
ASSOCIATION FOR ECONOMIC AND SOCIAL ANALYSIS

DISCUSSION PAPER SERIES



This Association seeks to discuss, debate, elaborate and extend Marxian theory. Our particular reading of that theory focuses upon the concepts of overdetermination, contradiction, and class. Our concerns include the philosophical and epistemological, the abstract as well as concrete formulations comprising a comprehensive Marxian social theory. The goals of our publications and conferences are to stimulate interest in and debate over the explanatory power and social consequences of Marxian economic and social analysis.

For more information, or to obtain copies of other papers in our Discussion Paper Series, please write to:

AESA
Department of Economics
University of Massachusetts
Amherst, MA 01003

SOCIAL THEORY AND SOCIALIST ECONOMIC PLANNING:
A CRITIQUE OF OPTIMAL PLANNING THEORY

By David F. Ruccio

Discussion Paper #13

November 1983

This paper examines optimal planning theory from the standpoint of the Marxist critique of essentialism. It develops an alternative concept of socialist planning and explores the contrasting social implications of essentialist and non-essentialist concepts of such planning.

Up to the present time all of these technical - economic problems have been solved more or less haphazardly by eye or by feel, and of course the solution obtained is only in rare cases the best.... The possibility now exists in a number of cases to obtain not an arbitrary solution but to find the optimum solution by a definite, scientifically based method.

L. V. Kantorovich¹

As far as we are concerned, we assert that the technique cannot be comprehended, nor therefore correctly applied, if the underlying concepts are misconstrued.

Jacques Lacan²

INTRODUCTION

Optimal planning (OP) theory is typically viewed as the result of the application of modern economic and mathematical tools to the question of socialist economic planning. Such a judgment, shared for the most part by the optimal planners themselves, is based on a commitment to the notion of a singular international Economic Science, defined as the study of economic optimization under some initially endowed conditions.

According to the alternative view elaborated below, the optimal planners' identification of socialist planning with a problem of mathematical programming is conditioned by an essentialist mode of reasoning. In particular, OP theory reductively defines the practice of socialist planning as a purely theoretical procedure, one which directly corresponds to the goals of socialism. Furthermore, the optimal planners operate with a set of mathematical models which, they maintain, capture the essence of social reality. In the terms elaborated below, OP theory involves an essentialist

concept of socialist planning, including an essentialist notion of planning theory itself.

The critique of those forms of essentialism leads to the development of a different concept of socialist planning -- one which emphasizes the complex, contradictory nature of that social practice -- and of an alternative conception of the role of mathematical models in the social theory of planning.

The critique cum reformulation that is proposed here is part of a larger project of elaborating a non-essentialist interpretation of Marxist social theory. It also recognizes the wider social implications of different social theories. In particular, socialist planning is not a self-evident object given to theory for which only a concrete methodology remains to be elaborated. Rather, socialist planning is itself an object of knowledge, i.e., an object constructed in theory. And, how it is variously understood (by, among others, its practitioners) will influence how it is variously practiced.

OPTIMAL PLANNING THEORY³

That which is known today as OP theory has its origin in the early work of L. V. Kantorovich, first published in 1939.^{4,5} That early form of OP theory was due to the generalization of the solution to a problem of production scheduling in the Plywood Trust and its application to various questions of efficient production scheduling and organization in the fields of manufacturing, construction, transportation, and agriculture. The author recognized "two ways of increasing the efficiency of the work of a shop, an enterprise, or a whole branch of industry.... One way is by various improvements in technology.... The other way ... is improvement in the organization

of planning and production."⁶ Kantorovich demonstrated the usefulness of following the second path. The immediate result was a numerical, iterative algorithm for determining the optimal variant of a production plan (e.g., to maximize output or minimize scrap) considering a number of limiting conditions (e.g., a given production mix and quantity of inputs.) His particular framing of the constrained optimization problems and their solutions were quite similar to what is studied today under the general theory of linear programming. The "best" variant of the enterprise plan, calculated according to his "resolving multiplier method," was capable of raising the use-value or technical efficiency of production by 4-5 percent over more conventionally chosen methods.

The publication of Kantorovich's Best Use of Economic Resources in 1959 signalled the end of a 20-year period of official silence on his earlier pioneering work.⁷ More important, it marked the transformation of that work into the theoretical foundation of today's OP theory. The technical development which characterized enterprise planning calculations in 1939 assumed the form of a heuristic breakthrough with respect to the general problem of socialist planning. The new objective of OP methods was to achieve "a harmonious combination of general and local interests" by furnishing an optimal national plan, one which achieved maximum production with scarce resources. The "resolving multipliers," the numbers utilized in calculating the most efficient enterprise plan, were re-named "objectively determined valuations" and re-interpreted as the set of (shadow) prices with which the optimal physical plan could be implemented. The fundamental objective of socialist planning was reformulated as achieving optimality in the level and efficiency of production; that goal was to be achieved by research into the concepts and techniques of mathematical programming.

