Introduction to Property Theory

David Ellerman
Department of Economics
University of California at Riverside
and
www.ellerman.org
Draft: April 2004

Table of Contents

Part I: The Market Mechanism of Appropriation
Introduction
The Conventional Neglect of the Question of Appropriation
The Fundamental Myth that Product Rights are Part of Capital Rights
The "Invisible Judge" Mechanism of Property Appropriation
Some Descriptive Implications for Economics
- **Origins of the Fundamental Myth**
- **Implications for General Equilibrium Theory**
- **The Property Error in Capital Theory**
- **The Property Error in Corporate Finance Theory**

The Normative Theory of Appropriation and Transfers
- **The Subjective Basis for Individual Welfare and the Paretean Criterion**
- **The Utilitarian Attempt to Define 'Social Welfare'**
- **Rights-Based Theory of Property Using the Subjectivist Methodology**

The Fundamental Theorem for the Property Mechanism of the Market
Part II: Application to Production
The Facts of the Case
Digression on Marginal Productivity Theory
Analysis of the Employment Contract
Summary
Appendix: History of Related Contracts and Inalienable Rights Theory
References

Part I: The Market Mechanism of Appropriation

Introduction

This paper is an introduction to a modern theory of property. To some extent the theory is new and to some extent it represents a reconstruction in modern terms of older and long-neglected ideas about property rights. Like economic theory, this property theory has both a descriptive and normative side. The normative theory is based on the same individualist-subjectivist (Austrian) methodology that supplies a basis for the efficiency norm (Pareto optimality) used in economics.

The modern development of this theory of property has been much delayed by a number of factors in the conceptual worldview of orthodox economics and jurisprudence. It is not a matter of making a perturbation or two; a number of mini-shifts in conceptual framework or "paradigm" are required before things fall into place in a new configuration or *gestalt*. Also the theory has

been much delayed by the critical implications for a specific but major institution, the employment relationship.

The Conventional Neglect of the Question of Appropriation

Property rights have a life cycle; they are created, transferred, and eventually terminated. Market contracts transfer property rights but what is the institution for the creation and termination of property rights? It turns out that the market also provides, under normal conditions, the mechanism for the initiation and termination of property rights. Our first task is to explain this little-noted role of the market and to give the fundamental theorem underlying this market mechanism in a private property system. Our second task is to apply this theory to analyze the specific private property system based on the employment contract.

In ordinary economic activity, property rights are being constantly created in production and they are constantly being terminated in consumption (consumption goods) as well as production activities (inputs consumed in production). It is a remarkable fact—which itself calls for explanation—that the literature on the economics of property rights does not even formulate the question about the mechanism for the initiation and termination of property rights in these normal activities. For example, the question is ignored in the "economics of property rights" [e.g., Furubotn and Pejovich 1974], in the "property rights approach" to the firm [e.g., Hart and Moore 1990], in the Putterman and Kroszner anthology [1996] of papers on the "economic" nature of the firm, in the "property rights" literature of the new institutional economics [e.g., Furubotn and Richter 1998], or in the law and economics literature [e.g., Cooter and Ulen 2004].

Before turning to an explanation, we could simplify the terminology about the eventual termination of property rights by referring to the legal termination of a property right as the legal assignment or appropriation of the liability for that property.[1] Hence the question before us is the mechanism for the appropriation of the assets and liabilities created in normal production and consumption activities.

One reason for the neglect is that discussions of property creation tend to be restricted in the philosophical literature to a rather mythical state of nature [e.g., Locke 1960 (1690)] or original position, or, in the economic literature, to the "appropriation" of unclaimed or commonly owned natural goods [e.g., Cooter and Ulen 2004] rather than the everyday matters of production and consumption of commodities where property rights are created and terminated "on the fly." For instance, Harold Demsetz [1967] considers how private property in land with fur-bearing animals was established as a result of the growth of the fur trade. John Umbeck [1981] considers how rights to gold deposits were created during the 1848 California gold rush on land recently ceded from Mexico. Yoram Barzel [1989] considers how the common property rights to minerals under the North Sea were privatized but ignores the assignment of initial rights in normal production [e.g., in his Chapter 5, "The formation of rights"]. On the negative side, the law and economics

---

[1] The termination of rights was an original meaning of "expropriation." "This word [expropriation] 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, ... " [Black 1968, 692, entry under "Expropriation"] Since "expropriation" now has this acquired meaning, I will treat the "expropriation (termination) of rights to the assets +X" as the "appropriation of the liabilities –X."

literature looks extensively at the assignment of liabilities in the legal trials that may follow the destruction of property in torts or crimes. But there is no attention to the mechanism for assigning the liabilities for the production inputs and consumption goods that are used up or consumed in normal production and consumption activities where legal trials are clearly not the mechanism for liability assignment.

The Fundamental Myth that Product Rights are Part of Capital Rights

In the case of production (leaving aside consumption for the moment), there is a reason—albeit a mistaken one—for not formulating the question of the mechanism for the appropriation of the assets and liabilities produced in normal production. It is rather commonly thought that the product rights are "attached to" or are "part and parcel of" some pre-existing property right such as the ownership of a capital asset, a production set, or, simply, the firm. This idea in various forms is so ubiquitous that it might be termed the "fundamental myth" about the private property system.

To see the fallacy, one only has to consider the result of renting the capital employed in production. The party who hired in the capital and paid for all the other used-up inputs would have the legally defensible first claim on the produced output, not the owner of the capital asset to whom the rent was being paid as one of the input costs.

The simplest version of this fundamental myth is the assumption that the bundle of rights that constitute ownership of a capital asset includes "a right of ownership-over-the-asset's-products, or *jus fruendi*" [Montias 1976, 116], the "right of usufruct [which] entitles the holder to the 'fruits' or 'produce' derived from an asset" [Furubotn and Richter 1998, 79], or simply "the right to the products of the asset" [Putterman 1996, 361]. Aside from being vulnerable to the "rent the capital" argument given above, this idea of an "asset's product," the "'produce' derived from an asset," or "the products of an asset" has a quaint nineteenth century flavor prior to the development of marginal productivity theory. With MP theory, it was generally understood that the services of *many* assets may be employed in the production of the product and there are no grounds of unique physical causality to present the product as the "fruits" or "produce" of one asset (e.g., the land) rather than another.

Another version of the fundamental myth is to take the "asset" as being a production opportunity as described by a production function or set. Entrepreneurs are "bidding for ownership of the firms" and become the "owners of the productive opportunity" [Hirshleifer 1970, 124-5]. A proprietor may sell "the rights to the transformation function" or "his rights to the venture" [Fama and Jensen 1996, 341] to another proprietor. The entrepreneur is the "owner of a production function" [Haavelmo 1960, 210].

But perhaps the primary source of the fundamental myth is the confusion between owning a corporation and "owning" the productive opportunity that a corporation may or may undertake depending on its contracts. The line of reasoning is: "a corporation is an owned asset and a corporation owns the products it produces so there is no need for some mechanism to account for the ownership of the product—it's all part of the ownership of the firm." It is only a tautology to say that a corporation owns "its products"; the question is how did the products produced in a certain productive opportunity become "its products." For instance, must the Studebaker

Corporation own the cars rolling off the end of the assembly line in the factory owned by Studebaker? Since Studebaker at one point leased its factory building to another automaker, the answer is "No." Those cars were owned by the other company who was making the lease payments and paying for all the other inputs in car production and who thus would have the defensible claim on the cars rolling off the end of the assembly line.

The simple fact is that the ownership of a corporation is the indirect ownership of the corporate assets (e.g., the Studebaker factory building). Whether or not the company owns the products produced using some of those assets depends on whether the company hires or leases out those assets to some other party (who would then appropriate the product) or the company hires in a complementary set of inputs to undertake the production opportunity itself. The legal party who ends up appropriating (i.e., having the defensible claim on) the produced assets is the party who was the contractual nexus of hiring or already owning all the inputs used up in production (and thus who "swallowed" those liabilities). Since that party undertaking production is determined by who was the nexus of the hiring contracts (who hires or already owns what or whom), the rights to the product are not part of some prior bundle of rights to a capital asset or to a corporation.

The grip of the fundamental myth in one form or another seems to account for the failure to formulate the concept of a mechanism for the appropriation of the assets and liabilities that are created in normal production activities.

The "Invisible Judge" Mechanism of Property Appropriation

Since Adam Smith, economic theory has worked to elucidate the Invisible Hand mechanism embodied in the price system that guides property rights to an efficient allocation. The life-cycle of property rights includes not just transfers in the market but the initiation and termination of the property rights. The market also embodies an Invisible Hand mechanism that governs the initiation and termination of property rights—but the very idea of this mechanism has been neglected due to the many forms of the fundamental myth that the product rights are already included in pre-existing capital rights.

There is a visible-hand mechanism of appropriation used when the legal system intervenes into the market. The prime example is a civil or criminal trial to assign the legal liability for property that has been destroyed. Such a trial also illustrates the underlying juridical norm of the *responsibility principle*: assign the de jure or legal responsibility to the person or persons who were actually de facto responsible for destroying the property.

