GREAT GRANDFATHER MARX,
UNCLE SRAFFA,
AND RADICAL POLITICAL ECONOMY

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robinhahnel@comcast.net
The Argument in Brief

• For too long those dis-enamored with the economics of competition and greed have had only two choices:

1. Continue to use a formal model based on the labor theory of value in a Hegelian philosophical framework as Marx developed it in *Capital* to justify one’s opposition to capitalism. Or...
2. Abandon the Marxian framework as outdated and risk losing a critical evaluation of capitalism.

• My next book is dedicated to providing the next generation fighting against the destructive effects of financialized, neoliberal, environmentally destructive capitalism a third choice: A modern, profoundly radical version of Sraffian economics that is also suited to analyzing environmental sustainability.
Radical Political Economy for Non-Experts

• There are many books and readers which cull wisdom from different heterodox schools: Early attempts, with many subsequent editions over the years, include Edwards, Reich, and Weisskopf, *The Capitalist System* (Prentice Hall 1972), and Hunt and Sherman, *Economics: An Introduction to Traditional and Radical Views* (Cotler 1972). More recently is my *The ABCs of Political Economy*, (Pluto, 2st edition 2002, 2nd edition 2014).

• Marxian economics: There are many abbreviated, accessible presentations of *Das Capital* by authors who present the formal logic with their own particular twist: Paul Sweezy, Ernst Mandel, Duncan Foley, Ben Fine, John Weeks, David Harvey, Charles Barone to name only a few.

• I’m just finishing a book that compares a radical version of Sraffian economics with formal Marxian economics that is accessible to undergraduates and a general audience. It makes the case for replacing popular versions of formal Marxian theory with a popular version of Sraffian theory that is every bit as radical and critical of capitalism.
Why Great Grandfather Marx?

• Marx was not the first, but remains the greatest critic of capitalism, and richly deserves his place in history.
• Marx opened our eyes to how the economic sphere of social life exerts a powerful influence over the political, cultural, and reproductive spheres of social life.
• Marx gave intellectual support to workers’ instinct that capitalism systematically exploits them.
• And Marx reminded us that life beyond capitalism, where workers manage and coordinate their economic activities themselves, democratically, fairly, and efficiently, is a real possibility.
Why Great Grandfather Marx?

• However a great deal has happened since Marx died in 1883. There are 133 years of world history -- some of which, such as the Soviet perversion of the socialist vision, and capitalism’s recovery from the Great Depression, would have come as great surprises to Marx.

• And there have been new intellectual discoveries as well, some of which, such as proof of the Frobenius-Perron theorem in mathematics, and modern, egalitarian, philosophical theories of distributive justice, provide us with intellectual tools unavailable to Marx.

• It is time to acknowledge that Marx’s attempt to fashion a formal economic theory of price and income determination in capitalism based on a “labor theory of value,” and elaborate a Hegelian “critique” of capitalism can now be surpassed... while acknowledging our “unpayable debt” to Great Grandfather Marx as our greatest pioneer.
Why Uncle Sraffa?

• Sraffa provided a theory of income distribution and prices in the “classical tradition” based on an analysis of production of an economic surplus that is superior to formal Marxian theory.

• But Sraffa published as little, on as few subjects, as Marx published volumes on a great many subjects!

• So Sraffa will always remain a minor intellectual figure compared to Marx. However, in the one area Sraffa addressed – price and income determination in capitalism -- Sraffa did surpass Marx.

• Moreover, since 1960 when *Production of Commodities by Means of Commodities* was published, a number of distinguished “Sraffian” economists have used modern mathematical tools to elaborate an intellectually rigorous version of Sraffian theory which surpasses “formal” Marxian economic theory in every regard.
How Is Sraffian Theory Better?