There are two major points which emerge from this interpretation of OP theory. On the one hand, OP theory is a unifying term attributed to a set of conceptual strategies which, although still changing and developing, have undergone a singularly important historical transformation. Where once, in the earliest work of Kantorovich, it designated one among other techniques for raising the technical efficiency of production within the larger practice of planning the socialist economy, today OP theory designates the unique theory whereby socialist planning should be theorized and practiced. There are two moments in that conceptual transition which deserve emphasis. First, what was originally considered a technique was modified and transformed into the general theory of socialist planning. Second, a technique, i.e., one among others, was recast as the unique theory of socialist planning.

On the other hand, the discourse of the optimal planners hinges crucially on the concepts of optimality and duality which emerge from mathematical programming theory. Using the standard notation of linear programming, the planning problem is equivalent to the formulation and solution of the following corresponding primal and dual problems:

<u>Primal</u>	<u>Dual</u>
$\begin{array}{l} \text{MAX } c'x \\ x \end{array}$	$\begin{array}{l} \text{MIN } p'b \\ p \end{array}$
$\text{subject to } Ax \leq b$	$\text{subject to } p'A \geq c'$
$x \geq 0$	$p' \geq 0'$

According to the well-known theorems of linear programming, three immediate properties result:⁸

1. the optimal solution to the primal problem is equal to the optimal solution to the associated dual problem, i.e., $c'x^* = p^*b$ (Strong Duality);

2. if the i th constraint of the primal problem is not binding at the optimal solution, then the corresponding dual variable is equal to zero (Complementary Slackness); and

3. the dual variables of the optimal solution are equal to the changes in the value of the optimal primal solution associated with marginal changes in the constraints, i.e., $\partial(c'x^*)/\partial b = p^*$ (Shadow Price Interpretation of the Dual Variables).

According to the optimal planners, the solution to the global optimal plan (the solution to the primal problem, x^*) maximizes something called national economic welfare; that global optimality can be achieved through the solution to the series of sub-optimization problems, e.g., on the part of individual enterprises, according to the "objectively determined valuations" (the solution to the corresponding dual problem, p^*). The result is the OP understanding of socialist planning as a problem of mathematical programming.

I would be remiss in this summary if I left the impression (certainly generated by the above discussion) that the optimal planners understand the problem of socialist planning merely as the formulation of, and solution to, an enormous linear program. The research project generated by the OP discourse on socialist planning includes extensive work on problems of non-linear (read: not necessarily linear) -- integer, quadratic and stochastic -- programming. In addition, the optimal planners have devoted considerable attention to the study of a variety of multi-level, multi-stage planning schemes (including research into decomposition algorithms and optimal control models for long-term, perspective planning.) However, such efforts are understood not as a break from, but as further refinements and extensions of, the central problematic specified above.

Nor have the optimal planners remained at the level of simply theorizing about the problem of socialist planning. The OP discourse also encompasses a set of policy directives, the Proposal for an Optimally Functioning Socialist Economy (POFSE). In general, the objective of the POFSE is to transform the socialist economy into one vast attempt at economic optimization. In particular, guided by the theorems of mathematical programming, the optimal planners have advocated such policies as the increased use of prices in planning (prices for labor, fixed capital and natural resources), the calculation of such prices according to optimal pricing schemes, and the use of accounting-profit maximization as the optimality criterion of socialist enterprises. The POFSE can be understood as a policy program which seeks to ensure the realization in the course of socialist planning of the concepts of optimality and duality, the cornerstones of OP theory.

The main elements of OP theory have been identified in this succinct exposition. I turn now to a discussion of the methodological and epistemological underpinnings of that theory. In particular, OP theory can be criticized for operating with an essentialist conception of socialist planning and an essentialist conception of theory itself.

ESSENTIALISM IN THEORY

I start with a definition of terms. Essentialism in theory, or methodological essentialism, refers to the presence of reductionist relationships among the theoretical objects designated by the concepts of a discourse. There are two forms of this essentialism which are relevant to the present effort. First, there is the essentialism which exists in the reductive definition or characterization of a social practice in terms of only one of its component aspects or processes. Second, methodological essentialism

derives from the conception of a social process as the simple effect of another social process, its essence. In both cases, an essentialist form of determination or social causation characterizes the relationship among social processes.⁹

In identifying socialist planning with the formulation and solution of a mathematical programming problem, the work of the optimal planners is characterized both by the definitional essentialism and by the causal essentialism discussed above. On the one hand, socialist planning is defined as the choice of the appropriate mathematical programming model and the formalistic manipulation of that model, i.e., as a purely theoretical procedure. This conception of socialist planning that reduces it to a theoretical process disregards the other, non-theoretical processes which together with the theoretical process comprise the social activity of planning. Complexity is reduced to one-dimensionality.

