

The Labour Theory of Property and Marginal Productivity Theory

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Abstract

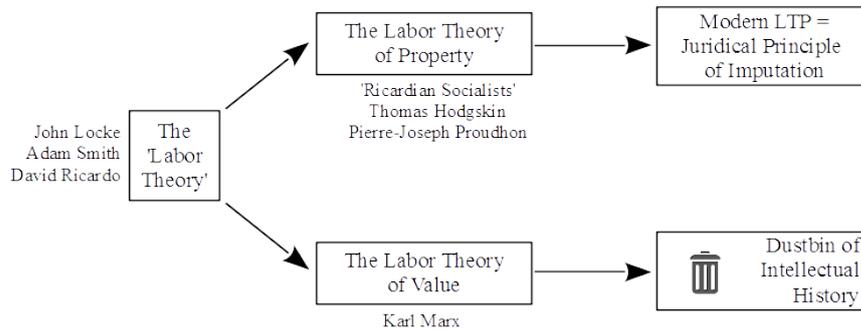
After Marx, dissenting economics almost always used ‘the labour theory’ as a theory of *value*. This paper develops a modern treatment of the alternative labour theory of *property* that is essentially the property theoretic application of the juridical principle of responsibility: impute legal responsibility in accordance with who was in fact responsible. To understand descriptively how assets and liabilities are appropriated in normal production, a ‘fundamental myth’ needs to be cleared away, and then the market mechanism of appropriation can be understood. On the normative side, neoclassical theory represents marginal productivity theory as showing that (a metaphorical version of) the imputation principle is satisfied (‘people get what they produce’) in competitive enterprises. Since that shows the moral commitment of neoclassical economics to the imputation principle, the labour theory of property is presented here as the actual non-metaphorical application of the imputation principle to property appropriation. The property-theoretic analysis at the firm level shows how the neoclassical (and much heterodox) analysis in terms of ‘distributive shares’ wholly misframed the basic questions. Finally, the paper shows how the imputation principle (modernised labour theory of property) is systematically violated in the present wage labour system of renting persons. The paper can be seen as taking up the recent challenge posed by Donald Katzner for a dialogue between neoclassical and heterodox microeconomics.

Keywords: labour theory of property, responsibility, imputation principle, appropriation, whole product, labour theory of value

1. Introduction: LTP, the Path Not Taken

In the pre-Marxian period, there was a group of heterodox political economists, including Thomas Hodgskin (1832) and Pierre-Joseph Proudhon (1840), who tried to develop the inchoate in-the-air ideas about the unique and normatively-relevant role of labour (as opposed to the other ‘factors of production’) into a labour theory of property (LTP) (Menger, 1899) rather than a labour theory of value. In the history of economic ideas, these early attempts to develop a labour theory of property were largely overshadowed by Karl Marx’s monumental attempt to develop a labour theory of value – whose eventual failure (Ellerman, 1983, 1992, 2010a) has made it the favorite foil of orthodox economics.

Figure 1: Fork in the Road: How to Develop the 'Labour Theory'



This paper outlines a modern attempt (Ellerman, 1992, 2014) to go back to that fork in the road and take the other path (figure 1). This property-theoretic approach to the microeconomic (e.g., firm-level) questions, usually ill-posed as being only about theories of value and distribution, can also be seen a contributing to the dialogue proposed by Donald Katzner (2015) between neoclassical microeconomics and heterodox political economy.

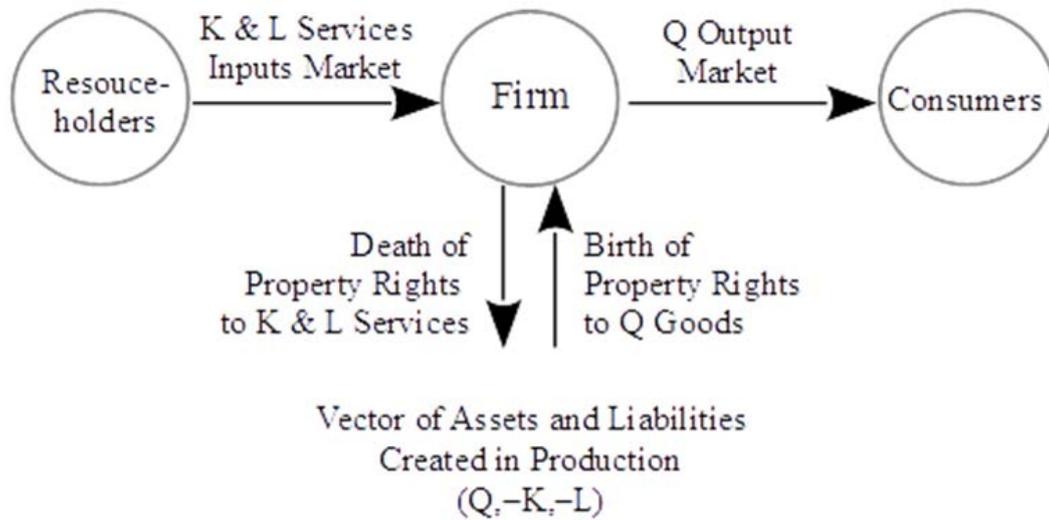
2. The Conventional Neglect of the Question of Appropriation

