

**Locating Class:
Production, Appropriation, Distribution and Circulation and Surplus Value in a Social Accounting
Matrix**

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INTRODUCTION

This paper presents a Marxian approach to macroeconomics from a class analytic perspective. The objective of the paper is to clarify and revive Marx's unique contribution to this area of economic thought, as well as to provide a new basis for pursuing a distinctly Marxian macroeconomics. In this paper I rely heavily on two different innovations in economic theory, one from inside the Marxian tradition and one from outside of it. The first is the Marxian class theory first put forward by Resnick and Wolff in *Knowledge and Class* (1987). Their work initiated a new line of inquiry in Marxian thought, and the growing list of topics that have been the subjects of class analysis is a testament to the richness of this contribution.¹ But new ideas answer some questions while posing others. *Knowledge and Class* and *Bringing It All Back Home* (Fraad, Resnick, and Wolff, 1994) present innovative class analytic theories of enterprise, the state, and the household but no clear statement of how these disparate sites relate to one another in such a way as to be capable of economic reproduction. Providing that statement is one of the objectives of this paper.

The second source that I draw on here is the literature on Social Accounting Matrices (SAMs). SAMs are not themselves models *per se*, but rather can be used as frameworks for organizing macroeconomic data, as the basis for computable general equilibrium models and simulations, or as a format for presenting economic theory (Pyatt, 1988). They will be used in this paper exclusively for the latter purpose. At a very general level a SAM can be said to bring together the production, circulation (income distribution and commodity exchange), and disposition (consumption or accumulation) of goods and services in an economy into a consistent framework. Production, circulation and disposition are the three basic moments in what I will call economic activity. Because this technique presents these processes as mutually constitutive, in the sense that each of the three moments are specified with reference to the

others, it is consistent with Marx's emphasis on the macroeconomy as a "unity".² I also argue that when properly specified a SAM has many similarities with Marx's reproduction schemes from volume two of *Capital*, though they contain significantly more information as well.

The most basic contribution of this paper is to show how the production, appropriation and distribution of surplus value—what Resnick and Wolff call the capitalist class process—can be made explicit in an extended model of economic reproduction. In order to focus attention on this point the analysis is simplified whenever and wherever possible. Consequently much of the complexity of contemporary class analysis has to be suppressed for the sake of clarity and simplicity of exposition. This is the cost incurred here to be understood, but these restrictions should not be interpreted as a necessary part of this approach. The paper consists of three main sections. Section I provides the reader with a brief introduction to the construction and use of SAMs. Section II develops and presents a Marxian model. The image of economic activity as an 'organic whole' (Marx's words, 1973, p. 100) defined by complex mutual interaction between the constituent elements is the organizing principle of the simple Marxian model developed there. Section III uses the Marxian model to interpret a well known, but little understood, piece of Marx's work: his own *Tableau Economique*.

I. A PRIMER ON SOCIAL ACCOUNTING MATRICES AND ECONOMIC MODELS

Table 1 presents the most basic conceptual SAM.³ It is conceptual or schematic because it lists what

¹ Gibson-Graham, Resnick, and Wolff (2000) and (2001) compile some of these class analytic studies.

² See Marx's Introduction to the *Grundrisse* (1973), esp. subsection two "The General Relation of Production to Distribution, Exchange, Consumption".

³Table 1 and the SAM's in the remainder of this paper, are organized somewhat differently from the conventions which have become established in the SAM literature. But the construction employed here is analagous to the early formulation developed by Stone (1961) and the first SAM produced by Stone and Brown in Cambridge University (1962)—the work which coined the term "Social Accounting Matrix". It is also similar to the earliest published applied study outside of Cambridge done by Pyatt, *et.*

activity (consumption, investment, saving, etc.) the entries in the matrix signify rather than specific numeric entries, and serves here as a purely heuristic device. Typically a SAM contains either numeric or algebraic entries and can be presented in either an aggregated or disaggregated form. In the aggregated form the elements of Table 1 would be sums representing the total for that activity in the population. In a disaggregated version the intersection of each account of Table 1 would contain a matrix, representing the actions of different sub groups in that population.

Table 1: Schematic Aggregated Social Accounting Matrix (closed economy)

	PRODUCTION	CURRENT: EXPENDITURE	ACCUMULATION	Σ
PRODUCTION	Intermediate	Consumption	Investment	Total Industrial Output
CURRENT: INCOME	Wages + Profits	Transfers of Current Income	0	Wages + Profits + Transfers
ACCUMULATION	0	Saving	Flow of Funds	Savings + Financial Transfers
Σ	Total Industrial Outlay	Consumption + Transfers + Saving	Investment + Financial Transfers	

Taken as a whole every SAM is a matrix. Like an input-output (IO) transactions table, each entry in the matrix registers transactions between the accounts or sites listed on the entry's column and row heading. Each entry represents expenditure when considered in its column context and revenue in its row context. However, a SAM differs from an IO transactions table in important ways and contains significantly more information. In particular a SAM contains information regarding circulation and relates the final uses of commodities to the generation and circulation of income in ways that an IO model does not. For example, a standard (open or closed) IO model solves for the total output of production, including the

al. (1973). The interested reader can follow the development of the SAM conventions to where they now stand in Pyatt and Thorbecke (1976), Pyatt, Roe and Associates (1977), and Pyatt and Round (1979 and

intermediate inputs into the productive industries, necessary to satisfy an exogenously specified level of final demand (consumption, accumulation, etc.). The information necessary for such an IO model is contained in only the first row and column of the SAM in Table 1. Every SAM contains within it an IO transactions table but represents a significant extension of this model by explicitly accounting for the circulation of income and thereby making consumption endogenous.⁴

For simplicity Table 1 has only three accounts: Production, Current Income/Expenditure, and Accumulation. These are sufficient for a rudimentary representation of the three basic moments of economic activity. These accounts are designed to depict a simple ‘circular flow’ model. Value added in production forms the current income of the economy, and is shown in the matrix as “Wages and Profits” at the intersection of row two and column one. This is the revenue source for expenditures described by the Current Expenditures column (Consumption, Transfers of Current Income, and Saving). Saving represents revenue into the Accumulation account (row three), which finances Investment. Consistency in the matrix is achieved by imposing the constraint that the sum of the *i*th row must equal the sum of the *j*th column. So, for example, revenues from Production (sum of row one) must equal the payments made by Production (sum of column one). The ‘circular flow’ design makes the SAM unique among linear-type models by making the mediation by circulation of value added in production and the final use of output explicit. Additional accounts, such as for government and the foreign sector, can be added as needed for a more detailed depiction of an economy.

From ‘Society’ to ‘Sites’

The first step towards a more theoretically specific model is to introduce the concept of sites. As a matter

1985). Early applications and development of the SAM approach is surveyed in Pyatt and Round (1977).

of convention economic models typically recognize three broad categories of sites: business enterprises, households, and governments. In order to minimize the degree of complexity only enterprises and households are considered in this paper.