On the other hand, socialist planning is conceived as a simple means to an end, as a non-contradictory activity which is determined by its goals. Socialist planning, in OP theory, occupies the same status as something called "socialist ownership of the means of production" as necessary mechanisms derived from the goal of achieving socialism. Thus, the goals occupy the position of the essence of the activity of socialist planning, giving it a teleology of movement by defining its origin as its end. Socialist planning is merely an expression, a phenomenon of those essential goals, while also one of their ultimate guarantors. Contradiction is lost to the teleology of a subject.

Socialist planning, according to the alternative approach, cannot be reduced to its theoretical process, nor can it be conceived as simply conforming to its stipulated goals, however formulated. Rather, that social

process and those goals are themselves contradictory (since overdetermined) and are only some of the determinants of anything like socialist planning which is put forward as a means.¹⁰ It is necessary, then, to produce an alternative, non-essentialist concept of socialist planning.

For purposes of analytical convenience, socialist planning may be conceived initially as a complex, contradictory social practice or site composed of cultural, political, economic, and natural processes. It includes, of course, a process of theorizing -- the production of the facts of planning and the theoretical working on those facts to produce the planning document. That theoretical process is itself multi-dimensional: the technico-mathematical manipulation of variables; the construction of the variables to be so manipulated; and the theoretical determination of how to construct those variables and how to interpret their mathematical manipulation are all conditions of existence of one another. Thus, no sharp dichotomy of the theoretical and technical is warranted; the conventionally conceived more technical operations are theoretical in nature and vice versa. Moreover, distinct theories of planning and theories of the social world, philosophies and methodologies, interpenetrate to structure the discourse of planning.

The cultural processes include considerably more than the purely theoretical. The daily activity of the planning "laboratories" and the product of that activity -- the plan -- owe as much to patterns and norms of persuasion as to the particular language through which the various results are formed and communicated.¹¹ The "cycle of credibility" among the planners, along with the various levels and types of education which are brought by the planners into their work, must be included among the prominent features of that activity. The realm of informal conversation -- among the "insiders" and between the planners and non-planners -- must not be forgotten. Nor can a

lack of significance be attributed to the structure of the relations among the various programs of planning, e.g., gathering data, proposing models, performing calculations, and producing the written documents. In sum, there are many cultural processes which must be investigated to produce an adequate, fully social concept of socialist planning.

Nor can the analysis end there. The activity of planning comprises myriad political processes, including the legal status of the planning institutions and of the plan itself. The relationship among the planners also includes an administrative hierarchy in the form of patterns of supervision and direction. In fact, there exists what might be called a political division of labor, in plan formulation -- which questions pertain to which entities -- , and in plan implementation -- who receives what pieces of information and who makes the various different types of decisions. Moreover, the plan itself may be militarily enforced.

An investigation into the economic aspects of planning begins with the technical coordination of the various parts of the planning procedures. The planning laboratory may, in fact, be viewed as a workplace, which includes the instruments of labor and, more broadly, its productive forces (encompassing the organization of the activity itself). In addition, the planning activity itself must be financed by a transfer of subsumed class income to the planners and the financing of the other material costs of planning. Thus, a particular transfer to the planners of some portion of surplus labor appropriated elsewhere in the social formation must be effected.¹²

In this manner, through the elaboration of its component processes, the planning activity is conceived as a complex, fully social site or activity. The final step in this investigation entails a recognition of the impact of the remaining social processes of the social formation -- those that make up

the other, non-planning practices -- on the planning processes. Thus, each of the various social processes in which the planners participate is conceived as a unique point of convergence of the effects of the other social processes of the social formation. For example, the subsumed class process of planning is overdetermined by prevailing cultural conceptions of the social status of "specialists," by forms of administration in the enterprise and in the State, and by the various modes of appropriating and distributing surplus labor elsewhere in the social formation. No process which figures in the planning relationship escapes from such a complex determination. In addition, it is expected that the overdetermination of the component social processes of planning would produce specific contradictions, and thus the movement and development, of that social practice. For example, the encouragement of a conception of planning as a purely technical procedure (divorced from economic policy) might lead to a decline in the social status of the planning "specialists" while, at the same time, requiring an increase in subsumed class payments to the planners to maintain their allegiance to the project of planning and their silence on matters of economic policy.¹³

The general perspective, then, is that the social nature of the activity of planning and the social construction of plans exists at two different levels of analysis: at the level of the component social processes of planning and at the level of the complex determination of each of those processes by all other social processes of the social formation. The result is a conception of socialist planning as a complexly composed social practice beset with contradictions, a relationship whose component processes are determined by, and participate in the determination of, the remaining social processes of the social formation in which that activity is located.