The Invisible Hand mechanism for the legal assignment of initial and terminal rights comes into play when there is no explicit trial—when the visible hand of the legal authorities does not intervene and when it thus, in effect, renders the *laissez faire* judgment of "let it be." Using the Smithian metaphor, we might conceptualize "non-action" on the part of the legal authorities as the ruling of the "Invisible Judge" who always rules "let it be."

In the tradition of Ronald Coase [1960], there has been an emphasis on a legal system defining clear property rights. Property rights are defined as much by the inaction of the legal system as by its actions. When sparks from a passing locomotive burn the crop growing in a farmer's field and the Invisible Judge rules "let it be" (i.e., the legal authorities for whatever reason allow no

action), then at least the right to take that specific action was, in effect, established on the part of the railroad.

There are two types of contracts where the role of the Invisible Judge is particularly important, namely, the first and last transfer contracts in the life-cycle of a commodity.[2] When a newly produced commodity is first sold and the Invisible Judge lets it be, then the first property right was, in effect, assigned to the first seller. Conversely, when a purchased commodity is subsequently consumed, used up, or destroyed and the Invisible Judge lets it be, then the liability was, in effect, assigned to the last buyer. Thus we have the:

Market mechanism of appropriation:
The property rights (or liabilities) to newly produced (respectively, finally used-up) commodities are assigned by the Invisible Judge to the first seller (respectively, last buyer) of the commodities.

The application to normal consumption is straightforward. When a commodity is consumed and the Invisible Judge lets it be then the liability for the using up or consumption of the commodity is imputed to the last buyer.

The most important and consequential application of the market mechanism of appropriation is to normal production activities. Abstractly considered, one legal party purchases (or already owns from past purchases or activities) all the "inputs" to be used up in the production process. When those inputs are used up and new products or "outputs" are produced, then the last buyer of the inputs is in a legally defensible position to be the first seller of the outputs unless the legal authorities would intervene to overturn both sets of contracts. Hence when no such intervention takes places—as in normal production—then that one legal party in effect legally appropriates a bundle of legal rights and liabilities, the input liabilities and the output assets.

Some Descriptive Implications for Economics

Origins of the Fundamental Myth

The intellectual space to ask the question of appropriation in production was opened up by the realization that product rights were not part of capital rights—the "fundamental myth"—but were determined by the pattern of market contracts. Whence the fundamental myth? Marx shares responsibility by having given his imprimatur—expressed in his misnomer "capitalism"—but the idea goes back to older notions of land ownership. In feudal times, the governance of people living on land was taken as an attribute of the ownership of that land: "ownership blends with lordship, rulership, sovereignty in the vague medieval *dominium*,...." [Maitland 1960, 174] The landlord was Lord of the land. As Gierke put it, "Rulership and Ownership were blent" [1958, 88]. Marx mistakenly carried over that idea to his analysis of capital in capitalism. The command over the production process was taken as part of the bundle of capital ownership rights.[3]

---

[2] Our focus is on commodities, rivalrous and excludable private goods that are produced and consumed as a part of deliberate human activity—even though in the distant past there may have been endowments of unproduced goods.

[3] This view survives to our day, e.g., the "rights of authority at the firm level are defined by the ownership of assets, tangible (machines or money) or intangible (goodwill or reputation)." [Holmstrom and Tirole 1989, 123]

> It is not because he is a leader of industry that a man is a capitalist; on the contrary, he is a leader of industry because he is a capitalist. The leadership of industry is an attribute of capital, just as in feudal times the functions of general and judge were attributes of landed property. [Marx 1967 (1867), 332]

Marx promoted the fundamental myth that governance and product rights were part of capital—one of the few points of complete agreement between Marxism and orthodox economics. By "capital" Marx did not simply mean financial or physical capital goods; he meant those goods used by wage labor with private ownership of the means of production. Otherwise, "capital" becomes just the "means of labor." In short,

Marx's Capital* = Means of labor (capital) + contractual role of being the firm (using wage labor)

If one wishes to use the word "capital*" in that Marxian sense, then one gives up being able to talk about the "*ownership*" of capital* since there is no "ownership" of a contractual role. But Marx continued to talk about "capital" as being owned, a common fallacy of using the same word with different meanings at different places in an argument.

There is similar shifting semantics in the common notion of "owning a factory." There is the ownership of factory buildings (or corporations with such assets), but there is no "ownership" of the going-concern aspect of *operating* a factory since that is a contractual role in a market economy. By using the same phrase "owning a factory" to straddle both meanings, one could seem to have an "argument" that the contractual role of operating a factory was "owned." For instance, when it is pointed out to many economists today that "owning the factory" (in the sense of operating it) is a contractual role, not an extra owned property right, a typical response is: "Yes, but it is that role which I call the 'ownership*' role." After thus redefining factory-ownership* to include the contractual role, they then shift back to conclude that "the product rights are part of the ownership* of the factory" [see the "property rights approach" to the firm in Hart and Moore 1990]. Such loose patterns of thought allow the fundamental myth to persist.

Implications for General Equilibrium Theory

The fundamental myth can be pin-pointed in the Arrow-Debreu genre of general equilibrium models. Shareholders own corporations, but corporations do not own production sets in a private property market economy. There is no problem in assuming that the ith consumer owns "a contractual claim to the share a_{ij} of the profit of the jth production unit" [Arrow and Debreu 1954, 270] where "production unit" is a corporation. The problem comes in the assumption that for "each production unit j, there is a set Y_j of possible production plans" [267] which no other party can undertake—which makes it appear that there could be a competitive equilibrium with pure profits.

In contrast, the McKenzie model [1954] of a competitive economy correctly realizes that there can only be an equilibrium with constant returns to scale and zero pure profits.

> The two models differ in their implications for income distribution. The Arrow-Debreu model creates a category of pure profits which are distributed to the

> owners of the firm; it is not assumed that the owners are necessarily the entrepreneurs or managers. ...
>
> In the McKenzie model, on the other hand, the firm makes no pure profits (since it operates at constant returns); the equivalent of profits appears in the form of payments for the use of entrepreneurial resources, but there is no residual category of owners who receive profits without rendering either capital or entrepreneurial services. [Arrow 1971, 70]

In a private enterprise market economy, there is no "ownership" of production sets of feasible production vectors—no "owners of the firm." Any party can bid on inputs—and would bid on inputs that would yield positive pure profits.[4]

Some orthodox economists are reconsidering this aspect of the Arrow-Debreu model.

> [Kaldor insisted] that perfectly competitive general equilibrium only made sense under constant returns. To economists brought up on Arrow-Debreu this seems plainly wrong. Constant returns are not assumed. [Hahn 1988, 1746]

Citing modern work by McKenzie and others that does not assume the identity of firms to be given prior to market contracts, Hahn concludes that Kaldor was "substantially right" [1746].

The Property Error in Capital Theory

The fundamental myth has unfortunately crept into some of the basic definitions of capital theory and thus into corporate finance theory. We need to introduce some more notation and terminology to express the problems in terms familiar in economics. If a production opportunity during a certain time period were described by a production function $Q = f(K,L)$, then the "inputs" would be the flow of capital services K (shorthand for all non-human inputs) and the flow of labor services L (shorthand for all the de facto responsible human activities of production), and the outputs Q produced during the period. The last buyer of the inputs would receive the *laissez faire* assignment or "imputation" of the liabilities for those used-up inputs which can be represented by the negative quantities $–K$ and $–L$. Hence that party would have the legally defensible claim on the outputs (in the absence of any overturning of the input contracts) and thus the Invisible Judge would also let stand that party's first sale of the output assets $+Q$. Putting the bundle of assets and liabilities that were thus appropriated together in one list or "vector" yields $(Q,–K,–L)$. This might be called the "production vector" or "input-output vector" but for historical reasons, I will call it the *whole product* vector.[5]

Ordinarily, "product" just refers to the outputs Q but the whole product also includes the liabilities for the used-up inputs. While prices play no essential role in property theory, they will be used

---

[4] This structural critique of the AD model has nothing to do with the common and trite criticisms of its unrealism. Indeed, it is precisely in the idealized frictionless model where it is clear that arbitragers would bid on the inputs to profitable production opportunities thus precluding an equilibrium with pure profits. See Ellerman 1992 for more analysis.

[5] I have used the "whole product" phrase to recognize the tradition summarized by Carl Menger's jurisprudential brother Anton Menger [1899].

here to relate property theoretic notions back to economic theory. If p, r, and w are the unit prices of the outputs, capital services, and labor services, then the value of the whole product is the profits $\pi = pQ - rK - wL$.

One form of the fundamental myth is the idea that the "product rights" are part of the ownership of the capital asset, say a widget-maker machine, from which the capital services K flow. Let us suppose that the capital asset would yield the capital services K without diminution for n years and then has no salvage value. The asset owner has the property right to the stream of capital services K or, in vectorial terms, (0,K,0) each year for n years. But if the asset owner also has the contractual role of "being the firm" or residual claimant in that production opportunity for the n years, then that party will additionally appropriate the whole products (Q,–K,–L) which sum to the stream of net ownership vectors (Q,0,–L) for n years [the first row plus the second row equals the bottom row in the following table 1].

