The laissez faire mechanism, which in effect imputes the positive product to the last legal owner of the used-up inputs, is only a mechanism of positive law. It may or may not function correctly in terms of the juridical imputation principle depending on certain conditions (e. g., the absence or presence of hired labor). The rightful ownership of the used-up inputs, determined by rightful appropriations and voluntary exchanges in the past, only determines *to whom* the rightful appropriator of the present whole product is liable for the used-up inputs. The rightful — not to mention the legal — ownership of the inputs thus does not determine who is to appropriate the whole product in the first place. That is determined by the basic juridical principle of imputation, i. e., the labor theory of property.

The Labor Theory of Value

The "labor theory of value" is essentially the labor theory of property presented in the disguise of a value theory. In the past, political economic theory has been virtually identified with value theory. Hence, as the ideas behind the labor theory of property were being developed within political economy in the nineteenth century, radical economists naturally tried to express these ideas as a value theory, the labor theory of value. Since, at that time, property theory did not exist as a distinct body of theory, and since value theory was the only theoretical paradigm at hand, it was almost preordained that the labor theory of property should be first developed as the "labor theory of value". It is only with the benefit of a century of hindsight that one can understand that the labor theory can only be developed, not as another value theory, but as different kind of a theory within a genuinely different paradigm, i. e., as a property theory.

The labor theory was developed in a rudimentary form by the school of pre-Marxian radical economists known as the 'Ricardian socialists' or classical laborists. This school included Pierre-Joseph Proudhon in France and Thomas Hodgskin, William Thompson, and

John Francis Bray in England [see: Anton Menger, *The Right to the Whole Produce of Labour: The Origin and Development of the Theory of Labour's Claim to the Whole Product of Industry*, (London: Macmillan and Co., 1899)]. While orthodox commentators have pictured the classical laborists as trying to develop the labor theory as a value theory, one can see in retrospect that their orientation was property theoretic. This is even evident in the titles of their books. Proudhon's best known work was entitled *What is Property?* (not "What is Value?") and Hodgskin wrote *The Natural and Artificial Right of Property Contrasted*.

While the use of the phrase "whole product" is derived from the classical laborists, they failed to include the all-important negative product in their concept of the whole product. They used the phrase "whole product" as being synonymous with the positive product. But the classical laborist's claim of "Labor's right to the whole product" is incoherent without the inclusion of the negative product. Suppose that, in a self-managed economy, firm A produces capital goods such as drill presses which are then used by firm B to produce consumer goods. The firm A workers appropriation of the positive fruits of their labor is meaningless unless the firm B workers appropriate the negative fruits of their labor (i.e., bear the liabilities for using up the machine services). Unless the firm A workers will give away their positive product for free (and live on air), the firm B workers must bear the negative fruits of their labor and satisfy those liabilities by purchasing or leasing the capital goods. The classical laborists' failure to develop the negative side of property theory left them without any coherent theory. This deficiency left the proponents of the embryonic labor theory facing a crucial choice; to cross the Pons Asinorum (by developing the negative side) or to fall back on the division of the positive product metaphor (which does not involve the negatve product).

After the classical laborists came Karl Marx, who has dominated radical political economy ever since that time. Like the classical laborists, Marx wanted to develop the labor theory and use it to demonstrate that the workers are robbed of the fruits of their labor under capitalist production. Unlike the classical laborists, Marx did develop a coherent theory. But, to make a long story short, Marx made one basic mistake: he developed the labor theory as a *value* theory — by using the 'bourgeois' division of the product metaphor.

In one of Marx's standard examples, a worker can, in 12 hours, produce 20 lbs. of yarn by using-up 20 lbs. of cotton and 1/2 spindle (through wear and tear). Hence the worker creates the assets and liabilities in the commodity version of the whole product (labor excluded): (+20 lbs. yarn, —20 lbs. cotton, —1/2 spindle). The values are 1 shilling per lb. cotton, 1 and 1/2 s. per lb. yarn and 8 s. per spindle. The value of the non-labor inputs is 24 s. and the value of the positive product is 30 shilling. Instead of viewing the worker as creating *all* the assets and liabilities (+20 lbs. yarn, —20 lbs. cotton, — 1/2 spindle), Marx pictured the cotton and spindle as if it reproduced itself in the form of 24/30 times 20 or 16 lbs. of yarn. Hence the worker is pictured as producing only the remaining share of the positive product which is (30 — 24)/30 times 20 or 4 lbs. yarn.

> On the other hand, the remaining two-tenths of the product, or 4 lb. of yarn, represent nothing but the new value of 6 s. created during the 12 hours' spinning process. All the value transferred to those 4 lb. from the raw material and instruments of labour consumed was *so to speak* intercepted in order to be incorporated in the 16 lb. first spun. In this case, it is *as if* the spinner had spun 4 lb. of yarn out of the air, ... [Karl Marx, *Capital*, Vol. I, trans. Ben Fowkes (New York: Vintage Books, 1977), pp. 330-331 in the section entitled "The Representation of the Value of the Product by Corresponding Proportional Parts of the Product" (emphasis added)].