It has been argued, then, that the definition reducing socialist planning to its theoretical process and the reduction of that process to a phenomenon of an essence, viz. certain given socialist goals, involves a double essentialism. That double essentialism in OP theory raises the issue of the optimal planners' conception of theory itself. I argue below that the conception of socialist planning produced by OP theory occurs together with an essentialist epistemology. Indeed, those two types of essentialism -- in and of theory -- seem to provide theoretical conditions of existence for one another.

ESSENTIALISM OF THEORY

Again, an initial definition of terms is necessary. The second type of essentialism which conditions the OP conception of socialist planning is epistemological, i.e., that which I have referred to above as an essentialism of theory. The work of the optimal planners is informed by both forms of the classical Subject-Object theory of knowledge, empiricism and rationalism. To briefly elaborate, both empiricist and rationalist arguments attempt to close the process of production of knowledge by guaranteeing its absolute truth. They act as ultimate validity criteria. Thus, for example, empiricist modes of argument refer to some extra-discursive reality, e.g., the "facts" or "history," against which any theory can be compared and validated. That theory is then declared to reflect or not to reflect the essential "facts" of the extra-discursive reality. Rationalism, on the other hand, reverses the terms of the empiricist proof and declares that the Truth of the theory is guaranteed by its ability to capture the essence of social reality. Once that identification of theory and reality is achieved then, according to

rationalist procedures, successive Truths are produced by more or less deductive elaborations of the theory.¹⁴

The optimal planners' theory of socialist planning relies crucially on a particular notion of theory, a particular conception of mathematical forms of discourse. Their use of mathematical relationships and models is justified by various arguments, of which the following are the most common:

1. Mathematics and mathematical relationships are conceptually neutral. They are devoid of content, i.e., merely formal, logical relationships, until they are used within a particular science.
2. Economico-mathematical models are objective, scientific models produced within an international Economic Science.
3. Mathematical programming models capture the "strategic relationships" of the phenomenon under study.
4. Mathematical programming models correspond to the essence of the socialist economy.
5. The Truth of the mathematical models of OP theory is guaranteed by their practical application, by their superiority to other models of planning.
6. Mathematical methods of planning constitute an "objective" means of planning, in contrast to so-called "subjective" methods of planning.

It can be shown that all of these arguments, and others, contain either empiricist, rationalist, or both modes of epistemological closure. I conclude that the optimal planners are obsessed with epistemology in the very denial of its importance within their discourse.

The argument can be summarized briefly as follows. Mathematical models serve, in OP theory, as representations of an "essential core" of the social

phenomena under study. By virtue of their unique ability to capture the "strategic relationships" of that reality, those models are understood to comprise the singular (OP) theory which corresponds to the given socialist goals. Moreover, the rationalist manipulation of those modelled variables and relationships produces, via deduction, further Truths concerning the nature of that modelled reality. Thus, to return to the concepts elaborated above, the theoretical process is conceived to correspond to its object which, in turn, is given to it independent of thought. The result is that the theoretical process is seen to operate through a unique theory which corresponds to a uniquely defined, extra-discursive reality.

OP theory does include the possibility that the mathematical models may change, e.g., stochastic programming models may be substituted for linear programming models, as a result of the relative inadequacy of previous models in representing the empirically given reality. However, the OP conception of that sequence of models is that it constitutes a path of successive approximations to the absolute truth of the modelled phenomena.

Drawing on recent work in the "philosophy of mathematics," the connection can be made between the OP conception of socialist planning through mathematical models and one of the contemporary "foundational" schools of thought in mathematics.¹⁵ The "formalist" school, as it is known, conceives of mathematics as a purely logical structure, devoid of conceptual content. It is but a simple step from that theory to the OP conception of mathematics as being a "neutral" conceptual tool in some ultimate sense and to the view that mathematical models constitute a universal scientific language.¹⁶ The task is to explain how this conception of mathematics has the effect of mathematical models becoming the subjects of reality in OP discourse and how the existence of such subjects rules out the fundamental Marxist notion of process. The

presence of epistemological essentialisms in OP theory, it can be shown, not only conditions the existence of its conception of mathematical models; it is also intimately related to the essentialist view of social processes at work in that theory.

The argument begins with the conclusions arrived at above. Thus, the OP conception of mathematical models as representing the Truth of reality means that the paths of social change are per force conceived as the product of a structural necessity. The focus of OP theory is the "equilibrium state" or optimal solution, although process and movement may be used as metaphors for the attainment of that final state.

There are two senses in which this conception of the "state of optimality" violates the alternative notion of the overdetermination of social processes. First, because of the operation of a structural necessity, the achievement of the state is conceived to be guaranteed by the movement of social processes. Second, it is the state which is the focus of attention i.e., what is important, and not the process of movement. Thus, to play on a phrase in Althusser, mathematical models constitute a "subject without a process" in OP theory.¹⁷

An alternative approach is to concentrate on process, on the social processes in continual movement and development, and on contradiction. The mathematical models, and their associated equilibrium states and optimal solutions, would be used as metaphors or heuristic devices designating parts of that contradictory movement. They would be used, where necessary, to consider in artificial isolation one aspect or another of that movement, to explain a moment in that process. This limited role must be further restricted to remain consistent with the concept of overdetermination. Because of the focus on process and contradiction, each mathematical

relationship or model must be problematized, i.e., dismantled, immediately upon being specified. If, indeed, a set of mathematical relationships can serve to "model" social processes, then the movement and contradictions of those processes undermine the relationships of the model as soon as it is specified.

