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Socialism and the Anarchy of Production

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ABSTRACT: The goal of this article is to extend the argument about the possibility of economic calculation under socialism first advanced by Ludwig von Mises (and later extended by Rothbard) to a related topic, the possibility of developing a comprehensive plan of production as a whole when all of the means of production are owned by a single entity. A division of ownership of the means of production permits a division of intellectual labor, a necessity when the scale of production is large. When plans of production are made independently, there is always the chance that the content of Plan A will not be compatible with the content of Plan B. I make a distinction between the direct coordination of plans of production and the indirect coordination of plans of production, which is effected by the direct coordination of plans to buy and to sell. Buying and selling requires two owners, which means that the indirect coordination of plans of production is impossible when there is only one owner, which means that the indirect coordination of plans of production is impossible under socialism. I explain in detail why it is impossible for anyone to come up with a comprehensive plan of production as a whole, i.e., with a Plan, and then apply that conclusion to the experience of the Soviet Union: there may have been central planners in the Soviet Union, but there never was central Planning for the simple reason that central Planning is impossible.

INTRODUCTION

Peter and Paul are bank robbers. Both have read Adam Smith. Peter's specialty is cracking safes; Paul's is driving the get-away car. Peter and Paul decide to collaborate. A division of labor ensues. Peter draws up a plan for cracking the safe, and Paul does the same

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for the get-away car. If the content of Peter's plan is selected by Peter and the content of Paul's plan is selected by Paul, what reason is there to think that the contents of both plans will be compatible?

Unless the content of Peter's plan is compatible with the content of Paul's plan, the best laid-plans … grief and pain, etc. If Peter plans to walk out of the bank with the stolen money at 3 A.M. and Paul plans to arrive with the get-away car at 10 A.M., both men may end up regretting the uncoordinated nature of their plans. For that reason, Peter and Paul will probably compare the contents of their plans before they attempt to implement them. Removing any inconsistent elements in the two plans will produce a unified plan. Until such time as someone has consciously combined the elements of Peter's plan with the elements of Paul's plan, Peter and Paul have no plan to rob a bank. Rather, Peter and Paul have plans to rob a bank, and the content of Peter's plan may be incompatible with the content of Paul's plan. The direct coordination of plans requires a conscious agent, and the result of that activity is a unified plan: *e pluribus unum*.

The distinction between the direct coordination of plans of production and what one might call the indirect coordination of those plans is every bit as significant as the distinction between direct exchange, or barter, and indirect exchange, which requires a medium of exchange. The subject will be discussed in some detail in the fourth part of the third section of this work. For the time being it is sufficient to state that the indirect coordination of plans of production is effected by the direct coordination of plans to buy and to sell.

The following sections are an examination of some of the problems created when ownership of the means of production resides in a single entity. In an article published in 1920, Ludwig von Mises argued that economic calculation is impossible when all of the means of production are owned by the state. Oskar Lange offered a rebuttal in the 1930s (Lange 1936, 1937). I not only hope to show in the body of this work that Lange never rebutted Mises, I also hope to show that the problem of economic calculation under socialism can best be understood when it is seen as one aspect of a larger problem, the problem of planning the production of everything when all of the means of production are owned by a single entity. The unavoidable conclusion of the argument is that it is impossible to produce a unified plan of production as a

whole when all of the means of production are owned by a single entity. In the light of that conclusion, a brief examination of central planning in the Soviet Union will follow.

In an attempt to forestall misunderstanding, I should mention now that some words or phrases will appear with upper-case letters where they would not normally be required. The reader will encounter the phrases "single manufacturer," "single owner," and "a plan," but he will also encounter the phrases "Single Manufacturer," "Single Owner," and "a Plan." In the latter examples the upper case has been used to signify the fact that the entity in question is not simply one member of a class but also the sole, or only, member of that class. For example, a Single Manufacturer is not simply a manufacturer but also the sole, or only, manufacturer. In like manner, a Plan of production would be not simply a plan of production but also the sole, or only, plan of production. A distinction between socialism and Socialism will also be made in the conclusion, but the distinction—and the reason for it—will be explained then.

I. THE ANARCHY OF PRODUCTION

A. Time to Hammer Home a Point

What is the best way to hammer home a point? With a hammer. The only problem is, where to get one? Assume that I am a manufacturer of hammers. Problem solved. Where to get a hammer? From me. Where did I get the hammer? I manufactured it. Which means what? It means that I had a plan which I implemented. Part of the content of that plan clearly involved the factors of production required for the manufacture of the hammer. Unless I already had the factors of production on hand, i.e., owned them, I clearly would have needed to acquire them. How could I have done so?

If a factor of production that I require and do not yet own has no owner, I can appropriate it. Assume that I need some land for a factory in which to manufacture the hammer. Fortunately, there is some land nearby which no one owns. I appropriate it for my purpose by erecting a factory on it. Suppose, however, that all the factors of production required for the implementation of my plan are owned by someone else. I'm left with three alternatives: the owner of a factor I require can give it to me, I can buy it from its owner, or I can steal it. That exhausts the possibilities.

Now let us eliminate two of those alternatives. Assume that I am reluctant to steal a factor of production, perhaps because of moral scruples. Also assume that none of the owners of the factors that I require are philanthropists, friends, or relatives—and therefore are not disposed to give them to me. The only remaining course of action is to buy those factors from the person or persons who own them. Each such transaction requires not simply two parties but also two owners. I own whatever is being transferred to someone else in exchange for the factor I am buying from him, and the person I am buying the factor from owns that factor until such time as he has transferred its ownership to me. Every voluntary exchange requires two owners. The full significance of that fact should become apparent later in this work.

Do I intend to manufacture the hammer for my own use (meaning, of course, do I intend to retain ownership of the hammer after I have manufactured it?), or do I intend to manufacture the hammer and then transfer its ownership to someone else? Assume the latter. Also assume that I am not a philanthropist and have no friends or relatives. It would then seem to be a reasonable assumption that my intention in manufacturing the hammer is to sell it to someone else (I presumably would not manufacture it with the intention that it be stolen nor with the intention of abandoning it).

Now let us up the ante. Assume that I plan to manufacture ten thousand hammers, all of which I intend to sell to someone else. Also assume that the production of each hammer requires one pound of steel. If my math is correct (and I hate to think what a discussion of economics would be like with no math), the production of ten thousand hammers would require ten thousand pounds of steel. Because steel does not grow on trees—it needs to be manufactured—how do I acquire it? Let us rule out appropriation (no abandoned steel), theft, and gift. What is left? I can either manufacture the steel myself or buy it from someone else. How do I decide?

Maybe I am a calculating guy who thinks that manufacturing the steel myself would cost two dollars per pound. If I can buy the steel I need from someone else for one dollar per pound and my goal is to manufacture the hammers as cheaply (in terms of money) as possible, my decision has been made for me: two owners, of whom I am one, will engage in a voluntary exchange.

Maybe I am a lazy guy whose goal is not to manufacture the hammers as cheaply (for as little money) as possible but to

manufacture them with as little effort on my part as possible. Not only is time required to implement a plan, it is also required to make one. Not having to plan the production of steel would save me both time and labor. I may therefore decide to buy the steel I need from someone else rather than to manufacture it myself. If so, two owners, of whom I am one, will engage in a voluntary exchange.

Now assume that my goal is to sell the hammers for more money than it costs me to manufacture them, that my calculations have shown that it costs eight dollars to manufacture and sell each hammer, and that I think ten dollars is a nice, round figure that will more than cover the cost of each hammer. My plan to manufacture and sell the hammers is beginning to take shape. During the coming month I intend to manufacture ten thousand hammers in a factory which I own. I will buy the remaining factors of production that I require (including ten thousand pounds of steel at one dollar per pound) from someone else. When the hammers have been manufactured, I will sell them to someone else for ten dollars apiece, which will leave me with a profit of two dollars on each hammer sold. My plan has been made. In order to implement it, what conditions must be met?

It should be obvious that the implementation of my plan requires the cooperation of at least two other parties, the party from whom I buy the steel and the party to whom I sell the hammers. If I plan to buy steel from someone else, the implementation of my plan requires a corresponding plan on someone else's part to sell it to me. If I plan to sell hammers to someone else, the implementation of my plan requires a corresponding plan on someone else's part to buy them from me. In short, the implementation of my plan requires that its content is compatible with the content of the plans made by at least two other parties.

B. Omniscience and the Lack Thereof

Now let us make an assumption that almost no economist has made for more than a century. Assume that I am not omniscient. That assumption might prove a blow not only to my pride but also to my wallet. After all, unless I were omniscient, I might not know the content of other parties' plans. Let us examine some of the possible consequences of my ignorance.

As a result of my ignorance I may find it impossible to implement my plan to manufacture hammers for eight dollars and sell them

for ten. Perhaps another manufacturer of hammers, unbeknownst to me, has decided to flood the market with his hammers, making it impossible for me to sell mine for ten dollars apiece.[1] As a result of competition from the same manufacturer I may find it impossible to find a manufacturer of steel who will sell it to me for one dollar per pound—or perhaps the competition has come from a manufacturer of sickles. Maybe the problem is simply that the customers for my product have pulled a disappearing act—perhaps a fad for sickles is the culprit. It is certainly easy to see why the phrase "anarchy of production" has been used to describe a situation in which the content of every party's plan is not known to every other party. How much simpler, and perhaps more profitable, production would be if it were. How to solve the problem? One could assume that all the parties are omniscient, but I am not sure that that would solve the problem anywhere except on paper. Perhaps one could permit the parties to exchange information about the content of their plans with one another? Sounds like a good idea. Let us examine it.