Table 1.	Year 1	Year 2	...	Year n
Property vector owned by asset owner. (i.e., capital)	(0,K,0)	(0,K,0)	...	(0,K,0)
+ Property vector appropriated by last owner of inputs (residual claimant).	+ (Q,–K,–L)	+ (Q,–K,–L)	...	+ (Q,–K,–L)
= Net property vector accruing to asset owner who is *also* the residual claimant. (i.e., capital*)	= (Q,0,–L)	= (Q,0,–L)	...	= (Q,0,–L)

Orthodox capital theory then discounts the value of the net vectors (Q,0,–L) [bottom row in table 1], often called the asset's "quasi-rent," back to the present to arrive as the "capitalized value of the asset" as if the right to the whole products [second row] had been part of the ownership of the assets.

> When a man buys an investment or capital-asset, he purchases the right to the series of prospective returns, which he expects to obtain from selling its output, after deducting the running expenses of obtaining that output, during the life of the asset. [Keynes 1936, 135]

But the appropriation of the whole products is contingent on a certain contractual fact-pattern, and it is not a violation of the ownership rights of the asset owner to have the asset hired out instead of labor being hired in. Thus the value of the whole products ("profits") might or might not go to the asset owner depending on the future pattern of the input contracts. The "capitalized value of the asset" is actually the value of the asset [discounted value of the (0,K,0) stream in the first row] plus the discounted value of the stream of whole products [discounted value of the (Q,–K,–L) stream in the second row]—where the latter may or may not accrue to the asset owner.[6]

The Property Error in Corporate Finance Theory

There is no legal necessity that the owner of the widget machine be the residual claimant (with respect to the widget making process), and the same holds when the machine-owner is a

[6] This critique of capital theory has nothing to do with the old Cambridge controversies—reswitching and all that.

corporation. Yet corporate finance theory carries over the same capital-theoretic fallacy of interpreting the whole product as part of asset ownership. For instance, the discounted cash flow method of valuation assigns to the corporation the present value of the net cash flows [e.g., from (Q,0,–L) on the bottom row of Table 1] from production rather than the present value of the cash flows from the services of the underlying corporate assets [e.g., from (0,K,0) on the top row].

> There, in valuing any specific machine we discount at the market rate of interest the stream of cash receipts generated by the machine; plus any scrap or terminal value of the machine; and minus the stream of cash outlays for direct labor, materials, repairs, and capital additions. The same approach, of course, can also be applied to the firm as a whole which may be thought of in this context as simply a large, composite machine. [Miller and Modigliani 1961, 415]

But in order to plausibly count the future whole products as part of the present property rights of the corporation, all the future input contracts would have to be made in favor of the corporation at the present time. Moreover, since contracts are generally not enforceable until one side performs, the corporation would have to have paid all future input contracts at the present time. Only then could the corporation have a plausible claim on the future whole products. Since those conditions would hardly be fulfilled, the usual discounted cash flow method of valuation does *not* value the property rights "of the corporation."

In terms of the usual shifting semantics "argument," if we take "corporation*" to mean corporation plus the contractual role of whole product appropriator in the future, then corporate finance theory discounts the returns to the corporation* as the value of the corporation.

Corporate valuation theory takes the future whole products and their value, the future profits—with "goodwill" as the discounted value—as part of bundle of ownership rights in a corporation. Buyers of corporate shares might assume that future contracts will be written in the same way but no property right backs up that expectation—and the unjustified practice of booking "purchased goodwill" as an "asset" (i.e., a property right) changes nothing.[7]

The Normative Theory of Appropriation and Transfers

The Subjective Basis for Individual Welfare and the Paretean Criterion

Preference maximizing consumers and profit maximizing firms use the price mechanism to make property transfers until an equilibrium is reached. To evaluate the optimality of this mechanism, a normative concept of efficiency, Pareto optimality, is defined, and then it is shown in the "fundamental theorem for the price system" that under certain conditions (e.g., pure competition

[7] Accounting correctly does not treat (unpurchased) goodwill (present value of future whole products) as a present asset but then it buys into the fundamental myth when goodwill is said to be "purchased" by then booking it as an asset. But some accountants have correctly argued that "purchased goodwill" is only an "anticipation," not a property right, and thus that it should be booked as a charge to equity to be replaced if and when the future whole products are appropriated, i.e., when the anticipated future earnings are realized. "The amount assigned to purchased goodwill represents a disbursement of existing resources, or of proceeds of stock issued to effect the business combination, in anticipation of future earnings. The expenditure should be accounted for as a reduction of stockholders' equity." [Catlett and Olson 1968, 106]

and the absence of externalities), that the equilibrium satisfies the normative condition of Pareto optimality.

In order to define a normative basis for appropriation—which can be used to evaluate the market mechanism for appropriation—we might take a closer looker at the notion of Pareto optimality and its basis in individual welfares. Where does the normative concept of an individual's welfare come from? By the (Austrian) methodology of individualist-subjectivism,[8] an individual's welfare as being defined by the individual's own preferences.

> The matter can be put somewhat formally by saying that a person's welfare map is defined to be identical with his preference map—which indicates how he would choose between different situations, if he were given the opportunity for choice. To say that his welfare would be higher in A than in B is thus no more than to say that he would choose A rather than B, if he were allowed to make the choice. [Graff 1967, 5]

It should be noted that this subjectivist definition singles out in a Kantian manner persons as the sole ends-in-themselves having unique normative significance in contrast to other sentient beings or inanimate objects—even though with some generosity of definition the other organisms and objects could be said to have a (revealed) "preference map."

An allocation of commodities to persons is *Pareto optimal* if there is no reallocation of the commodities that will improve the individual welfare of some people without making anyone else worse off in terms of their individual welfare. There is no assumption of any commensurability between the individual welfares across different people. Thus the best situation that one can reach when trying to maximize the welfares of incommensurate individuals is the Pareto optimal situation (technically, a "vector maximum of individual welfares") where none can be increased without decreasing another's welfare.

The main controversies in normative economics are about how to go beyond the Paretean criterion. There is a multitude of Pareto optimal allocations so some enrichment of the theory is needed to add structure and narrow down possibilities. Here the road divides between utilitarian and rights-based approaches.

The Utilitarian Attempt to Define 'Social Welfare'

The utilitarian approach tries to stick to the idea of maximizing welfare by postulating a "social welfare function" that would transform the vector maximization problem involving only individual welfares into a scalar maximization problem for "social welfare." The problem is to define any "social welfare function" that has normative significance and legitimacy. If utilitarianism was to maintain the subjectivist methodology—which identified individual welfare with individual preference—then it would have to postulate a "social subject" or "group mind" whose preference ordering would provide a basis for the "social welfare function." But that path has not been taken or, at least, not explicitly. Hence utilitarianism or welfarism has had to abandon the subjectivist methodology and to seek some other basis to make individual welfares

---

[8] That is, "individuals are presumed to be the only ultimate source of evaluation" [Buchanan 1986, 250]

commensurate so they can be melded together in a normatively legitimate "social welfare function."

Individual preferences are, in fact, quite incomplete and they are constantly formed and reformed through social interaction. Through the processes of socialization and of the political system, a number of individual preferences may come to rank certain social options in the same way. The resulting unanimity of certain groups of individuals over the ordering of some options requires no notion of "social welfare" over and above the agreement of individual welfares [see Buchanan 1986]. The idea of a "social welfare function" has a different role—to somehow provide a "social" ordering when the individual orderings disagree. It is here that utilitarianism has floundered.

It is easy enough to find various rather arbitrary ways to make "add" individual preferences but it is much harder to find a normative justification for the resulting sums. For instance, the law and economics literature [e.g., Friedman 2000; or literature summarized in Cooter and Ulen 2004] takes preferences as being monetized and then adds together the dollars of the rich and the dollars of the poor as if they formed some normatively meaningful "supra-individual scalar" [Buchanan 1986, 250] that ought to be maximized.

Rights-Based Theory of Property Using the Subjectivist Methodology

Rights-based theory takes a different approach than that of trying to move from the variety of individual welfares to one overarching "social welfare." Indeed, a rights-based theory can maintain the methodology behind the Pareto criterion *by extending the subjectivist approach to other attributes of human subjects than preferences*.

The key concept in this approach is the notion of "responsibility" which allows the initiation and termination of commodities (i.e., commodity assets and liabilities) to be imputed or assigned to persons or parties.[9] With that account of the initiation and termination of property rights, the notion of "consent" governs the transfers of these assigned commodities between parties—thereby providing a normative basis for the whole life-cycle of property rights, i.e., a normative theory of property.

The subjectivist approach again provides the normative basis. The normative notion of *responsibility* is defined by identifying it with the actual or de facto responsibility of an individual or a party consisting of individuals acting jointly. Assuming the legal system would try, wherever possible, to implement this normative notion of responsibility, then the legal system's principle would be to impute or assign legal or de jure responsibility, whenever possible, in accordance with de facto responsibility. We have already encountered exactly this *responsibility principle* in legal trials where the legal system tries to assign the legal responsibility to the party who was actually responsible for the tort or crime in question. That is the principle used when a (visible) judge intervenes to hold a trial so our task is to see, under appropriate conditions, if the Invisible Judge—the market mechanism of appropriation—follows the same responsibility principle.

[9] Just as individuals might agree on the preference ordering of certain options, so some individuals might join together to undertake a deliberate joint activity. A "party" could be an individual or a set of individuals acting in such a joint manner.