The distinction between households and enterprises is common to Marxian and non-Marxian theories, and both agree that the interaction between them is the basis of a theory of economic reproduction. But the structure of this relationship is, as I hope to show here, a matter of fundamental disagreement and contestation between Marxian and non-Marxian theories. The contradictory positions that these theories take on this issue results from the different and antagonistic theories of value and distribution that they employ. This difference is a fissure running through the history of economic thought at least since Adam Smith's *Wealth of Nations* (1776). As is well known the *Wealth of Nations* contained two different and incompatible theories of value (Dobb, 1973, p.p. 112-120), a labor theory of value accepted and developed by Ricardo and then Marx, and one that Sraffa (1951) named the "Adding-up" theory of value which viewed land, labor and capital as independent sources of value. The 'Adding-up' theory of value formed the basis of the economics of Say, Malthus, Bastiat, Carey, and was later developed by Jevons, Walras, Menger, and the followers of their marginalist economics. In this paper I refer to all theories deriving from the 'Adding-up' approach to value, whether marginalist or not, as trinitarian.

The two different and incompatible theories of the *source* of value give rise to two different and incompatible *claims* to the value created in production, and it is these claims that provide a basis for the different theories of distribution. The labor theory of value gives rise to the concept of a surplus produced by labor over and above what they receive in compensation, which is subsequently appropriated and

⁴ Pyatt, Roe and Associates (1977) present the first formal statement of this and discuss the relationship between a SAM and an IO model.

distributed to the groups who consume or accumulate this portion of the social income. Resnick and Wolff (1987, p. 20) refer to the production, appropriation and distribution of surplus as the class process. Under exploitative forms of the class process the individuals or groups who appropriate and distribute this surplus are different from those who produce it, and they distribute it in order to secure the conditions enabling this exploitation to take place (119-122). While this has been the source of continuing debate between Marxian and non-Marxian theories, the argument of this paper is that it also has implications for a theory of economic activity and reproduction which has not generally been recognized. Value and distribution theories are the basis for statements establishing the categories and organization of economic activity. Any presentation beyond the rudimentary one presented thus far requires them. The remainder of this section develops this idea by examining the specific ways that the dominant non-Marxian model of economic activity derives from the trinitarian theory of value and distribution.

Central to the trinitarian understanding of the relationship between the enterprise and the household is the argument that the enterprise is nothing more than the place where the various productive factors are brought together and put to use producing commodities. Harris (1975) describes the neoclassical vision of the relationship between enterprise and the household in this way,

The capitalist firm is seen merely as an intermediary between the individuals as suppliers of factors and the individuals as *rentiers* consuming their lifetime income (p. 329).

The factors are the property of households and the enterprise becomes their custodian when employing them in the production process. New value is created by the factors as a result of their ‘factor services’, the total of which represents value added in production. Since, as the theory contends, value added is the contribution of the different factors, their owners should receive it as compensation for their use—remuneration to each in proportion to their contribution. In a market based capitalist economy the revenues from the sale of the commodities accrue to the enterprise, which then distributes them to the

owners of the various factors of production as ‘factor incomes’: wages for labor; dividends or interest for equity and finance capital; rents for real and intellectual property. The factor payments are the monetary equivalent of the contribution that each factor has made to the final product, and the sum of the factor incomes is the income available from the current period’s production (‘current income’).

The key point is that in this vision of the economic process the enterprise plays no other role than that of facilitator; it benignly brings together and stewards the productive resources of numerous individuals that would otherwise remain uncoordinated and unproductive, and expedites the realization of the product of these resources for the various owners. Pre-marginalist theories of this type (Say, Bastiat, Carey, etc.) took the value adding capacity of the non-labor factors as a premise and appealed variously to fairness, natural rights, reason, pragmatism etc. to justify the claim to non-labor factor incomes. Marginalist theory likewise assumes the value adding capacity of capital but does not rely on such ‘normative’ claims for its theory of distribution—indeed one of marginalism’s principal contributions is exactly on this point (Stigler, 1968). It simply proposes that in a system of free markets and property rights this *will* be the case, albeit only if certain conditions are present (perfect information, costless recontracting, etc.).

Euler’s Theorem, and additional conditions, solve the so-called ‘Adding-up Problem’ (Robinson, 1978) and allows marginalist theory to conclude that the total product is completely exhausted by paying each factor according to its marginal contribution. Furthermore, in a system of competitive markets the only equilibrium solution is one in which each factor is remunerated precisely in accordance with its marginal contribution. There can be no other durable outcome. Under such a system, according to marginalist theory, technology and the market mechanism provide the logic for income distribution, and enterprise is afforded no discretionary role.

In either case the basic argument remains the same. There is no portion of the revenues from production

which is not the direct result of the productive service provided by one of the different factors, hence the role of the enterprise in income distribution is simply to return the product of the different factors to their owners in the form of factor payments. Enterprise simply mediates between the owners of productive factors and the consumers of goods and services by implementing the available technology, and serving as the conduit whereby revenues from the consumers are distributed to the rightful recipients.

The conclusion to be drawn from marginalist theory is that income distribution is a technical matter governed by engineering datum and nothing more. This is the logical extension of the pre-marginalist trinitarian approach which Marx (1967c, p. 830) characterized as “the conversion of social relations into things”. In either approach enterprise is reduced to the passive instrument of the household. It employs such productive factors as the household chooses to provide; it responds to the household’s desire for consumption by providing products; it absorbs household savings and uses them to form new capital assets by accumulating investment goods.

It is a curious result that marginalist theory, whose *sine qua non* is choice, should reduce enterprise to the level of a mechanism, but this finds its antithesis in the role which is attributed to the household—this is the repository of choice and thereby causality. Since all current income belongs to households they make all expenditure decisions, including the decision to either consume or save. Households may transfer a portion of their income to another household, either voluntarily or under duress, but this does not change to total quantity of income available. Hence the disposition of the economic product falls solely within the purview of the household.

In keeping with the preceding discussion, Table 1a is a revised version of the SAM in Table 1 and now incorporates the role that the different sites play in economic activity. The SAM presented here is

premised on a trinitarian theory of value and distribution. Enterprise appears twice: once in its role as the site of Production, and once as the site of Accumulation. It is excluded categorically from having a current income and hence from making expenditures thereof. Households are identified with receiving Current Income and disposing of it (Current Expenditure). They supply and hence receive the incomes of labor and non-labor factors, and choose between consumption, income transfers, or saving. Household saving forms the revenue for the Accumulation account for Enterprise and, as mediated by the Flow-of-Funds, is used by Enterprise for Investment—the purchase of goods for use in production in future periods. Table 1b reproduces Table 1a in matrix notation. Letting the number of enterprises or enterprise sectors be n and the number of households or household types be k , the matrices in 1b are defined as:

Z = $[z_{ij}]$ an $n \times n$ matrix of inter-industry flows.

Y = $[y_{ij}]$ a $k \times n$ matrix listing the payment of wages and profits from the enterprises to the households.

K = $[k_{ij}]$ an $n \times k$ matrix listing the purchase of commodities by the households from the enterprises.

T = $[t_{ij}]$ a $k \times k$ matrix listing the transfers of income between household groups.

H = $[h_{ij}]$ an $n \times k$ matrix listing the savings from households to financial intermediaries.

I = $[i_{ij}]$ an $n \times n$ matrix listing the purchase of commodities for investment purposes by enterprises.

F = $[f_{ij}]$ an $n \times n$ matrix listing the flow of funds between financial intermediaries and enterprises.

Households receive the current income, which consists of labor and non-labor factor payments (Wages and Profits) from the enterprises. This is registered as the first entry of the Current Income row.

Households can expend their income on either Consumption or Saving, as shown in the Current Expenditure column. Income transfers between households are also possible. Enterprises produce commodities by purchasing inputs from other enterprises, and their output commodities are purchased either by households for consumption or by other enterprises as investment goods. Enterprises finance investment by receiving the savings of households via financial intermediaries.