Why not permit every manufacturer to place a monthly phone call to all the other manufacturers in an attempt to learn something about the content of their plans? I can see at least two drawbacks to this proposed solution to the problem of ignorance. The first

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[1] Cf. Wootton (1935, 151):

> This tendency arises from the fact that no producer, planning his own production programme, knows what his colleagues are doing. He knows only that it is to his interest, first, that the total production of the kind of goods in which he deals should not pass the point at which these can be profitably sold; and, second, that as large a part of that total as possible should be produced by himself, and not by any of his fellows, so that he may reap the profit and not they. The obvious consequence is that all the producers between them, in their anxiety to look after this second interest, neglect the inevitably damaging consequences of their action upon the first.

Cf. also Cole (1935, 196):

> But under competitive conditions, no single entrepreneur can, even by the most correct anticipation of demand, assure himself of satisfactory selling conditions. For he does not know what anticipations other entrepreneurs will make, or how they will act in the light of them. Even if he could know—as he cannot—the exact total demand at a given price, he cannot be sure that anything he can do will cause this to be the ruling price, for the actions of his competitors may cause the total supply offered for sale to exceed, or to fall below, what is for him the optimum quantity.

is, other manufacturers might be reluctant to disclose the content of their plans to parties they regard as their competitors (maybe the other manufacturers of hammers do not want me to know what they are up to). The second is, one might end up with a huge phone bill. The price of the steel I require to manufacture hammers depends, after all, not only on the content of the plans of other manufacturers of hammers but also on the content of the plans of those who manufacture anything containing steel. Not only would I have to call every manufacturer of hammers, I would also have to call every manufacturer of sickles. Indeed, I would have to call every manufacturer who used—or might use—any of the factors of production that I might use myself. That is a lot of phone calls.

Consider my plight. I am not omniscient, and I know that I am not omniscient. Indeed, when you get right down to it, I am ignorant, and I know that I am ignorant. And look what happens when I try to do something that might dispel my ignorance. I spend all my time on the phone trying to get in touch with other manufacturers, and most of them will not return my calls. And when I finally find another manufacturer who will return my call, I have to worry that I will be prosecuted for collusion by some bureaucrat whose salary I pay. If only there were an easier way to make a living.... If only there were some way that I could learn something about the content of other parties' plans without the need for an explicit disclosure of that content by those parties.... If only I did not have to spend so much time on the phone.... If only there were things called prices which charged in response to the underlying conditions of supply and demand.... Fortunately, there are. We will postpone an examination of them until the third section of this work.

By this point it should be apparent that the existence of parties who are ignorant of the content of other parties' plans creates the possibility that some plans will gang aft agley. Some parties may be unable to implement the plans they have made if the content of those plans requires corresponding content in the plans of other parties. Plans that require, but lack, corresponding content in another plan are incompatible. If two plans are incompatible, neither one can be implemented. Anarchy of production? So it would seem—unless we can figure out some way to reduce the ignorance of the parties who make the plans. If we cannot? Maybe we should take a different tack. Maybe we should reduce the number of parties who make plans.

II. SOCIALISM

A. An End to the Anarchy of Production?

Many socialists have presented socialism as an alternative to what they called "the anarchy of production." That phrase can be found in the works of Marx, Engels, and Lenin. We saw in the previous section that the phrase "anarchy of production" might seem to be an apt description of a situation in which the parties who make plans are ignorant of the content of one another's plans. If only one party made a plan, there is no possible way he could be ignorant of the content of other parties' plans. Other parties would have no plans—for all practical purposes there would be no other parties. Before pursuing that thought, however, we need to examine what one might call the skeleton of every plan.

The implementation of every plan made by man requires the use of at least two distinct factors of production, land and labor. Land—at least in the sense of space—clearly is a prerequisite: every man is located somewhere. So, too, is labor: what plan made by man has ever been implemented without the use of his body? Ownership is control of the use of that which has extension. The implementation of every plan therefore requires the ownership of at least two distinct factors of production. If the person who is using something doesn't own it, someone else does. Any discussion of the implementation of a plan that ignores the subject of ownership is suspect.

Returning to our discussion of socialism, we find that socialism, which ordinarily is defined as ownership (note the word) of the means of production by the state, almost certainly was a proposal by some socialists to eliminate the anarchy of production by reducing the number of owners. If the state is the only manufacturer of hammers, does it need to worry that the market will be flooded by other manufacturers? There are no other manufacturers. If the state is the only manufacturer, does it need to worry about competition for the factors of production from other manufacturers? There are no other manufacturers. If the state is the only manufacturer of hammers, does it need to worry that the market for those hammers will disappear? What market? There is no market. If the state is the only owner of the means of production and hammers themselves are means of production, there is no possible way to sell those hammers: there is no other

party to sell them to. Those hammers were not produced with the intention of selling them.

What an exceptionally elegant solution to the problems created by a multiplicity of owners, most or all of whom are ignorant of the content of the plans made by the other owners. Why not replace a multiplicity of owners with a Single Owner? Would that owner be ignorant of the content of the plans made by other owners?[2] How could he be? There are no other owners—and thus no other plans. Would the content of the plan made by the Single Owner be incompatible with the content of a plan made by another owner? How could it be? There is no other owner—and thus no other plan. The heck with plans, it is time for a Plan.[3] It sounds like a good idea. Perhaps it is time to subject it to some scrutiny.

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[2] Cf. Dobb (1945, 271):

> So far as what may be termed the mechanics of each system are concerned (with which the present chapter will mainly deal), the essential contrast is between an economy where the multifarious decisions which rule production are taken each in ignorance of all the rest and an economy where such decisions are co-ordinated and unified.

Cf. also Schumpeter (1950, 186):

> solution of the problems confronting the socialist management would be not only just as possible as is the practical solution of the problems confronting commercial managements: it would be easier. Of this we can readily convince ourselves by observing that one of the most important difficulties of running a business—the difficulty which absorbs most of the energy of a successful business leader—consists in the uncertainties surrounding every decision. A very important class of these consists in turn in the uncertainties about the reaction of one's actual and potential competitors and about how general business situations are going to shape. Although other classes of uncertainties would no doubt persist in a socialist commonwealth, these two can reasonably be expected to vanish almost completely. The managements of socialized industries and plants would be in a position to know exactly what the other fellows propose to do and nothing would prevent them from getting together for concerted action.

[3] Cf. Steele (1992, 255):

> The replacement of "the market" by planning means the replacement of many plans by one plan, a 'single great plan' in the words of Engels. These two forms of planning are not only distinct; they are at odds. The more that is decided by a single great plan, a society-wide plan, the less can be decided by individuals or by groups (other than the individual or group which makes the single great plan).

B. Time for the Other Shoe to Drop

In a performance at the United Nations on Oct. 12, 1960, Nikita Khrushchev used a shoe to hammer home a point (there was probably a shortage of hammers in the Soviet Union at the time). That shoe was manufactured somewhere, and it was manufactured somewhere only after a decision had been made to manufacture it. What decisions were implicated by the decision to manufacture it? Let us interrogate the usual suspects: who, what, where, when, and why. Who is going to produce something? Peter? Paul? Peter and Paul? What is going to be produced? A shoe? As we will see shortly, that decision raises more questions than it answers. Where will something be produced? Europe? Canada? Europe and Canada? When will something be produced? This week? Next week? This week and next week? And last and—in this context—least, why will something be produced? I intend to ignore that question and to compress the other four suspects into what one might call the two questions of production, what will be produced and how will it be produced. Back to Khrushchev's shoe.

Assume that the manufacturer of Khrushchev's shoes knew the dimensions of Khrushchev's feet and therefore knew the size of the shoes that needed to be manufactured. What questions still needed an answer? Who should manufacture them. A mason? A carpenter? A cobbler? The cobbler named Peter? When should they be manufactured. This week? Next week (please bear in mind that engaging the services of the cobbler named Peter for the coming week will not do much good if the shoes cannot be manufactured until the following week)? Where should they be manufactured. If the manufacturer has two factories at his disposal, in which factory will the pair of shoes be made? If the manufacturer has no factory at his disposal, where and how will he acquire one?

Even after the manufacturer of shoes has answered the preceding questions, we still do not know much about some of the shoes' characteristics. Do they have leather uppers? If so, did the leather come from a cow? From a horse? From an alligator? Do the shoes have leather heels or rubber heels? Are the soles made of leather or of a composite material? Are the soles attached to the uppers with glue or with thread? Are the heels attached with nails? If so, are the nails made of steel? Iron? Wood? I may be belaboring the obvious, but a decision to manufacture a pair of shoes is a decision to make a lot of decisions.

Assume that our manufacturer has answered the questions raised in the preceding paragraph and has decided that the shoes in question will have leather (from a cow) uppers, that the soles will be made of leather and will be sewn to the uppers, and that the heels will be made of rubber and will be attached with steel nails. Planning the production of a relatively simple product like a shoe can be hard work. Perhaps our manufacturer could use some time off?

Not so fast. If the state owns all the factors of production, socialism entails the existence of a Single Manufacturer. Which means what? It is not enough for a manufacturer under socialism merely to plan the production of shoes; he must also plan the production of all the other products that are used to make the shoes. In the example given in the previous paragraph, not only would the manufacturer have to plan the production of the shoes, he would also have to plan the production of the leather used for the uppers, the rubber used for the heels, the leather used for the soles, the thread used to attach the soles to the uppers, and the steel nails used to attach the heels to the soles.

Now let us examine the decisions the manufacturer would have to make when planning the production of something as apparently trivial as those steel nails. Where will the raw materials needed to make the steel come from? How will they be transported from those locations to the place where the steel is manufactured? What source of energy will be used when the steel is manufactured? Any electricity? If so, where will it be generated? And how? Oil? Gas? Coal? Hydro? Nuclear? Does our manufacturer of shoes have to plan the construction of a hydro-electric project in order to come up with the electricity needed to manufacture the steel used for the nails?