In normal production, the Invisible Judge would allow to stand a first-sale contract for produced outputs by the same party who was the nexus for the last-buyer input contracts. But not all commodities are produced. Some are gifts of nature so their legal appropriation would not be accounted for by the market mechanism governing normal production and consumption. These initial gift-of-nature commodities could be assigned to the legal parties by some endowment method or they could be left in common. Our present result, e.g., the fundamental theorem for the property mechanism, is quite independent of the principle used to make the endowment assignments since our focus is normal production and consumption—activities concerned with commodities produced and used up by de facto responsible human activities. The endowment does not determine to which party the produced assets and liabilities would be imputed (just as the ownership of a destroyed asset would not determine to whom would be imputed the legal liability for destroying the asset in a trial for damages). It would only determine to whom some of the input liabilities would be owed—to the endowed recipient of an original unproduced input or "to Nature" if the original resources were left for common use.

The commodities assigned to a legal party by the endowment mechanism and thereafter by the market mechanism of appropriation—subject to occasional corrections by legal trials—constitutes the party's *property* and the legal system's recognition of that assignment is the party's *property rights* to the commodities.

With commodities assigned to parties—their owners—the next normative question is: "Which transfers of owned commodities between parties are to be legally permitted and made?" Here again, the subjectivist methodology provides the answer. The normatively permitted transfers between parties are the transfers voluntarily agreed to by the parties.[10] Usually this consent would take the form of reciprocal conditional-consent or *contract*: "I consent to transfer X to you if you transfer Y to me" on the one side with the complementary conditional consent on the other side: "I consent to transfer Y to you if you transfer X to me." A legal system accepting this normative definition of which transfers are to be made would then try to have all and only those transfers—the legal contracts—made. There are two ways this might go wrong: if a property transfer was made without any voluntary contract, namely, an *externality*, or if a contract was not fulfilled by the required transfers, namely, a *breach*. For instance, a legal system would typically not accept that a contract has been made until one side delivered, e.g., X was delivered from one party to the other. If Y was not delivered in the opposite direction, then the condition on the conditional transfer of X was not fulfilled, so that transfer of X without consent constitutes the rights violation or breach of the contract by the non-delivery of Y.

In this simple model of the property system, the legal authorities have two normative tasks: to implement the responsibility principle in the production and consumption activities of the parties, and to implement mutually voluntary transfers between parties. The responsibility principle is concerned with the internal activities of the parties whereas the transfer contracts deal with the external relationships between parties. But in a market system, the two tasks are related. The key result is that if the legal authorities just ensure that the contractual machinery works correctly in

[10] "Consent is the moral component that distinguishes valid from invalid transfers of alienable rights." [Barnett 1986, 270]

the external relationships between parties—no externalities and no breaches (Hume's conditions[11] on transfers)—then the market mechanism of appropriation will indeed satisfy the responsibility principle in the internal activities of the parties (Locke's principle[12]).

The Fundamental Theorem for the Property Mechanism of the Market

Our task is to give the correctness theorem for the market mechanism of appropriation—to show that if the market contractual mechanism works correctly (no breaches or externalities), then the imputation mechanism operates correctly in terms of the responsibility principle. Each party has a certain set of commodities (goods and services) within the party's possession and control which we might call the party's *possessions*.

In the one-period individual consumption problem of maximizing utility $U(x_1,\ldots,x_n)$ subject to a budget constraint $p_1x_1 + \ldots + p_nx_n = B$, there are several (often implicit) assumptions that relate the x_i's that occur in the utility function to those that occur in the budget constraint. If five pounds of meat are purchased but then accidentally spoil, then the same five pounds will not appear in the utility function representing consumption. Or there might be vicarious consumption of commodities in some other party's possession. Both these possibilities are ruled out in the optimality theorem for the price mechanism (i.e., that a competitive equilibrium is Pareto optimal), and we must make similar assumptions about the property mechanism.

This motivates the set of assumptions that relates the party's de facto responsible actions to the internal changes[13] in a party's possessions. Just as it is conventionally assumed that consumer goods do not accidentally spoil or get destroyed but are deliberately consumed, so we must rule out accidents by assuming that the internal changes in a party's possessions are made by the party's de facto responsible actions. And the analogy of "no vicarious consumption" is the locality or no-action-at-a-distance principle that de facto responsible action can only operate on commodities in the party's possession or control (i.e., responsibility implies causality). By these no-accident and locality assumptions, the positive and negative results of a party's de facto responsible actions are exactly equal to the internal changes in the party's possessions. We could abbreviate this as:

"de facto responsibility = internal changes in possessions."

Now we turn to the legal system's task of enforcing the rules about the external changes, the changes due to transfers with other parties. In the consumption example, the purchased x_i's that appear in the budget constraint might not be delivered (a breached purchase contract), and there might be some commodities "delivered" from another party which were not purchased as in an externality (e.g., a theft or conversion). The enforcement of Hume's no-breach and no-externality conditions means that the external changes in each party's possessions are precisely those made by the legal contracts with other parties. When the same commodity is bought and sold by a party

[11] These are "*transference by consent,* and *of the performance of promises.*" [Hume 1978 (1739), Book III, Part II, Section VI, 526]

[12] If the responsibility principle is taken as a modern explication of the Lockean theory [see Ellerman 1992], then the theorem says that "Hume implies Locke."

[13] These "internal changes" are "trades with Nature" as opposed to trades with other parties.

(and transferred in and out), then it nets out so the external changes (always in net terms) in a party's possessions are those indicated by the first-sale and last-purchase contracts (netting out pure transfer contracts). We could abbreviate the enforcement of the no-breach and no-externality rules as:

"external changes in possessions = first-sale and last-purchase contracts."

We previously saw that in the market mechanism of appropriation, the Invisible Judge imputes legal responsibility according to the first-sale and last-purchase contracts. We could abbreviate this mechanism as:

"legal responsibility = first-sale and last-purchase contracts."

To complete the theorem, it only remains to note the mathematical result that: "internal changes in possessions = external changes in possessions." In graph theory, this is the "divergence principle" [Rockafellar 1984, 55] which is the discrete version of the fundamental theorem of calculus and its various higher dimensional generalizations such as the "divergence theorem" [see Fleming 1977]. For an intuitive picture, think of a fluid flowing into and out of a closed region in the plane. Fluid is also coming out of sources inside the region with a sink counting as a negative source. The divergence principle is that the net amount flowing out across the boundary of the regions (external changes) equals the net amount flowing out of the sources within the region (internal changes):[14]

"external changes in possession = internal changes in possessions."

We may put the assumptions, conditions, and mathematics together to have the:

<u>Fundamental theorem for the property mechanism ("Hume implies Locke")</u>:
If there are no breaches and no externalities in the market contractual mechanism of transfers, then the market mechanism of appropriation imputes legal responsibility in accordance with de facto responsibility, i.e., operates correctly in terms of the responsibility principle.

Informal proof:

Legal responsibility =	(by the market mechanism of appropriation)
first-sale and last-purchase contracts =	(by enforcing no-externality and no-breach rules)
external changes in possessions =	(by divergence principle)
internal changes in possessions =	(by no-accident and locality assumptions)

de facto responsibility. [The proof is easily formalized using vector flows on graphs.]

[14] The one-dimensional continuous version is the fundamental theorem of calculus. For example, consider a one-dimensional "tube" from point a to point b along the x-axis with the amount of the flow in tube at point x given by F(x). At each point between a and b, there is a flow source of strength F'(x) = dF/dx so by the divergence principle, the sum (integral) of all the sources within the region or interval from a to b is equal to the out-flow minus the in-flow to the tube: $F(b) - F(a) = \int_a^b F'(x)dx$.

Enforce the contractual rules between the parties and then the Invisible Judge will make the right imputations to the parties. In the contrapositive form (Not-Locke implies Not-Hume), the theorem states that if there was a misimputation by the Invisible Judge, then it would have to show up publicly as a property externality or a breached contract. This is the property-theoretic refutation of Marx's charge that there could be exploitation in the "hidden abode of production" while the sphere of exchange "is in fact a very Eden of the innate rights of man" [Marx 1967 (1867), 176]. Marx's cleverness ran afoul of the cunning of the divergence principle.

Part II: Application to Production
The Facts of the Case

In view of the connection between transfers between parties (contracts) and the internal activities of the parties (e.g., production), analysis can start either place. We begin in the abode of production and then move to the sphere of exchange.

Consider a productive opportunity represented by the production function Q = f(K,L) where K represents all the non-labor inputs used up during the time period in the productive opportunity and L represents all the intentional human actions performed by all who work in the enterprise (managerial and non-managerial workers). The basic argument is that in performing the intentional actions L, the people working in the enterprise are de facto responsible for using up the inputs K and for producing the outputs Q. By the responsibility principle, they should jointly be the legal appropriators of the input-liabilities –K and the produced assets +Q. These are the underlying facts about de facto responsibility and about the application of the responsibility principle regardless of the legal or institutional superstructure.

In vectorial terms, the people working in the enterprise, by performing the actions L, produce the positive and negative results (Q,–K,0) which might be called *Labor's product*. It is customary in conventional economics to conceptualize the performance of these human actions as the "producing" of the labor services L which are then "used up" in production. Using that representation, Labor's product can be parsed into two parts:

Labor's product = (Q,–K,0) = (0,0,L) + (Q,–K,–L) = "labor commodity" + whole product.