This representation of the positive product as being divided into shares or "Parts" in proportion to the value of the inputs is Marx's version of the as-if production relations. In the example, the wage for the 12 hours labor is 3 shilling, so the worker's as-if property share in the product is 2 lbs. of yarn. Since the worker's as-if productive share (= 4 lbs. yarn) is greater than the worker's as-if property share (= 2 lbs. yarn), Marx argues that the worker is exploited out of the surplus product of 4—2 = 2 lbs. yarn. It is as if the worker spent 6 hours producing his wages and then the other 6 hours performing surplus labor for the capitalist. But, like the bourgeois analysis of production and property relations, this analysis by Marx is at the metaphorical level. As Joan Robinson has pointed out:

> There are some statements that seemed to Marx to contain important truths which now appear only as metaphor.
> ... Marx expresses the rate of exploitation as the division of the working day into the time that a man is producing for himself (creating wage goods) and the time he is working for the capitalist. But a man by himself cannot produce anything. The whole labor force is producing the whole output. ... The time that a man works for himself is a striking metaphor, not an analytical proposition. [Joan Robinson, "The Labor Theory of Value", *Monthly Review*, Vol. 29, n. 7, Dec. 1977, p. 54].

Like the capitalist metaphors, the Marxian metaphors ultimately obfuscate the structure of the property relations ("Who appropriates the whole product?"; Capital), the power relations ("Who controls production?"; Capital), and the production relations ("Who produces the whole product?"; Labor). Marx was well aware of these facts in his extra-theoretical discussion of capitalist production. But his *theory* was based on a metaphorical picture of capitalist production. The Marxian labor theory of value, neo-Ricardian value theory, neoclassical value theory, or any other *value* theory can at best deal only with quantitative value relations and cannot deal with the structure of the property, power, and production relations [for more details, see "The

Marxian Labor Theory of Value: Towards Its 'Aufhebung' ", unpublished paper, 1977].

Neoclassical economists try to interpret a part of value theory as if it were a property theory. Marx made the opposite mistake of trying to develop a property theory as if it were a value theory. But given the dominance of the value theoretic paradigm, the value theoretic treatment of the labor theory was like Voltaire's God; if it didn't exist, someone would have to invent it. Marx played that historical role. It is only after Marx has completed his prodigious effort that latter-day radical economists can "stand on the shoulders of the giant" and see that the labor theoretic analysis and critique of capitalist production can only be successfully carried out by completely reconstructing the "labor theory of value", from the ground up, as the labor theory of property.

"Only Labor is Creative"

The details of Marx's labor theory of value are primarily of antiquarian interest since they represent an abortive attempt to develop the labor theory of property within the conceptual framework of a value theory. The labor theoretic legacy of Marx and the classical laborists takes the form of several general themes, often expressed in slogans or epigrams which capitalist economists have prematurely taken to be epitaphs. The labor theory of property can be used to explicate many of these old slogans, to pour new wine in the old bottles.

Capitalist economists always seem to be baffled by the old radical slogan that is expressed variously as "Only labor is creative", "Labor is the only creative factor", and so forth. The equivalence between the labor theory of property and the juridical principle of imputation provides a direct explication using the notion of responsibility. Only persons can be responsible for anything. Things, such as capital goods or land, cannot be responsible for anything. Of course, capital goods and land are "productive" in the sense of being causally efficacious; otherwise there would be no occasion to use them in production. But in the lawful production of a product, just as in the unlawful commission of a tort or crime, things, cannot be responsible, no matter how efficacious or instrumental the things might have been in the activity. Only intentional human actions can be responsible, and, in the context of production, such actions are called "labor". Hence the explication of the slogan "Only labor is creative" is; "Only labor is *responsible*".

The services of capital and land are used-up in production because they are causally efficacious in producing the product. It is the people who work in an enterprise (Labor) who are responsible for using-up the inputs (i.e., responsible for producing the negative product) and who are also responsible for producing the outputs or positive product. That is, Labor is responsible for producing the whole product. And that fact provides the explication for the classical laborists' slogan of »Labor's right to the whole product«.

We have seen that one apologetic strategy of neoclassical capitalist economics is to first pitch the discussion of property relations at

a metaphorical level and then to interpret marginal productivity theory as a metaphorical version of the labor theory of property. Since the labor theory of property can be expressed in two different vocabularies, one would expect to find two metaphorical versions of MP theory. We have already seen that John Bates Clark interpreted MP theory using the vocabulary of property theory. It was Friedrich von Wieser who gave the other metaphorical version of MP theory using the juridical vocabulary of imputation (»Zurechnung«) of responsibility. Since they were both interpreting the same theory of marginal productivity, we may, by combining the insights of Clark and Wieser, attribute to Clark-Wieser the recognition — at the metaphorical level — of the equivalence between the labor theory of property and the juridical principle of imputation.

