The Grounds of Planning:
Rationality, Pseudorationality and Critique

December 4 - 5, 2025
Auditorium, Grimm-Zentrum Geschwister-Scholl-Str. 1-3, 10117 Berlin
Organized by *Centre for Social Critique*

Thursday, December 4: Past Debates on Planning

13:00–14:45 | **Rationality or Pseudorationality**
Jacob Blumenfeld / Christian Schmidt / Lillian Cicerchia

Text basis for discussion:
1911 Otto Neurath, "Lost Wanderers of Descartes"
1925 Otto Neurath, "Socialist Utility Calculation and Capitalist Profit Calculation"

14:45-15:15 | Break

15:15–17:00 | **Knowledge and the Limits of Planning**
Rabea Berfelde / Gabriel Wollner / Jakob Heyer

Text basis for discussion:
1945 Friedrich Hayek, "The Use of Knowledge in Society"

17:00-17:30 | Break

17:30 –19:00 | **Keynote** John O'Neill

Friday, December 5: Present Debates on Planning

10-11:15 | **Keynote** Aaron Benanav

11:15-11:30 | Break

11:30 –13:00 | **Planning Nature**
Solveig Degen / Jan Groos

13:00 –14:15 | Lunch

14:15–15:45 | **Algorithmic Planning**
Max Grünberg / Sandra Sieron

15:45 - 16:00 | **Closing**
Christian Schmidt, Jacob Blumenfeld, Rabea Berfelde

Backgrounds Texts to the Planning Debate:

1996 John O'Neill, "Who won the socialist calculation debate?"
1935 Friedrich Hayek, "The Nature and History of the Problem"
1916 Otto Neurath, "Economics in Kind, Calculation in Kind and their Relation to War Economics"
1919 Otto Neurath, "Character and Course of Socialization"
1920 Otto Neurath, "Total Socialization"
1920 Max Weber, *Economy and Society*, Chapter 2, §12-14
1920 Ludwig von Mises, "Economic Calculation in the Socialist Commonwealth"
1922 Karl Polyani, "Socialist Accounting"
1932 Friedrich Pollock, "Die gegenwärtige Lage des Kapitalismus und die Aussichten einer planwirtschaftlichen Neuordnung"
1933 Maurice Dobb "Economic Theory and the Problems of a Socialist Economy"
1936 Paul Mattick, "The Nonsense of Planning"
1937 Friedrich Hayek, "Economics and Knowledge"
1938 Oskar Lange, "On the Economic Theory of Socialism"
1965 Friedrich Hayek, "Kinds of Rationalism"

Relevant Work by Workshop Participants:

John O'Neill, "Knowledge, planning, and markets: A missing chapter in the socialist calculation debates"
Aaron Benanav, "Beyond Capitalism"
Lillian Cicerchia, "Making sense of critical theory's economic gap"
Gabriel Wollner, "In Defense of Council Democracy"
Max Grünberg, "The Planning Daemon: Future Desire and Communal Production"
Jakob Heyer, "Basic Problems of a Democratically Planned Economy"
Solveig Degen et al. "Banks in the Democratic Economic Planning Debate"
Jan Groos, "Planning as an Art of Government"
Sandra Sieron et al., "Mythos der Maschine? Künstliche Intelligenz und Gesellschaftskritik"
Christian Schmidt et al. „11 Theses on Socialisation"
Rabea Berfelde und Jacob Blumenfeld, „Von der Vergesellschaftung zur Planung und wieder zurück"

OTTO NEURATH

PHILOSOPHICAL PAPERS 1913–1946

With a Bibliography of Neurath in English

Edited and Translated by

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CHAPTER 1

THE LOST WANDERERS OF DESCARTES AND THE AUXILIARY MOTIVE

(*On the Psychology of Decision*)

I want to take a remarkable passage in the *Discourse on Method* of Descartes as the starting point of my paper. In this work the author, in addition to the rules of theoretical research, also discusses rules of practical action which are for the most part insufficiently appreciated in representations of Cartesian ethics. Among others Descartes puts forward the following principle:

> My second maxim was to be as unwavering and as resolute in my actions as possible, and having once adopted opinions to adhere to them, however in themselves open to doubt, no less steadfastly than if they had been amply confirmed. In this I am following the example of travelers who, on finding themselves astray in some forest, realize that they ought not to vacillate, turning now in one direction and now in another, and still less to stop moving, but to keep always in as straight a line as possible, never for any minor reason changing direction, even though at the start it may have been chance alone which determined them in their choice of direction. If, in thus proceeding, they do not advance in the direction they expected, they will at least, in the final outcome, find themselves better located than in mid-forest. In the same way, since often, in actual living, the requirements of action allow of no delay, it is very certain that when it is not in our power to determine which opinions are truest, we ought to follow those seemingly most likely; and that in those cases in which we fail to observe any greater likelihood in some than in others, we should nevertheless give our adherence to certain of them, and thereafter (since this was our motive for adhering to them) consider them, in their bearing on action, as no longer doubtful, but very true and certain. This decision was sufficient to deliver me from all the repentings and feelings of remorse which are wont to disturb the consciences of those weak, unstable beings who in a vacillating manner abandon themselves to the acting out, as if it were good, what the next moment they are prepared to recognize as being evil (Descartes 1958, pp. 112–113).