Now we view the facts of the case under the institutional structure of production based on the employer-employee contract.[15] Under the employment system, Labor, as the first seller of L, is recognized as initially owning (0,0,L). However, the employer (who we may or may not be the owner of the assets yielding the capital services K) is in the contractual position of the last buyer of all the inputs (including "labor") and thus as the defensible claimant on the product Q. Thus the employer, in sum, legally appropriates the whole product (Q,–K,–L). This is summarized in the following table.

[15] Marx's label "capitalism" was a misnomer due to his mistaken belief (fundamental myth) that the key institution was the private ownership of capital rather than the employment relation. A better name would be "employment system."

Labor de facto responsible for	(Q,–K,0)	= Labor's product
Labor legally appropriates	(0, 0, L)	= labor commodity
Labor responsible for but does not appropriate	(Q,–K,0) – (0, 0, L) = (Q,–K,–L)	= whole product.[16]

Responsibility Principle Violation under the Employment System

Digression on Marginal Productivity Theory

It may be helpful to connect this back to the conventional discourse using marginal productivity theory. One line of reasoning was that if labor was the only de facto responsible factor, then all of labor would be responsible for the integral of the marginal productivity of labor from 0 to L:

$$\int_0^L \frac{\partial f}{\partial L} d\ell = f(K,L) - f(K,0) = Q.$$

But that would leave no accounting for the other factor (input liabilities) so the conventional line of reasoning was to see each factor as being marginally "responsible" for a "distributive share" of the product. Then the focus switched to the so-called "problem of distributive shares" (including the "adding-up problem").

The flaw in this reasoning, aside from the switch to the metaphorical notion of "responsibility", is the scalar notion of marginal productivity. The explicit or implicit interpretation of the scalar marginal productivity as the product of the marginal unit never made sense because production would also involve using up other inputs. Labor cannot produce $\partial f/\partial L$ *ex nihilo*.[17] Marginal productivity should be a vector and the assumption of least cost requires that the derivatives be taken along the least cost expansion path. Then the marginal products are vectors $\mathbf{MP_L}$ and $\mathbf{MP_K}$ where profit maximization implies that the values of the marginal products equal the factor prices

$$(p,r,0)\mathbf{MP_L} = w \quad \text{and} \quad (p,0,w)\mathbf{MP_K} = r.$$

With a Cobb-Douglas production function, $Q = AK^aL^b$, the vectorial marginal products are derived by taking derivatives along the least cost expansion path where K/L = wa/br. The *marginal product of labor* is the vector:

$$\mathbf{MP_L} = \left((a+b)A\left(\frac{aw}{br}\right)^a L^{a+b-1}, \quad -\frac{aw}{br}, \quad 0 \right).$$

[16] This provides the modern reconstruction of the old slogan: "Labour's claim to the whole product" put forward by the "band" of classical laborists such as Thomas Hodgskin and William Thompson. For the history of that school, see the book by Carl Menger's jurisprudential brother Anton Menger [1899].

[17] See Chapter 5 "Are Marginal Products Created *ex Nihilo*?" in Ellerman [1995].

Since labor is the only responsible factor, one can compute its responsibility for the positive and negative results of production by "adding up"[18] or integrating its marginal product from 0 to L to obtain the result—which is Labor's product (Q,–K,0) = (Q,–K,–L) + (0,0,L) = Whole product + labor:

$$\int_0^L \mathbf{MP}_L \, d\ell = \int_0^L \left((a+b)A\left(\frac{aw}{br}\right)^a \ell^{a+b-1}, -\frac{aw}{br}, 0 \right) d\ell = \left(\left[A\left(\frac{aw}{br}\right)^a \ell^{a+b} \right]_0^L, \left[-\frac{aw}{br}\ell \right]_0^L, 0 \right)$$

$$= \left(A\left(\frac{aw}{br}\right)^a L^{a+b}, -\frac{aw}{br}L, 0 \right) = (Q,-K,0) = \text{Labor's product.}$$

Hence when marginal productivity is formulated in terms of marginal variations along the least cost expansion path—instead of notional variations off that path—then the adding up of the marginal products of the responsible factor does give the total responsibility which includes the liabilities (–K) for the other inputs.

The similar formal calculation could be performed for the non-human inputs K but it would have no normative significance since, as the legal system recognizes, the services of animals or things are not de facto responsible no matter how causally efficacious they might be. Only human actions can be de facto responsible. Things are like perfect conductors (not sources) of responsibility so responsibility is imputed back through things to the human users.

The notion of "imputation" was metaphorically introduced into economics by the legally trained Austrian economist Friedrich von Wieser in his treatment of marginal productivity theory at the end of the nineteenth century. Things as well as human actions are causally efficacious at the margin so Wieser metaphorically used the notion of "imputation" according to (scalar) marginal productivity which Wieser thought of as "economic responsibility." But he was well aware that this "economic" notion was not the same as the legal or moral notion of imputation which could only apply to human actions.

> 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.… The expression "this man has done it" does not mean "this man alone has done it," but "this man alone, among all the active causes and factors, is legally responsible for the deed."

[18] This is the "Adding Up Theorem" that resolves the non-metaphorical "adding up problem"—the problem of giving an account of "who is responsible for what" in production so that the marginal results add up to the total results of production. Note the asymmetric adding of the results of the responsible factor labor L instead of doing the same calculation for the non-responsible inputs K.

> 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. [Wieser 1889, 76-79]

The task of property theory is the opposite—to deal with an imputation, save that it is from the judicial, not the "economic" point of view. The original non-metaphorical judicial notions of imputation and responsibility are used in property theory, and, they can be derived by extending the Austrian-Kantian subjectivist methodology beyond preferences to other aspects of human subjects such as responsibility and consent.

The property theoretic question is not about "distributive shares"; it is about who appropriates the whole product. Since Labor is responsible for producing (Q,–K,0) but only appropriates (0,0,L) in the employment system, Labor is responsible for but does not appropriate the difference which is the whole product:

$$(Q,-K,0) - (0,0,L) = (Q,-K,-L).$$

The legal party who has the contractual role of being the last buyer of all the inputs consumed in production would "swallow" the input liabilities –K and –L and thus would have the legally defensible claim on the outputs Q. In this manner, the employer would legally appropriate the whole product (Q,–K,–L) independently of owning the assets yielding K and independently of any de facto responsible actions—which would, in any case, be included in L. Since Labor was de facto responsible for the whole product, the responsibility principle was violated by the employer's appropriation of the whole product.

Analysis of the Employment Contract

Since "Not-Locke implies Not-Hume," the violation of the responsibility principle in production under the employment relation means that there must have been some violation of the no-externality or no-breach conditions in the sphere of exchange.

The basic fact that connects the contractual mechanism and the imputation mechanism is that "things" can, in fact, be transferred from the factual possession and control of one party to another. Person A might rent a van (i.e., sell some of the van's services) to another person B. To fulfill the contract, the van would be factually transferred from A to B so that B can then use the van (i.e., use up the van services) independently of A and be solely de facto responsible for the results obtained by using up the services of the van. The contractual mechanism functions correctly when legal title to those services stays coordinated with the factual possession and use of the services. Then the legal imputation of the Invisible Judge to B for using up the van's services according to the last-buyer contract will be in accordance with de facto responsibility of B for the use of those services.

But this mechanism breaks down when person A (an "employee") tries to rent his or her self (i.e., sells his or her own services) to person B (the "employer"). There is no voluntary action to fulfill an employment contract so that the employer can "employ" the employee and be solely de facto responsible for the "employment" of those services. What actually happens to "fulfill" the employment contract is that the employee agrees to co-operate with the employer in a certain

activity. But there is no voluntary transfer of de facto responsibility. Both the employee and the working employer are jointly de facto responsible for the fruits of their joint activity.

When the legal authorities accept (NB: "accept" in the *laissez faire* sense of taking no action) the de facto responsible co-operation of the employee as "fulfilling" the labor contract for the sale of labor services from the employee to the employer, then the Invisible Judge mistakenly imputes all the legal responsibility to the employer for the using up of the "input" labor services and for the other positive and negative fruits of their joint activity.

The legal authorities take no action to declare that the employees are "non-responsible" or to declare that the employer is solely de facto responsible for the positive and negative product of the joint activity. And that is just the point; an Invisible Hand mechanism works by non-action. The mis-imputation of the Invisible Judge is based simply on the legal authorities not rejecting the employees' responsible co-operation as "fulfilling" the legal transfer so that there seems to be no externality or breach to give grounds for intervention.

The underlying facts of workers' de facto responsibility are not controversial. This is easily seen by considering the rather different reaction of the legal authorities when the employer and employee, or "master and servant" in the old-speak of agency law, co-operate together in the commission of a crime. The servant in work becomes the partner in crime.

> All who participate in a crime with a guilty intent are liable to punishment. A master and servant who so participate in a crime are liable criminally, not because they are master and servant, but because they jointly carried out a criminal venture and are both criminous. [Batt 1967, 612]

When the venture being "jointly carried out" is non-criminous, the workers do not suddenly become non-persons or automatons being "employed" by the employer. The facts about de facto responsible co-operation remain the same. It is the reaction of the legal system that changes when no legal wrong is recognized. Then the Invisible Judge rules "let it be" and the contractual pattern imputes the whole product to the employer.