Table 1a: Schematic Aggregated Social Accounting Matrix (closed economy)

		PRODUCTION	CURRENT: EXPENDITURE	ACCUMULATION	Σ
		ENTERPRISE	HOUSEHOLD	ENTERPRISE	
PRODUCTION	ENTERPRISE	Intermediate	Consumption	Investment	Total Industrial Output
CURRENT: INCOME	HOUSEHOLD	Wages + Profits	Transfers of Current Income	0	Wages + Profits + Transfers
ACCUMULATION	ENTERPRISE	0	Saving	Flow of Funds	Savings + Financial Transfers
Σ		Total Industrial Outlay	Consumption + Transfers + Saving	Investment + Financial Transfers	

Table 1b: Schematic Aggregated Social Accounting Matrix (closed economy)

		PRODUCTION	CURRENT: EXPENDITURE	ACCUMULATION	Σ
		ENTERPRISE	HOUSEHOLD	ENTERPRISE	
PRODUCTION	ENTERPRISE	Z	K	I	y_1
CURRENT: INCOME	HOUSEHOLD	Y	T	0	y_2
ACCUMULATION	ENTERPRISE	0	H	F	y_3
Σ		y_1'	y_2'	y_3'	

Notes:

Tables 1 and 1a assume:

- 1) Production is assumed to occur only in enterprises.
- 2) All factors (labor, industrial and finance capital, real and intellectual property) used in production are the property of households.
- 3) This economy is 'closed' in the sense that it excludes transactions with sites beyond its borders.
- 4) All savings are used to finance capital accumulation by enterprise.
- 5) All activity by enterprises is assumed to be 'productive'.

Throughout this paper the following notational conventions are employed: scalars are rendered as uppercase, no bold, or lowercase, no bold, italic; matrices as uppercase, bold; vectors as lowercase, bold.

The i th household in Table 1 or 1a faces the following constraint,

$$\sum_{j=1}^n y_{ij} + \sum_{j=1}^k t_{ij} = \sum_{i=1}^n k_{ij} + \sum_{i=1}^k t_{ij} + \sum_{i=1}^n h_{ij} \quad (1)$$

Its expenditures for consumption, transfers, and saving (RHS of eq. 1) are constrained by its revenues from factor incomes and transfers from other households.

The constraint facing the enterprise is somewhat more complex than the household because it is the site of both production and accumulation. From row one of Table 1 we see that Production revenues accrue to the enterprises from the sale of Intermediate and Investment goods to other enterprises, and from the sale of Consumption goods to households. Row three indicates that Accumulation revenues result from the inflow of Savings from the Household sector. Flows of Funds transfers between enterprises are also possible. The total revenues of the enterprise are,

$$\text{Total Enterprise Revenue} = \sum_{j=1}^n z_{ij} + \sum_{j=1}^k k_{ij} + \sum_{j=1}^n i_{ij} + \sum_{j=1}^k h_{ij} + \sum_{j=1}^n f_{ij}$$

The Production expenditures of the enterprise consist of purchases of intermediate goods and primary factors as inputs for production. Accumulation expenditures consist of Investment through the accumulation of final commodities and Flow of Funds transfers. The total expenditures of the enterprise are,

$$\text{Total Enterprise Expenditure} = \sum_{i=1}^n z_{ij} + \sum_{i=1}^n y_{ij} + \sum_{i=1}^n i_{ij} + \sum_{i=1}^n f_{ij}$$

Setting total Enterprise revenues equal to expenditures and rearranging gives the Enterprise constraint,

$$\left[\sum_{j=1}^n (z_{ij} + i_{ij}) + \sum_{j=1}^k k_{ij} \right] + \sum_{j=1}^k h_{ij} + \sum_{j=1}^n f_{ij} = \sum_{i=1}^n (z_{ij} + i_{ij}) + \sum_{i=1}^n y_{ij} + \sum_{i=1}^n f_{ij} \quad (2)$$

In short, the enterprise is constrained to the buying and selling of commodities (including factor services)

in order to produce other commodities and to form capital assets. It has no other function, and it discriminates amongst households based solely on their endowment of productive assets. Even if an enterprise wanted to engage in some other activities it would be unable to for the simple reason that payments to the owners of the factors exhausts its net revenue leaving no resources to support other activities. Marginal productivity theory solved what was then known as the ‘Adding-up’ problem by putting the enterprise into Euler’s straightjacket—a virtuous straightjacket according to this theory, but a straightjacket nonetheless.

This concludes the arguments for this section. The objective was to show that accounting matrices have a unique pedagogic value in illustrating the process of economic reproduction. The second point that I have tried to make here is that theories of value and distribution impact how we understand economic activity and, consequently, our model and representation of this activity in a SAM. The next section develops a model and accounting matrix that is constructed according to Marxian theory. The objectives are to create a uniquely Marxian class analytic theory of economic activity, cast it in the form of an accounting matrix, and contrast it with the one developed thus far.

II. A MARXIAN MODEL

Following Resnick and Wolff (1987), I take class as Marx’s distinctive insight and the distinguishing feature of Marxian theory. Notice that the trinitarian model developed previously categorically denies the existence of surplus, and in so doing precludes any notion of class and class analytic theories. The objective here then is to produce a different economic model, one that not only recognizes and makes class explicit, but makes it the organizing principle of a Marxian model of economic activity. Doing so enables us to ‘see’ class at individual sites, in the relations between sites, and in the functioning of economic activity as a whole.

The most basic version of the model proposed here is exemplified by the SAM in Table 2 “A Marxian Class Analytic Accounting Matrix”. In order to allow for a direct comparison between the SAM in Table 2 and those in the previous section assumptions 1-4 from Table 1 and 1a are retained:

- 1) Production is assumed to occur only in enterprises.
- 2) All factors (labor, industrial and financial capital, real and intellectual property) used in production are the property of households.
- 3) This economy is ‘closed’ in the sense that it excludes transactions with sites beyond its borders.
- 4) All savings are used to finance capital accumulation by enterprise.

To simplify exposition a fifth assumption is added,

- 5) No financial intermediation, (e.g. savings are passed directly from savers to borrowers) which results in the elimination of the Flow of Funds.

In order to limit the scope of the model depicted in Table 2 a sixth assumption is added:

- 6) Only capitalism, one of the different class processes potentially present in a social formation, is considered here.

This restriction is added for several reasons. Perhaps most importantly is to maintain continuity with the earlier model, which, though its originators may or may not acknowledge it, is a model of a capitalist economy. In order to be clear how the Marxian model is different from the trinitarian one it must set out to describe the same class form.

The last explicit restriction placed on the Marxian model is that the previous assumption that all enterprises are productive is modified in the following way:

- 7) There are no wholly ‘unproductive’ enterprises (i.e. no purely financial, merchant, etc. enterprises), but unproductive activities may be present within otherwise productive enterprises.