Once the steel has been manufactured, where and how will it be fashioned into nails? If the plant where the nails are manufactured is five hundred miles from the shoe factory, how will those nails be transported a distance of five hundred miles? Airplane (does our manufacturer of shoes also have to plan the production of airplanes—if he does, his list of things-to-do is getting longer by the second)? Rail (does our manufacturer of shoes also have to plan the production of a railroad)? Truck (does our manufacturer of shoes also...)?

Assume that the answer is a truck. Trucks require fuel. Assume that the fuel is gasoline. Where will the refinery (must our

manufacturer of shoes also…) be located? Who will staff it? And where will the crude oil come from? If wells already exist, from which well or wells will it be taken? If there are no wells, where should our manufacturer sink one—and what equipment will he need to do so? Must our manufacturer of shoes now plan the production of the drilling equipment used to extract the crude oil which will be refined into the gasoline used to transport one of the components of his shoes from the place where it was manufactured to the place where the shoes are manufactured?

The examples that I have given could be multiplied endlessly, but I trust that by this point it is clear that a manufacturer of shoes who is also the manufacturer of every thing (i.e., capital good) used to make those shoes and is also the manufacturer of every thing used to make every thing which is used to make those shoes and is also ... I am out of breath. Suffice it to say, a Single Manufacturer has his work cut out for him. If the notion of a Plan seems simple, the actual drafting of a Plan should not. Would anyone blame our Single Manufacturer if he went in search of a short-cut? Is there a short-cut?

C. The Division of Ownership and the Division of Intellectual Labor

In an example given in the preceding section a manufacturer of shoes found himself forced not only to plan the production of those shoes but also to plan the production of every product used to make those shoes—and then found himself forced to plan the production of every product used to make every product used to make those shoes, and then found himself forced.… What created so much work for the manufacturer? The reason the manufacturer had to plan the production of so many things was that the manufacturer in question was the only manufacturer of every thing. There was no other manufacturer to plan the production of any thing, which is why the task of planning the production of every thing fell on the Single Manufacturer. And there was no other manufacturer because there was no other owner: our manufacturer of shoes owned all the factors of production.

Suppose that there had been other owners. Suppose, for example, that there had been a manufacturer of nails as well as a manufacturer of shoes (i.e., two distinct manufacturers). The only way that one can acquire the ownership of that which has an owner is gift, theft, or purchase. Ignore the first two possibilities.

If the manufacturer of shoes buys the nails that he needs from the manufacturer of nails, does the manufacturer of shoes need to plan the production of those nails? The only thing that he needs to plan is their purchase. The task of planning the production of those nails falls on the manufacturer of the nails.

The implementation of every plan requires the ownership of at least two factors of production. The manufacturer of nails cannot implement his plan for their production unless he owns the factors of production needed to make them; so, too, with the manufacturer of shoes. Single owner? Single producer. Single producer? Single plan. Single plan? Single planner. More than one owner? The possibility of more than one producer. More than one producer? At least two plans—and planners.

A division of ownership of the means of production permits a division of intellectual labor. A Single Owner, in the nature of the case, is responsible for planning the production of everything. Where there is more than one owner, no single owner needs to do all of the planning. After all, some of that planning can always be done by ... another owner.

Return to the case of the Single Manufacturer of shoes who was also the manufacturer of all the products used to make those shoes. Is there any reason why, faced with a task that exceeds his capacity (planning the production of everything—in short, producing a Plan), he cannot farm out the task of planning the production of some of those things to other parties? No, there is not, but that will not solve the problem. Unless the Single Manufacturer can consciously combine the elements of all the plans made by all the different parties (planners) with the elements of his own plan—and so eliminate all of the incompatible elements—the result of all that farming out, that division of intellectual labor, will be a mish-mash of plans that have not been coordinated, not a unified plan of production as a whole (i.e., a Plan). The Single Manufacturer will find the task of directly coordinating all of those disparate plans to be no less impossible than the task of making all of those plans by himself. Indeed, the task—and the problem—that he faces will be the same in both cases.[4]

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[4] Cf. Hayek (1997, 141):

> The first point which must be stressed is that it is the very complexity of the task—i.e., the very fact which usually makes comprehensive planning

The second part of this section ended with a Single Manufacturer looking for a short-cut that would make the task he faced less burdensome. Has a short-cut been unearthed? The task faced by a single manufacturer can be made less burdensome by enlisting the services of another manufacturer. No such shortcut is available to a Single Manufacturer. Part B of the first section of this work also ended with a producer who was looking for a short-cut. The destination he wanted to reach? Knowledge of the content of other parties' plans. Let us see if such a short-cut can be found.

III. PRICES

A. The Role of Prices in the Reduction of Ignorance

We saw in the first section of this work that when plans are made by different parties, each party might want to know something about the content of the other parties' plans because the content of those plans could have a bearing on its ability to implement its own. The problem, of course, was how to acquire that knowledge. No easy solution seemed to be available. Fortunately, one is: sometimes if you want something badly enough, the only thing you have to do is pay the price.

What is a price? The price paid for anything is the property whose ownership one relinquishes in a voluntary exchange. One buys something from someone by selling him something else. A market is the place where a voluntary exchange occurs. A price therefore presupposes the existence of a market and a voluntary exchange, and a voluntary exchange presupposes the existence of at least two owners. And every voluntary exchange entails the existence not merely of one price but of two: there are always two parties in a voluntary exchange who are relinquishing the ownership of something.

Are any prices current? Not really. The only voluntary exchanges that have ever occurred are those which have already occurred. The only prices we can have any knowledge of are

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necessary—which renders it impracticable for the economic system as a whole. In a plan, as the engineer draws it up, all the relevant facts must enter, and to make it a coherent plan all these facts must in the last resort be commanded and mastered by a single mind. This sets a limit on the degree of complexity of the task which can be solved by completely thinking it through, because the number of variables which any mind, even with the best assistance, can manipulate is limited.

prices from the recent past (commonly called current prices) and the not-so-recent past.

Is it possible to compare prices? We will return to the subject shortly, but if Peter paid two apples to buy one orange and Paul paid one lemon to buy one orange, it is by no means clear that it is possible to compare the prices paid by Peter and Paul.

We do not seem to be making much progress. In the first place, every voluntary exchange presents us with two prices rather than with one. The only prices we can have any knowledge of are prices from the past, and all plans are prospective: no one ever makes a plan to do something two years ago. And different prices might be incommensurable. On the other hand, having money has been known to solve a lot of problems.

If Peter paid two dollars (what a dollar is need not concern us provided that one dollar is a unit of money) for the orange and Paul paid one dollar, we know that the price that Peter paid was more than the price that Paul paid. And if we assume that money is one of the prices paid in every voluntary exchange (every voluntary exchange, remember, engenders two prices), the remainder of those prices begin to speak in a common tongue. We are still left with the fact that the only knowledge provided by prices is knowledge of the past. When we reflect, however, on the fact that decisions made in the past often have a bearing on future events, we will probably be grateful for such knowledge as we have. Why? Because prices convey information about the contents of other parties' plans.

Prices talk, and it is not just idle chatter. Assume again that I am a manufacturer of hammers. The demand of another manufacturer of hammers for steel expresses itself in the price that he pays for that steel; so, too, does the demand of a manufacturer of sickles. Better still, not only does the price of steel convey information about the content of other parties' plans, it conveys that information in an abridged, and therefore manageable, form.[5] Do

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[5] Cf. Hayek (1948, 86–87):

> The most significant fact about this system [the price system] is the economy of knowledge with which it operates, or how little the individual participants need to know in order to be able to take the right action. In abbreviated form, by a kind of symbol, only the most essential information is passed on and passed on only to those concerned. It is more than a metaphor to describe the price system as a kind of machinery for registering change, or a system of

I need to know all the ends for which steel is being purchased? Do I need to know all the contents of other parties' plans? Not only do I not need to know all the contents of other parties' plans, it is by no means clear that I would want to. Assume that there are one million other plans that have some bearing on my own. How could I ever digest the contents of those plans if they were fed to me in all their excruciating detail? The information that prices provide is imperfect, but it is significant and, no less important, concise.

B. The Role of Prices in the Formation of Plans

Earlier in this work I said that the two questions of production are what to produce and how to produce it. The information that prices provide can help producers decide what to produce and how to produce it—in other words, it can help producers make their plans.

Prices can help producers answer the "what" question of production. A producer who wants to satisfy the preferences of buyers cannot base his decisions on his knowledge of what those preferences will be. Production takes time. The preferences that will express themselves in future transactions are unknown to all parties, buyers included. A producer who wants to satisfy the preferences of buyers can only proceed on the basis of what he thinks those preferences will be, but he can use his knowledge of what those preferences were as a clue that may help him solve that mystery.

If Peter's desire to acquire the ownership of a lemon owned by someone else is stronger than his desire to retain the ownership of an apple, he may very well buy a lemon by selling his apple—provided, of course, that he can find someone else with the opposite preference. If Peter makes that exchange, his preference is manifested by the transaction itself. Knowledge of that transaction is knowledge of that preference. Knowledge of that transaction can also be knowledge of other preferences on Peter's part. The fact that Peter bought a lemon rather than an orange—assuming that an orange costing one apple was there for the taking—tells us that Peter wanted to acquire ownership of the lemon more than he wanted

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telecommunications which enables individual producers to watch merely the movement of a few pointers, as an engineer might watch the hands of a few dials, in order to adjust their activities to changes of which they may never know more than is reflected in the price movement.

to acquire ownership of the orange. How can buyers express their preferences? By buying. How can sellers learn something about those preferences? When prices talk, they can listen.