The labour theory of property is a normative theory, but there is also a descriptive theory of property as to how property rights are actually created and terminated in a private property market economy. Neoclassical microeconomics 'neglects' that descriptive theory in favour of focusing on the distributive shares metaphor that 'pictures' each party to production as getting a 'share' so the only question to be addressed is the value-theoretic question about the size of the 'shares.'

The flows of property rights should always be described in an algebraically symmetric manner reflecting both assets and liabilities. In a common stylised picture of production, the input services, say K and L , are used up and the outputs Q are produced. The assets Q are created so the property-theoretic question is: 'who is to own those assets?'. The services K and L (and other intermediate goods) are used up so the property-theoretic question is: 'who is to owe those liabilities?'.¹ Combining the questions: 'who is to legally appropriate the assets and liabilities ($Q, -K, -L$) created in production?' (figure 2).

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, p. 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 $-X$.'

Figure 2: Assets and liabilities created 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 of production (or consumption for that matter).

One reason for the neglect is that discussions of property creation tend to be restricted to a rather mythical state of nature (e.g., Locke, 1690) or original position, or 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 constantly created and terminated. On the negative side, the law and economics literature looks extensively at the assignment of liabilities in the legal trials that may follow the accidental destruction of property (Calabresi, 1970). But what is the mechanism for assigning the liabilities for the normal deliberate using-up or consumption of goods where legal trials are clearly not the mechanism for liability assignment?

3. 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 current private property system.

To see the fallacy, one only has to consider the result of renting in 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. Since it is not a major intellectual feat to conceptually consider capital as being rented in, the persistence of the fundamental myth points to its ideological role on both the left and right.

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

Perhaps the most common example of the fundamental myth arises when a corporation uses a technologically-specified productive opportunity such as $Q = f(K,L)$ in our example. Then the question of 'who is to own Q and owe $-K$ and $-L$ ' is often answered by 'the corporation, or in terms of natural persons, the owners of the corporation.'

But this is confusion between owning a corporation and 'owning' the productive opportunity that a corporation may or may not undertake depending on its contracts. The line of reasoning is: 'a corporation is an owned asset [true] and a corporation owns its products [by definition] so there is no need for some mechanism to account for the ownership of the product [false]—it's all part of the ownership of the corporation [false].' 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, perhaps using some of its assets, 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 which was making the lease payments and paying for all the other inputs in car production and which 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) and the 'rent the capital' argument still applies to those assets (i.e., not to the corporation as a whole but to its assets). Whether or not the company owns the products produced using some of those assets depends on whether the company 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, sometimes called the 'residual claimant,' 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. Being a certain 'nexus of contracts' and thus the residual claimant in a technologically specified productive opportunity, like $Q = f(K,L)$, is not an owned property right. The grip of the fundamental myth in one form or another seems to account for the failure *to even formulate the question*, not to mention the mechanism, of the appropriation of the assets and liabilities that are created in normal production activities.

4. 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.’ Whence the fundamental myth? The myth is not a point of contention between orthodox economics and its favourite foil, Marxian economics. Both agree that product rights are attached to the ‘ownership of the means of production’ but disagree about that ownership being private or public. Marx shares responsibility by having given his imprimatur 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. The landlord was Lord of the land. As Otto von Gierke put it, ‘Rulership and Ownership were blent’ (1958, p. 88). Marx mistakenly carried over that idea to his analysis of capital in the system that he thus inappropriately named ‘capitalism’. The command over the production process was taken as part of the bundle of capital ownership rights.

‘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, 1867, p. 332).

Marx’s use of the fundamental myth that governance and product rights were part of capital is one of many points of agreement between Marxism and much orthodox economics (Ellerman, 2010a).