This conception of the relationship between mathematical models and the social theory of planning does not constitute a flat rejection of the use of mathematical models in the social theory of planning. Rather, the objective is to re-define the status of those models, accepting a restricted use of mathematical relations as metaphors which are borrowed from outside of social theory to illustrate and develop the concepts and statements of that theory.

An additional implication of the epistemological essentialism in OP theory concerns the concepts of science and scientific community. The presence of rationalism in OP theory conditions the existence of its concept of a universal Economic Science (in the singular!). That science is characterized by the degree to which it can be expressed in mathematical terms and by its ability to transcend different "ideological" points of view and different social formations. The implication is that the members of the "scientific community" of planners share in that scientific Truth and enter into theoretical disputes on the basis of a common methodology and a (present in its absence) common epistemology.

This last argument can serve to account for the ability of optimal planners and Neo-classical economists to meet and discuss "common" scientific questions in international conferences far more readily and harmoniously than can their counterparts in history, sociology and other disciplines.

SOCIAL CONSEQUENCES

The preceding sections explored the various types of essentialism which inform the optimal planners' theory of socialist planning. At the same time, I began to elaborate an alternative conception of planning and of mathematical models in planning theory based on different, non-essentialist notions of social determination and of theory itself, summarized by the concept overdetermination. It remains, then, to complement the discussion of the theoretical effects of essentialism, to indicate briefly the contrasting extra-theoretical implications of essentialist and non-essentialist theories of socialist planning.

Such an analysis seeks to elaborate the following general argument. First, different conceptions of planning are understood to have different implications for the actual practice of planning. In other words, how planning is variously practiced is partly determined by the different theories in and through which its practitioners conduct and assess the consequences of their tasks. Second, those distinct planning practices are conceived to produce different, contradictory effects on the social processes of the social formation in general, and on the class processes in particular. Thus, according to this argument, different (essentialist and non-essentialist) methodologies and epistemologies not only have determinate theoretical effects; they are also expected to have contrasting social implications vis-a-vis the movement or transition of the social formation as a whole.

More specifically, an essentialist theory of socialist planning such as OP theory which operates with a non-contradictory notion of optimality and whose entry-point into the analysis is the concept "technique" approaches the crucial questions of socialist planning in a manner quite distinct from one which emphasizes overdetermination and the centrality of the class process.¹⁸

They provide very different answers to such questions as the following: what do planners look at in the course of planning; how do they investigate the consequences of planning; what are determined to be the relevant circumstances of such planning; and what interactions are important among the processes which are planned.

In the case of OP theory, the responses to such questions are generally taken as given -- given from outside of the planning practice itself in the form of the optimality criterion or objective function of the mathematical program. Once the optimality criterion is provided, the techniques of optimal planning can be applied to determine, under the appropriate set of constraints and simplifying assumptions, the unique point of optimality. For example, the correct set of gross output norms or level of investment can be calculated, once the criterion of maximizing consumption in the terminal year of the five-year plan is provided to the planners. Both the goals of planning as well as the movement to those goals are conceived in a non-contradictory fashion. The result is a notion of a harmonious path of movement to given goals through a set of given techniques. An alternative approach would be to conceive of both the goals and the attempted movement to reach those goals as being overdetermined and, thus, contradictory -- the goals themselves being a product of the struggles and compromises in the social formation in question.

Nota bene. The argument is not that certain goals of planning should not be specified nor that one or another optimality criterion, e.g., maximizing consumption, minimizing labor inputs, or maximizing growth rates, is a more appropriate objective of socialist planning. The emphasis here is on the status of any optimality criterion, the way in which it is conceived, and the social consequences of that conception.

I now consider a simple example to illustrate the preceding argument. In any particular social formation in which such planning might take place it is expected that several fundamental and subsumed classes would be present.¹⁹ To begin, I specify a social formation in which both the communist fundamental class process (the communal appropriation of surplus labor) and the ancient fundamental class process (the appropriation of surplus labor by independent producers by right of citizenship) co-exist.²⁰ There is no need to indicate the relative predominance of one class process over another in this case; nor is there a presumption that this social formation must necessarily move in the direction of the social predominance of either one of the two fundamental class processes.