Prices can also help producers answer the "how" question of production. Every producer will want to produce his "what" with the expenditure of as few valuable resources as possible. What does the word *expenditure* mean in this context? An item is expended when it is no longer owned. If I buy a dollar's worth of gasoline, I no longer own that dollar. And when that gasoline has been expended, I no longer own that gasoline. What does the word *valuable* mean in this context? A valuable resource is something worth owning. Every producer will want to produce his "what" with the expenditure of as few valuable resources as possible.

The broader the definition of the "what," the more leeway a producer has in terms of the "hows" available to him. If the "what" is a hammer, he can use steel to manufacture it, but he can also use other materials, e.g., titanium. If the "what" is a steel hammer, the choice of using titanium has disappeared. Given the "what," the producer will want to employ that "how" which will result in the expenditure of as few valuable resources as possible. This need not mean that he will always attempt to produce his "what" at the lowest possible cost in terms of money. Money may be a valuable resource to the producer, but it need not be the only one. Having said which, money does enable the producer to compare the costs of different "hows" in terms of money and to make a selection on that basis if he so chooses.

The same caveat needs to be made about prices in connection with the "how" question of production that was earlier made in connection with the "what" question. A producer who does not yet own the factors of production that he requires does not know how much it will cost to acquire them, i.e., he has no knowledge of future prices. If the caveat is the same, so also is the response: the producer can base his expectations of those future costs on such knowledge as he has of the prices those factors have fetched in the past. Prices not only can help a producer answer the "what" question of production, they can also help him answer the "how" question.

Although the information that prices convey can help producers make their plans, that information by itself will not be sufficient to ensure that the content of any plan so made is—or will be—compatible with the contents of the plans made by other parties.

The only way to ensure that the content of a plan one has made is compatible with the content of a plan made by someone else is to compare the contents of both plans. When a producer uses his knowledge of prices to select the content of his plan, he is not attempting to directly coordinate the content of that plan with the contents of the plans made by other parties. Indeed, one could almost say that that is the very thing he is attempting to avoid.

Making a plan and implementing a plan are two different things. When producers use their knowledge of prices to select the contents of their plans, they are making plans that they think they will be able to implement at some future date because they know that similar plans were implemented in the past. The coordination of the contents of those plans with the contents of the plans made by other parties ordinarily will occur—if it does occur—only when attempts are made to implement them.

C. The Role of Prices in the Revision of Plans

Plans need not be writ in stone. Indeed, plans are often revised on the basis of information discovered during the attempt to implement them.[6] Producers not only can use the information that prices convey when they make their plans, they can also use that information when they revise them.

A developer buys one hundred acres of land with the intention of building one hundred houses on it. Before he can secure financing for the construction of the houses, he notices that prices in the local

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[6] Cf. Hayek (1948, 85–86):

> Fundamentally, in a system in which the knowledge of the relevant facts is dispersed among many people, prices can act to co-ordinate the separate actions of different people in the same way as subjective values help the individual to co-ordinate the parts of his plan. It is worth contemplating for a moment a very simple and commonplace instance of the action of the price system to see what precisely it accomplishes. Assume that somewhere in the world a new opportunity for the use of some raw material, say, tin, has arisen, or that one of the sources of supply of tin has been eliminated. It does not matter for our purpose—and it is significant that it does not matter—which of these two causes has made tin more scarce. All that the users of tin need to know is that some of the tin they used to consume is now more profitably employed elsewhere and that, in consequence, they must economize tin. There is no need for the great majority of them even to know where the more urgent need has arisen, or in favor of what other needs they ought to husband the supply.

housing market are showing signs of weakness. On thinking the matter over, he decides that the market is much too soft to continue with his plan. He therefore revises it: for the time being (a plan, remember, includes a "when"), his plan is on hold.

A housewife heads to market with a plan to buy beef for dinner that evening—she will not, however, pay more than six dollars a pound for the beef. She revises her plan and buys chicken instead of beef when she discovers that all of the available beef costs more than six dollars a pound. Alternatively, she revises her plan and buys chicken instead of beef not because no beef is available for six dollars a pound—it is—but because the chicken is on sale. Plans are neither made nor revised exclusively by producers who intend to sell their products.

Plans of production are revised by the parties who made them for a variety of reasons. The developer's original plan presumably called for the construction and sale of the houses in the not too distant future (perhaps during the coming eighteen months) at prices the developer found acceptable. He revises his plan not because he knows that the plan cannot be implemented (he certainly can have no knowledge of future prices) but because new information—in the form of current prices—has led him to think that the implementation of his original plan is doubtful.

The housewife who revised her plan to buy beef for dinner because all the beef available cost more than six dollars a pound revised her plan because she discovered that she could not implement it: the content of her plan was incompatible with the content of the plan to sell it made by the owner of the beef. If, however, she revised her plan to buy beef only because she discovered that chicken was on sale, she revised her plan to buy beef for dinner not because she could not implement it but because, prompted by the price of chicken, she came up with what she thought was a better plan.

The "prices" encountered by the housewife in the previous paragraph were not prices proper but rather asks. Bids and asks are what one might call potential prices: they are offers to buy and to sell. A price is formed only when a second party accepts the offer. Having said which, I can see no reason not to treat bids and asks in the same manner as prices proper: they certainly convey information about the content of the plan made by the party that makes the offer, a second party can use that information when he makes

or revises his own plan, and they are current in a way in which even "current" prices are not. Potential prices may even perform a more conspicuous role in the coordination and implementation of plans than prices proper. That subject will be explored in the next part of this section.

D. Prices and the Indirect Coordination of Plans of Production

A self-sufficient household has no need to coordinate its plans of production with the plans of production of another self-sufficient household because the successful implementation of its plans does not depend on the content of the plans made by the other self-sufficient household. It only needs to ensure that such plans as it has made are compatible with one another, which is not a particularly difficult task, and an easy remedy is available if (perhaps through inadvertence) they are not: the plans can be revised—indeed, must be revised—by the household that made them.

Once households begin to engage in trade, some households may discover that some of the plans of production they have made are incompatible with the plans of production made by other households. Peter and Paul are neighbors. Each one has decided to produce more eggs than his household can consume and to sell his surplus to his neighbor. In such a situation it may be possible to remedy the problem by means of the direct coordination of those plans. Peter and Paul may agree, for example, that Peter should continue to produce a surplus of eggs and Paul should attempt to produce a surplus of milk, which he could then exchange for some of Peter's eggs. The direct coordination of plans of production need not be difficult provided that the number of plans that need to be coordinated is small.

Suppose, however, that there are ten million households (more generally, entities) that engage in production and trade. How could anyone possibly compare the contents of the plans of production made by those ten million entities, eliminate the incompatible elements, and so produce a unified plan of production as a whole (in other words, a Plan)? Some of those entities may be able to engage in the direct coordination of plans of production with some other of those entities, but no one will be able to effect the direct coordination of all of those plans. Put differently, the direct coordination of plans of production will still be possible at what

one might call the micro level, but the direct coordination of all of those plans will not be possible at the macro level.

The distinction between the direct coordination of plans of production and the indirect coordination of plans of production is no less significant a distinction than the one between direct exchange, or barter, and indirect exchange, which requires a medium of exchange. Just as indirect exchange is effected by acts of direct exchange with a particular character—the direct exchange of a less marketable commodity for a commodity that is more easily marketable and will be used in that capacity, i.e., sold—so is the indirect coordination of plans of production effected by the direct coordination of plans with a particular character, plans to buy and to sell. Plans to buy and to sell are directly coordinated by the decisions made by different parties to buy and to sell particular goods and services.

It is almost impossible to exaggerate the significance of the fact that some of the content of the plans of production which are made in a free market almost always involves the purchase and sale of goods and services. A farmer plans to buy a new tractor for one hundred thousand dollars and to use that tractor to increase his output of wheat. Should we say that the farmer really has two plans, a plan to buy a tractor and a plan to use the tractor to increase his output of wheat, or should we say that the farmer really has only one plan, a plan which is composed of two segments (mini-plans?) which have been combined by the farmer into a unified plan? The language that we use is not important; grasping the import of the content of one of those mini-plans, or segments, is.

Ten farmers all plan to buy a new tractor for one hundred thousand dollars and to use that tractor to increase their outputs of wheat. Only eight new tractors are available for sale. The plans made by the ten farmers to increase the production of wheat are incompatible with the plans of production previously made by the manufacturers of tractors. Clearly, we have a problem, ten farmers and eight tractors. How do we resolve it? We don't have to. The problem will be resolved by the decisions made by the farmers themselves and by the owners of the tractors.

If we make the appropriate assumption about the conditions under which the tractors are sold (that the tractors, in effect, are sold at auction), it is clear that all ten farmers will need to revise at least one segment of their plans of production. If the price that

emerges for a new tractor is one hundred and ten thousand dollars, eight farmers will revise a segment of their plans to increase the production of wheat, the segment to buy a new tractor for one hundred thousand dollars, but the remainder of those eight plans—the segment to use a new tractor to increase the production of wheat—will remain intact. Two farmers will not only have to scuttle their plans to buy a new tractor for one hundred thousand dollars, they will also have to scuttle their plans to use those new tractors to increase the production of wheat. The eight remaining plans to increase the production of wheat are now compatible with the plans of production made previously by the manufacturers of tractors. Plans of production have been coordinated indirectly by the direct coordination of plans to buy and to sell.

