

ACCEPTANCE SPEECH FOR THE WORLD MARXIAN ECONOMICS AWARD (II)

Marxism, Science and Economics

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I am, of course, honored to receive the World Marxian Economics Award from the World Association for Political Economy. It is gratifying to know that my work, over a lifetime, has been noticed, and even used, by others, in our common quest for socialist understanding, and socialist construction, throughout the world. Marx once joked about how the bourgeoisie would pay for his carbuncles! I think we all would love to know that our efforts have had a noticeable effect, even if a small one; just *how* noticeable must, of course, be left to others to judge.

In 2012 I published a book with the title *Political Economy after Economics* (Laibman 2012). This book contains some of my more challenging essays, with mathematical interventions into the nature and logic of capitalism, and into the theory of socialism. Its main message, however, is quite simple: After the emergence of economic theory in the latter decades of the nineteenth century, and that theory's coming-to-dominance in academic and political discourse throughout the capitalist world during the twentieth century, critical political economy can no longer be done in the same way as it had been done earlier. Political economy *after economics* must incorporate the insights and techniques of economic theory, including the use of mathematical methods and modern computational capacity, *along with—not* replacing—the key qualitative insights of Marx's grand synthesis: the law of value; the role of labor in production, social reproduction and social evolution; the existence of laws of motion of capitalism and other modes of

production; and the centrality of class and class struggle in shaping human progress and possibilities.

These insights—or so it seems to me—are as valid as ever, especially in the present, when, from the standpoint of working-class and progressive movements, we are in a period of adversity and retrenchment. Marxist theoretical and political practice, however, is—as both a matter of self-definition and a goal to be obtained—a unity of scientific and revolutionary–critical activism. Yes, the working class must, in our new century as earlier, raise up the banner of a radical vision for human emancipation; but it must also take on board all of the knowledge and achievements of the past—and, indeed, safeguard that legacy from the predations of fascist and neofascist social forces, which are outgrowths of capitalism in decay. As Marx and Engels themselves did in the nineteenth century, we in the twenty-first must incorporate into our own work everything accomplished by the bourgeoisie and its representatives in political office, social institutions, and academia. “Mainstream” social science, in this view, is a *combination* of bourgeois ideology and scientific practice, and thus cannot be dismissed *in toto*. Capitalist ruling classes have always needed ideology, and apparatuses of ideological reproduction, to ensure their hegemony and power; but they have also always needed the truth—about social, economic and technical relations—in order to act effectively in their own interests. The task for us, going forward, is to *separate* the two strands—and this, to put it mildly, is not an easy task.

In what follows I would like to illustrate this project of critique-and-recuperation, briefly, by referring to four areas of Marxist research, all of which I have worked on over the years. These are: (1) the theory of value, which I take to refer to the most basic properties of capitalist (and other market-based) social relations, properties that are often hidden behind all manner of visible social phenomena; (2) the theory of the specific growth path of the abstract capitalist economy, most evident in still-open debates about technical change and long-term structural change, especially the tendency of the rate of profit to fall; (3) historical materialist propositions about the general shape of social evolution—in particular, the existence and nature of modes of production, or stages of progression before and after capitalism; and (4) the theory of socialism—the nature of the social formation replacing capitalism and class society overall, and the question of the extent to which scientific projection is possible in this area.

The Theory of Value

Marx’s Law of Value, which he clearly applied, in different ways, to both precapitalist (“simple”) commodity production and to full-blown capitalism, is above all about the essence of a socioeconomic system: the core relations that are not

normally visible “to the naked eye,” but that take on a bewildering variety of visible forms: wages, prices, money, income, consumption, investment, “capital,” profit, interest, and so forth. The Law refers simultaneously to the elemental process of competition, in which outcomes emerge as the result of numerous spontaneous and uncoordinated actions of individual agents; and to the underlying place of labor in shaping and determining the real nature of those outcomes. Whatever the proposition “abstract labor is the source and substance of value” is taken to mean, it is presumably fundamental in bringing to the surface the inner nature of capitalist exploitation—the extraction of surplus value—and therefore the unifying core of all manner of really existing capitalisms. It is therefore essential in separating the inner reality of capitalist society from its numerous manifestations, and thus in keeping the working class focused on fundamentals, as opposed to getting sidetracked into shadow-boxing with the various particulars: for example, rent, monopoly, greed, finance, cronyism, consumerism, bureaucratism, statism, militarism—to give some idea of the possibilities.