These assumptions allow for the construction of the most rudimentary, but probably the most common, Marxian depiction of a capitalist economy. The simplicity allows for emphasis to be placed on what I wish to foreground here, namely class. I would likely agree with those who will criticize this approach

Table 2: A Marxian Class Analytic Accounting Matrix (Closed Economy)

		PRODUCTION	CURRENT		ACCUMULATION	Σ
		ENTERPRISE	ENTERPRISE	HOUSEHOLD	ENTERPRISE	
PRODUCTION	ENTERPRISE	Inter-Industry Flows	Commodities for 'Faux Frais'	Consumer Goods Consumption	Capital Goods Accumulation	Total Production Output
CURRENT	ENTERPRISE	Surplus Value	-	0	0	Enterprise Current Income
	HOUSEHOLD	Wages of Productive Laborers	a) Dividends, Interest, Rent b) Wages of Unproductive Laborers	-	Variable Capital Accumulation	Household Current Income
ACCUMULATION	ENTERPRISE	0	0	Household Saving	-	Sources of Accumulation Funds
Σ		Total Production Outlay	Enterprise Current Expenditure	Household Current Expenditure	Uses of Accumulation Funds	

Table 2a: A Marxian Class Analytic Accounting Matrix (Closed Economy)

		PRODUCTION	CURRENT		ACCUMULATION	Σ
		ENTERPRISE	ENTERPRISE	HOUSEHOLD	ENTERPRISE	
PRODUCTION	ENTERPRISE	C	K^e	K^h	I^c	q₁
CURRENT	ENTERPRISE	S	-	0	0	q₂
	HOUSEHOLD	V	S^p	-	I^v	q₃
ACCUMULATION	ENTERPRISE	0	0	H^σ	-	q₄
Σ		q₁'	q₂'	q₃'	q₄'	

These matrices are defined as:

C = $[c_{ij}]$ an $n \times n$ matrix of inter-industry flows.

S = $[s_{ij}]$ an $n \times n$ matrix recording the appropriation of surplus by the enterprises.

V = $[v_{ij}]$ a $k \times n$ matrix listing wage payments by the enterprise to the households.

K^e = $[k_{ij}^e]$ an $n \times n$ matrix listing the purchase of commodities by enterprises as part of the *faux frais*.

S^p = $[s_{ij}^p]$ a $k \times n$ matrix recording the distribution of surplus from the enterprises to the households.

K^h = $[k_{ij}^h]$ an $n \times k$ matrix listing the purchase of commodities by households for consumption.

H^σ = $[h_{ij}^σ]$ an $n \times k$ matrix listing the savings by households.

I^c = $[i_{ij}^c]$ an $n \times n$ matrix listing the purchase of commodities for accumulation.

I^v = $[i_{ij}^v]$ a $k \times n$ matrix listing the purchase of labor power from households to expand employment.

for the injustice that it does to one or another of their particular interests. But at this early state of development the emphasis on class as the *differentia specifica* of this model makes this narrowly circumscribed characterization a necessary choice.

Turning now to what is distinctive about the Marxian SAM in Table 2, an important difference from the earlier approach is the role of the enterprise in economic activity. Instead of simply catering to the desires of households, Enterprise—in this case capitalist Enterprise—is now understood as no less an active participant in economic activity than is the household. In Marxian theory capitalist enterprises contain a unique position in the capitalist class process, that of the appropriator and distributor of surplus. Resnick and Wolff refer to this as the “fundamental class position” of the appropriator of surplus (1987, pp. 166-70). In Marx’s words, the capitalist who occupies the fundamental class position as appropriator of surplus is,

... the person who at first holds the whole surplus-value in his hands no matter how it may be distributed between himself and other people under the names of rent, industrial profit, and interest (1972, p. 471)

This is one of the roles traditionally ascribed to ‘the capitalist’ within a capitalist enterprise. At times Marx refers to a “functioning capitalist” and at others to an “industrial capitalist” as the occupant of the fundamental class position within the enterprise as the appropriator and distributor of surplus, and throughout the remainder of this paper I will use these two terms interchangeably. There is, however, no necessity for this to be an individual. In a modern capitalist corporation, for example, the board of directors fulfills the role of the industrial capitalist. But for present purposes what is important is to recognize that this class position is within the enterprise itself and the obligation of whomever occupies it is to the enterprise. The industrial capitalist receives the surplus generated by capitalist production at the enterprise and uses it to secure the conditions necessary to enable this exploitation to take place. While the industrial capitalist in the enterprise initially receives one form of the income generated by the

production process, households receive another. Wages are paid directly from the enterprise to households that provide productive labor—a simple exchange of labor power for a wage.

The capital/labor relation therefore results in the occupants of two different class positions initially receiving the incomes generated by production: (1) wages are paid directly to households for providing productive labor to enterprises, and (2) surplus value realized for the enterprise by the sale of commodities is appropriated by the industrial capitalists. The appropriator of surplus stands at the juncture between the production and disposition of a portion of the social income. They are the first to receive it and they distribute it to subsequent recipients. Throughout much of *Capital* Marx's discussion of the recipients of surplus is focused on the groups which classical political economy paid almost exclusive attention to: landlords as recipients of rents, the owners of enterprise as the recipients of industrial profits, and bankers or moneylenders as the recipients of interest payments. He also devotes considerable attention to merchants and “commercial workers”, as well as discussing supervisors, managers, and others to a lesser extent, describing them as unproductive laborers whose incomes derive from distributed shares of the surplus from industrial capitalists. He lists the services that these unproductive workers provide as among the “*faux frais*” (false costs) of capitalist production, and treats their labor as forms of consumption rather than production (1967b, p. 131-33). Finally, he mentions “ideological” groups in passing (1967a, p. 446), citing government officials, priests, lawyers, and members of the military, though he does not analyze their roles in any significant detail.

Because the enterprise is the first to receive and expend the surplus value, an Enterprise sector is listed in the Current Income/Expenditure sections of the SAM. This depicts the movement of surplus value from the appropriation at an enterprise to its distribution to the subsequent recipients, thereby making this aspect of the circulation of surplus value explicit. In contrast to the trinitarian approach, where the

enterprise is merely a conduit that funnels factor payments to the providers of factor services, in the Marxian approach surplus value constitutes a current income which the enterprise exploits from productive workers and uses to perpetuate this exploitation. Current expenditures of this revenue—distributions of surplus—can be grouped according to three broad types and are described in the SAM accordingly: (i) the consumption of commodities by the enterprises for the purposes of carrying on those unproductive tasks that Marx identifies as the *faux frais* or false costs of the economic system (\mathbf{K}^e); (ii) the payment of dividends, interest and rents to owners of capital, land, copyrights, etc. (\mathbf{S}^p); and (iii) wages for laborers engaged in the type of unproductive activities discussed above (\mathbf{S}^p). The expenditure of surplus value for commodities associated with the *faux frais* of capitalist production is an element of the final demand for goods and services in this model economy. This stands in direct contrast with non-Marxian theories which treat all actions undertaken by enterprises as productive, and hence considers all commodities purchased by the enterprises as intermediate goods. The expenditures of surplus value by an enterprise to households for providing property, unproductive labor, or other services represent a transfer of surplus value appropriated by the enterprise from the productive laborers who produce it to the receiving households who receive it as income. Resnick and Wolff (1987, p. 118-120) refer to these income transfers as “subsumed class payments”.

The quantity of surplus value realized by the enterprise is determined by its revenues and costs. The Production activities of Enterprise generate total revenues equal to the quantity of intermediate and final commodities produced and sold; their production requires payments for intermediate goods and labor power. Surplus value (\mathbf{S}) can then be defined in the SAM as a residual of the revenue of the enterprise from the sale of commodities minus their direct production cost. Direct production cost for the enterprise

is the sum of its inter-industry purchases⁵ (\mathbf{C}) and wage payments (\mathbf{V}) to productive laborers. Revenues accrue to the enterprise from the sale of final commodities, the demand for which consists of three parts. Consumption includes both the enterprises' consumption of commodities (\mathbf{K}^e) in order to carry out unproductive activities (*faux frais*) and the household's demand for consumer goods (\mathbf{K}^h). The third element of final demand in this model economy is the accumulation of capital goods by the various enterprises (\mathbf{I}^c).