In defence of Marx, by ‘capital’ he did not simply mean financial or physical capital goods; he meant those goods used by wage labour with private ownership of the means of production. Otherwise, ‘capital’ becomes just the ‘means of labour’. In short,

Marx’s capital* = Means of labour (capital) + contractual role of being the firm using wage labour.

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 that extra *contractual* role. One can’t have it both ways. 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. Many versions of the fundamental myth take the same form of assuming that the capital owner has the contractual role of being the firm (i.e., capital*) and then taking all the property rights accruing to capital* as being part of the ownership of capital (*sans* asterisk *).

For instance, take the common notion of ‘owning a factory’. There is the ownership of factory buildings (or ownership of 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 that operating an owned factory is a contractual role, not an extra owned property right, a typical orthodox response is: ‘Yes, but it is that role which is called the ‘ownership*’ role.’ After thus redefining factory-ownership* to *include* the contractual role of residual claimancy, the semantics shift back to conclude that ‘the product rights are part of the ownership of the factory’ (meaning the ownership of the factory building). Such loose patterns of thought in neoclassical and Marxian economics allow the fundamental myth to persist.

5. 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 towards an efficient allocation. However, the life-cycle of property rights includes not just transfers in the market but also 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 this mechanism seems to have been truly invisible to both orthodox and heterodox economists 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 in 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 principle of imputation*: 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.'

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 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 intervene to overturn both sets of contracts. Hence when no such intervention takes place – as in normal production – then that one legal party in effect legally appropriates a bundle of both legal liabilities and ownership rights, the input liabilities and the output assets (Q,-K,-L) in our example.

The recognition of the market mechanism of appropriation shows that the market has an under-appreciated role in the property system. The market is not just for rearranging

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.

existing property rights. In view of the widespread belief in some form of the fundamental myth, many supporters and critics of the current private property system have misplaced their focus. The pattern of appropriation is conceptually defined not by the ownership of property but by the pattern of contracts (although the ownership of property obviously plays an indirect role in the bargaining power to make contracts one way rather than another). When the legal system validates or invalidates certain contracts, the property system is also transformed.

We have so far only been concerned with clearing up myths and fallacies in *descriptive* property theory. But just as there is both a descriptive theory and a normative (efficiency) analysis of the price system, so there is also both a descriptive and normative theory of the underlying property system.

6. Normative Property Theory of Appropriation and Transfers

The fundamental theorem for the competitive *price* mechanism proves a correspondence between the descriptive notion of a competitive equilibrium and the normative notion of Pareto efficiency. The fundamental theorem for the Invisible Judge market mechanism of appropriation has the same logical form of a correspondence between a descriptive situation and a normative principle of appropriation.

The normative property theory presented here is the modern treatment of the labour theory of property that is 'modern' in the sense of being based on interpreting it as the property-theoretic application of the usual *juridical principle of imputation according to responsibility*:

assign or impute de jure (or legal) responsibility in accordance with de facto (or factual) responsibility.³

Since this principle is used in the interventions of the visible hand of the law, i.e., legal trials, it is natural to see under what conditions the invisible hand mechanism of the property system follows the same principle.

7. The Imputation Principle in Marginal Productivity Theory

Neoclassical economics is already quite familiar with a certain version of the juridical imputation principle since it is routinely applied (or implied) in the interpretation of marginal productivity (MP) theory in competitive markets.⁴ However, this attempted application of the imputation principle is based on a metaphor, a mistake, and a miracle. Since this misapplication of the imputation principle has such normative acceptance in neoclassical economics, probably the best way to present the labour theory of property (i.e., the property-theoretic application of the imputation principle) to neoclassicals is simply as the actual imputation principle without the metaphor, mistake, or miracle.

³ '[This] is itself a principle about natural responsibility, and so, as a guide for adjudication, unites adjudication and private morality and permits the claim that a decision in a hard case, assigning responsibility to some party, simply recognizes that party's moral responsibility.' (Dworkin, 1985, p. 288) See also Perry (1997). This responsibility for the results of deliberate actions should not be confused with many other uses of the word such as one's 'responsibilities' in an organisational role.

⁴ For instance, 'To each according to what he and the instruments he owns produces.' (Friedman, 1962, pp. 161-2)

7.1 The Metaphor: Treating Services of Things like the Actions of Persons

The first and foremost problem is the neglect of the difference between responsible human actions and the non-responsible (but causally efficacious) services of things. Both are treated simply as causally effective productive services.