In my only-ever foray into dramatic writing, I once imagined an intense discussion between two actors: “true believer” (TB) and “stubborn skeptic” (SS) (Laibman 1984–1985). TB defends Marx’s classical presentation of the categories of abstract labor in *Capital*, Volume I, down to the last comma, and insists that everything from basic grasp of Marxist doctrine to socialist revolution requires this defense. SS, on the other hand, brandishes the long list of critiques, for which the starting point may well be Böhm-Bawerk’s ([1897] 1966) *Karl Marx and the Close of His System*: Marx’s failure to address fully the heterogeneity of labor (the range of skills); his failure to incorporate time into the theory of production; arbitrariness in the choice of labor as the only available universal element in commodities that can serve as the substance of value; and that annoying divergence between labor values, on the one hand, and profit-rate-equalizing prices of production, on the other.¹ But the ultimate point of division in this longstanding debate is SS’s perception that TB fails to deliver an answer to the most basic question of all: what does value theory *actually accomplish*? What does it add to what we know about how market-based social relations (including, as the most important instance, capitalist ones) work, other than serving as a sort of catechism for the faithful? In particular, is value theory required if we are to achieve a completely adequate account of capitalist exploitation (surplus value extraction)?

I have tried to transcend this dichotomous situation (it can hardly be called a “dialog”) by working toward an actual answer to this question.² *This is a work in progress*, and I can’t hope to do more here than to touch, in an almost elliptical manner, on the basic point. Identification of abstract social labor as the source and homogeneous substance of value—the *tertium comparationis* that underlies benchmark ratios of exchange, however complex and mediated determination of

the actual quantitative content of those ratios may be—turns out, I believe, to be logically inseparable from the observation that social arrangements in general, and capitalism in specific ways, create and require sources of *systematization*—forces that make social outcomes regular and objective, from the standpoint of agents—*other than* rational individual choice leading to uniform price ratios, wage rates, profit rates, and so on.³ In capitalist societies, in which division into an exploiting and an exploited social class is fundamental, the *balance of class forces* becomes the signature “parameter” for value determination. I believe I can show that this parameter is sufficient to determine, completely, in the quantitative sense of “completely,” the quantities of social labor underlying benchmark exchange ratios (prices of production), in the abstract capitalist economy with fully and freely operating markets in capital and labor power (*i.e.*, with uniform wage and profit rates).⁴

This is, as indicated, a work in progress! To return for now to the theme of “political economy after economics,” I can simply cite this project as an instance of my general claim that progress in Marxist theory requires us to take seriously the challenges posed by pre-dialectical materialist social science, without succumbing to those challenges. This means finding a path between TB’s endless rehearsal of Marx’s texts, on one side; and SS’s capitulation to mainstream individualism, empiricism, and formal logic, on the other. Revolutionary social science is difficult, because its object (including all forms of society—notably, capitalist *and* postcapitalist ones) is complex, not yielding to “simple” or common-sense observation.