What is it about the indirect coordination of plans of production that makes it so useful? What makes it so useful—indeed, so essential—is that it eliminates almost all of the need for a direct coordination of plans of production. In the example just given, does a farmer need to know anything about the plans made by the manufacturers of tractors to acquire the factors of production necessary to manufacture those tractors? Does the farmer need to know anything about the plans of production made by other farmers to increase their production of wheat? The only thing a farmer needs to know in order to bring his plan of production into synch—to coordinate it—with all the other plans of production made by all the other producers is, in this example, the price at which he can buy a tractor; the only thing a manufacturer of tractors needs to know in order to bring his own plan of production into synch—to coordinate it—with all the other plans of production made by all the other producers is the price at which he can sell a tractor. Omniscience is still in short supply, but so is the need for it.

Let us give the socialists their due. When plans are made by ignorant parties, it may not be possible to implement all of them. Many of them may be incompatible. How do we extricate ourselves from this morass? If a free market exists, we do not have to. The parties who made the incompatible plans will extricate themselves by revising those plans. It is not as if they have any choice in the matter: a plan that cannot be implemented has to be revised.

The solution to the problem of ignorance proposed by some socialists was socialism itself. How to eliminate what were sure to be the unfortunate consequences if a myriad of independent

producers made their plans in ignorance of the content of one another's plans? Eliminate the producers and replace them with a Producer; eliminate the plans and replace them with a Plan. The fact that it is impossible for anyone to produce a Plan makes that a less than ideal solution to the problem of ignorance.

Is there a better—at any rate a more feasible—solution to the problem of ignorance? Maybe Marx spoke truer than he knew. The free-market version of the anarchy of production contains within itself the seeds of its own destruction. Those seeds are called prices. The only adequate solution to the problem of ignorance and all that it entails—the proliferation of plans that have not been coordinated—is that reduction of ignorance effected by those things we call prices.

IV. MISES AND LANGE

A. Mises

In an article published in 1920[7] Ludwig von Mises argued that socialism and economic calculation could never know a peaceful co-existence. Consider first the following passage:

> It will be evident, even in a socialist society, that 1,000 hectolitres of wine are better than 800, and it is not difficult to decide whether it desires 1,000 hectolitres of wine rather than 500 of oil. There is no need for any system of calculation to establish this fact: the deciding element is the will of the economic subjects involved. But once this decision has been taken, the real task of rational economic direction only commences, i.e. economically, to place the means at the service of the end. That can only be done with some kind of economic calculation. The human mind cannot orient itself properly among the bewildering mass of intermediate products and potentialities of production without such aid. It would simply stand perplexed before the problems of management and location.
>
> It is an illusion to imagine that in a socialist state calculation *in natura* can take the place of monetary calculation. Calculation *in natura*, in an economy without exchange, can embrace consumption goods only; it completely fails when it comes to deal with goods of a higher order. And as soon as one gives up the conception of a freely established monetary price for goods of a higher order, rational production becomes completely impossible. Every step that takes us away from private ownership of the means of production and from the use of money also takes us away from rational economics.[8]

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[7] Mises (1920); cf. Hayek (1935, 87).

[8] See Hayek (1935), pp. 103–04.

What point did Mises make in the passage just quoted? Mises is willing to grant that what was earlier called the "what" question of production will not be a particularly difficult decision to make.[9] That decision can be "grounded in the will of the economic subjects involved." That leaves us with the "how" question, i.e., which means will be used to produce that "what"? For Mises this is the heart of the matter.

A producer will want to achieve his end, his "what," with the expenditure of as few valuable resources as possible. That means, of course, that a "how" that requires the expenditure of less valuable resources will be a better "how" than a "how" that requires the expenditure of resources which are more valuable. How does one determine the value of the resources expended in a "how"? Allow Mises to answer the question:

> Picture the building of a new railroad. Should it be built at all, and if so, which out of a number of conceivable roads should be built? In a competitive and monetary economy, this question would be answered by monetary calculation. The new road will render less expensive the transport of some goods, and it may be possible to calculate whether this reduction of expense transcends that involved in the building and upkeep of the next line. That can only be calculated in money. It is not possible to attain the desired end merely by counterbalancing the various physical expenses and physical savings. Where one cannot express hours of labour, iron, coal, all kinds of building material, machines and other things necessary for the construction and upkeep of the railroad in a common unit it is not possible to make calculations at all. The drawing up of bills on an economic basis is only possible where all the goods concerned can be referred back to money. (Hayek 1935, 108–09).

For Mises, the only way to express the value of the different factors of production used in a "how" is "in a common unit." I said previously that when money is one of the prices paid in every voluntary exchange, the remainder of those prices begin to speak in a common tongue. When there is no common unit? Babel. Mises let his readers off the hook by not drawing up a bill computed in something other than money. I see no reason to be that charitable.

I paid a teenager five dollars to mow my lawn. He used my lawnmower, which runs on gasoline. The cost of the gasoline was one dollar. My lawnmower cost two hundred dollars, and I have

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[9] Please bear in mind that for Mises the "what" in question is a consumption good. The argument I am presenting differs slightly from his argument. See note 14.

decided that it is good for another one hundred and ninety-nine jobs—this was its first. I produced a mown lawn. What did it cost? Seven dollars. Note that the cost is computed in terms of money. In what else could it be computed? I suppose one could compute its cost in terms of the factors of production used to produce it.

What were those factors of production? I will here ignore the land (volume of space, soil, and grass) and concentrate on the remaining factors: labor, gasoline, and lawnmower. Assume that the teenager spent one hour mowing my lawn and that a half-gallon of gasoline was used. The factors of production spent on the production of a mown lawn were an hour of the teenager's labor, a half-gallon of gasoline, and 1/200th of a lawnmower. Even if the factors of production do not speak in a common tongue, enumerating those factors seems to be a relatively simple task. Not necessarily.

In the example just given, I bought the gasoline from another party, and I did the same with the lawnmower. That means that there were at least three (I was one of them) distinct producers. Because I did not produce the gasoline, I did not have to compute the cost of its production. That was a job for another producer. So, too, with the lawnmower. Here is another illustration of a point made earlier, that a division of ownership permits a division of intellectual labor: if I only produce one thing, I only have to compute the cost of one thing.

Suppose, however, that production took place where there was only a Single Producer—what would I, or anyone else for that matter, have to do in order to compute the cost of one mown lawn? Clearly my job will not have ended when I have specified the factors of production used to mow the lawn. I will also have to specify the factors of production used to make the factors of production (i.e., the capital goods) used to mow the lawn. Am I finished yet? Of course not. I will also have to specify the factors of production used to make the factors of production used to make the factors of production used to mow the lawn. Am I finished yet? Of course not. I will also have to specify....

Consider the gasoline that was used to fuel the lawnmower. Some portion of the cost—specified in terms of the factors of production used to produce it—of the refinery where the gasoline was produced will have to be allocated to that half-gallon of gasoline. So, too, with the crude oil: some portion of the factors of production used to produce it will have to be allocated to that half-gallon of

gasoline. Some portion of the cost—specified in terms of the factors of production required to produce it—of the drilling equipment used to sink the well from which the crude oil was extracted will therefore have to be allocated to that half-gallon of gasoline. I could continue, but it is time to let my readers off the hook.

I trust that it is clear by now that computing the cost of a good or service in a state of socialism will not be easy, and I hope that it is apparent that part of the reason why it will be difficult is the same reason why it will be difficult to plan the production of one good or service in a state of socialism: once you start, where do you stop? No Single Planner in a state of socialism can enlist the services of another planner, for there is no other planner. In the same sense no Single Accountant can enlist the services of another accountant, for there is no other accountant. The computation of cost occurs within the boundaries set by ownership. Where there is a Single Owner, there are no boundaries.

A distinction should be made between the computation of cost and the calculation of costs. The computation of cost is historical; the calculation of costs is prospective. It is important to compute cost when one wants to evaluate prior actions. It is important to calculate costs when one wants to select future actions. Calculating the costs of goods and services enables the producer to husband his resources. Killing two birds with one stone might make more sense than killing two birds with two stones. If stones are a valuable resource, it does make more sense. Where two different "hows" are available, the calculation of costs enables the producer to select the "how" that requires the expenditure of the less valuable resources.

"The drawing up of bills on an economic basis is only possible where all the goods concerned can be referred back to money." The obvious question is, why can the factors of production not be referred back to money in a state of socialism? Why must each factor speak a different language? As usual, Mises provides the answer: "Moreover, just because no production-good will ever become the object of exchange, it will be impossible to determine its monetary value. Money could never fill in a socialist state the role it fills in a competitive society in determining the value of production-goods. Calculation in terms of money will here be impossible."[10] The factors of production cannot be referred back to money in a state

[10] Ibid., p. 92.

of socialism because the factors of production are never bought and sold. And the factors of production are never bought and sold because...? There is no other party to buy something from or sell something to: there is, after all, only one owner.

"Calculation in terms of money will here be impossible." What consequence follows from that fact? "Where there is no free market, there is no pricing mechanism; without a pricing mechanism, there is no economic calculation."[11] What point is Mises making? That without monetary calculation there can be no economic calculation.[12]

Why must there be monetary calculation if there is going to be economic calculation? Consider the alternative. How could one compare the cost of electricity generated at a large hydro-electric project with the cost of electricity generated at a nuclear power plant if the cost of that electricity had to be specified in terms of all the concrete factors of production that had played a role, however small, in its generation? Calculation *in natura* would be unnatural. It would also be impossible.

What does the absence of economic calculation entail? Again, Mises has the answer:

> Without economic calculation there can be no economy. Hence, in a socialist state wherein the pursuit of economic calculation is impossible,

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[11] Ibid., p. 111.