Each fundamental class process has its political, economic, and cultural conditions of existence. For brevity's sake I do not list them here, except to specify that two conditions of existence are common to both fundamental class processes, viz. forms of commodity production and circulation and forms of planning. In other words, the direct producers in both class processes produce commodities and both "sectors" are included in the national plan.²¹ One such example might be that manufactured items for domestic consumption are communist commodities; and that ancient commodities take the form of domestic foodstuffs, and export crops which generate foreign exchange for the purchase of non-competitive imports for domestic (communist) manufacturing.

It is expected that, in such a situation, different conceptions of planning and thus different planning practices would produce contrasting economic, cultural and political arenas of tension, struggle, and compromise between and among the specified fundamental classes and the subsumed class of planners.

For example, the essentialist conception of planning discussed above might result in the calculation of a new set of (optimal) relative prices with the objective of maximizing consumption. The new prices might induce ancient food producers to substitute the production of domestic foodstuffs for export crops. One result would be a rise in the level of domestic consumption (communist producers purchasing more of the previously scarce state-subsidized primary food products), the desired effect.²² However, an additional outcome might be either (a) a decline in the level of purchases of imported inputs for communist manufacturing production, due to the shortage of foreign exchange, or (b) the acquisition of foreign loans to finance the existing level of imports. In the former case, the lack of spare parts might cause a decline in the level of labor productivity. In turn, the lower level of productivity might create the conditions in which it is required that there be an increase in the rate of communal surplus labor appropriation to maintain the existing rate of communist accumulation. In the latter case, a class of foreign bankers might become subsumed to the communist class process, requiring an increase in the level of communally appropriated subsumed class (interest) payments. Thus, an additional result might be a new set of alliances between the ancient producers and the communist producers and between the ancient producers and the subsumed class of planners. However, new tensions between the communist direct producers and the subsumed class of planners and/or foreign bankers might also emerge. Some of the resulting tensions might develop into struggles which have as their object the quantitative and qualitative dimensions of the appropriation and distribution of surplus labor. Similarly, non-class struggles might also emerge, e.g., over concepts of national sovereignty, religious ideas, and property rights.

In contrast, a conception of planning which begins with class processes and overdetermination would seek to analyze the contradictory social implications of any attempt to maximize the level of domestic consumption and to implement such a price reform. There is no necessary reason to assume that such a different conception would produce a "correct" set of alliances and conflicts. The effects of the social processes of planning are only some of the constitutive elements in the movement of the social processes of the social formation as a whole. However, a conception of planning which begins with techniques and which "forgets" about classes and the contradictory consequences of the objectives and procedures of planning may promote the conditions of existence of the conflicts and alliances sketched above. Furthermore, the emergence of such tensions and compromises may undermine the social existence of the communist class process itself. Thus, an essentialist conception of planning may make possible the transition to a social formation in which the communist fundamental class process is even further from becoming socially dominant.

FOOTNOTES

¹"Mathematical Methods of Organizing and Planning Production," Management Science 6 (July 1960): 387.

²The Language of Self: The Function of Language in Psycho-analysis, trans. Anthony Wilden (Baltimore: Johns Hopkins Press, 1968), p. 7.

³M. J. Swann, "On the Theory of Optimal Planning in the Soviet Union," Australian Economic Papers 14 (June 1975): 41-56 is a useful, short introduction to OP theory. A more extensive summary of the various aspects of OP theory can be found in Michael Ellman, Planning Problems in the USSR: The Contribution of Mathematical Economics to Their Solution, 1960-1971 (Cambridge: At the University Press, 1973).

⁴Translated and published in English, with an introductory note by Tjalling C. Koopmans, as "Mathematical Methods of Organizing and Planning Production," Management Science 6 (July 1960): 366-422.

⁵To be clear, it is not the purpose of this paper to construct the concrete history of thought of OP theory, i.e., an analysis of the particular configuration of social processes which resulted in the original formation and subsequent development of OP theory. Important suggestions for producing that history are provided by Dominique Lecourt's analysis of the phenomenon of Lysenkoism (Proletarian Science? The Case of Lysenko, trans. Ben Brewster [London: New Left Books, 1977]) and by Robert Linhart's study of the post-revolutionary development of the Soviet Economy (Lenine, les Paysans, Taylor: Essai d'Analyse Materialiste Historique de la Naissance du Systeme Productif Sovietique [Paris: Editions du Seuil, 1976]).

⁶"Mathematical Methods," p. 367.

⁷The Best Use of Economic Resources, trans. P. F. Knightsfield (Cambridge: Harvard University Press, 1965). That same year (1959) saw the publication of a related volume, The Use of Mathematics in Economics, ed. V. S. Nemchinov (Cambridge: M.I.T. Press, 1965), which included contributions by Kantorovich, Oscar Lange, A.A. Lur'e, and V.V. Novozhilov.

⁸Kantorovich's original statement of the duality theorems of linear programming is in the first Appendix to his Best Use of Economic Resources, pp. 274-5. For a more comprehensive presentation, see Hukukane Nikaido, Introduction to Sets and Mappings in Modern Economics, trans. Kazuo Sato (New York: American Elsevier Publishing Company, 1972), pp. 173-80 and 211-14.