Technical Change and the Rate of Profit

I became interested in Marx’s “law of the falling tendency of the rate of profit,” as found in *Capital*, volume III, when I was an undergraduate student in the early 1960s. I was impressed by Paul Sweezy’s careful treatment in *The Theory of Capitalist Development* (Sweezy [1942] 1956), and took note of his ultimate conclusion to the effect that Marx did not successfully drive his point home. Since that time, I have tried to apply the general maxim of this essay: take the critiques seriously, but also take the theory itself seriously, using all available methods, including mathematical techniques that were not available to Marx.⁵

The most common “orthodox” defense of Marx clearly relies on a magnificent *non-sequitur*, for which, it must be said, Marx (1967) himself was responsible: “whether condition or consequence, the growing extent of the means of production, as compared with the labor power incorporated with them, is an expression of the growing productiveness of labor” (*Capital*, vol. I, ch. 25, sec. 2). In this view, increasing productive power of labor, brought about incessantly by

capitalists in their struggle for accumulation, power and survival, is the expulsion of labor from production, and this means less surplus labor and surplus value and thus (here is the *non-sequitur*) a lower rate of profit. Despite some recent attempts to breathe new life into this line of reasoning, it simply does not hold. The critics, I fear, are correct: Marx repeatedly *asserted* that the forces impelling technical changes that lower the profit rate would eventually prevail over what he called “counteracting” forces; he did not, however, back up this assertion with actual logically sound arguments.

So, instead of lapsing into agnosticism and apostasy (SS), we need to look into this more deeply. In doing so, I would never suggest that “vindication” of Marx in this area is the only way to build on his work or to understand the trajectories of developing capitalist economies; Maurice Dobb’s wise warnings about trying to capture the complex contradictions of capitalism in a single curve, “like the temperature-chart of a hospital-patient,” should be recalled (Dobb 1959). The question, rather, is: can a rigorous account be given of the conditions in which rational capitalists, who must always seek the *highest* possible profit rates, initiate technical changes that, *in and of themselves* (i.e., without changing the class balance of forces) result in a falling profit rate?

Marx was sensitive to the fact that the individual capitalist always acts as the innovator who acquires a temporary monopoly of a newly introduced technique. If he does not grasp the momentary surge in profit rates resulting from this, his competitors will; this behavior is therefore imposed on him with the force of a “natural” law. The step Marx did not take was to examine the relation between capital deepening, under existing conditions of technical knowledge, and the resulting increase in productivity; this is the constraint that conventional economics captures, in a one-sided manner, in its conception of the “production function.”⁶

It turns out that, when capitalist firms innovate so as to maximize the temporary-monopoly (I call it the “conjunctural”) profit rate, they *may* find it in their interest to choose techniques that raise the organic composition of capital. This imposes a non-steady-state choice: the path of accumulation, once new techniques are disseminated widely and monopoly positions wiped out, will then exhibit one of *two* crisis-inducing tendencies: a falling rate of profit, *or* a rising rate of exploitation (or, of course, both). The falling profit rate, then, is placed into a wider framework of multiple long-term critical tendencies, and the strictures of the Analytical Marxists are heeded: a full account is given of capitalist determination of the path of technical change that incorporates capitalists’ socially embedded rational choice.

However, that annoying word “may,” in the first sentence of the paragraph just above, remains. Can anything further be said about when and whether that “may” can be replaced by “will”? How likely is it that conjunctural-profit-rate-maximizing

capitalists will choose techniques that necessarily either raise the profit share (the rate of exploitation) or lower the rate of profit? This turns out to depend on three parameters: the existing profit share (which is one measure of the rate of exploitation); the rate at which diminishing returns to mechanization set in, along the trade-off that capitalists examine when they choose techniques; and the rate at which innovation at the level of fundamental science is disseminated and actualized. To take these in order: *if* the long-term evolution of the social classes, and the balance of power between them, is in the direction of lowering the profit share;⁷ *if* diminishing returns to mechanization set in slowly, owing to capitalists' impatient search for technical changes with significant short-term results; and *if* basic research tends to be neglected, owing to that same impatience; *then* the condition in which the composition of capital rises and the contradiction (rising exploitation rate/falling profit rate) exists is more likely to prevail.