[12] Mises makes it clear that economic calculation without monetary calculation can occur when the conditions of production are primitive:

> Only under simple conditions can economics dispense with monetary calculation. Within the narrow confines of household economy, for instance, where the father can supervise the entire economic management, it is possible to determine the significance of changes in the processes of production, without such aids to the mind, and yet with more or less of accuracy. In such a case the process develops under a relatively limited use of capital. Few of the capitalistic roundabout processes of production are here introduced: what is manufactured is, as a rule, consumption-goods or at least such goods of a higher order as stand very near to consumption-goods. The division of labour is in its rudimentary stages: one and the same labourer controls the labour of what is in effect, a complete process of production of goods ready for consumption, from beginning to end. All this is different, however, in developed communal production. The experiences of a remote and bygone period of simple production do not provide any sort of argument for establishing the possibility of an economic system without monetary calculation. (Hayek 1935, 102–03)

> there can be—in our sense of the term—no economy whatsoever. In trivial and secondary matters rational conduct might still be possible, but in general it would be impossible to speak of rational production any more. There would be no means of determining what was rational, and hence it is obvious that production could never be directed by economic considerations.[13]

What point is Mises making? How can one select the least costly "how," i.e., how can one deploy one's resources in an economical manner, if one does not know what the least costly "how" is?[14] Mises's contention is not that socialism is impossible but that production under socialism could never be directed by economic considerations.[15]

B. Lange

In two papers published in 1936 and 1937[16] Oskar Lange responded to Mises's argument. How should production proceed in a socialist state? Consider first the following passage:

> The decisions of the managers of production are no longer guided by the aim of maximizing profit. Instead, certain rules are imposed on them by the Central Planning Board which aim at satisfying consumers' preferences in the best way possible. These rules determine the combination of factors of production and the scale of output.
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> One rule must impose the choice of the combination of factors which minimizes the average cost of production. This rule leads to

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[13] Hayek (1935, 105).

[14] The point Mises actually made was more comprehensive than I have made it out to be. Economic calculation can come into play not only when a choice of "hows" is available, it can also come into play when only one "how" is available. In that situation the question is, "Given both the 'what' and the 'how,' does it make sense to proceed with the 'what'?" In other words, does the value of the "what" justify the expenditure entailed by the "how"? For Mises's position, read the text to notes 7 and 9.

[15] Cf. Hayek (1935, 36):

> But although the discussion on this point dragged on for several years, in the course of which Mises twice replied to his critics, it became more and more clear that in so far as a strictly centrally directed planned system of the type originally proposed by most socialists was concerned, his central thesis could not be refuted. Much of the objections made at first were really more a quibbling about words caused by the fact that Mises had occasionally used the somewhat loose statement that socialism was impossible, while what he meant was that socialism made rational calculation impossible.

[16] See Lippincott (1939, 57).

> the factors being combined in such proportion that the marginal productivity of that amount of each factor which is worth a unit of money is the same for all factors. This rule is addressed to whoever makes decisions involving the problem of the optimum combination of factors, i.e., to managers responsible for running existing plants and to those engaged in building new plants. A second rule determines the scale of output by stating that output has to be fixed so that marginal cost is equal to the price of the product. This rule is addressed to two kinds of persons. First of all, it is addressed to the managers of plants and thus determines the scale of output of each plant and, together with the first rule, its demand for factors of production. The first rule, to whomever addressed, and the second rule when addressed to the managers of plants perform the same function that in a competitive system is carried out by the private producer's aiming to maximize his profit, when the prices of factors and of the product are independent of the amount of each factor used by him and of his scale of output.[17]

Lange here informs us that the "what" decisions will be governed by consumers' preferences. In a different passage he also discusses a situation where the "what" decisions are governed by the preference scale of the Central Planning Board, but that discussion introduces no new issues and so can be ignored. For Mises, remember, the "what" decisions are largely peripheral.

Before examining Lange's position in more detail, let me note one curious fact: according to Lange, managers are going to make decisions. Why is that curious? It certainly is not curious if managers make decisions in a free market, but managers who make decisions in a state of socialism—what could be more curious? No manager of a plant makes decisions in a state of socialism; he implements the decisions made by someone else.[18] His job, after all, is not to make plans. We're all supposed to be socialists here—don't want no anarchists messing with the Plan. Don't want, in short, no anarchy of production.

Now let me note an even more curious point about Lange's response: Lange could not be more outspoken about the role played by prices in the system he has devised. According to Lange, his managers must have prices if they are going to follow his rules: "To enable the managers of production to follow these rules the

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[17] Ibid., pp. 75–76.

[18] Cf. Dobb (1945, 276): "Competition necessarily implies not only diffusion but also autonomy of separate decisions.... Either planning means overriding the autonomy of separate decisions or it apparently means nothing at all."

prices of the factors and of the products must, of course, be given. In the case of consumers' goods and services of labor they are determined on a market; in all other cases they are fixed by the Central Planning Board. Those prices being given, the supply of products and the demand for factors are determined."[19]

The operation of Lange's system might seem to resemble the operation of a free market in most respects. Indeed, Lange makes that very point:

> Our study of the determination of equilibrium prices in a socialist economy has shown that the process of price determination is quite analogous to that in a competitive market. The Central Planning Board performs the functions of the market. It establishes the rules for combining factors of production and choosing the scale of output of a plant, for determining the output of an industry, for the allocation of resources, and for the parametric use of prices in accounting. Finally, it fixes the prices so as to balance the quantity supplied and demanded of each commodity. It follows that a substitution of planning for the functions of the market is quite possible and workable.[20]

Perhaps it does, but does it follow that a substitution of Planning for the functions of the market is quite possible and workable? Where in Lange's system can one discover any Planning whatsoever? Where in Lange's system can one discover either a Planner who produces a Plan by himself or an Uber-planner who consciously combines the elements of the plans made by the different managers into a unified plan of production (i.e., a Plan) devoid of incompatible elements? One cannot. And it is not even clear that his "central planners" qualify as central planners. In fact, it is quite clear that they do not. His "central planners" make rules; his managers make plans of production.[21]

What does Lange have to say on the subject of an efficient allocation of resources? Lange tells us that "there is no way of measuring

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[19] Lippincott (1939, 78).

[20] Ibid., pp. 82–83.

[21] Cf. Polanyi (1951, 125):

> Unnoticed both by its advocates and its critics, modern Socialist theory, by adopting the principles of commerce, has quietly abandoned the cardinal claim of Socialism: the central direction of industrial production. Apart from calling his chief economic authority by the name of Central Planning Board, Oscar Lange makes no reference to planning in the proper sense.

the *efficiency* in carrying out the plan without a system of accounting prices which satisfies the objective equilibrium condition, for the rule to produce at the minimum average cost has no significance with regard to the aims of the plan unless prices represent the relative scarcity of the factors of production." [22] Lange's position is that it is possible to talk about an efficient allocation of resources only if the prices of the factors of production are equilibrium prices.

Lange has already informed us that one responsibility of the Central Planning Board is to fix the prices so as to balance the quantity supplied and demanded of each commodity. Why is this such an important task? Lange provides the answer:

> The condition that the quantity demanded and supplied has to be equal for each commodity serves to select the equilibrium prices which alone assure the compatibility of all decisions taken. *Any price different from the equilibrium price would show at the end of the accounting period a surplus or a shortage of the commodity in question*. Thus the accounting prices in a socialist economy, far from being arbitrary, have quite the same objective character as the market prices in a regime of competition. Any mistake made by the Central Planning Board in fixing prices would announce itself in a very objective way—by a physical shortage or surplus of the quantity of the commodity or resources in question—and would have to be corrected in order to keep production running smoothly.[23]

Please read once more the first sentence in the passage from Lange just quoted. As we saw in the first section of this work, when plans are made independently, there is always the possibility that they will not be compatible. Lange is fully aware of the fact that the decisions (i.e., plans) of his managers might not be compatible. How is that possible? Suppose that ten managers, misled by an artificially low price, bid for eight tractors (and there are only eight tractors because the managers of the tractor plants were misled themselves by the artificially low price of tractors and so produced only eight). The result, of course, would be a shortage: there is no way all ten plans could be implemented. Does the phrase "anarchy of production" spring to mind? How could it not?

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[22] Lippincott (1939, 94). Lange makes this point when discussing production governed by the preference scale of the Central Planning Board, but it clearly applies also to production aimed at satisfying the preferences of consumers. He also mentions in a footnote a special case where prices are not needed to carry out the plan efficiently, but the special case, in his own words, is "extremely unrealistic."

[23] Ibid., pp. 81–82.

Lange has told us that if the Central Planning Board makes a mistake by fixing prices too low, there will be a shortage and production will not run smoothly. That is a bit of an understatement. Consider the case in which ten managers want eight tractors. Not only will two would-be users of tractors find it impossible to implement their plans, the plans of other would-be producers could suffer a similar fate. Indeed, many of the plans whose content depends on the content of the plans of the two managers who do not get the tractors would suffer a similar fate. No tractors? No grain. No grain? No flour. No flour? No bread. No bread? No thanks.

What Lange has told us in the passage we have been examining can only be called astonishing. Any price in the entire system that is something other than an equilibrium price will cause problems—and will cause problems to the extent that the plans of the producers are compatible with one another. Out of chaos, order? Out of order, chaos. And who is responsible for the existence of a price that is not an equilibrium price? Who, if not the Central Planning Board that fixed it? The obvious question is, why permit the Central Planning Board—or any body—to fix prices? Why not permit buyers and sellers to set the proper prices themselves? The answer, of course, is that if the state is a Single Owner, there can be no buyers and sellers. Lange's prices for the factors of production are ersatz prices because they have to be.

In the passage we have been examining, Lange never tells us what will happen before the Central Planning Board has corrected its mistake. Assume that the Central Planning Board sets the "price" of a tractor at one hundred thousand roubles, that eight tractors are available, and that ten managers want those tractors at that "price". What procedure will determine which eight of those ten managers get the tractors? Only three (I here ignore the possibility of bribery) methods can be adopted: first come, first served; a lottery; and an allocation.