Of course, a contract involving a crime is null and void. But the worker is not de facto responsible for the crime because he made an illegal contract. The employee is de facto responsible because the employee, together with the employer, committed the crime (not because of the legal status of the contract). It was his de facto responsibility for carrying out a "criminal venture" which gave the legal authorities grounds to intervene and set aside the contract. In the previous example, if person B went off and committed a crime with the van and if A, the owner of the van, had no personal involvement (aside from being the person hiring out the van), then person A, the seller of the van's services, would have no de facto responsibility for B's employment of those services and there would be no reason to invalidate the van rental contract.

The meaning of "immobility" depends on the "space" being considered. In trade theory, land and its services are immobile factors in geographical space. People and capital, in contrast, move about in geographical or physical space. But when it is said, for example, that a house was transferred into the possession of the buyer, then the house is transferred in what we might call

"possession space" while it stays immobile in physical space. It is people who are the fixed coordinates in possession space; people and their services cannot be transferred in possession space.[19]

As noted above, there is no factual transfer of labor services between parties—only de facto responsible co-operation. In terms of the contractual machinery, the employment contract is impossible to actually fulfill with the transfer of responsible actions from the seller (employee) to the buyer (employer). Thus the employment contract systematically violates Hume's conditions by being always breached. In what might be taken as a fraud on an institutional scale, the responsible co-operation of the "employees" is taken by the legal authorities as "fulfilling" (i.e., not breaching) the labor contract which allows the employer to take the contractual position of the whole product appropriator. Since the contract for renting people is impossible to fulfill, it is invalid on grounds of impossibility.

If the modest proposal were accepted that the contract for the renting of human beings be recognized as invalid, then production could only be organized on the basis of the people working in production (jointly) hiring or already owning the capital and other inputs they use in production. Then the Invisible Judge would correctly impute the legal responsibility to the de facto responsible party. The legal members of the firm as a legal party would be the people working in the firm.[20] Such a firm is a *democratic firm* and the private property market economy of such firms is an *economic democracy*.[21]

Summary

I mentioned at the outset that a number of small *gestalt* changes in framework, mini-paradigm shifts, are necessary before the ideas developed here fall together. Now we are in a better position to elucidate these shifts.

1. Fundamental myth: The idea that the "rights to the product" are part and parcel of the rights to some existing asset is easily defeated by considering the case where the asset is rented out. Then the product goes elsewhere while the ownership of the asset remains in the same hands. This shows that "being a firm" (i.e., whole product appropriator) is a contractual role. Then avoiding the semantic shifts between "capital" (as owned assets) and "capital*" (owned assets plus non-owned contractual role of whole product appropriator) will clear the path to moving beyond the fundamental myth in spite of the strong repercussions for capital theory, corporate finance theory, and general equilibrium theory.

---

[19] Strictly speaking, this applies only to the voluntary actions of people. A person can be physically coerced and thus not be de facto responsible for the results of that coercion. Hence involuntary "actions" are factually transferred in possession space but, unless otherwise stated, our concern is with normal voluntary actions. Here again, Marx went down a completely different road by arguing that wage labor was "coerced" labor.

[20] It was noted previously that when employer and employees engage in a crime and the legal authorities intervene to explicitly make the imputation in accordance with the responsibility principle, then the "business" is reconstituted as a "partnership" of all the people involved. Since the facts about de facto responsibility are unchanged when the business is non-criminous, it might be said that the people working in an enterprise should always be "treated as criminals" by setting aside the employment contract and legally reconstituting the business as a partnership.

[21] See, for example, Dahl 1985. The best examples today are probably the Mondragon industrial cooperatives in the Basque region of Spain [see Oakeshott 1978, 2000; Ellerman 1984; Whyte and Whyte 1988, or Lutz 1999]. Employee ownership schemes and codetermination arrangements are steps in the same direction.

2. Appropriation: If the rights to the product are not part of some pre-existing property rights, then the ground is cleared to raise the question of appropriation in normal production, not just in some mythical state of nature or when common property is being privately appropriated.
3. Vectorial treatment: By "vectorial treatment," I mean not just thinking in multi-dimensional terms but in algebraically symmetrical terms about "positives" and "negatives," i.e., assets and liabilities. This allows the symmetrical treatment of both ends of the life-cycle of a property right, initiation and termination, as being the appropriation of property assets and liabilities. Moreover it shows that consumption is also a site for appropriation since property rights are terminated in consumption (as well as in production).
4. Whole product: The conventional approach is dominated by the "distributive shares" metaphor, as if the suppliers of the inputs were producers and claimants on shares of the positive product (Q,0,0). There is also a dual metaphor about the demanders of outputs using up the inputs and thus having shares in the negative product (0,–K,–L) as claims against them. The dual metaphor tells a "story" about marginal cost pricing of outputs just as the usual "story" leads to the marginal productivity costing of inputs. But these metaphors duel only with each other. There is in fact no legal imputation of the positive product to the input suppliers and no imputation of the negative product to the output demanders. Instead, the whole product (positive plus negative products) is legally imputed to one legal party, the party who would thereby be called the "firm." This reconceptualization of production changes the focus of normative questions from "distributive shares" to the basic question of "Who is to be the firm?".
5. Invisible judge: All four of the previous points come together to arrive at the formulation of the market mechanism of appropriation. This idea could not arise without the mini-paradigm shifts of getting beyond the fundamental myth, raising the question of appropriation, seeing appropriation in a two-sided vectorial fashion, and moving beyond the metaphorical picture of imputation in the firm (from distributive shares to the whole product). Then the idea quickly arises of a last-buyer/first-seller Invisible Hand mechanism of imputation by the "lowest court in the land," the Invisible Judge.
6. Responsibility: One of the astonishing feats, or, rather, feints of conventional economics is the learned ignorance of the fact that while all the inputs are causally efficacious, only human action ("labor") can be de facto responsible and that the responsibility for using productive instruments is imputed back through the instruments to the human users. The basic reasons for the professional blindness are not hard to fathom; today's unnatural system of property and contract based on the renting of human beings, the "employment system," legally treats labor services *as if* they were "non-responsible" (outside of crimes) and transferable like the services of things. Indeed, it would be natural and consistent for the Austrian-Kantian subjectivist methodology to recognize the normative significance of not only human preferences but human action. However that would conflict with the social role of the "science of economics" to "explain" the system that treats both persons and things as being rentable.
7. Responsibility principle: One of the key connections to bring the pieces of the puzzle together was the realization that the "fruits of one's labor" principle from Lockean property theory was

the positive application of the normal juridical principle of responsibility typically applied to the negative side of appropriation, the imputation of liabilities.[22]

8. Possession space: A focus on what happens when contracts for the purchase and sale of commodities are fulfilled and on property externalities quickly shows that the relevant transfers are not in physical space (although that may be involved), but transfers in possession. Similarly, the relevant "immobile" or "non-tradable" factors would be what cannot in fact be voluntarily transferred out of the possession of a person, i.e., a person's de facto responsibility and decision-making capability.
9. Fundamental theorem: One part of the theorem was seeing that putting the juridical principle together with the idea of possession space pointed out that the de facto responsible party for consuming or producing a commodity would also be, respectively, the last or first possessor of the commodity. That, in turn, established the connections to the contracts fulfilled by transfers in possession. Hence when all contracts are fulfilled and there are no extra-contractual transfers, then the last-buyer/first-seller imputation of the Invisible Judge will be respectively to the last/first possessor and thus correct in terms of the responsibility principle, i.e., the Hume-implies-Locke fundamental theorem.
10. Analysis and critique of employment system: With the above pieces in place, the analysis and critique of the current system based on the renting of human beings is straightforward. With the connection between production and contracts established by the fundamental theorem, the analysis of the employment system had two parts both with deep historical roots.
    - 10.1. Lockean theory applied to production: Labor produces Labor's product (Q,–K,0), which is the sum of the de facto responsible actions conceived as a "commodity" (0,0,L) plus the whole product (Q,–K,–L), but Labor only appropriates (as first seller) the "labor commodity" while the employer appropriates the whole product.[23]
    - 10.2. Inalienable rights analysis of the employment contract: The traditional theory of inalienable rights that descends from the Reformation and Enlightenment (see Appendix) was based on the de facto non-transferability of decision-making. The same de facto non-transferability holds for all non-coerced human activity such as that involved in production (and in crimes where the inalienability is routinely recognized). Hence the voluntary contract for the renting of human beings, like the voluntary contract for the all-at-once renting or sale of human labor and the voluntary Hobbesian constitution of subjection, is impossible to fulfill and is naturally invalid.