With these words Descartes formulates his resignation in the field of practical action. He acknowledges, in principle, the necessity that we must act with insufficient insight. How does this train of thought fit into his world-view? In the second part of the *Discourse on Method* he puts forward his well-known four rules for theoretical investigation: One should assume as true only what is clearly known, dissect all problems into separate questions, arrange the problems according to their complexity, and attempt to make a complete survey of them within an investigation.

Translation of Neurath 1913a [ON 62].

Descartes was of the opinion that, in the field of theory, by forming successive series of statements that one has recognised as definitely true, one could reach a complete picture of the world. He places great confidence in this endeavour which is in sharp contrast to the resignation mentioned above. "Nothing is so difficult that one could not reach it in the end, nothing so hidden that one could not discover it." But how should the man act who has not yet attained complete insight? For this purpose Descartes formulates preliminary rules for practical action which have to be applied as long as one has not reached complete insight. For those who are of the opinion that complete insight can never be reached, these preliminary rules become definitive ones. The necessity that action must take place even if insight is incomplete already follows from the fact that 'non-action' is also an action – the result of a decision. It is precisely this that matters, that the course of events depends on our decision. Descartes does not count theoretical thinking among actions. This view could be supported if one points out that thinking can, as it were, be suspended for a time, whereas with action in the narrower sense this is not possible, since also non-action has to be considered as action, as just mentioned. Against this the objection can be made that there are a whole series of occupations which are similar to thinking. For example, we can interrupt the construction of a house for a time and we can hesitate as long as we want about continuing it. However, the most favourable time for construction may pass and the partly finished building may suffer – but the same is certainly true of thinking. Of thinking it can only be claimed that it belongs to those activities that are relatively independent of the point in time at which they are begun and of the speed with which they are carried out; in any case, the differences between thinking and action are only of degree, not kind. In the *Principles of Philosophy*, Descartes makes a sharp separation between thinking and action.

> ... we are to make use of this doubt only when we are engaged in contemplating the truth. For, as regards the conduct of our life, we are frequently obliged to follow opinions which are merely probable, because the opportunities for action would in most cases pass away before we could deliver ourselves from our doubts. And when, as frequently happens with two courses of action, we do not perceive the probability of the one more than the other, we must yet select one of them (Descartes 1911, pp. 219–220).

In this sense three provisional moral rules are formulated; one should adapt oneself to the usual laws, customs and religious views; act energetically even if insight is insufficient; and change oneself rather than the order of the world – a view which is, on the whole, of a stoical character.

It was a fundamental error of Descartes that he believed that only in the practical field could he not dispense with provisional rules. Thinking, too, needs preliminary rules in more than one respect. The limited span of life already urges us ahead. The wish that in a foreseeable time the picture of the world could be rounded off makes provisional rules a necessity. But there are fundamental objections to the Cartesian view. Whoever wants to create a world-view or a scientific system must operate with doubtful premises. Each attempt to create a world-picture by starting from a *tabula rasa* and making a series of statements which are recognised as definitively true, is necessarily full of trickeries. The phenomena that we encounter are so much interconnected that they cannot be described by a one-dimensional chain of statements. The correctness of each statement is related to that of all the others. It is absolutely impossible to formulate a single statement about the world without making tacit use at the same time of countless others. Also we cannot express any statement without applying all of our preceding concept formation. On the one hand we must state the connection of each statement dealing with the world with all the other statements that deal with it, and on the other hand we must state the connection of each train of thought with all our earlier trains of thought. We can vary the world of concepts present in us, but we cannot discard it. Each attempt to renew it from the bottom up is by its very nature a child of the concepts at hand.

What is the situation concerning provisional rules in the field of study of the world? In order to make progress one very often finds oneself in the position of having to choose one of several hypotheses of equal probability. The necessity of provisional rules in the field of thinking is usually less clearly understood; this may be related to the fact that one can, so to speak, lead several theoretical lives simultaneously. Serious and bold thought experiments can be risked without hesitation; if they fail, others can be started. However, one cannot, for example, attempt, in the same way, to train for more than one career. Starting from the same initial point one can always develop different theories of light, just as one can undertake different excursions. But one should not overlook the fact that it is certainly of consequence which trains of thought one has once had before a certain investigation. The thinking of a man during his whole life forms a psychological unity, and only in a very limited sense can one speak of trains of thought *per se*. Though Descartes speaks again and again of the process of thinking, he treats it like a system of logical relationships, which as such, of course, has nothing to do with the psychological progression to which it owes its origin. Descartes seems to have in mind the possibility that one can re-start each train of

thought again and again. However, what should one do if, in order to think one hypothesis through to the end, one needs a whole life, and therefore one has to choose one way which one cannot retrace before the completion of the whole investigation? In the field of thinking these cases are certainly not very frequent. If one imagines how a train of ideas would have run on the basis of different premises, then one has thereby already realised this second possibility; however, in the field of action in the narrower sense this is not the case: here the imagination of 'how it might have been' is far removed from making it become real. The most important acts of thinking can be repeated at will; for the most part this is not the case with the most important actions in human life. That an event happens only once is considered characteristic of it. "One cannot step into the same river twice." Thus, Hebbel's Marianne calls out in her prayer:

You did what You have never done: returned
The wheel of time to the position it
Had in the past; please, let him not do as
He did before . . . (Hebbel 1974, Act 3, Scene 6, p. 160).