• Sraffian theory is devoid of embarrassing inconsistencies which plague Marxian formal theory, which apologists for capitalism exploit.
• Because it uses familiar economic and philosophical concepts -- rather than a conceptual apparatus abandoned long ago by all except Marxists – Sraffian theory is more intelligible to economists, philosophers, and lay audiences today.
• Sraffian theory and the “Fundamental Sraffian Theorem” show more clearly why capitalists are parasites living off the work of others than does Marxian theory and the “Fundamental Marxist Theorem.”
• Marxian theory misleads us to search for non-existent crises which distracts us from focusing attention on actual sources of crisis in capitalism.
• Unlike the Marxian labor theory of value which is ill-suited to incorporating inputs from “nature” into our formal analysis, the Sraffian framework easily accommodates natural resources and rents.
• Finally, recent developments extend Sraffian theory to facilitate a rigorous analysis of environmental throughput, formulate sufficient conditions for achieving environmental sustainability, and sort out the “sense” from the “nonsense” in the steady-state and de-growth movements.
Marx or Sraffa? Prices 1

- Marxian theory starts with technology, derives labor values, and then must “transform” these labor values into what Marxists call “prices of production” which are consistent with equal rates of profit in all industries. In other words the process is: \{A, L, w_s\} \rightarrow V \rightarrow P
  where \(w_s\) stands for a subsistence wage rate.

- Sraffian theory derives prices consistent with equal rates of profit in all industries directly from technologies and a given real wage: \{A, L, w_a\} \rightarrow P
  where \(w_a\) stands for any wage rate workers manage to achieve.

- Of course it is possible to go from \(V \rightarrow P\). Since \(P\) is a relative price vector while \(V\) is a vector of absolute values, there is one degree of freedom when performing the transformation. This has given rise to different “solutions” to the transformation problem depending on choice of a numeraire. And much ink has been spilled among Marxist economists debating over which choice of a numeraire is “more consistent” with Marx’s argument, or intent, which choice “better illustrates” some valuable lesson about how capitalism functions, etc.

- But the question is: Why bother? If we can derive prices of production directly from technologies for any real wage -- as Sraffian theory demonstrates we can -- why bother first to calculate labor values, only to have to go to the trouble of deriving a correct set of prices starting from labor values?
Marx or Sraffa? Prices 2

• Before citing Occam’s razor and declaring discussion closed because prices under capitalism can be explained without referring to labor values, and are not equal to labor values in any case, we should consider if there is any reason why beginning with labor values on our way to explaining prices might be insightful.

• Rationale 1: In capitalist economies values originate first, and subsequently become transformed into prices, i.e. our intellectual transformation reveals something about the actual process of price formation in capitalist economies.

• Rebuttal: This rationale requires that financial capital must *constantly* flow from capital intensive industries to labor intensive industries in order to equalize rates of profit in all industries. There is no evidence that this happens. If anything the exact opposite happens, and only over much longer periods of time. Moreover, the only reason we need to conjure up such a non-existent flow is that we started from the obviously incorrect assumption that goods *initially* tend to sell according to their labor values under capitalism.
Marx or Sraffa? Prices 3

• Rationale 2: A transformation from value prices to prices of production occurs when a pre-capitalist economy Marx called “simple commodity production” is transformed into a capitalist economy, i.e. our intellectual transformation mirrors a hypothetical or historical transformation from one economic system to another.

• Rebuttal: This argument has much more to recommend it. One important thing to understand about different economic systems is why they generate different price signals even if their technologies, endowments, and preferences are the same. So as long as we do not attempt to use labor values to explain prices in capitalist economies, there is no reason they may not be helpful in explaining price formation in some other pre-capitalist economic system.
Marx or Sraffa? Prices 4

• Rationale 3: Labor values are necessary because otherwise the origin of profits will remain a mystery.

• Rebuttal: Values are not necessary to explain the origins of profit because the Fundamental Sraffian Theorem (FST) explains the origins of profits as well or better than Morishima’s Fundamental Marxian Theorem (FMT) without reference to values. (More on this in a moment)

• Rationale 4: Capitalism is best understood by studying production first and exchange second, and values are best suited to understanding the former, while prices of production are only necessary to understand the latter.