---

[22] Independently of Ellerman [1980, 1985, 1992], this connection has been noted by a legal scholar: "[T]he libertarian entitlement thesis, to the effect that persons are entitled to retain the fruits of their labor, and the libertarian thesis about outcome-responsibility, to the effect that persons are responsible for the harms that they cause, are two sides of the same coin. ... The basis of this unity is the idea that people "own" the effects, both good and bad, that causally flow from their actions." [Perry 1997, 352] Actually the connection was, in effect, made over a century ago in orthodox apologetics. John Bates Clark [1899] constructed a metaphorical interpretation of marginal productivity theory using Lockean language that became part of orthodoxy, e.g., "The basic postulate on which the argument rests is the ethical proposition than an individual deserves what is produced by the resources he owns." [Friedman 1962, 196] Wieser [1889]constructed a metaphorical interpretation MP theory using the language of imputation and the responsibility principle. Since both schemes build metaphorical interpretations of the same MP theory (where all resources are treated as "responsible" for the product that was "produced by the resources"), the entitlement-responsibility connection was there all along in orthodox apologetics.

[23] Here again, Marx missed developing the beginnings of the labor theory of property in Hodgskin, Thompson, Proudhon, and others while obsessing on the rather hopelessly "labor theory of value."

The interesting implication is that, notwithstanding two centuries of economic theorizing, the current system is not the "natural system of property and contract" any more than would be a private property system where longer-term voluntary contracts in human capital (e.g., self-sale or voluntary slavery contracts) were legally valid. The natural system is one where the "owner-operated" proprietorship and family farm generalize to democratic firms of any size where people are jointly working for themselves. Moreover, the system of economic democracy finally resolves the long-standing conflict between being a voting citizen bearing inalienable rights in the political sphere and being a rented "employee" in the workplace.

Appendix: History of Related Contracts and Inalienable Rights Theory

The employment contract for the renting or hiring of persons is the short and limited term version of the indefinite term contract to sell all of a person's labor at once which historically was the voluntary self-sale contract. Although outlawed since the Civil War, this rump-and-stump labor contract is nevertheless necessary to have the conditions for full competitive equilibrium (i.e., full future markets in the "commodity" labor). This point is little noted in the usual neoclassical literature but the point was made in Congressional testimony by the econometrician Carl Christ.

> Now it is time to state the conditions under which private property and free contract will lead to an optimal allocation of resources.... The institution of private property and free contract as we know it is modified to permit individuals to sell or mortgage their persons in return for present and/or future benefits. [Christ 1975, 334]

The older voluntary slavery contract was treated as being legally valid from Antiquity up to the Civil War (see Ellerman 1986 or 1992 for the history of these contracts). A person could voluntary agree to take on the legal role of a "non-person" in return for some consideration and the legal authorities would similarly take co-operation with the master as "fulfilling" the contract. Yet when the slave committed a crime, then the contractual "non-person" suddenly became a responsible person in the eyes of the law. Since the voluntary slave never actually became a de facto non-person, the self-sale contract was like the self-rental contract in being impossible to fulfill but where the legal authorities accepted an alternative performance as long as it did not involve legal wrongs. The legal fiction of considering the slave as a non-person—except for crimes—was quite explicit on the part of the legal authorities. For instance, an antebellum Alabama court asserted that slaves

> are rational beings, they are capable of committing crimes; and in reference to acts which are crimes, are regarded as persons. Because they are slaves, they are … incapable of performing civil acts, and, in reference to all such, they are things, not persons. [quoted in: Catterall 1926, 247]

Another example of this sort of institutionalized fiction was the older and now legally invalid marriage contract that "identified" the legal personality of the wife with that of the husband. The *baron-feme relationship* established by the coverture marriage contract exemplified the identity fiction in past domestic law. A female was to pass from the cover of her father to the cover of her husband; always a "feme covert" instead of the anomalous "feme sole." The identity fiction for

the baron-feme relation was that "the husband and wife are one person in law" with the implicit or explicit rider, "and that one person is the husband." A wife could own property and make contracts, but only in the name of her husband. Again, obedience counted as "fulfilling" the contract to have the wife's legal personality subsumed under and identified with that of the husband.[24]

The last example of this type of impossible-to-fulfill contract is the historically important concept of a political pact of subjection, a *pactum subjectionis*, wherein a group of people would "transfer" their decision-making powers to some authority, sovereign, or king and become its "subjects." The Hobbesian [Hobbes 1958 (1651)] contract was the best known example in philosophy but the idea was often evoked as an implicit contract between people and ruler wherever non-democratic government existed as a settled condition. It is important to be clear that the *pactum subjectionis* is a transfer or alienation of decision-making, not a delegation. The sovereign is not a delegate, representative, agent, or trustee making decisions in the name of the people; the sovereign governs the people in his own name.[25]

Many modern histories of thought project backward the idea that the transition from non-democratic to democratic forms of government was a transition from coercion to consent—the idea of democracy as simply government with the consent of the governed as if Hobbes and many others had not based autocracy on just such consent. The core of the development of democratic thought was not the argument against coercion since the sophisticated defenders of non-democratic government started with consent. The core was the contra-Hobbes argument that the sort of voluntary contract that legally alienated or transferred decision-making rights was naturally invalid and thus those rights were inalienable.

The basis for inalienable rights theory was the de facto non-transferability of decision-making, an idea that most forcefully entered history with Martin Luther's argument about liberty of conscience:

> As little as another can go to hell or heaven for me, so little can he believe or disbelieve for me; and as little as he can open or shut heaven or hell for me, so little can he drive me to faith or unbelief. [Luther 1942 (1523), 316]

---

[24] In Carole Pateman's analysis of this sort of a "sexual contract" in a more general setting, she independently pointed out the connection to the employment contract and the de facto inalienability of labor. "The contractarian argument is unassailable all the time it is accepted that abilities can 'acquire' an external relation to an individual, and can be treated as if they were property. To treat abilities in this manner is also implicitly to accept that the 'exchange' between employer and worker is like any other exchange of material property. …The answer to the question of how property in the person can be contracted out is that no such procedure is possible. Labour power, capacities or services, cannot be separated from the person of the worker like pieces of property." [Pateman 1988, 147-150]

[25] This point is easier to understand when it is considered that the employment contract is the mini-Hobbesian contract for transferring decision-making in the workplace. The employer is not the delegate or representative of the employees; the employer manages the employees within the scope of the contract solely in the employer's own name.

Luther was making the point that the Church could not in fact determine one's beliefs because the individual inextricably always had to accept the Church's decision so the decisions of conscience were de facto inalienable.[26]

From the Reformation, this theory of inalienability traveled to the Scottish Enlightenment where it was developed by Francis Hutcheson, Adam Smith's teacher and predecessor in the Chair of Moral Philosophy in Glasgow. Hutcheson contrasts de facto alienability of actual commodities where "the translation of them to others can be made effectually" with factually inalienable human faculties where "the translation cannot be made with any effect." Hutcheson goes on to show how the "right of private judgment" or "liberty of conscience" is inalienable. In the case of the criminous employee, we saw how the employee ultimately makes the decisions himself in spite of what is commanded by the employer. Short of coercion, an individual's faculty of judgment cannot in fact be short circuited by a secular or religious authority.

> A like natural right every intelligent being has about his own opinions, speculative or practical, to judge according to the evidence that appears to him. This right appears from the very constitution of the rational mind which can assent or dissent solely according to the evidence presented, and naturally desires knowledge. The same considerations shew this right to be unalienable: it cannot be subjected to the will of another: tho' where there is a previous judgment formed concerning the superior wisdom of another, or his infallibility, the opinion of this other, to a weak mind, may become sufficient evidence. [Hutcheson 1755, 295]

From Hutcheson, the notion of inalienability of the rights of self-governance passed to Thomas Jefferson and then—with the American Declaration of Independence—into broader political history.[27]

In view of this intellectual history, the modern treatment of the theory of inalienable rights based on the de facto impossibility and thus natural invalidity of contracts to legally transfer decision-making and responsibility [e.g., Ellerman 1992] has been less a matter of discovery than rediscovery and retrieval.[28] However, the notion of "inalienable rights" is often reduced to empty rhetoric, e.g., in an economy where daily work life is based on the mini-Hobbesian contract of employment, or is lost altogether by reinterpretation as in the work of the late Harvard philosopher Robert Nozick. Nozick [1974] interpreted an "inalienable right" as a right that may not be alienated without consent—which is actually only a right as opposed to a privilege—whereas the theory of inalienable rights was about rights that may not be validly alienated even

[26] Kant made the point in an even more forceful way: "For in whatever way…the Deity should be made known to you, and even…if He should reveal Himself to you: it is you…who must judge whether you are permitted [by your conscience] to believe in Him, and to worship Him." [translated and quoted by Popper 1965, 182; original is: Kant 1960, 157 (Book Four, Part Two, Section 1, footnote)]

[27] "Jefferson took his division of rights into alienable and unalienable from Hutcheson, who made the distinction popular and important" [Wills 1979, 213].

[28] For instance, one of the clearest expressions of this inalienable rights theory was given by Hegel [1967 (1821)] in his critique of the self-sale contract. Hegel apparently realized that the argument applied equally well to the self-rental contract since he tried to back-pedal away from that implication by engaging in some metaphysical double-talk [see Ellerman 1992]. At the risk of beating a dead horse, Marx completely missed this implied critique of wage labor in Hegel and took an entirely different road.

with consent. Nozick had no notion of rights inalienable-with-consent and accordingly he with perfect logic accepted the Hobbesian contract alienating self-governing rights of a group to a "dominant protective association" and similarly for the individual.