Since Wieser introduced the language of »imputation« and »responsibility« into economic theory, it is not surprising that he, in spite of being a faithful capitalist economist, was the first to give, perhaps unwittingly, a clear explication of the slogan »Only labor is creative« in terms of responsibility.

> The judge, . . . , who, in his narrowly-defined task, is only concerned with the *legal imputation*, confines himself to the discovery of the legally responsible factor, — that person, in fact, who is threatened with the legal punishment. On him will rightly be laid the whole burden of the consequences, although he could never by himself alone — without instruments and all the other conditions — have committed the crime. The imputation takes for granted physical causality. . . .
>
> . . . If it is the moral imputation that is in question, then certainly no one but the labourer could be named. Land and capital have no merit that they bring forth fruit: they are dead tools in the hand of man; and the man is responsible for the use he makes of them. [Friedrich von Wieser, *Natural Value*, trans. C. A. Malloch (New York: G. E. Stechert and Co., 1930, orig. published in 1889), pp. 76—79]

Wieser's reaction to this insight exemplifies the unwritten law of capitalist apologetics: judge not capitalism by any juridical or moral principles but rather judge these principles by capitalism. Capitalism is »The Principle«. If there is a contradiction between capitalism and any normative principle, then it is the principle that must be set aside or, better, metaphorically reinterpreted to render it compatible with capitalism. Wieser clearly recognized that only Labor can in fact be responsible for the results of production. Yet hired workers have precisely the legal role of human tools or instruments since they have no legal responsibility for either the positive or the negative results of their 'services' and since that legal responsibility is imputed back through them to the 'user' of the 'instruments', the 'employer'. Wieser naturally concluded, not that capitalism was a legalized form of theft, but that the juridical principle of imputation did not apply. It would have to be metaphorically reinterpreted.

Wieser proposed a new metaphorical notion of 'economic imputation' in accordance with 'economic responsibility' (i. e., marginal productivity) which could be used to 'justify' the pie shares.

> In the division of the return from production, we have to deal similarly... with an imputation, — save that it is from the economic, not the judicial point of view. [*Ibid.*, p. 76]

Since 'economic responsibility' was identified with marginal productivity, Wieser could then refer to *all* the factors (not just labor) as being »economically responsible factors« [*Ibid.*, p. 77]. If the factors were paid in accordance with their marginal productivity in a competitive capitalist model, then Wieser could draw his desired conclusion: that the 'distributive shares' in the product were being 'economically imputed' to the factors in accordance with their 'economic responsibility'. By thus reinterpreting the juridical principle of imputation at the metaphorical level, Wieser tried to render it compatible with capitalism.

The equivalence of the labor theory of property and the juridical imputation principle pushes the roots of the labor theory back in history to the time when humanity emerged from the world-view of primative animism. Animism attributed responsible agency not just to persons but also to non-human entities and forces. Accordingly, in order to escape the grasp of the imputation principle that imputes responsibility only to persons, capitalist economists have had to resurrect a metaphorical form of primative animism. This economic animism views productivity in the sense of causal efficacy as if it were responsible agency, and it views all the inputs as 'agents of production cooperating together to produce the product'. The attribution of agency to natural objects is a common literary and artistic metaphor that Ruskin called the *pathetic fallacy*. Examples include; »The wind was responsible for the banging shutters« or »The waves pounded furiously on the shore«. Examples in the economic 'literature' are; »Together, the man and shovel can dig my cellar« or »[L]and and labor *together* produce the corn harvest« [Samuelson, *Economics*, 10th ed., pp. 536—537]. In spite of the literary allure of the pathetic fallacy, it is still a fallacy. It confounds the distinction, well-grounded in jurisprudence, between the *behavior* of things and the responsible *actions* of persons. A shovel does not act together with a person to dig a cellar; a person uses a shovel to dig a cellar. Things do not act together with persons; things are acted upon and used by persons. Machines do not cooperate with workers; machines are operated by workers.

In the context of a theory, metaphors are like lies; one requires many more to round out the picture. The as-if property relations of the pie-shares picture requires the metaphorical production relations (used by Wieser, Clark and the neo-classical school) wherein the inputs are viewed, animisticly, as responsible agents of production, each of which produces a certain share of the product. Then neoclassical economists triumphantly use MP theory to specify the as-if productive shares and to show that they equal the as-if property shares in a competitive equilibrium.