‘We have insisted that the word “produce” in the sense of the specific productivity theory of distribution, is used in precisely the same way as the word “cause” in scientific discourse in general’ (Knight, 1965, p. 178).⁵

‘For “labor” we should now say “productive resources”’ (Knight, 1956, p. 8).

There is an old literary metaphor (a version of the pathetic fallacy) where natural forces are pictured as being ‘responsible’ for certain consequences. Economists sometimes indulge these picturesque images as when an asset is imagined as producing a (marginal) product or when natural forces and human actions are coupled together as if both were de facto responsible.

‘Goods are typically produced by the co-operation of various kinds of productive services, and the special problem of distribution, in modern terms, is that of the division of this joint product among the different kinds of co-operating productive services and agents’ (Knight, 1956, p. 21).

‘Together, the man and shovel can dig my cellar’ and ‘land and labor together produce the corn harvest’ (Samuelson, 1976, pp. 536-537). However, since the demise of primitive animism the law has only recognized persons as being capable of being responsible. When orthodox economists are called in for jury duty on a trial of a person accused of committing a murder with a gun, they would not ask the judge why the gun is not on trial. They understand in their own non-professional lives, that even though the gun was causally efficacious (i.e., ‘productive’) in the commission of the act, the responsibility for the murder is imputed back through the gun to the person using those criminal means.

As the legally-trained Austrian economist, Friedrich von Wieser, put it:

‘The judge ... who, in his narrowly-defined task, is only concerned with the *legal imputation*, confines himself to the discovery of the legally responsible factor, – that person, in fact, who is threatened with the legal punishment. On him will rightly be laid the whole burden of the consequences, although he could never by himself alone – without instruments and all the other conditions – have committed the crime. The imputation takes for granted physical causality...

If it is the moral imputation that is in question, then certainly no one but the labourer could be named. Land and capital have no merit that they bring forth fruit; they are dead tools in the hand of man; and the man is responsible for the use he makes of them’ (Wieser, 1889, pp. 76-79).

⁵ Frank H. Knight was perhaps the most philosophically sophisticated defender of this ‘imputation’ interpretation of MP theory as well as a founder of the Chicago School of Economics.

The responsibility for the results of using tools or assets is imputed back through the things to the human users. For instance, a description without the pathetic fallacy would be that a man is responsible both for using up the services of a shovel and for thereby digging a cellar (note the positive and negative side of responsibility) – or that labour uses up the services of land in the production of the corn harvest.

There is a common pose that orthodox economists are judging the existing system according to some normative principles, but the causality seems to be the reverse. Normative principles are judged according to whether or not they align with the social role of orthodox economics in giving a 'scientific account' of the existing system. For instance, Wieser summarizes the essence of the labour theory of property (juridical imputation principle) critique of the employment system – 'Land and capital have no merit that they bring forth fruit; they are dead tools in the hand of man; and the man is responsible for the use he makes of them.' But that gives Wieser no second thoughts about the system of renting human beings;⁶ it only shows that the moral or legal notions of imputation do not apply! The social role of economics requires a new notion of 'economic imputation' in accordance with another new notion of 'economic responsibility'.

'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, p. 76).

By defining 'economic responsibility' in terms of the animistic version of marginal productivity, Wieser could finally draw the conclusion demanded by his calling: to show that the competitive employment system 'economically' imputes the product in accordance with 'economic' responsibility. Thus we arrive at one of the highpoints of neoclassical microeconomics: trying to justify a metaphorical 'division' of the product with a metaphorical notion of 'responsibility'. Needless to say, the actual juridical principle of imputation uses the usual moral and legal notion of imputation where 'no one but the labourer could be named' – not the metaphorical notion of 'economic responsibility'.

Friedrich von Wieser's American counterpart in providing this interpretation to MP theory was John Bates Clark, who was even more explicit in trying to co-opt the normative force of the imputation principle using the Lockean narrative of everyone getting what they have produced.

'At the point in the economic system where titles to property originate,—where labor and capital come into possession of the amounts that the state afterwards treats as their own,—the social procedure is true to the principle on which the right of property rests. So far as it is not obstructed, it assigns to every one what he has specifically produced' (Clark, 1899, p. v).

Clark is so sure that the competitive system of renting people satisfies the imputation principle that he spells out the alternative.