⁹Two familiar examples may help to illustrate this brief discussion. The two most prevalent and far-reaching forms of reductionism in Marxist conceptions of social reality have been economic determinism (economism) and theoretical humanism. Both forms operate with a mechanistic conception of social determination, purporting to explain all social phenomena by the operation of some economic or human essence. Similarly, neoclassical economic theory is characterized by its use of the concept utility as the essence of all aspects of society. For a discussion of different views of economic theories in general, see Richard D. Wolff, Bruce Roberts, and Antonino Callari, "Marx (not Ricardo's) 'Transformation Problem': A Radical Reconceptualization," History of Political Economy 14 (Winter 1982): 564-8. See Stephen Resnick and Richard Wolff, "The Theory of Transitional Conjunctures and the Transition from Feudalism to Capitalism," Review of Radical Political Economics 11 (Fall 1979): 3-22 and "Marxist Epistemology:

The Critique of Economic Determinism," Social Text no. 6 (Spring, 1983): 37-72 for a more complete discussion and criticism of the various forms of essentialism in theory.

¹⁰The concept overdetermination represents the strong anti-essentialism of Marxist theory. Originally borrowed from Freud, and subsequently transformed and extended, overdetermination orients the causal explanation of social phenomena in terms of the notions of mutual constitutivity and relative autonomy. On the one hand, the overdetermination of social processes means that they are mutually constitutive, that each social process participates in the formation of all other processes. On the other hand, overdetermination implies that each process is conceived as a relatively autonomous nodal point, a nexus of determinations with its own position in the constellation of causal relations. Thus, each process is understood to be constituted only by the effects emanating from all the other social processes and, as a relatively autonomous process, to participate in its own right in that complex web of mutual determinations.

This understanding of overdetermination is counterposed to notions of simple multiple causation, of simple reciprocal causality, and of relations between processes as separate things linked externally by a causal effect. It is also unrelated to the mathematical concept bearing the same name, which designates a simultaneous equation system in which there are more equations than unknowns.

¹¹This discussion of the cultural processes of planning was inspired by the analysis of Bruno Latour and Steve Woolgar, Laboratory Life: The Social Construction of Scientific Facts, with an Introduction by Jonas Salk (Beverly Hills: Sage Publications, 1979).

¹²See below, fn. 19.

¹³Cf. Dominique Lecourt, Proletarian Science?, pp. 123-7.

¹⁴The most thorough contemporary critique of classical epistemology, albeit from a non-Marxist position, is by Richard Rorty, Philosophy and the Mirror of Nature (Princeton: Princeton University Press, 1979). The definition and criticism of empiricism and rationalism as they appear here are more fully elaborated in Resnick and Wolff, "Marxist Epistemology."

¹⁵An explanation and criticism of the contemporary foundational debates in mathematics can be found in two recent volumes: Philip J. Davis and Reuben Hersh, The Mathematical Experience, with an Introduction by Gian-Carlo Rota (Boston: Birkhauser, 1980) and Morris Kline, Mathematics: The Loss of Certainty (New York: Oxford University Press, 1980). See my review essay, "Mathematics: Accounting for Uncertainty in the Mathematical Experience," History of Political Economy (forthcoming).

Nicholas Georgescu-Roegen, The Entropy Law and the Economic Process (Cambridge: Harvard University Press, 1971), especially chapter two, "Science, Arithmomorphism, and Dialectics," is an important critical discussion of the use of mathematical models in economic theory. However, our approaches differ in important respects.

Other important sources for the present discussion of mathematical models in social theory include the following: Barry Hindess, "Materialist Mathematics," Theoretical Practice, no. 3-4 (Autumn 1971), pp. 82-103; Pierre Raymond, L'Histoire et les Sciences, Suivi de, Cinq Questions Sur l'Histoire des Mathématiques (Paris: F. Maspero, 1978); Alan Badiou, Le Concept de Modèle (Paris: F. Maspero, 1970); and Jean Cavailles, Philosophie Mathématique (Paris: Hermann, 1962).

- ¹⁶For a penetrating criticism of the conception of mathematics as a language, see Gaston Bachelard, Le Nouvel Esprit Scientifique, 5th ed. (Paris: Presses Universitaires de France, 1949), pp. 53-70 and Dominique Lecourt, Marxism and Epistemology, trans. Ben Brewster (London: New Left Books, 1972), pp. 56-60.
- ¹⁷Louis Althusser, Essays in Self-Criticism, trans. Grahame Lock (London: New Left Books, 1976).
- ¹⁸A brief explanation is in order. The anti-essentialism which guides the present effort -- a disputation of all causal priorities in the explanation of social phenomena -- does not preclude discursive priority being attached to one among the myriad social and natural processes. The notion of the "centrality of the class process" indicates the use of the concept class process as the entry-point and goal of the Marxist analysis of social formations. This discursive priority (centrality) of the class process refers to the object of Marxist theory, oriented by such questions as the following: what are the existent class processes; how are they constituted; how are they changing. It is expressly not a matter of designating the class process as the most important determinant of social life nor of conferring on that concept an elevated status from which all others are deduced.
- ¹⁹The fundamental class process is one among the myriad economic processes which indicates the particular process of the performance and direct appropriation of surplus labor. Surplus labor is that labor performed by the class of direct producers which is the part of total labor in addition to necessary labor. Necessary labor, in turn, is defined as that amount of total labor which is performed by the direct producers equivalent to the