A full exposition of this result clearly requires more than a few paragraphs of text. The point, again returning to the main theme of this essay, is that when we press forward with Marx's project, rather than either abandoning it or treating it as some sacred object of adoration, we learn new things about the concrete workings of the capitalist economy, even at a level where "concrete" still refers to the realm of capitalism-in-general, and not to particular territorial/national/historical social formations, or indeed to the global capitalist economy.

General History: Stages of Social Development

A similar TB/SS bifurcation exists on the terrain of Marx's general theory of history, encompassing modes of production from the earliest periods of human history up through the capitalist era and what lies beyond. And, once again, my studies in this area suggest that there is an alternative—to either abandoning the historical materialist project of a stadial (stage-based), progressive theory of social development altogether, on the one hand; or attempting to defend a rigid, "linear" model that fails to do justice to the richness and variety of the historical record, on the other. In this case, the issue is not so much one of quantitative methods as of rigorous conceptualization.

The classical source for this is Marx's 1859 preface to his *Contribution to the Critique of Political Economy*, the famous passage in which he produces summary definitions of the key ideas: forces and relations of production, base and superstructure, classes and class struggle, and modes of production, which (in "broad outlines") run from primitive communism to the "ancient [slave], Asiatic, feudal and modern bourgeois" forms of society.⁸ The question for the literature has always been whether or not this sequence of modes of production, especially the three class-antagonistic modes (slave, feudal, capitalist; I leave aside the

enormous controversy concerning the “Asiatic” mode for now), is to be interpreted literally (and linearly), as a path that must be traversed by all societies. Marxists have tended to swing periodically between defense of this model, in periods of working-class forward movement and the attendant optimism and confidence; and “revisionist” deconstruction, based on massive and increasing volumes of historical and anthropological evidence to the contrary, which becomes strong in periods of retreat and reevaluation. It is the TB/SS divide all over again.

My intervention, as noted, has been not so much involved with rigorous and quantitative methods as with insistence upon the appropriate and consistent use of abstraction. The idea, clearly in Marx with roots in Hegel, is to dig down through a process of synthesis of materials from research and practice to appropriation of an underlying essence of the phenomena under study. In the present case, I propose to reach an abstract distillation of the historical record, to which I give a name: the Abstract Social Totality (AST). This, for reasons that emerge in the analysis, in turn consists of a sequence of modes of production (MPs), which in turn consist of a pairing of Productive Forces (PFs) and their associated Production Relations (PRs). The MPs form, indeed, a ladder, progressing from lower to higher in a non-arbitrary order. These are *theoretical* stages, defined by the unfolding of logical necessities, as opposed to the *descriptive* stages that are often proposed in empirical studies. The logical necessities are revealed when we identify, for a particular MP, its precondition (what must have been achieved for it to come into existence; its contradiction (internal conflict that intensifies and problematizes the MP as a result of its own immanent path of development); and contribution (what it specifically creates that is necessary for the succeeding MP to emerge).

The theory of the correspondence between PFs and PRs, and of the immanent progressive tendency of the PFs, is complex, and can only be hinted at here. In brief, I propose a model of “social–functional” determination of the PF–PR relation, in which different systems of incentive/coercion/control are functional for both the operation and the development of the PFs, at each broad level of development of the PFs. Given the periodic objective need for progression to more sophisticated systems of surplus extraction occasioned by progress in human power to affect and transform the natural world, the actual achievement of these transitions depends on the ways in which this necessity appears in the actual conditions facing human actors, often aligned into hostile classes, and its embodiment in consciousness, will, and rational action.

This, then, is a ladder-like model of general social progression through stages—although it does not involve any mystical or teleological reasoning, being based entirely on the constraints and impulses working on the actors, the social classes, at different stages of development of the PFs. Nevertheless, all of the skeptical

questions concerning correspondence of the model to real history (or lack thereof) come immediately to the fore.