First come, first served: the tractors are acquired by the first eight managers who place dibs on them. In technical language this is known as a queue. A lottery: stick the names of all would-be "buyers" in a hat and extract the appropriate number of names. This might not be the worst solution, but it is difficult to believe that any self-respecting "scientific" socialist would adopt it. An allocation: someone, presumably from the Central Planning Board, allocates the eight tractors to eight of the ten would-be "buyers."

The lineaments of Lange's response to Mises should now be clear. It is time for a verdict.

C. The Verdict

In the article published in 1920 Mises argued that socialism and production directed by economic considerations are incompatible. With no market for the factors of production, monetary calculation is impossible. Because no substitute for monetary calculation exists, there can be no economic calculation. Because economic calculation is impossible, no attempt can be made to deploy resources in an economical manner.

Did Mises overstate his case? Not only did Mises not overstate his case, the argument against socialism that he presented can be made even more comprehensive and compelling. As Murray Rothbard has shown,[24] the argument that Mises advanced applies not merely to one type of owner, the state, but also to any other Single Owner. In addition, one can also assert with absolute confidence that central Planning (i.e., Planning by the state) is impossible whenever the task of planning the production of everything, i.e., producing a Plan, is too great a task for any one planner to accomplish. If central Planning is impossible, how does that square with what took place in the Soviet Union? As we will see in the next section, central Planning never existed in the Soviet Union.

What was Lange's response to Mises's argument? Did Lange deny that prices for the factors of production are necessary for an efficient allocation of resources? Deny it? He insists on it—and notes that those prices had better be equilibrium prices or else. Did Lange argue that economic calculation is possible in the absence of monetary calculation? No, he quotes with approval Kautsky's rejection of such a notion.[25] How, then, did Lange rebut Mises? He did not. He "rebutted" Mises by conceding the very points that Mises made. Nice work ... if you can get it.

What was Mises's verdict on Lange's "rebuttal"?

> It is therefore nothing short of a full acknowledgment of the correctness and irrefutability of the economists' analysis and devastating critique

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[24] See Rothbard (1962, 548–49).

[25] See Lippincott (1939, 136–37).

> of the socialists' plans that the intellectual leaders of socialism are now busy designing schemes for a socialist system in which the market, market prices for the factors of production, and catallactic competition are to be preserved. The overwhelmingly rapid triumph of the demonstration that no economic calculation is possible under a socialist system is without precedent indeed in the history of human thought. The socialists cannot help admitting their crushing final defeat. (Mises 1966, 706)

Well put.

V. PRODUCTION IN THE SOVIET UNION

A. The Structure of the Five-Year Plans

Did Joseph Stalin ever draft a Five-Year Plan by himself? Did anyone else in the Soviet Union ever draft a Five-Year Plan by himself? "Don't be absurd—the length of the first Five-Year Plan was approximately forty thousand pages.[26] The Five-Year Plans were the product of the collaboration of countless central planners." Indeed they were—and therein lies the problem. Did Joseph Stalin ever read a Five-Year Plan? Did anyone else in the Soviet Union ever read a Five-Year Plan? Allow me to answer the questions: "Don't be absurd—the length of the first Five-Year Plan was approximately forty- thousand pages."

Let me see if I have this straight. If every Five-Year Plan was really a collection of disparate plans produced by different parties and if no one ever even read all of those disparate plans, who then combined all those disparate plans into a unified plan of production devoid of incompatible elements? Who engaged in the direct coordination of all of the plans of production? Who served as the uber-planner? The answer, of course, is, "No one."

Every Five-Year Plan was a mish-mash of different plans that were, so to speak, stapled together and then fobbed off on the credulous as a Plan.[27] It is no mere play on words to say that the existence of central planners almost certainly precludes the

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[26] "In Russia the authorities decide that in a particular year there shall be woven so many thousand yards of cotton cloth; and they publish this decision, or perhaps we should rather say this good resolution, somewhere in the forty thousand pages of their Five Year Plan." (Wootton 1935, 17)

[27] Cf. Polanyi (1951, 134):

existence of a central Plan. If there are central planners, there must also be an uber-planner who directly coordinates all of the different plans made by those central planners. Absent that uber-planner, there is no central Plan. The only possible conclusion one can reach is that although central planners existed in the Soviet Union, central Planning did not.[28]

Incidentally, when I refer to the length of a Five-Year Plan as approximately forty thousand pages, I trust that it is understood

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> Bearing this in mind, let us now examine the structure of a national production plan. Such plans state the sum of various types of goods and services that are to be produced. The products are divided into classes and sub-classes. We may see for example Industry and Agriculture as our main divisions. Then Industry may be subdivided into Production of Raw Materials, Finished Products and Industrial Services, while Agriculture may again fall into parts, such as Food Production, Forestry and Raw Materials for Industry. Each of these classes can be subdivided again into sub-classes and this process can be continued until we finally come down to the proposed quantities of individual products, which form the ultimate items of the plan.
>
> At first sight, this looks exactly like a true plan, namely like a comprehensive purpose elaborated in detail through successive stages; the kind of plan, in fact, which can be carried out only by appropriate central direction.
>
> But in reality such an alleged plan is but a meaningless summary of an aggregate of plans, dressed up as a single plan. It is as if the manager of a team of chess-players were to find out from each individual player what his next move was going to be and would then sum up the result by saying: "The plan of my team is to advance 45 pawns by one place, move 20 bishops by an average of three places, 15 castles by an average of four places, etc." He could pretend to have a plan for his team, but actually he would be only announcing a nonsensical summary of an aggregate of plans.

[28] Cf. Lavoie (1985, 156):

> The point is not only that the Soviet model has performed badly but also that the extent to which the Soviet economy has managed to muddle through corresponds to the degree to which its planning agencies have relinquished effective control over economic decisions to the plant managers. In a very important sense the Soviet economy is not really a centrally planned economy at all. As Eugene Zaleski concluded in his monumental study of the Soviet economy, "The centralization of power does not imply an equal concentration of decision-making authority, and the formal appropriation of all power does not carry with it the ability to exercise that power." As his research shows, "The existence of ... a central national plan, coherent and perfect, to be subdivided and implemented at all levels, is only a *myth*. What actually exists, as in any centrally administered economy, is an endless number of plans, constantly evolving, that are coordinated *ex post* after they have been put into operation." In short, what exists is not planning but economic rivalry.

that I am referring to what should be called the abridged versions of those Five-Year Plans. The forty thousand page monsters were really only outlines that needed to be fleshed out as they were distributed to lower and lower levels of the food chain. Although I can give no reference to support my figures, by the time the Five-Year Plans reached the level of the plants or enterprises where production actually took place, the length of those Five-Year Plans had to have numbered in the tens of millions of pages, maybe even in the hundreds of millions. Ideal candidates to tote to the beach this summer? *Nyet*.

B. Economic Calculation in the Soviet Union

If economic calculation requires prices for the factors of production and if there were no markets for factors of production (labor excepted) in the Soviet Union, it might be tempting to conclude that economic calculation was impossible in the Soviet Union, that central planners could not even attempt to deploy resources in an economical manner. That conclusion would be false. We saw earlier that prices can help producers decide what to produce and how to produce it, can help them when they make their plans of production. The absence of prices for the factors of production inside the Soviet Union did not mean that no prices for those factors were formed outside the Soviet Union.

Consider the following case. A plant that will generate electricity is going to be built in the Soviet Union. Should the burners be fueled by natural gas or by oil? Central planners in the Soviet Union could "cheat" by peeking at the prices for which the two commodities were sold in the markets of the world—and use that information to help them arrive at a decision. Inside the Soviet Union the state may well have been a Single Owner (insofar as the Five-Year Plan was concerned, it was); in the world at large, that state was but a single owner. Economic calculation was possible in the Soviet Union but only because the world contained a multiplicity of owners.[29]

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[29] Cf. Mises (1951, 136):

> The attempt of the Russian Bolsheviks to transfer Socialism from a party programme into real life has not encountered the problem of economic calculation under Socialism, for the Soviet Republics exist within a world which forms money prices for all means of production. The rulers of the

C. The Coordination of Plans of Production in the Soviet Union

Planning the production of everything produced in the Soviet Union was a task no mere mortal could have accomplished. The task of planning production was therefore sub-divided—there was a division of intellectual labor in the Soviet Union. Alas, the task of directly coordinating all of the plans of production made by the central planners was also a task no mere mortal could have accomplished.

We know that all of the plans of production made in the Soviet Union were never directly coordinated. How, then, were plans of production coordinated? Were they coordinated? The fact that the direct coordination of all of the plans of production was impossible does not mean that the direct coordination of some of those plans was impossible. There can be no doubt that the direct coordination of plans of production did take place in the Soviet Union, but the direct coordination of plans of production will only take you so far. Indeed, it may even create its own problems.

In order to illustrate what I mean when I say that the direct coordination of plans of production will only take you so far, let us make as favorable an assumption as possible about the quality of work done by the central planners in the Soviet Union. Assume that one of the Five-Year Plans called for the production of two new tractors at each of five different plants and the delivery of one new tractor to each of ten different state farms. We will also assume that the new tractors were included in the plans of production made for those state farms. No central planner has made a mistake: all the relevant plans of production are compatible. Now assume that a fire occurs at one of the plants with the result that only eight new tractors are produced. We now find ourselves in the same situation we found ourselves in previously when discussing Lange's system, eight tractors with ten suitors.