reproduction of the social (nb. not merely biological or minimum) conditions of their existence as a class. The different modes of surplus labor appropriation designate the various types of the fundamental class process, e.g., the primitive communal, capitalist, slave, feudal, ancient, and advanced communist class processes.

The subsumed class process, in turn, is defined as the process of distribution of a particular quantum of previously appropriated surplus labor. It is a transfer which is made for the performance, by the corresponding subsumed class(es), of one or another condition of existence of the fundamental class process. For example, in volumes 2 and especially 3 of Capital, Marx discusses several different classes subsumed to the capitalist fundamental class process. In particular, he analyzes the subsumed class activities of, and transfers of surplus-value to, merchants, money-lenders, and landlords.

For a more extended discussion of the concept of (fundamental and subsumed) classes as it is used here, see Steven Resnick and Richard Wolff, "Classes in Marxian Theory," Review of Radical Political Economics 13 (Winter 1982): 1-18, as well as Susan Feiner, "Factors, Bankers, and Masters: Class Relations in the Antebellum South" and Rolf Jensen, "The Transition From Primitive Communism: The Wolof Social Formation of West Africa," both in the Journal of Economic History 42 (March 1982): 61-7 and 69-76, respectively.

²⁰For a more complete definition of the ancient class process, see Rona S. Weiss, "Primitive Accumulation in the United States: The Interaction Between Capitalist and Noncapitalist Class Relations in Seventeenth-Century Massachusetts," Journal of Economic History 42 (March 1982): 78, and Barry

Hindess and Paul Q. Hirst, Pre-capitalist Modes of Production (Boston: Routledge & Kegan Paul, 1975), pp. 82-90.

²¹Although confusion continues to exist in the Marxist literature on economic development and socialist planning concerning the relationship between commodity production and capitalism, Marx's analysis is quite clear on this point : he noted numerous forms of non-capitalist commodity production (e.g., Capital, vol. II [New York: International Publishers, 1967], p. 110). Here, his specific references are extended to include commodity production as a condition of existence of the communist fundamental class process.

²²The relevant assumption is that the relative, net-of-taxes purchase price to the ancient producers has risen while the retail price to the consumers has remained constant, thus allowing for an increase in purchases by communist producers. An analysis of the flows of surplus labor necessary to finance the increased state subsidies of domestic foodstuffs (the difference between the producer and consumer prices) might identify additional arenas of tension and compromise. However, that analysis is not conducted here.

AESA DISCUSSION PAPERS AS OF NOVEMBER 1983

1. "The Theory of Commodity Fetishism and the Social Constitution of Individuals", by Jack Amariglio and Antonio Callari.
2. "The Value of African Labor-Power in South Africa: 1948-1978", by Fred Curtis.
3. "Adam Smith, the Theory of Value, and the History of Economic Thought", by Antonio Callari.
4. "Genovese and the Slave Mode of Production: A Marxian Critique", by Susan F. Feiner.
5. "Marx and Freud: Brothers in Overdetermination", by Harriet Fraad.
6. "Structure and Contradictions of Primitive Communism in Pre-Sixteenth Century West Africa", by Rolf Jenson.
7. "Towards a Class Analysis of the Relationship between Corporations and Banks", by E. Thomas Kuh.
8. "Some Comments on the Construction of Paradigms of Social Development", by Joseph E. Medley.
9. "The Accumulation of Capital as Historical Essence: A Critique of the Theory of Monopoly Capitalism", by Bruce Norton.
10. "Towards a Nonessentialist Class Consciousness", by Elizabeth Oakes.
11. "A Contribution Towards an Alternative Marxian Theory of Fixed Capital", by Bruce B. Roberts.
12. "Marx's Theory of Money: A Reinterpretation", by John T. Roche.
13. "Social Theory and Socialist Economic Planning: A Critique of Optimal Planning Theory", by David F. Ruccio.
14. "The Origins of the Capitalist Class Process in the United States: The Early Massachusetts Boot and Shoe Industry", by Rona S. Weiss.
15. "A Marxian Reconceptualization of Income Distribution", by Richard Wolff and Stephen Resnick.

For reprints, please send \$1 per copy to:

AESA
Economics Department
University of Massachusetts
Amherst, MA. 01003