My next step, therefore, was to insist that the progression through a determinate ladder of stages, leading to the final transition to communism, exists *only* at the level of the AST. In a process of successive concretization, we bring the model back in the direction of perceived reality (Marx's "reconstruction of the concrete"). The MPs themselves contain within them social formations that rise and fall in cycles, in which new formations replace existing ones and are in turn replaced. Development proceeds at different speeds, under the influence of widely varied conditions of geography, climate, flora, fauna, waterways, and terrain. Societies at different levels of development come into contact, through migration, trade, war and conquest, resulting in mixtures and combinations of MPs within a single formation. Finally, there are accidental factors, such as famines, floods, epidemics, and, most particularly, the fortuitous impact of individual personalities and individual choices, especially among military and political leaders. All of this can result in blockages—in which development along the ladder of transition from one MP to the next is prevented from occurring—and bypasses—skipping of stages as a result of contact between social formations at different levels.

The directionality of history, then, is not refuted by the variety and contingency of actual events; these events are in fact the pathways through which directionality is ultimately asserted. Once again, we find that careful study reveals a synergy between mainstream scholarly production (this time, historical research rather than economic theory) and basic Marxist concerns, once Marxist foundations are applied in the appropriation of pre-Marxist science and investigations. The result is (or can be) a better grasp of the totality with which we are concerned.

Envisioning Socialism: The Debate, and the Role of Economics

The divide between "true believer" (TB) and "stubborn skeptic" (SS), and the need to transcend it, appears once more in the enormous and increasingly topical discussion of alternatives to capitalism. "Socialism" has, once again, become a hot item in the political debate that is unfolding in the run-up to the 2020 Presidential election in the United States—despite everything that the guardians of the bourgeois ideological fortress have been able to do, from the years of McCarthyite repression up to the present, to exorcize this demon once and for all, culminating in the famous slogan from the Thatcher (UK) and Reagan (USA) era: "There Is No Alternative" (TINA).⁹

The first point here is one that the Marxist journal which I have served as Editor, for almost four decades, *Science & Society*, has made often. In fact, we have produced no fewer than three Special Issues, at exact regular ten-year

intervals (Spring 1992; Spring 2002; April 2012; with a fourth one scheduled, in sequence, for April 2022), with the purpose of advancing this claim: a *socialist system* must be envisioned concretely, by elaborating general models of how non-market, non-exploitative production relations will actually function. This amounts to an insistence that projecting *operational* visions of socialism is not the same thing as the arbitrary, speculative “grand designs” of the utopians that Marx and Engels worked so hard to transcend. These are not “recipes for the cookshops of the future” (as Marx said); they are scientific projections from the central contradictions and experiences of capitalism, and from the vast laboratories of experience in early socialist construction during most of the twentieth century. It is not a matter of drawing up precise “blueprints”; exact descriptions must await the emergence of historically and culturally specific “really existing” actual practices and situations. It is, rather, about arriving at a full understanding of the *general-concrete* qualities of a post-capitalist economy, one that is capable of solving the complex problem of coordinating multiple activities, and the equally complex challenge to solve problems of choice among alternatives. This is coordination and choice with the values and needs and aspirations of working-class people now the guiding criterion, as opposed to the age-old drive to accumulation wealth, power, and privilege, in the form of profit, which has existed in class-antagonistic conditions up to and including the world capitalist megalith of the present.

It is, again, that guiding thread running through my work: political economy after economics. Socialism as a concept, and radical movements based on it, have always been rejected, and tossed aside, on the basis of TINA: the capitalist present is “the air itself,” it is “all there is”; you can’t even *imagine* an alternative without becoming incoherent and (worse) engaging a slippery slope down to irrationalism, dictatorship and darkness (Hayek 1944). In this atmosphere, and facing this momentous challenge, research and activism in the Marxist tradition simply must respond, forcefully, to the charge of “romanticism” and fuzzy-headed thinking. If all we have is the old slogans of the “commonwealth of toil,” or the “kingdom of freedom” governed by the “associated producers,” we will fail. The wealth of society, built up in the past and in the present, is the accumulated blood, sweat and tears of countless numbers of working people. If we, socialists, propose to manage that wealth in the interests of the vast working majority of society, and to involve that majority increasingly in this management, we had better be sure we know precisely (not exactly!) what we mean to do! The working majority will expect no less.