• Rebuttal: Sraffian theory analyzes production, and the “economic surplus” without recourse to values which are not only redundant, but misleading. Dom(A) < 1 is a rigorous measure of the extent to which the economy can generate a physical surplus.
Marx or Sraffa? Profits 1

• Marx believed he had discovered the answer to the mystery of where profits come from even when capitalists must pay for all inputs according to their labor values and sell their outputs according to their labor values.

• Marx argued that the answer lies in one special commodity capitalists buy, labor power, which has the unique ability to produce more value when used than the number of hours it takes to produce it, and therefore capitalists have to pay for it.

• Michio Morishima (1974) provided a formal representation of this explanation of the origin of profits in what became known as the “fundamental Marxian theorem” (FMT): Iff the rate of exploitation (of labor) is positive will the profit rate be positive.

• There is no problem with Morishima’s proof of the FMT. However, there are three problems with the Marxian explanation of profits as deriving from the exploitation of one input to production, labor power.
• 1. As in the case of prices, it turns out that labor values are not necessary to explain profits, i.e. they are redundant.

• 2. It also turns out that the choice of labor power as the input capitalists “exploit” is arbitrary since any other basic input can be used to tell the same story. The implication that only one input to production, labor, is “exploitable” is also misleading. In fact capitalists price by marking-up over the cost of every input they buy, not only labor.

• 3. And finally, the Marxian explanation of profits can be misleading with regards to predicting the effects of technological change on the rate of profit in the economy. (More on this later)
Marx or Sraffa? Profits 3

• The Fundamental Sraffian Theorem (FST) explains the origins of profit without resort to the LTofV: Iff workers are denied all of the surplus goods they produce will the profit rate be positive.

• One can prove that the rate of profit is positive iff every basic input is “exploited” when we choose to define values embodied in terms of that input, i.e. the choice of the input labor power is arbitrary.

• If you believe profits come from exploiting only one input, labor, you can easily be deceived into believing there must be a TRPF as capitalists engage in “capital deepening” -- whereas the Okishio theorem proves this cannot be the case.

• For the curious: Yes: FMT ↔ FST (See theorem 22 in Hahnel 2017). This is because dom(A+bL) < 1 is both necessary and sufficient for both the FST and the FMT to be true.
Marx or Sraffa? Profits 4

• Instead of searching for an input which is magically capable of “expanding value” during production, it turns out that reality is much simpler: It is the productivity of the economy after wages are paid that allows for positive profits.

• It is because workers are denied part of the surplus goods they produce that profits are positive.

• There is no need to elaborate a labor theory of value to make this point; no need to define a complicated technical ratio defined in terms of labor values, \((1 – V_b)/V_b\); and no misleading identification of one input in particular that holds the key to the origins of profit, when in fact every input could be used to tell the same story.

• Sraffian theory identifies the actual surplus of goods workers produce which capitalists manage to expropriate, and establishes a strong *prima facie* case that those who do no work, but nonetheless consume part of the physical surplus others produce, are parasites.
Marx or Sraffa? Technical Change 1

• Marxists and Sraffians agree that if and only if a new technology reduces costs of production will profit maximizing capitalists adopt it. And also agree that after a technical change is adopted by all in an industry there will be a general adjustment in relative prices to eliminate super profits in the innovating industry, and once again yield a uniform rate of profit throughout the economy.

• After which, there is a parting of the ways in the Sraffian and Marxian analyses of technical change.

• All Sraffians recognize the validity of the Okishio theorem, which lays to rest any concerns that capital deepening will reduce the rate of profit in the economy if the real wage is held constant.

• Some Marxist economists persist in futile attempts to resuscitate a “tendency for the rate of profit to fall,” which have all been thoroughly rebutted.
Marx or Sraffa? Technical Change 2

• Marxist economists have been willing to accept that Adam Smith’s second invisible hand does work, i.e that profit maximizing capitalists can be trusted to always and only adopt technical changes which increase economic productivity.

• Whereas Sraffians have demonstrated that capitalists cannot be trusted to always serve the social interest with regard to adopting and rejecting new technologies.