Presenting the Marxist theory of capitalist enterprise in this way has several advantages. Any accounting matrix is a type of a model that describes the way a theory understands the production and distribution of commodities as well as the associated income flows in an economy. This is what differentiates it from a simple accounting statement. I believe that the most basic requirement of a Marxian model is to represent the class process in its conception of economic activity and this requires making the appropriation and distribution of surplus explicit. No Marxian model of the macroeconomy that I am aware of has previously accomplished this.

The circulation of surplus value and the interrelation between the accounts in the SAM can be demonstrated using a technique developed by Thorbecke and Jung (1996, p 282-87). This requires that the SAM be partitioned into endogenous and exogenous accounts. Typically accounts for capital accumulation, government, and the foreign sector (when present) are considered exogenous. The Production and Current accounts are taken as endogenous. In the case of Table 2 the Accumulation account represents the sole exogenous sector, and is consolidated into vectors of exogenous injections \mathbf{x}_i . With these modifications Table 2 or 2a can be written as the following system of equations:

⁵ The inter-industry flows in Table 2 are of different from those in Tables 1 and 1a because a portion of what would previously have been identified as intermediate goods are now represented as *faux frais*.

$$\begin{bmatrix} \mathbf{q}_1 \\ \mathbf{q}_2 \\ \mathbf{q}_3 \end{bmatrix} = \begin{bmatrix} \mathbf{T}_{11} & \mathbf{T}_{12} & \mathbf{T}_{13} \\ \mathbf{T}_{21} & 0 & 0 \\ \mathbf{T}_{31} & \mathbf{T}_{32} & 0 \end{bmatrix} + \begin{bmatrix} \mathbf{x}_1 \\ \mathbf{x}_2 \\ \mathbf{x}_3 \end{bmatrix} \quad (3)$$

Where \mathbf{T}_{ij} is the matrix at the intersection of the i th row and the j th column of Table 2a (e.g. $\mathbf{T}_{11} = \mathbf{C}$, etc.). A coefficient matrix is formed using the endogenous portion of the SAM, with the coefficients are defined as,

$$\mathbf{A}_{ij} = \mathbf{T}_{ij} \hat{\mathbf{q}}_i^{-1} \quad (4)$$

Where $\hat{\mathbf{q}}_i^{-1}$ denotes the inverse of a diagonal matrix $\text{diag}(\mathbf{q}_i)$. This yields the following portioned coefficient matrix:

$$\mathbf{A}_n = \begin{bmatrix} \mathbf{A}_{11} & \mathbf{A}_{12} & \mathbf{A}_{13} \\ \mathbf{A}_{21} & 0 & 0 \\ \mathbf{A}_{31} & \mathbf{A}_{32} & 0 \end{bmatrix} \quad (5)$$

Using this coefficient matrix the system of equations given by (3) can be written as,

$$\mathbf{q} = \mathbf{A}_n \mathbf{q} + \mathbf{x} \quad (6)$$

Which is written out in full as,

$$\begin{aligned} \mathbf{q}_1 &= \mathbf{A}_{11} \mathbf{q}_1 + \mathbf{A}_{12} \mathbf{q}_2 + \mathbf{A}_{13} \mathbf{q}_3 + \mathbf{x}_1 \\ \mathbf{q}_2 &= \mathbf{A}_{21} \mathbf{q}_1 + \mathbf{x}_2 \\ \mathbf{q}_3 &= \mathbf{A}_{31} \mathbf{q}_1 + \mathbf{A}_{32} \mathbf{q}_2 + \mathbf{x}_3 \end{aligned} \quad (7)$$

or

$$\begin{aligned} \mathbf{q}_1 &= (\mathbf{I} - \mathbf{A}_{11})^{-1} \mathbf{A}_{12} \mathbf{q}_2 + (\mathbf{I} - \mathbf{A}_{11})^{-1} \mathbf{A}_{13} \mathbf{q}_3 + (\mathbf{I} - \mathbf{A}_{11})^{-1} \mathbf{x}_1 \\ \mathbf{q}_2 &= \mathbf{A}_{21} \mathbf{q}_1 + \mathbf{x}_2 \\ \mathbf{q}_3 &= \mathbf{A}_{31} \mathbf{q}_1 + \mathbf{A}_{32} \mathbf{q}_2 + \mathbf{x}_3 \end{aligned} \quad (7.1)$$

The system of equation (7.1) can be used to show the circular flow mechanism through which a change in the exogenous aspects of the system impacts the endogenous relations. An increase in spending on constant capital (\mathbf{x}_1), for example, generates an initial increase in production of $(\mathbf{I} - \mathbf{A}_{11})^{-1} \mathbf{x}_1$. This increased production generates surplus value equal to $\mathbf{A}_{21} \mathbf{q}_1$, and since $\mathbf{x}_2 = 0$ this is the initial impact on

\mathbf{q}_2 . The surplus value generated by the initial increase in production is appropriated by the various Industrial Capitalists according to \mathbf{A}_{21} . They disperse $\mathbf{A}_{12}\mathbf{q}_2$ for commodities to carry out the unproductive activities and distribute $\mathbf{A}_{32}\mathbf{q}_2$ to the occupants of the subsumed class positions. The initial increase in production also increases wage payments by the amount $\mathbf{A}_{31}\mathbf{q}_1$. Both $\mathbf{A}_{31}\mathbf{q}_1$ and $\mathbf{A}_{32}\mathbf{q}_2$ are incomes for the Household sector and serve to increase the demand for final commodities through an increase in \mathbf{q}_3 . This increase in demand for final commodities by the Enterprise and Household sectors generates further increases in production via the well-known Leontief matrix multiplier $(\mathbf{I}-\mathbf{A}_{11})^{-1}$, which leads to further increases and a series of dampening cycles. The ultimate cumulative effect of the initial exogenous change on the various accounts depends upon the rate at which income leaks from the system, which in the model economy given in Table 2 results only from savings by households.

Another advantage of the model of economic activity presented in Table 2 and 2a is that it locates the appropriation and distribution of surplus as a moment in economic activity and thereby offers the potential to explore the relationship between the class and nonclass (i.e. consumption, accumulation, saving, etc.) moments of this activity. Presenting the relationship between the enterprise and the household this way also separates the income that the household receives from Enterprise into two distinct components: income received for the sale of labor power for productive purposes (\mathbf{V}), and income received which is a distribution of appropriated surplus value (\mathbf{S}^P). Any household potentially has either or both of these income sources. Separating them makes possible an explicit analysis of the effects on the Household from changes in either the capital/labor relation or the relative distributions of surplus by the enterprises.

Consider, for example, an increase in the rate of exploitation as measured by a decrease in wages received by the Household sector from Enterprise relative to the quantity of surplus value that the Enterprise sector

appropriates. Because the Household sector receives income both in the form of wages and subsumed class payments this implies *prima facie* that the ability of the Enterprise sector to sell its entire output of final goods and services may not necessarily be constrained. A further elaboration of the composition of the household sector and the effects of income distribution on final demand is necessary to consider this question. An entire body of Marxist literature on economic crises derives from the (often tacit) assumption that wages are received by one portion of the population which *must* consume them to survive, while surplus value is received by another group who *must not* consume them (e.g. save and accumulate) to survive—leading to the conclusion that an inevitable tendency towards realization crises exists. This conclusion is only one of many possible outcomes that this approach suggests. Placing class in the context of economic reproduction provides the ability to characterize not only the specific ways that surplus value is produced, appropriated and distributed in a given economic formation but also the ways in which this shapes and interacts with the entire process of economic reproduction. This is a distinctive contribution of this approach to Marxian economics.