There is, then, a series of models, involving forms of planning, use (or non-use) of prices and money, principles to govern the distribution of income, principles to determine the level of investment and growth rates, and to think about the future (and ecological sustainability) in novel ways; means to implement local

autonomy, worker and community participation, and much else. In recent work I have, I think, hit upon a synthesizing conceptualization—a “model of the models.”¹⁰

This mega-model is based on two cross-cutting distinctions: between central (at one extreme) and decentral (at the other) systems of coordination; and between quantitative and qualitative (political) regulation. “Quantitative” regulation can either take on a digital form, as in highly centralized but calculative planning; or a spontaneous form, at the decentral end of the central/decentral continuum, as in market determination of equilibrium prices. The various extant proposals, at least those in the English-language literature, can be arrayed in a two-dimensional space according to the ways in which they combine particular positions on the central/decentral dimension with corresponding positions on the quantitative/qualitative dimension.

The exercise clearly points to the center of the space defined by the two dimensions, at which we would find a model that combines the two principles in each direction: a mix of central and decentral structures, on the one hand; and a mix of quantitative and political processes and criteria for decision-making, on the other. But here a crucial distinction must be stressed: the model at the center (so to speak) is *not* simply a socialist “social formation” in which all of these various systems exist side by side; that sort of “mixed economy” indeed describes the reality of many historical societies, in which various features have evolved to represent a similar variety of class interests with a conflictual-cum-symbiotic process playing itself out among them. I hope, instead, to identify a *synthesis*—a *core* that signals the presence of a mature socialist economy—in which central and decentral structures, and quantitative and qualitative methods of regulation and evaluation, are not merely juxtaposed, but rather *integrated* into a coherent whole. This is the model that I call *Multilevel Democratic Iterative Coordination* (MDIC).

The MDIC core may then serve as the organizing factor in a socialist formation that does indeed contain other elements: simple market economy, a foreign-trade zone dominated by practices and qualities coming from the world capitalist economy, a traditional state sector that does not involve systemic and participatory (iterative) planning, and perhaps even some elements coming from precapitalist sources, such as village communal institutions that have persisted into the present day.

There are a number of specific quantitative proposals regarding planning systems, methods of evaluation, and systems of reward, to both collectives and individuals; these cannot be elaborated in detail here (but see Laibman 2011 [also in Laibman 2012]; Laibman 2015). The heart of their interest, in terms of the central argument of this essay, lies in a clear understanding that quantitative method—as developed formally within the practices of economic theory in the academic and

governmental institutions within capitalist societies—is an essential ingredient for visions and models of socialist construction today and going forward. It therefore represents the element in present-day political economy that is “after”—that is to say, incorporating—economics. It carries a clear—and magnificent—implication for small countries such as Cuba, and large ones such as China: there is not a simple matter of “reform” (vs. stasis); the question is: Reform *in which direction?* The state sector as such is *not* socialism (just as the “private sector” is not capitalism). Public/administrative sectors have long existed in precapitalist history, and certainly in capitalist times as well. In countries where socialist political movements have taken power, existing state institutions become contested terrain, on which elements of actual socialist relations can gradually be introduced. State sectors, cooperatives, market sectors—all are prerequisites for qualitative socialist transition, in societies that may be characterized as “early socialist.” The actual leap into *mature socialism* can be located at the point where core MDIC systems emerge, to a qualitatively significant degree, within state sectors. These systems contain, uniquely, regularized and institutionalized participatory processes, in both local and central coordination, and use all of the now-available technical resources to develop optimal systems of pricing, information processing and checkup, and principled methods of evaluation and reward, at all levels. From this emerges a genuine alternative to capitalism *and* to unregulated markets, and so constitutes a real attractor, the foundation on which, with due allowance for the unpredictable evolution of social norms and cultural qualities, new qualities of social life can be erected.