⁶ This may seem an unusual use of 'rent' but, 'hiring a car' in the U.K. and 'renting a car' in the U.S. are the same thing. As Paul Samuelson explains:

'One can even say that wages are the rentals paid for the use of a man's personal services for a day or a week or a year. This may seem a strange use of terms, but on second thought, one recognizes that every agreement to hire labor is really for some limited period of time. By outright purchase, you might avoid ever renting any kind of land. But in our society, labor is one of the few productive factors that cannot legally be bought outright. Labor can only be rented, and the wage rate is really a rental' (1976, p. 569).

‘A plan of living that should force men to leave in their employer’s hands anything that by right of creation is theirs, would be an institutional robbery—a legally established violation of the principle on which property is supposed to rest’ (Clark, 1899, p. 9).

Although more circumspect in statement, Frank Knight is no less assured that the competitive system of renting people delivers both efficiency and justice – with ‘justice’ defined by the metaphorical version of the labour theory of property.

‘The analysis [of market competition] shows how, under the conditions necessary for its existence, this organization achieves *efficiency* in the utilization of resources and *justice* in the distribution of the total product, efficiency being defined by the ends chosen by individuals and justice by the principle of equality in relations of reciprocity, giving each the product contributed to the total by its own performance (“what a man soweth that shall he also reap”)’ (Knight, 1956, p. 292).

7.2 The Mistake: No Division of the Product in terms of Property Rights

We have seen the metaphor used in interpreting causally efficacious services of things as if they were the responsible actions of persons. The simple ‘mistake’ involved in this interpretation of MP theory is that it does not deal with the actual distribution of property rights and liabilities in production at all. In a productive opportunity described by $Q = f(K,L)$, the initial ownership of the (positive) product Q is not divided between different legal parties such as the input-suppliers. It is all appropriated by one legal party, the same party who ‘shoulders’ or ‘bears’ all the input-liabilities $-K$ and $-L$. Thus one legal party appropriates both the positive and negative product, which we will call the *whole product*.⁷

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

Whole product = Positive product + Negative product.

The *basic question* about production is not about any hypothetical division of property rights to the product (or even about the MP pricing of inputs) but about: *who is to be that one legal party who appropriates the whole product?* The standard answers are: ‘Capital’ (i.e., the employer in the employment system), Labour (i.e., the people working in the productive opportunity who perform the responsible actions L to use up the inputs K to produce the product Q), or the State (i.e., in a socialist or communist system).⁸ In order to address that question about the actual appropriation of the assets and liabilities created in production, one needs a theory of property, not a MP theory of the derived demand for inputs.

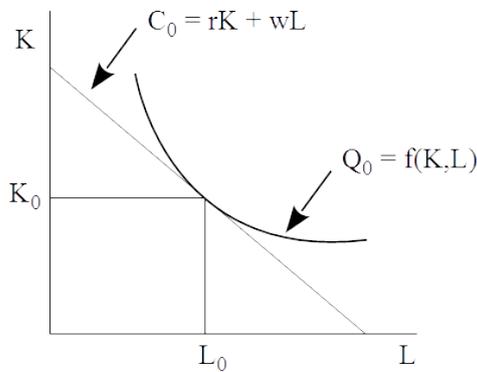
⁷ I have used the ‘whole product’ phrase to recognise the labour theory of property tradition summarised by Carl Menger’s jurisprudential brother, Anton Menger (1899).

⁸ Much ink has been spilt in neoclassical economics on the near-tautology that the party who ‘bears the risks’ (i.e. appropriates the negative product) should also appropriate the positive product. Of course, *one* party appropriates the whole product (positive + negative product). The real question is: who is to be that one party?

7.3 The Miracle: Each Factor's Immaculate Production of its Marginal Product

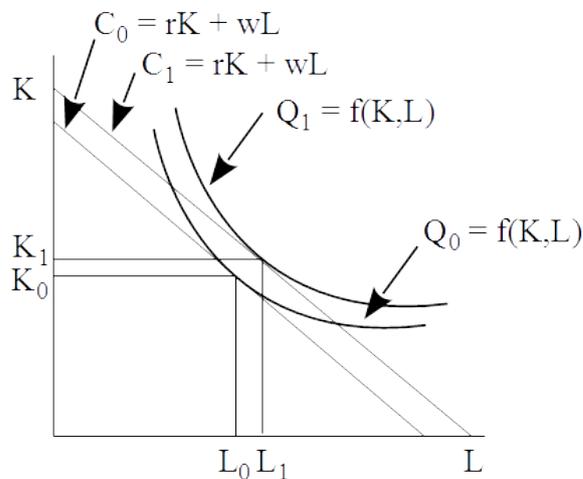
The whole picture of each unit of a factor producing its marginal product is not even remotely plausible in the first place, since production requires other inputs! Each (marginal) unit of the labour L cannot 'immaculately' produce its marginal product $\Delta Q/\Delta L$ of so-many widgets without using up some services of capital (and other intermediate goods summarized in K). This again raises the question of algebraic symmetry in the treatment of production. If neoclassical theory was to pay less attention to trying to co-opt the normative force of the imputation principle in MP theory, then it might follow its own assumption of cost-minimization. Given unit prices r for capital services and w for labour services, for each level of output Q_0 there is (under standard assumptions) a level of capital services $K_0 = K(Q_0)$ and a level of labour services $L_0 = L(Q_0)$ so that $Q_0 = f(K,L)$ is produced at minimum cost (figure 3).