Soviet Republics base the calculations on which they make their decisions on these prices. Without the help of these prices their actions would be aimless and planless. Only so far as they refer to this price system, are they able to calculate and keep books and prepare their plans. Their position is the same as the position of the state and municipal Socialism of other countries: the problem of socialist economic calculation has not yet arisen for them. State and municipal enterprises calculate with those prices of the means of production and of consumption goods which are formed on the market. Therefore it would be precipitate to conclude from the fact that municipal and state enterprises exist, that socialist economic calculation is possible.

Ten "farmers" plan (hope?) to acquire (the word *buy* should be conspicuous by its absence) a new tractor and to use that tractor to increase the output of wheat. Four tractor plants each plan to release (the word *sell* should be conspicuous by its absence) two new tractors to the appropriate parties. It will no longer be possible to implement the ten plans of production made for the ten state farms. The plans of production made for two state farms will need to be revised, and some procedure will have to be selected in order to deal with the shortage of tractors. Before we examine how the problem was solved in the Soviet Union, let us ask ourselves what did not occur.

The eight tractors were not sold to the highest bidders. Why not? The plants where the tractors were manufactured did not own the tractors. Those tractors—and the plants that produced them—were owned by the state. And the ten suitors? The ten state farms were also owned by the state. How do you sell something to yourself? You cannot. A voluntary exchange requires two owners. The "market" for those eight tractors was never cleared by the direct coordination of plans to buy and to sell because there was no market, and there was no market because there were no buyers and sellers: there was only one owner. How, then, was the "market" for tractors cleared in the Soviet Union? We will return to the subject shortly.

What else did not occur in the Soviet Union? A great deal of the coordination of plans of production that occurs in a free market is effected indirectly, is effected by the direct coordination of plans to buy and to sell. Where there are no plans to buy and to sell, there can be no indirect coordination of plans of production. We saw in the previous part of this section that central planners in the Soviet Union could "cheat" by using prices that were formed outside the Soviet Union to help them make their plans of production. One cannot "cheat" when it comes to the indirect coordination of plans of production. The absence of a market for capital goods and land inside the Soviet Union made the indirect coordination of plans of production that required the use of capital goods or land impossible. Put differently, the indirect coordination of plans of production was illegal in the Soviet Union.

Back to the eight tractors. Who got them, and why? If we ignore the cases where the manager of a state farm bribed the manager of a tractor factory (an extremely common practice in the Soviet

Union), the tractors were allocated. The winners were selected at a higher level of the food chain. What criteria were used to select the winners? The usual suspects. Was the manager of State Farm No. 7 a crony of a powerful bureaucrat? A relative? Married to a relative? Willing to pay a bribe to a powerful bureaucrat? Allocation by its very nature is arbitrary. For that reason one cannot produce a formula that would enable one to specify the winners. Let us move on to a different subject, the revision of plans of production.

Producing a Five-Year Plan was an arduous task. So was revising a Five-Year Plan. Consider the task the central planners would have faced as a result of the fire at the tractor plant. Not only would it have been necessary to revise the plans of production made for one tractor plant and two state farms, it would also have been necessary to revise all of the plans of production that had been directly coordinated with the plans of production made for those two state farms. Fewer tractors presumably means less fuel consumed. Plans for the production or distribution of fuel will need to be revised. Fewer tractors presumably means less wheat produced. Less wheat produced presumably means less flour. Does that mean that the planned expansion of a flour mill should be placed on hold? Less flour presumably means less bread. Or does it mean less pasta? Or does it mean less bread and less pasta? If less bread is going to be produced, will it be necessary to revise plans made for the production of jam? How many millions (tens of millions?) of pages will this revision of a Five-Year Plan require?

Revising a Five-Year Plan was so difficult that it was often revised only at the end of the period to which it applied. One tabulated the results that had been achieved during the period in question, one then revised the numbers in the original Five-Year Plan, and, abracadabra, another successful implementation of a Five-Year Plan.[30] Let us give credit where credit is due. Central

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[30] Cf. Steele (1992, 267):

> The Soviet economy never was planned in the sense that a group of people at the top were able to work out what everyone should do and then tell them to do it. "Plans" were published: five-year plans, which generated yearly, quarterly, and monthly plans, and, of course, the attempts to implement these plans did have major effects. But the plans were usually issued after the commencement of the period to which they applied, and were always amended repeatedly in the course of "implementation." When the government triumphantly announced that the five-year plan had been fulfilled, this was a

planners in the Soviet Union were able to achieve two things that might previously have been thought impossible. I said earlier that all plans are prospective, that no one ever makes a plan to do something two years ago. In the sense just described, a Five-Year Plan was really a plan to do something during the previous five years. And—wonder of the ages—the plan succeeded.

The other achievement may have been even more spectacular. Not only was the Soviet Union always awash in plans of production that could not be implemented because the content of those plans was incompatible with the content of other plans, i.e., in plans of production that had not been coordinated, the Soviet Union was always awash in plans of production that could not be implemented because they had been directly coordinated. Consider the case of the fire at the tractor plant. One could not implement the plans of production made for the two state farms that did not get the new tractors—nor any of the other plans of production that had been directly coordinated with those two plans—not because they were incompatible with the plans of production made for the tractor plants but because they had been directly coordinated with those plans.

Central planning takes the anarchy of production to a whole new level. You begin with central planners who could not possibly know all of the contents of the plans of production made by other central planners—you begin, that is, with the anarchy of production—and you allow them to directly coordinate as many of those plans as possible. It will not, of course, be possible to directly coordinate all of them. You then toss in a plan whose content is incompatible with the content of another plan—those two plans have escaped direct coordination—and the havoc you wreak is proportional to the extent to which the plans of production have been directly coordinated (where is the indirect coordination of plans of production now that we need it?). I am not even sure that the term "anarchy of production" does it justice. I think the term we need for central planning is "THE ANARCHY OF PRODUCTION." After all, central planning really is the anarchy of production writ large.[31]

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drastically different document than had been first published under that name about four years earlier.

[31] Cf. Brutzkus (1935, 49):

CONCLUSION

A distinction should be made between socialism, or ownership of some of the means of production by the state, and Socialism, or ownership of all of the means of production by the state. If the state owns some, but not all, of the means of production, it follows that the means of production have more than one owner. In the light of that distinction, Mises's argument in the paper published in 1920 was that economic calculation under Socialism is impossible. It certainly was not his contention that socialism is impossible (see Note 29), nor was it his contention that Socialism is impossible (see Note 15).

Murray Rothbard extended the argument made by Mises by showing that the argument applied to all cases of Single Ownership, that economic calculation is impossible when all of the means of production are owned by any entity, not just by the state. One goal of this work was to take the argument against Single Ownership even further by examining the problem that would confront the Single Owner when it came time to plan the production of everything—the argument advanced by Mises and Rothbard dealt with the problem that would confront a Single Owner when it came time to plan the production of one thing. The Single Owner would never be able to plan the production of everything by himself—the mere suggestion that he would is ludicrous. The Single Owner would therefore be forced to employ a division of intellectual labor and farm the planning of production out to different parties.

The result of that division of intellectual labor would be a collection of disparate plans made by different people who could not possibly know all of the contents of all of the plans made by all the different parties. The result of that division of intellectual labor would be the dreaded condition known as the anarchy of production. In order to escape from its clutches—in order to ensure that all the different plans were compatible—it would be necessary for an uber-planner to directly combine all the disparate plans into a unified plan of production as a whole.

It is obvious that an economic system which possesses no mechanism for co-ordinating production with the needs of society cannot be maintained. Socialism overcomes the "anarchy of capitalist production" by substituting a condition of super anarchy; and in comparison with this 'super anarchy' capitalism presents a picture of the utmost harmony.

That clearly could not have occurred, and it is ludicrous even to suggest otherwise. Nor would the Single Owner and his minions be able to escape from the clutches of the anarchy of production and all that it entails by enlisting the services of the indirect coordination of plans of production, which is effected by the direct coordination of plans to buy and to sell: the Single Owner, after all, is nothing if not the Single Owner.

It should now be clear that Planning itself is impossible, that the creation of a unified plan of production as a whole, i.e., a Plan, cannot be achieved. It follows, of course, that central Planning, or Planning by the state, is impossible. It does not follow that central planning is impossible. Central planning (central plans-ing?) isn't impossible, it is merely disastrous, and it is disastrous because it makes the indirect coordination of plans of production impossible. How so? The problem is the same as the problem of economic calculation under Socialism: where there is only one owner, i.e., a Single Owner, there can be no buying and selling.

What is it that makes the division of intellectual labor that occurs in a free market fruitful[32] and the division of intellectual labor that occurs under central planning barren? In the latter case there is no underlying division of ownership. The planning of production occurs within the boundaries set by ownership. Where there is a Single Owner, there are no boundaries. No entity in a free market needs to coordinate all of the plans of production because no entity in a free market is responsible for planning the production of everything. The only plans of production that it needs to coordinate are its own.

All of the plans of production that are made in a free market are ultimately coordinated because the parties that made them have

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[32] Cf. Rothbard (1962, 765–66):

> One reason why economics has tended to concentrate on the free market is that here is presented the problem of order arising out of a seemingly 'anarchic' and 'planless' set of actions. We have seen that instead of the 'anarchy of production' that a person untrained in economics might see in the free market, there emerges an orderly pattern, structured to meet the desires of all individuals, and yet eminently suited to adapt to changing conditions. In this way we have seen how the free, voluntary actions of individuals combine in an orderly determination of such seemingly mysterious processes as the formation of prices, income, money, economic calculation, profits and losses, and production.

to coordinate them: a plan that cannot be implemented because its content is incompatible with the content of another plan has to be revised. A great deal of that coordination is effected indirectly, is effected by the direct coordination of plans to buy and to sell. The "fact" that the plans of production that are made in a free market are never coordinated isn't an argument in favor of central planning. Rather, it is a gross falsehood that can only proceed from gross stupidity—or from something worse.

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