From Class to Class Positions

Up to this point class has been examined in the context of aggregated Enterprise and Household sectors. The final step in illustrating this class analytic approach to Marxian analysis is to formally introduce the multiple different class positions discussed thus far by disaggregating these sectors. Doing so adds several different dimensions to the understanding of class relations. In particular, explicitly distinguishing different sub-groups makes it possible to illustrate the issue of exploitation. All productive laborers are exploited in a capitalist economy, but a SAM based model can take the issue of exploitation one step further. It makes it possible to illustrate how the exploitation of the occupants of one class position (e.g. productive laborers) serves as the source of income for the occupants of other class positions (e.g. subsumed classes and unproductive laborers). This model of the macroeconomy is

intended to exemplify how in the course of economic activity some individuals perform surplus labor and produce surplus value while others ultimately receive it and obtain their subsistence this way—and the latter may even include some who also labor, but labor unproductively in the service of the capitalist economy. In this way exploitation forms the basis of a different way—a uniquely Marxian way—of understanding social relations between different groups in society.

When the household sector is disaggregated to allow for multiple different class positions it is possible to consider both the struggle between productive workers and the enterprise over surplus value, and the potential for struggle amongst different social groups competing for shares of the appropriated surplus value. Class struggle can therefore be understood as pervading the whole social structure, not simply the point of production:

Tensions and struggles between occupants of positions within the fundamental class process must be examined alongside of and in interaction with tensions and struggles between occupants of positions within the subsumed class process. Class struggles are understood to occur over the dimensions and forms of the subsumed class as well as of the fundamental class process (Resnick and Wolff, 1987, p. 122).

A few simple equations will serve to make this disaggregation clearly, beginning with the Current account constraint of the Enterprise. Setting the current revenues of the i th enterprise in Table 2 equal to its current expenditures forms this constraint equation:

$$\sum_{j=1}^n s_{ij} = \sum_{i=1}^n k_{ij}^e + \sum_{i=1}^k s_{ij}^p \quad (8)$$

As an initial formulation, limit the potential subsumed class payments to wages of unproductive laborers (s_{lab}^p), plus the three conventional forms of payment to property owners: dividend payments (s_{div}^p), interest payments (s_{int}^p), and rents (s_{rent}^p). The simplest definition of subsumed class payments consist then of these four potential constituent parts. The disaggregated form of equation (8) is then written as,

$$\sum_{j=1}^n s_{ij} = \sum_{i=1}^n k_{ij}^e + \sum_{i=1}^k (s_{lab_{ij}}^p + s_{div_{ij}}^p + s_{int_{ij}}^p + s_{rent_{ij}}^p) \quad (8.1)$$

The right-hand side of Equation (8.1) indicates that an individual enterprise may expend surplus value for: the purchase of goods for unproductive activities (consumption by the enterprise), or subsumed class payments to the k households or household types for unproductive labor, dividends, interest, or rents. The subsumed class payments are received by the Household sector, and form one of two possible income sources for this sector. If the amount of surplus value is held constant, each of the different demands on this surplus compete for a share against the other. Presenting the enterprise in this way enables a new and fruitful way to understand social relations and economic behavior. Consider, for example, what this implies about some relatively recent episodes in the economic history of the United States. The ‘downsizing’ of corporate middle management prevalent during the first half of the 1990’s, or the late 1990’s exuberance of businesses for information technology to eliminate ‘back office jobs’ and reduce retailing or wholesaling costs can be explained as efforts to reduce expenditures on unproductive labor (s_{lab}^p) and the other costs associated with unproductive activities (k^e). These strategies can be seen as efforts by the occupants of one certain class positions (equity holders, financiers, and rent recipients) to improve their positions at the expense of others (managers and commercial workers).

Turning next to the Household sector, the current revenues and expenditures of each household form the constraint equation:

$$\sum_{j=1}^n v_{ij} + \sum_{j=1}^n s_{ij}^p = \sum_{i=1}^n k_{ij}^h + \sum_{i=1}^n h_{ij}^\sigma \quad (9)$$

The left-hand or revenue side of this equation tells us that any individual household potentially has revenues from either the sale of labor power for productive purposes (v) to any of the n enterprises or enterprise groups, or from the distributions of surplus (s^p) from them. The class analytic interpretation of

this equation is that the household potentially occupies a fundamental class position by laboring productively in return for wages, or a subsumed class position as the recipient of distributions of surplus by Enterprise. The right-hand or expenditure side of equation (9) indicates that the household may expend its income for the consumption of commodities provided by enterprise, a nonclass purchase of final goods and services, or may save it. Due to the assumption that the only potential use for savings is capital accumulation, saving would serve to secure either a new subsumed class position vis-à-vis one of the enterprises, or an expansion of an existing one.

As was done with equation (8), equation (9) can be expanded to make its class components explicit by subdividing the subsumed class revenues of the household into wages of unproductive labor, dividends interest, and rents. This yields,

$$\sum_{j=1}^n v_{ij} + \sum_{j=1}^n (s_{lab_{ij}}^p + s_{div_{ij}}^p + s_{int_{ij}}^p + s_{rent_{ij}}^p) = \sum_{i=1}^n k_{ij}^h + \sum_{i=1}^n h_{ij}^\sigma \quad (5)$$

This equation makes explicit the multiplicity of class positions that members of a household, or even an individual, may potentially occupy. The approach traditionally taken by Marxists is to identify different households with one of these class positions. An advantage of the traditional approach is to focus attention on exploitation as the source of the incomes for owners of capital goods, financial capital, and real or intellectual property. A convincing case can be made that this is also the approach that Marx takes throughout much of *Capital* (though he largely abandons it in volume three), and this is the approach taken in this paper when dealing with Marx's *tableau economique* in section III. But this can also be seen as a particular assumption and not as a requirement to theorize society along class lines. One may choose to theorize in this way for political or empirical reasons, out of a perceived fidelity to Marx's texts, or other reasons, but these reasons should be recognized and acknowledged. Consider, for example, a productive laborer who also owns equity in capitalist industrial corporations through a pension plan. In

such a case this person, and by extension their household, occupies both the fundamental class position of an exploited productive laborer and a subsumed class position by virtue of their pension fund. In this case—not an improbable one I might add—it would be a choice by the analyst to identify this individual with one of these different class positions. Critics of Marxism have also ignored the potential variability of class positions, and in so doing reached perverse conclusions regarding what a progressive economic agenda might entail. Consider, for example, the claims by the business writer Peter Drucker (1976) of an “Unseen Revolution” of “Pension Fund Socialism” resulting from the substantial holding of corporate equity by employee pension funds and the resultant flow of equity payments to retired workers. For Drucker the idea that individuals who had formerly been productive laborers might come to own a significant portion of corporate equity and receive the resultant equity payments constitutes a transition to socialism. What the approach presented here suggests, however, is that Drucker’s transition to socialism is merely a change in the composition of the households receiving equity payments and not a change in the basic economic structure of society itself.