Figure 3: Least cost amounts $K_0 = K(Q_0)$ and $L_0 = L(Q_0)$ needed to produce Q_0



If, say, labour L_0 is to be increased by one unit to $L_1 = L_0 + 1$, there is a minimum cost level of output Q_1 such that $L_1 = L(Q_1)$. Thus cost minimization requires that the other input, K in this case, also be increased to $K_1 = K(Q_1)$ so the extra output $\Delta Q = Q_1 - Q_0$ is not produced 'immaculately' or *ex nihilo* (figure 4).

Figure 4: Cost minimization implies no 'immaculate' marginal products



Thus we see that the actual (non-immaculate) marginal product of labour is a vector, not a scalar amount:

$$\text{Vector Marginal Product of Labour} = (\Delta Q, -\Delta K, 0)$$

where $\Delta K = K_1 - K_0$.⁹ In a perfectly analogous way, one can define the vector marginal product of capital.

In retrospect, one might ask about the scalar marginal (immaculate) product of labour $MP_L = \partial f(K,L)/\partial L$. If a marginal increase in labour is combined with a slightly more labour-intensive production process, using the same amount of K , then the increase in output would be MP_L . But that would in general take the firm off the least-cost path for output expansion so it is only a hypothetical or notional change.

This raises the question of why doesn't neoclassical economics follow out its own assumptions using the vector marginal products taken along the least-cost expansion path instead of the notional (immaculate) marginal products off that path? The answer seems to be that only the immaculate marginal products give the 'distribution of the product' or 'distributive shares' picture (with the 'exhaustion of the product' under constant returns to scale) – which can then be combined with the pseudo-application of the imputation principle to show that the competitive employment system satisfies 'the ethical proposition that an individual deserves what is produced by the resources he owns' (Friedman, 1976, p. 199).

7.4 A Stunning Success of Neoclassical Economics

No amount of staring at partial derivatives $MP_L = \partial Q/\partial L$ or $MP_K = \partial Q/\partial K$ will reveal the relevant difference between the responsible actions of persons and the non-responsible services of things that is the basis for the actual imputation principle 'from the juridical point of view' where 'Land and capital have no merit that they bring forth fruit; they are dead tools in the hand of man; and the man is responsible for the use he makes of them.' It is rather remarkable how so much of the economics literature that 'criticises' MP theory (Appendix A in Thurow, 1975; Chapter 6 in Keen, 2011) misses that fundamental point (i.e., can't find the R-word, 'responsibility'), and even accepts that MP theory *in theory* reflects the imputation principle. Even some of the most sophisticated philosophers writing about justice seem to confuse the pseudo-application of the imputation principle in MP theory with the actual principle.

'Accepting the marginal productivity theory of distribution, each factor of production receives an income according to how much it adds to output (assuming private property in the means of production). In this sense, a worker is paid the full value of the results of his labor, no more and no less. Offhand this strikes us as fair. It appeals to a traditional idea of the natural right of property in the fruits of our labor. Therefore to some writers the precept of contribution has seemed satisfactory as a principle of justice' (Rawls, 1971, p. 308).

Then these various 'critiques' of MP theory focus on the difficulties in actually defining and measuring marginal productivity, on the non-competitive nature of markets, on the vagaries of

⁹ Profit maximisation would then require that the value of the vector marginal product of labour be equal to the wage w . See Chapter 5: 'Are Marginal Products Created *ex Nihilo*?' (Ellerman, 1995) for the mathematical treatment.

supply and demand, and especially on the lack of justice in the given distribution of factor ownership (even including human talents).