> Now the riddle of the Sphinx — how to allocate among two (or more) cooperating factors the total product they *jointly* produce — can be solved by use of the marginal-product concept. [Samuelson, *Economics*, 10th ed., p. 541]

It is this economic animism that inspires the conventional 'vision' of production which can be encapsulated in the seemingly innocent but ultimately fallacious expression: »The inputs produce the outputs«.

Marginal Cost Theory as a Metaphorical Property Theory

Symmetry is one of the mightiest engines of scientific thought. Since capitalist economists are so given to metaphors, they could at least construct symmetrical metaphors. We have emphasized the symmetry in the non-metaphorical treatment of property relations using the concepts of the positive product and the negative product. One might ask; »If the negative product is supposed to be conceptually on par with the positive product, then how is it that capitalist economists never need refer to it in the as-if property relations which picture shares in only the positive product being imputed back to the input suppliers«? The answer is that economists have neglected to develop the opposite or inverse metaphor which pictures shares in the negative product being imputed forward to the output demanders.

Just as the original metaphor views each unit of an input as producing so many units of the outputs, so the inverse metaphor views each unit of an output as using-up so many units of the inputs (i. e., as producing certain input-liabilities). In the one case, the market value of the outputs produced per marginal unit of an input is the value of the marginal product, and, in the other case, the value of the inputs used-up per marginal unit of an output is the marginal cost (MC). And, in competitive capitalist equilibrium, just as the value of the marginal product equals the input price, so the marginal cost equals the output price. Thus, just as the original as-if property relations view each input seller as being paid for the share of the positive product imputed back to him, so the inverse as-if property relations view each output buyer as paying for the share of the negative product (input-liabilities) imputed forward to him.

As a metaphorical interpretation of the neo-classical theory of the firm, the inverse metaphor is just as good as the original. We inverted the original metaphor not to add to the body of capitalist mythology, but to subtract from it by cancelling the original metaphor with its inverse. Each metaphor is internally coherent, but if both are applied at once, then one has the incoherent picture of the input suppliers as appropriating and selling the outputs at the same time that the output demanders are appropriating the input-liabilities and thus buying the inputs.

The inversion of metaphors offers a systematic method of criticizing certain aspects of capitalist thought that we have already, for other reasons, criticized above. The value theoretic view that the basic questions about production are concerned with distributive shares of the positive product can be countered with the inverted picture that the 'basic' questions are concerned with the distributive shares in the negative product which are imputed to consumers. Samuelson's »riddle of the Sphinx« can be turned around.

> Now the inverted riddle of the Sphinx — how to allocate among the cooperating outputs the negative product they jointly produce — can be solved by use of the marginal cost concept.

The animistic vision of production which views the inputs as agents that produce the outputs can be countered with the inverted animistic vision of production which views the outputs as agents that use-up the inputs. In short, the »inputs produce outputs« vison is countered with the »outputs use-up inputs« vision.

These pairs of metaphors, the original and its inverse, cancel out so that the ground is cleared for a non-metaphorical, symmetrical, and factual treatment of property and production relations. The input-liabilities are not imputed forward to the output demanders anymore than the output-assets are imputed backward to the input suppliers. There is one legal party that stands between the input suppliers and the output demanders, and that one party legally appropriates all the input-liabilities and all the output-assets. That party appropirates the whole product. That party is the firm. The fundamental question about production is concerned not with the quantitative size of the »distributive shares« in the positive product or in the negative product, but with who appropriates the whole product in the first place. Who is to be the firm?

The inputs do not 'produce' outputs just as the outputs do not 'use-up' inputs, since neither the inputs nor the outputs can *act* in the first place. They can only be acted upon by persons. The inputs are used-up and the outputs are produced by the people who work in the labor process. Hence the third and factual vision of production, which can be juxtaposed to the two pathetic fallacies »Inputs produce outputs« and »Outputs use-up inputs«, is the view of *production as a human activity* wherein the workers use-up the inputs in the process of producing the outputs. This vision of the labor process is, of course, Marx's.

Final Remarks

The purpose of this paper has only been to introduce some of the basic concepts and modes of analysis in property theory and to contrast the property theoretic paradigm with the customary paradigm of value theory which has heretofore dominated both orthodox and radical political economy. Property theory deals with the structural features of property, power, and production relations — features that value theory either ignores or treats only at the metaphorical level. We have outlined normative property theory which can be formulated as the labor theory of property or the juridical principle of imputation. The labor theory of property directly criticizes capitalist production as an »institutional robbery« (to use J. B. Clark's expression) since, metaphors aside, Labor produces the whole product but Capital legally

appropriates it. Since Labor produces the whole product, Labor should appropriate it; that is, production should be worker-managed.

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O TEORIJI SVOJINE I TEORIJI VREDNOSTI

David P. ELLERMAN

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