This concludes the discussion of Tables 2 and 2a and this section of the paper. The objective has been to show how the Marxian concepts of class and class exploitation can be modeled explicitly at the macroeconomic level. This results in a method of locating the class process within an extended multi-sector scheme of reproduction. This is something that Marx himself sketched with the *tableau economique* that he created while drafting *Capital*, but the *tableau* was not included in the published volumes, and it has remained an enigmatic part of his legacy ever since. A number of writers have commented on Marx’s *tableau*, but none have been able to successfully relate it to the bulk of Marx’s economic writings. Section III uses the SAM-based method presented thus far to interpret Marx’s *tableau* in order to both illustrate it and to reconsider an overlooked but valuable piece of Marx’s work from a class analytic perspective.

III. MARX'S TABLEAU

In a letter to Engels dated July 6, 1863 Marx included his well known, but little commented upon, economic table with this request:

. . . will you take a reasonably close look at the enclosed 'Tableau Economique' which I am substituting for Quesnay's table and let me know your objections, if any. It embraces the whole process of reproduction (Marx and Engels, 1985, p. 485).

He goes on to note that his table "figures in one of the last chapters of my work by way of recapitulation".

Since it was at this time that Marx was drafting *Capital* one can surmise that this table was initially intended to be contained in one of the concluding chapters of this book. It appears from a review of their letters in the *Collected Works* (Marx and Engels, 1975-) that Engels never replied to Marx on the matter. Perhaps he found Marx's *tableau* as difficult to comprehend as he found Quesnay's original, which he referred to as, ". . . an insoluble riddle of the sphinx to all modern political economy" (Engels, 1987, p. 15). But this is only the most well known version of the *tableau* that he worked out as the conclusion to his *Manuscripts of 1861-1863* (Marx, 1988-94)—Marx's second draft of *Capital* (Dussel, 2001). Upon completion of these manuscripts, in July of 1863, he created what is apparently the final version of his economic table (his fifth overall) and mailed it to Engels asking for his comments (Marx and Engels, 1985, pp. 483-87 and illustration).⁶

Tsuru (1942, p. 368) proposes that Marx's complex *tableau* was replaced in *Capital* by the more succinct equations ('reproduction schemes') that figure prominently in the volume II, part III, "The Reproduction and Circulation of the Aggregate Social Capital". But this is an interpretation that misses the cohesiveness and consistency of Marx's argument throughout the three volumes of *Capital*. I argue that

the relation between Marx's *tableau* and *Capital* is more significant than has previously been acknowledged as it contains a concise schematic representation of the class theoretic argument that he develops throughout the book. Using his reproduction schemes Marx solves several technical questions. That analysis is an element of the *tableau* but it is only a part. What Marx does in the *tableau* is he presents both the quantitative analysis of economic reproduction that he examines in detail in his reproduction schemes, and a basic class analysis of the reproduction process using the conventional class positions of classical political economy, which would later form the subject of *Capital* volume three, part VII, "Revenues and Their Sources". Those issues that Marx would treat independently in volumes two and three of *Capital* are analyzed together in the earlier draft. This analysis is summarized in the *tableau*. Marx makes reference to this diachronic development several times in *Capital*. For example, in volume one when he first addresses the issue of reproduction he states,

In his description of the process of reproduction, and of accumulation, Adam Smith, in many ways, not only made no advance, but even lost considerable ground, compared with his predecessors, especially by the Physiocrats. Connected with the illusion [created by circulation] mentioned in the text, is the really wonderful dogma, left by him as an inheritance to Political Economy, the dogma, that the price of commodities is made up of wages, profit (interest) and rent, *i.e.*, of wages and surplus value. . . . This point will be further investigated in the seventh part of Book iii (1967a, p. 591, ff 1).

And when he does return to the issue of reproduction in *Capital* volume three,

It is seen that the problem presented here [simple reproduction] has already been solved in the consideration of reproduction of the total social capital—Book II, Part III. We return to it here, . . . , because surplus-value had not been developed there in its revenue forms: profit (profit of enterprise plus interest) and rent, and could not, therefore, be treated in these forms . . . (Marx, 1967c, p. 836).

Marx's analysis of reproduction and his class theory are intimately related with one another. The diachronic development of *Capital* has led many readers to overlook this relationship, and as a consequence considerable attention has been focused on Marx's reproduction schemes in isolation from

⁶ The version of Marx's *tableau* that he sent to Engels appeared in English translation at least as early as 1936 (Marx and Engels, 1936, pp. 153-56). The portion of *The Manuscripts of 1861-1863* which contains

the role of class in the reproduction process. In his *tableau* Marx analyzes the process of simple economic reproduction as a “unity” using a class analysis. It portrays how a hypothetical quantity of production circulates among and is consumed by the occupants of the different class positions that he specifies. In so doing he shows schematically how the different moments of this complex movement of goods and monetary flows can be understood both quantitatively and in specifically class terms. He shows quantitatively how the product of his two departments can satisfy the demands of the productive system itself, serve as income for the various class positions, and provide commodities for consumption. The diagram and explanation that Marx provides also describe the set of social relations necessary for this to occur and the class positions that these entail. It is a synthetic argument (a “recapitulation”) containing many of the concepts that Marx later develops diachronically throughout the three volumes of *Capital*.

Table 3 recasts Marx’s *tableau* in a class analytic accounting matrix of the type developed in the preceding section. Since Marx’s tableau depicts the most basic case of simple reproduction (i.e. accumulation is excluded), Table 3 retains only Production and Current accounts and does not have an accumulation account. As before, production occurs only in enterprises, but Marx divides productive enterprises into two types: “Category I” and “Category II”. Category I consists of enterprises which produce exclusively “Means of Subsistence”, which Marx defines as “. . . *everything* that goes into the *consumption fund* each year (or might *without accumulation*, which is *excluded* from the table, go into the consumption fund)” (Marx and Engels, 1985, p. 485, italics in original). Category II enterprises produces only “Machinery and Raw Materials” or “. . . commodities that constitute *constant capital*, i.e. re-enter the process of reproduction in the form of raw materials and machinery” (p. 485, italics in original).⁷ In his *tableau* Marx ignores unproductive activities, as well as the *faux frais* costs associated with them, and

Marx’s work on his *tableau* was not published in English translation until 1994 (Marx, 1988-94).

⁷ These definitions reverse the ones Marx uses in *Capital* to designate Departments I and II.

focuses only on that set of class positions prevalent in the economic discourses of that time: workers, industrial capitalists, entrepreneurs, moneylenders (“Monied Men”), and landlords. Consequently Table 3 shows zeros where the *faux frais* costs would be registered in the SAM, and does not contain entries for merchants, managers, clerical workers, etc.

Table 3: Marx's Tableau Economique as an Accounting Matrix

		PRODUCTION		CURRENT						Σ	
		ENTERPRISE		ENTERPRISE		HOUSEHOLDS					
		Cat.I	Cat.II	Industrial Cap. (I)	Industrial Cap. (II)	Workers	Entrep- reneurs	Monied Men	Landlords		
PRODUCTION	ENT.	Category I	0	0	0	0	233.33	233.33	116.67	116.67	700
		Category II	400	533.33	0	0	0	0	0	0	933.33
CURRENT	ENT.	Ind. Capitalist (I)	200	0	-	-	0	0	0	0	200
		Ind. Capitalist (II)	0	266.67	-	-	0	0	0	0	266.67
	HOUSEHOLD	Workers	100	133.33	0	0	-	-	-	-	233.33
		Entrepreneurs	0	0	100	133.33	-	-	-	-	233.33
		Monied Men	0	0	50	66.67	-	-	-	-	116.67
		Landlords	0	0	50	66.67	-	-	-	-	116.67
Σ		700	933.33	200	266.67	233.33	233.33	116.67	116.67		

Notes: Marx does not indicate the relative shares of surplus value for the different subsumed classes in his *tableau*. The distribution of surplus shown here is based on the following assumed distributive shares: Entrepreneurs ½, Monied Men ¼, Landlords ¼.