'The marginal product of labor depends upon supply and demand. What an individual contributes by his work varies with the demand of firms for his skills, and this in turn varies with the demand for the products of firms. An individual's contribution is also affected by how many offer similar talents. There is no presumption, then, that following the precept of contribution leads to a just outcome unless the underlying market forces, and the availability of opportunities which they reflect, are appropriately regulated' (Rawls, 1971, p. 308).

It is a stunning success of the neoclassical 'science' of economics to get so many progressive and left-wing thinkers to accept the pseudo-imputation principle of MP theory as being correct in principle and then to only fuss about its empirical applicability and background conditions.

8. Analysis of the Employment Contract

The property theoretic question is *not* about the value-theoretic notion of 'distributive shares' since in fact the various input-suppliers do not appropriate shares in the *positive product* Q . There is also a dual metaphor about the output-demanders 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 dual metaphors duel only with each other.

There is in fact no legal imputation of the positive product to the input suppliers (i.e., input suppliers do not in fact sell outputs) and no imputation of the negative product to the output demanders (i.e., customers do not in fact pay off input liabilities). Moving beyond the 'deep' metaphors of neoclassical value theory to the 'shallow' legal facts, the whole product (positive plus negative products) is in fact legally appropriated by *one legal party* (residual claimant), the party who stands between the input suppliers and output demanders, and who pays for all the inputs and sells all the outputs of production.

The simple legal fact that one legal party legally appropriates all the positive product (produced outputs) and legally bears all the negative product (input liabilities) is not really controversial – although neoclassical theory has learned to always redirect attention from that total asymmetry to the symmetrical 'picture' of the distributive shares metaphor. The property-theoretic analysis of production changes the focus of normative questions from the value-theoretic 'distributive shares' questions to the basic property-theoretic question of 'Who is to be the whole product appropriator?' or 'Who is to be the firm?', e.g., Capital, Labour, or the State.

Since *all* who work in a production opportunity ('Labour' including managers) are de facto responsible for using up the inputs K to produce the outputs Q , i.e., for producing *Labour's product* $(Q, -K, 0)$,¹⁰ but only legally appropriate $(0, 0, L)$ in the employment system,

¹⁰ The summation or integral of Labour's vector marginal product $(\Delta Q, -\Delta K, 0)$ from 0 to L gives the same result as Labour's product $(Q, -K, 0)$. One could, of course, do the same formal summation for the vector marginal product of capital, but it would be without the same significance since the services of things are not responsible.

Labour is *de facto* responsible for but does not appropriate the difference, which is the whole product: $(Q, -K, 0) - (0, 0, L) = (Q, -K, -L)$ (see table 1).¹¹

Table 1 Imputation Principle Violation under the Employment System

Labour <i>de facto</i> responsible for	$(Q, -K, 0)$	= Labour's product
Labour legally appropriates	$(0, 0, L)$	= labour commodity
Labour responsible for but does not appropriate	$(Q, -K, 0)$ $- (0, 0, L)$ $= (Q, -K, -L)$	= whole product.

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 $(Q, -K, -L)$. Since Labour was *de facto* responsible for the whole product, the responsibility principle was violated by the employer's appropriation of the whole product.

The *fundamental theorem of property theory* (Ellerman, 2014) gives the two descriptive conditions:¹²

- *no-externalities condition* (i.e., all property transfers between parties are covered by consent), and
- *no-breach condition* (i.e., all voluntary contracts to transfer property are fulfilled by the transfer of the property from the possession of the seller to the buyer),

under which the invisible hand mechanism of property appropriation satisfies the juridical principle of imputation (imputes legal responsibility in accordance with factual responsibility).

It is the no-breach condition that is violated by the employment contract. The basic fact that connects the contractual mechanism and the imputation mechanism is that *things* (as opposed to persons) 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 fulfil 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. As per the fundamental theorem, 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 him- or herself (i.e., sells his or her own services) to person B (the 'employer'). There is no voluntary action to fulfil 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

¹¹ This provides the modern reconstruction of the old slogan: 'Labour's claim to the whole product' put forward by the 'band' of classical labourists such as Thomas Hodgskin and William Thompson. For the history of that school, see Anton Menger (1899) and particularly the Introduction by Foxwell (1899) as well as Lowenthal (1911) and Stark (1943). Although the classical labourists would hardly expect some other party to pay the costs of production in a cooperative or labour-managed enterprise, they were not clear that the negative product $(0, -K, -L)$ must always be included along with the positive product $(Q, 0, 0)$ in making 'Labour's claim to the whole product' $(Q, -K, -L)$.