• The higher the rate of profit and lower the wage rate, the more likely it becomes that capitalists will commit both sins of omission – fail to adopt capital-using, labor-saving technologies that are more productive – and sins of commission – adopt labor-using, capital-saving technologies even though they are less productive. (See Roemer 1981 *Analytical Foundations* )

• And using a Sraffian framework it is possible to measure precisely how much any technical change in any industry increases or decreases overall labor productivity: $\rho(l)$, the percentage change in overall labor productivity in the economy is equal to $(1 - \beta')$ where $\beta'$ is the dominant eigenvalue of the matrix $(A' + \bar{b}L')$. (See Hahnel 2016 RRPE)
Lacking a formal framework that facilitates accounting for inputs from the natural environment and focuses entirely on how much labor time it takes to produce things, some “ecological” Marxists have scoured Marx’s voluminous writings to find a few passages where he conjectured that capitalism would cause what they have labeled a “metabolic rift” between humanity and nature, and treat environmental problems as one of the “crises” that inevitably plague capitalist economies.

Citing the master himself -- “Accumulate, accumulate! That is Moses and the prophets!” these “ecological Marxists” argue that because capitalism is all about accelerating economic growth it must be incompatible with environmental sustainability, as if this were obvious. (David Harvey (1996), James O’Connor (1998), Joel Kovel (2002), John Bellamy Foster (1994, 2000, 2002, 2009), Paul Burkett (2006), and Jason Moore (2015).

Unfortunately, the claim that a continual increase in the growth of capitalist accumulation of surplus value (which is what Marx postulated) is impossible on a finite planet does not survive the sniff test. Those who make the claim fail to realize that value is not throughput, carelessly applying reasoning to value as if it were throughput, and, in effect, are guilty of assuming their conclusion.
Sraffian theory easily incorporates inputs from nature into its explanation of prices, wages, profits, and rents: \((1+r)pA + wL + uT = p\). (See theorem 19 in Hahnel 2017)

Sraffian theory facilitates rigorously measuring what ecological economists call environmental throughput: \(N = H[I-A]^{-1}\) where \(N\) is the vector of “nature values” analogous to the vector of “labor values,” and tells us how many units of “nature” are used up both directly and indirectly to produce a unit of each good.

Sraffian theory facilitates rigorously measuring the rate of change of throughput efficiency stemming from any technical change in any industry: \(\rho(n)\), the percentage change in throughput efficiency is equal to \((1 – \alpha’)\) where \(\alpha’ = \text{dom}[A’+ \tilde{\partial}H']\). (See theorem 20 in Hahnel 2017)
And because we can rigorously measure both the percentage change in labor productivity and the percentage change in throughput efficiency in a Sraffian framework, it is possible to stipulate a sufficient condition for environmental sustainability assuming the number of hours worked in every industry remains the same:

As long as $\rho(l)$, the rate of growth of labor productivity, does not exceed $\rho(n)$, the rate of growth of throughput efficiency, environmental throughput will not increase.

A Sraffian treatment of the environment demonstrates that environmental sustainability reduces to whether or not increases in throughput efficiency keep pace with increases in labor productivity, or, as environmental economists put it, on whether or not we can sufficiently “de-couple” growth of output from growth of throughput.

Which allows us to sort out the “sense” from the “nonsense” in the steady-state and de-growth literatures.
Marx or Sraffa? A Moral Critique

• In a different talk I would explain why I believe that neither Marxist theory, nor Sraffian theory as it has been traditionally presented, provides the most compelling and strongest moral critique of capitalism. But we can compare what each theory does provide to start with, which we might call the *prima facie* case that profits are unjust and capitalists are parasites:

• The FMT: \((1-V_b)/V_b > 0 \iff r > 0\). *In words, only when the “rate of exploitation” is positive can profits be positive.*

• The FST: \(\text{dom}(A+bL) < 1 \iff r > 0\): *In words, only when those who do all the work receive less than the entire surplus of goods they produced can profits be positive.*

• I submit that the implicit moral critique in the FST is at least as powerful, if not more powerful. And because it does not assume familiarity with a theory of pricing that is redundant, misleading, and foreign to economists and lay audiences today, pedagogically advantageous.