Workers and industrial capitalists occupy the two fundamental class positions. Industrial capitalists appropriate the surplus value produced by workers in the enterprises and then pay this out to the occupants of the three subsumed class positions. The Industrial Capitalist receives no income for their function, though they may receive income from the enterprise if they also occupy a subsumed class position. An ambiguity in Marx's text implies that he may have considered it common for some individuals to occupy both the positions of industrial capitalist and entrepreneur⁸, though there is no necessity for this to be the case. Workers' income is received as wages from the enterprise in return for their labor power. Entrepreneurs own the enterprises' equity, for which they receive distributions of surplus as industrial profit, though at least some portion of the capital of the enterprise is borrowed from "Monied Men" who also receive distributions of surplus in the form of interest. Landlords likewise receive a share of the surplus value in the form of rents.

Revenues, Expenditures and Their Sources

Since any household may have multiple fundamental and subsumed revenues, the choice of how to disaggregate the household sector is not unambiguous. There are a variety of ways to do this, but in keeping with the orthodox Marxist approach I assume here that each household occupies only one fundamental or subsumed class position and hence receives only one type of income. This allows for the Household sector to be disaggregated according to the four groups ("Workers", "Entrepreneurs", "Monied

⁸On p. 486 Marx writes, "The surplus value . . . is split up into *industrial profit* (*commercial* included), and further into *interest*, which the industrial capitalist pays in money, and rent, which he likewise pays in money. This money paid out for industrial profit, interest and rent, flows back (indicated by descending lines) since the product of class I is bought in return for it. Hence all the money laid out by the industrial capitalist within class I flows back to him, while 300 of the product, 700, is consumed by workers, *entrepreneurs*, monied men and landlords." Clearly this indicates that Marx differentiates between the class positions of industrial capitalist and entrepreneur, and further that he considers industrial profit to be the entrepreneur's income. However, on p. 487 Marx notes, ". . . consumption (by the industrial capitalists themselves, the monied men, and the landlords)", with no mention of the entrepreneur.

Men”, and “Landlords”) that Marx specifies as receiving income in his discussion of the *tableau*. Since my interpretation of Marx’s *tableau* is that industrial capitalists receive no income for performing the task of appropriating and distributing surplus, there is no household group specifically for this class position.

The SAM representation of Marx’s *tableau* describes the macroeconomic value flows in Marx’s hypothetical economy, and shows the sources of revenues and class positions of the various sectors as well as the uses of these revenues. Row one describes the distribution of the commodities produced by Category I enterprises. The output of these producers has a total value of £700, which the enterprises realize through the sale of commodities to the various households. According to column one, in order to produce this output the Category I enterprises make £400 in inter-industry purchases (constant capital) from Category II producers, and purchase £100 of labor power (variable capital) from Worker households. This £500 capital investment yields surplus value in the amount of £200. The origin of the £200 surplus value is the exploitation of the productive laborers who receive £100 in wages but add value in the amount £300—which replaces the £100 originally received by them and adds an additional £200 which is appropriated by the Category I Industrial Capitalists. Marx describes the origin of the surplus value in this way: “In the case of this relationship between variable capital and surplus value it is assumed that the worker works 1/3 of the working day for himself and 2/3 for his *natural superiors* (italics original, p. 486).” Once appropriated by the Industrial Capitalists of Category I this surplus value is subsequently distributed to the Entrepreneur, “Monied Men”, and Landlord households as described by column three. In his *tableau* Marx does not indicate the relative shares of surplus received by these subsumed classes. Table 3 assumes a distribution of one-half to the Entrepreneurs and the remaining half split between the Monied Men and the Landlords. The value flows involving the Category II enterprises is analogous to that of Category I, so description is omitted here, with one exception. Since Category II enterprises produce only commodities which serve as inputs for the production of other commodities,

these producers realize the value of their output from their sales to Category I producers and from sales amongst the Category II producers themselves. This is shown in row two of the SAM.

Turning next to the Household sector, it was noted earlier that each household is assumed to have only one type of income: wages for Worker households and shares of surplus value for subsumed class households which are distributed to them by the Industrial Capitalists. Thus household purchases are constrained by the incomes they receive from various fundamental and subsumed class positions they occupy. Both the Worker and subsumed class households may receive income from either the Category I or II enterprises. Row six, for example, indicates that Entrepreneur households receive £100 from Category I enterprises and £133.33 from Category II enterprises. They use these revenues to finance their purchase of £233.33 worth of consumer goods from the Category I enterprises (column six).

Expenditures by both the Worker and the subsumed class households serve to realize the capital and surplus value for the enterprise and allow the cycle to repeat itself again. In describing this circular flow relation between the households and the enterprises in the *tableau* Marx states for the first time the expenditure-reflux of money mechanism which has come to be known as the “widow’s cruse” argument that ‘capitalists earn what they spend, and workers spend what they earn’ developed by Keynes (1930), Kalecki (1935), and Kaldor (1955-56). For example, Marx states,

The surplus value of 200 in its general form=*profit*, which, however, is split up into *industrial profit* (*commercial* included), and further into *interest*, which the industrial capitalist pays in money, and rent, which he likewise pays in money. This money paid out for industrial profit, interest and rent, flows back . . . since the product of class I is bought in return for it. Hence all the money laid out by the industrial capitalist within class I flows back to him . . . (italics original, p.486).

This is a point that Marx would return to later in volume II of Capital:

So far as the entire capitalist class is concerned, the proposition that it must itself throw into circulation the money required for the realization of its surplus-value

(correspondingly also for the circulation of its capital constant and variable) not only fails to appear paradoxical, but stands forth as a necessary condition for the entire mechanism (1967b, p. 421).

Marx's conception of a monetary economy is evident in his discussion of the *tableau*, perhaps for the first time in his writings.

CONCLUSION

This paper demonstrates how to use class theory as the basis for a uniquely Marxian model of macroeconomic value flows. Doing so provides a coherence to Marx's work which has eluded most interpretations. Perhaps more importantly is that it opens up an entirely new approach to many topics in economics and makes class a vehicle for theorizing them.

The obvious next step in the progression of the theory presented in this paper is to use the Marxian class analytic SAM as the basis for formal modeling. As it stands now the SAM and the equations derived from it all have the status of identities. Explicitly casting the relationships that are used in constructing the SAM in mathematical form would allow for a structuralist-type Marxian macroeconomic model.

Another obvious progression in the work presented here would be to reduce the number of restrictions placed on it. Removing these in particular would be especially productive: (i) the assumption of a closed economy, (ii) the absence of a government sector, and (iii) restriction of the analysis to only a capitalist class process. If the population is a nation then opening the model to transactions with sites other than the population under consideration allows a class analytic theory of international trade. This would likely be a fruitful way to pursue a Marxian theory of imperialism and globalization. Of particular interest to the author is what might follow from relaxing restrictions on the number of forms of the class process potentially present in a population. This would open the way to a class analytic theory of social formations. The relative presence or absence of these forms, and the relationship between, could be

analyzed with only minor modifications to this framework.

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