But laying this foundation requires, as we know from the legacy flowing from Marx and Lenin, mastery of science in the interests of revolution. This is a precious insight: We need to *acquire* what has come before in order to then *transcend* that inheritance. Political economy must incorporate economics. Socialist revolutionary thought must incorporate the entire cultural heritage of humankind, including the individuation that comes down to us in incomplete and distorted form from the capitalist social era. The road to the future passes through the present, with roots in the sometimes horrific, sometimes inspiring, but always potentiating past.

Notes

1. On old and new versions of the controversy surrounding Marx’s theory of values and prices of production, see Laibman (1974 [also in Laibman 1992]; 2018).
2. See my *Value, Technical Change and Crisis: Explorations in Marxist Economic Theory* (Laibman 1992), especially chapters 1–3.
3. If this insight holds, it establishes a clear boundary between the school of “Analytical Marxism,” or “Rational Choice Marxism,” on the one hand (Elster 1985), and a position based on Marx’s classical work, on the other. The former insists on limiting the source of regularization and objectivity

to the dimension of individual optimal choice, whereas the latter adds the realm of social/class relations; these, moreover, in a system in which social relations assume the guise of commodity relations, necessarily take on quantitatively determinate forms. There is the further implication that the existence of objective laws of motion is not confined to capitalist or commodity-exchange societies; see section 3 on historical materialism, below.

4. Note that this problem of quantitative determination is completely distinct from the more widely recognized problem of finding the benchmark price *ratios*. See my “Value and the Quest for the Core of Capitalism” (Laibman 2002); republished as chapter 1 of *Political Economy after Economics: Scientific Method and Radical Imagination* (Laibman 2012).
5. The fullest treatment, although not the most rigorous one, is my *Capitalist Macrodynamics: A Systematic Introduction* (Laibman 1997). For more recent and polemical elaborations, chs. 2–4 of *Political Economy after Economics* (Laibman 2012).
6. Again: the challenge is to use the achievements of mainstream (pre-Marxist) science, extracting them from their bourgeois ideological trappings; *not* to ignore or dismiss these achievements in their entirety. In this regard, I have come to believe it is necessary to distinguish between the production function (or, in dynamic terms, the mechanization function) as a simple relation, with diminishing returns, between increases in material intensity of production and productivity, on one hand; and the ideological hyperextension of this into marginal productivity, as the basis for optimal income distribution in competitive equilibrium, on the other; see Laibman and Nell (1977).
7. The theory of capitalist crisis resting on the long-term shift in the balance of power toward the proletariat and away from the bourgeoisie, as the former is recruited *via* industrialization and depletion of the older subaltern classes and as the proletariat gains in experience, is perhaps the true original theory of capitalist crisis, as propounded in the *Communist Manifesto* (Marx and Engels [1848] 1971).
8. My contributions in this area began in 1984, with “Modes of Production and Theories of Transition” (Laibman 1984), reappearing as ch. 13 of *Value, Technical Change and Crisis* (Laibman 1992). Most recently, I have addressed this topic in “Forces of Production and Relations of Production,” in *The Oxford Handbook of Karl Marx*, edited by Matt Vidal, Tomás Rotta, Tony Smith, and Paul Prew (Laibman 2019).
9. The opening lines of the *Communist Manifesto* of 1848 come to mind once again, in all of their prescience. The “spectre” that haunted the bourgeoisie of that period is, apparently (and thankfully!) alive and well.
10. See my “Multilevel Democratic Iterative Coordination: An Entry in the ‘Envisioning Socialism’ Models Competition” (Laibman 2015).

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