> The comparable question about an individual is whether a free system will allow him to sell himself into slavery. I believe that it would. [Nozick 1974, 331]

The short-term renting of human beings in the employment contract is the basis for the present stage of economic civilization.[29] Since that contract is the short-term version of the lifetime labor contract and the limited workplace version of the Hobbesian contract, Nozick was perhaps the most "consistent" of all modern philosophers.[30]

References

Arrow, K.J. 1971. The Firm in General Equilibrium Theory. In *The Corporate Economy.* R. Marris and A. Woods eds. Cambridge: Harvard Univ. Press.

Arrow, K.J. and G. Debreu 1954. Existence of an Equilibrium for a Competitive Economy. *Econometrica.* 22: 265-290.

Barnett, Randy 1986. A Consent Theory of Contract. *Columbia Law Review.* 86(2): 269-321.

Barzel, Yoram 1989. *Economic Analysis of Property Rights*. New York: Cambridge University Press.

Batt, Francis 1967. *The Law of Master and Servant*. London: Pitman.

Buchanan, James M. 1986. *Liberty, Market and State*. Brighton, Sussex: Wheatshaft Books.

Catlett, G. and N. Olson 1968. *ARS No.10: Accounting for Goodwill*. New York: American Institute of Certified Public Accountants.

Catterall, Helen T., Ed. 1926. *Judicial Cases Concerning Slavery and the Negro*. Washington, D.C.: Carnegie Institute.

Christ, Carl F. 1975. The Competitive Market and Optimal Allocative Efficiency. In *Competing Philosophies in American Political Economics.* Edited by J. Elliott and J. Cownie. Pacific Palisades, CA: Goodyear: 332-338.

Clark, John Bates 1899. *The Distribution of Wealth*. New York: Macmillan.

Coase, Ronald 1960. The Problem of Social Cost. *Journal of Law and Economics.* 3: 1-44.

Cooter, Robert and Thomas Ulen 2004. *Law and Economics*. Fourth ed. Boston: Pearson Addison-Wesley.

Dahl, Robert 1985. *Preface to Economic Democracy*. Berkeley: University of California Press.

Demsetz, Harold 1967. Toward a Theory of Property Rights. *American Economic Review*. Vol. 57 (May 1967), 347-359.

[29] "Since slavery was abolished, human earning power is forbidden by law to be capitalized. A man is not even free to sell himself; he must **rent** himself at a wage." [Samuelson 1976, 52 (emphasis in the original)]

[30] This was argued at length—with irony—in "The Libertarian Case for Slavery: A Note on Nozick" by the author writing under a pseudonym [Philmore 1982; reprinted with explanation in Ellerman 1995].

Ellerman, David 1980. Property Theory and Orthodox Economics. In *Growth, Profits and Property: Essays in the Revival of Political Economy.* Ed. by E. J. Nell. Cambridge: Cambridge University Press: 250-263.

Ellerman, David 1984. Entrepreneurship in the Mondragon Cooperatives. *Review of Social Economy.* XLII (December 1984): 272-294.

Ellerman, David 1985. On the Labor Theory of Property. *Philosophical Forum.* XVI(Summer 1985): 293-326.

Ellerman, David 1986. The Employment Contract and Liberal Thought. *Review of Social Economy.* XLIV(April 1986): 13-39.

Ellerman, David 1992. *Property & Contract in Economics: The Case for Economic Democracy*. Cambridge: Blackwell. [Out-of-print with rights reverted to the author so the full text is available at: www.ellerman.org]

Ellerman, David 1995. *Intellectual Trespassing as a Way of Life: Essays in Philosophy, Economics, and Mathematics*. Lanham MD: Rowman & Littlefield.

Fama, E. and M. Jensen 1996. Organizational Forms and Investment Decisions. In *The Economic Nature of the Firm*. Second edition. L. Putterman and R. Kroszner, Eds. Cambridge, Cambridge University Press**:** 336-344.

Fleming, Wendell 1977. *Functions of Several Variables*. New York: Springer-Verlag.

Friedman, David D. 2000. *Law's Order: What Economics has to do with Law and why it matters*. Princeton: Princeton University Press.

Friedman, Milton 1962. *Price Theory*. Chicago: Aldine.

Furubotn, E. and S. Pejovich, Eds. 1974. *The Economics of Property Rights*. Cambridge: Ballinger Publishing Company.

Furubotn, Eirik and Rudolf Richter 1998. *Institutions and Economic Theory: The Contributions of the New Institutional Economics*. Ann Arbor: University of Michigan.

Gierke, Otto von 1958. *Political Theories of the Middle Age.* Tr. F. Maitland. Boston: Beacon.

Graff, J. de V. 1967. *Theoretical Welfare Economics*. Cambridge: Cambridge University Press.

Haavelmo, T. 1960. *A Study in the Theory of Investment.* Chicago: University of Chicago Press.

Hahn, Frank. 1988. Review of *Nicholas Kaldor*, By Anthony Thirlwall. *Journal of Economic Literature*. XXVI (Dec. 1988) : 1746-1747.

Hart, O. and J. Moore 1990. Property Rights and the Nature of the Firm. *Journal of Political Economy.* 98: 1119-59.

Hegel, Georg W. F. 1967 (1821). *Hegel's Philosophy of Right*. New York: Oxford U. Press.

Hirshleifer, J. 1970. *Investment, Interest, and Capital.* Englewood Cliffs: Prentice-Hall.

Hobbes, Thomas 1958 (1651). *Leviathan*. Indianapolis: Bobbs-Merrill.

Holmstrom, B. and J. Tirole 1989. The Theory of the Firm. In *Handbook of Industrial Organization Vol. I*. R. Schmalensee and R. Willig Eds. Amsterdam, North-Holland**:** 61-133.

Hume, David 1978 (1739). *A Treatise of Human Nature*. Oxford: Oxford University Press.

Hutcheson, Francis 1755. *A System of Moral Philosophy*. London.

Kant, Immanuel 1960. *Religion Within the Limits of Reason Alone*. New York: Harper Torchbooks.

Keynes, J. M. 1936. *The General Theory of Employment, Interest, and Money.* New York: Harcourt, Brace & World.

Locke, John 1960 (1690). *Two Treatises of Government*. New York: New American Library.

Luther, Martin 1942 (orig. 1523). Concerning Secular Authority. In *Readings in Political Philosophy.* Ed. by F. W. Coker. New York: Macmillan: 306-329.

Lutz, Mark 1999. *Economics for the Common Good*. London: Routledge.

Maitland, F.W. 1960. *Frederic William Maitland: Historian*. R.L. Schuyler ed. Berkeley: University of California Press.

Marx, Karl 1967 (1867). *Capital: A Critique of Political Economy. Volume I.* S. Moore and E. Aveling trans. New York: International Publishers.

McKenzie, Lionel 1954. On Equilibrium in Graham's Model of World Trade and Other Competitive Systems. *Econometrica.* Vol. 22, April 1954, 147-161.

Menger, Anton 1899. *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.* Trans. M.E. Tanner. Intro. by Herbert S. Foxwell. London: Macmillan and Co (Reprinted by Augustus Kelley).

Miller, M. H. and F. Modigliani 1961. Dividend Policy, Growth, and the Valuation of Shares. *The Journal of Business.* 34 (October 1961): 411-433.

Montias, J. M. 1976. *The Structure of Economic Systems.* New Haven: Yale University Press.

Nozick, Robert 1974. *Anarchy, State, and Utopia*. New York: Basic Books.

Oakeshott, Robert 1978. *The Case for Workers' Co-ops*. London: Routledge and Kegan Paul.

Oakeshott, Robert 2000. *Jobs and Fairness: The Logic and Experience of Employee Ownership*. Norwich UK: Michael Russell.

Pateman, Carole 1988. *The Sexual Contract*. Stanford: Stanford University Press.

Perry, Stephen 1997. Libertarianism, Entitlement, and Responsibility. *Philosophy & Public Affairs.* 26(4, Fall): 351-96.

"Philmore, J." [pseudonym for David Ellerman] 1982. The Libertarian Case for Slavery: A Note on Nozick. *Philosophical Forum.* XIV(Fall 1982): 43-58. [Reprinted in Ellerman 1995]

Popper, Karl 1965. *Conjectures and Refutations: The Growth of Scientific Knowledge*. New York: Harper & Row.

Putterman, L. 1996. Ownership and the nature of the firm. In *The Economic Nature of the Firm*. L. Putterman and R. Kroszner Eds. Cambridge, Cambridge University Press**:** 361-369.

Putterman, L. and R. S. Kroszner, Eds. 1996. *The Economic Nature of the Firm*. 2nd edition. Cambridge: Cambridge University Press.

Rockafellar, R.T. 1984. *Network Flows and Monotropic Optimization*. New York: John Wiley.

Samuelson, Paul 1976. *Economics.* Tenth edition. New York: McGraw-Hill.

Umbeck, John 1981. Might Makes Right: A Theory of the Formation and Initial Distribution of Property Rights. *Economic Inquiry*. Vol. 19 (1), 38-59.

Wieser, Friedrich von 1889. *Natural Value.* Trans. by C.A. Malloch and published in 1930. New York: G.E. Stechert and Company.

Wills, Garry 1979. *Inventing America*. New York: Vintage Books.