¹² Historically, these are Hume's two conditions: '*transference by consent, and of the performance of promises*'. (Hume, 1739, Book III, Part II, Section VI, p. 526).

to 'fulfil' the employment contract is that the employee agrees to co-operate with the employer in a certain activity. But unlike the van case, 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. The employee's responsible agency is inherently inalienable (Ellerman, 2010b, 2015). Frank Knight (perhaps the most thorough defender of the current system of renting workers instead of owning them as property) thus has to represent the co-responsible co-operation of employer and employee as being like an employer employing a thing like a van or horse.

'It is characteristic of the enterprise organization that labor is directed by its employer, not its owner, in a way analogous to material equipment. Certainly there is in this respect no sharp difference between a free laborer and a horse, not to mention a slave, who would, of course, be property' (Knight, 1965, p. 126).¹³

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 labour contract for the sale of labour 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' labour 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 or *laissez-faire* mechanism works by non-action. The mis-imputation of the Invisible Judge is based simply on the legal authorities accepting the employees' co-responsible co-operation as 'fulfilling' the legal transfer so that there *seems* to be no breach to give grounds for intervention.

The employment contract is impossible to actually fulfil with the transfer of responsible actions from the seller (employee) to the buyer (employer). In what might be taken as a fraud on an institutional scale, 'an institutional robbery—a legally established violation of the principle on which property is supposed to rest' (Clark, 1899, p. 9) or as Proudhon put it simply 'property is theft', the responsible co-operation of the 'employees' is taken by the legal authorities as 'fulfilling' the labour contract which allows the employer to take the contractual position of the whole product appropriator. *That is the basic trick* in the employment system of renting human beings.

Since the contract for renting people is impossible to fulfil, it is invalid like the voluntary self-sale contract (to essentially take on the full-time role of a non-responsible instrument) which is already recognised as being invalid.¹⁴

Clearly this property-theoretic analysis of the employment contract has *nothing* – repeat *nothing* – to do with the size of the wage payment (which was never used in the analysis) so it is totally independent of the superficial exploitation theories of the neoclassical variety (paying less than the value of the marginal productivity of labour) or the Marxian

¹³ There is, of course, no difficulty in the legal authorities recognising the *de facto* co-responsible co-operation of employer and employee when they commit a crime together rather than produce widgets together:

'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, p. 612).

¹⁴ '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, p. 52 [his italics]).

variety (extracting more labour time than is embodied in the wages). The whole employment system of renting persons is a *property* system based on 'a legally established violation of the principle on which property is supposed to rest' that is established by virtue of the employment contract to rent human beings. It takes a property theory to criticise a property system, not a value theory which at best may show that 'wages are too damn low' – but which would thus not even be a critique of wage labour *per se*.

9. Workplace Democracy: the Alternative to the Employment System

If this neo-abolitionist proposal were accepted that the contract for the renting of human beings be recognised as invalid and be abolished, then production could only be organised on the basis of the people working in production (jointly) hiring or already owning the capital and other inputs they use in production.¹⁵ The market mechanism of appropriation would *then* correctly impute the legal responsibility to the *de facto* responsible party. The conservative thinker, Lord Eustace Percy, singled out that *de facto* responsible party in 1944:

'Here is the most urgent challenge to political invention ever offered to the jurist and the statesman. The human association which in fact produces and distributes wealth, the association of workmen, managers, technicians and directors, is not an association recognised by the law. The association which the law does recognise – the association of shareholders, creditors and directors – is incapable of production and is not expected by the law to perform these functions. We have to give law to the real association, and to withdraw meaningless privilege from the imaginary one' (Percy, 1944, p. 38; quoted in: Goyder, 1961, p. 57).

The legal members of the firm as a legal party would then be the people working in the firm. After abolishing both the owning and renting of persons, private property would finally be founded on 'the principle on which property is supposed to rest'. Such a firm is a *democratic firm* and the private property market economy of such firms is an *economic democracy*.¹⁶

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¹⁵ The current discussion of the obscene distribution of income and wealth in today's system of renting workers is analogous to the superficiality of analysing the previous system of owned workers just in terms of the resulting obscene distribution of income and wealth between the slave owners and slaves.

¹⁶ See, for example, Dahl (1985). The best examples today are probably the Mondragón industrial cooperatives in the Basque region of Spain (see Oakeshott, 1978; Ellerman, 1984; Whyte and Whyte, 1991).

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