We saw that there are events that happen only once, and events that happen several times, in both the field of thinking and the field of action in the narrower sense. That any doubt can arise at all results from the fact that there are known and unknown premises from which the conclusion cannot be made unambiguously. Now it can happen that one has to choose a definite course, either in the field of thinking or in the field of action in the narrower sense. Descartes stresses the necessity of being able to make the required resolution quickly and without weakening the will. While he mainly describes the manner in which a resolution, made on the basis of insufficient insight, is to be carried out, here, with reference to Descartes, I want to deal with the question, how such a resolution comes about empirically.

We have seen that in many cases, by considering different possibilities of action, a man cannot reach a result. If he nevertheless singles out one of them to put it into operation, and in so doing makes use of a principle of a more general kind, we want to call the motive thus created, which has nothing to do with the concrete aims in question, the auxiliary motive, because it is an aid to the vacillating, so to speak.

The auxiliary motive appears in its purest form as a drawing of lots. If a man is no longer able to decide on the basis of insight which of several actions to prefer, he can draw lots, or, equally well, declare vaguely that he will just do 'something or other', or that he will wait and see which resolution, after

some hesitation will come out on top, as if leaving the decision to exhaustion, or at any rate to an agent quite outside the motives in question, that belongs to the category of the parrot who draws the 'planets'.[1]

The frame of mind just described is only found so clearly in those men of modern society who are used to making a large part of their actions dependent on individual insight by the exact weighing and examining of means and ends in long drawn-out deliberations. But also the traditional man sometimes becomes conscious of the difficulty of choice, especially when he faces actions that are not adequately determined by tradition. He also finds himself in a painful position if contradictory traditions exert their pressure on him. One can think of all kinds of men in situations in which no further deliberation can help. There is not the slightest reason to doubt that a great military leader like Napoleon is frequently incapable of deciding by means of reflexion exactly what he should do. Nevertheless the method of more or less admitted button counting is an object of abhorrence or ridicule to most contemporaries. However, since these contemporaries are not in possession of complete insight either, the question is which substitute for button-counting do they apply.

In many cases there is action of an instinctive kind, but this can in no way achieve everything. Since it frees one from doubts, it is highly valued by many and its effectiveness is often exaggerated. Yes, many wish for instinctive action even where the problems concern pure expediency. Some are of the opinion that to start with one could reflect, and then when reflexion fails, turn to instinct; this view misuses instinct by consciously introducing it as a mere stop-gap, whereas its significance is evident wherever it rules from the start, though it is perhaps replaceable by reflexion. But an instinct in reserve may well be psychologically doubtful. Precisely if one values the significance of instinctive action so highly should one not misuse it like that. One should clearly realise that instinct must fail with respect to the complex rational relationships created by the consciously shaped institutions of the social order and modern technology. Certainly, part of the significance of instinct is that it did not allow vacillation to occur in periods when cool calculation played a minor role, and in this respect it avoided waste of energy. The world would be in a bad way if we would have had to wait until insight rules, and until it itself systematically eliminates the damage which it causes, for example, by the creation of vacillation.

Thus nature mother's duty takes
and watches that the chain not break
and that the rim not cracketh.

Until the whole of world's domain
is under philosophy's reign
it keeps things on the move
by hunger and by love.[2]

Where instinct recedes we very often discover the unconscious tendency to eliminate any bud of weakening vacillation in some way or other. Here belongs the belief in oracles, omens, prophecies and the like. I do not want this to be understood as a claim that those who follow omens might be of the opinion that this trust in omens may be useful to them and therefore had to be preserved. Rather what actually happens may be this: the view of the value of omens originates from other sources and encounters an emotional disposition for which the elimination of doubt means a release from a feeling of displeasure; therefore, involuntarily, the respective mode of thinking is eagerly absorbed. In the same way I should like to explain why great military leaders, politicians and other men of action so often show a pronounced tendency toward superstition. It should be plainly stressed that such men are often much more superstitious than corresponds to the spirit of their age, and that the forms of their superstition sometimes are strangely primitive or archaic. This is further proof that this superstition is certainly not a product of latter-day reflexion as is occasionally found in spiritualism and other such movements. Given the chance, however, men of the type described above are of course amenable to subsequent systematisation and rationalisation of their original superstitious tendency. If one keeps this in mind, it also becomes understandable why it is precisely in times of political unrest, when further developments are very unclear, that spiritualism and similar currents gain ground more easily. However, there are also other circumstances, which we cannot discuss here in detail, that have an effect. For example, the wish to know the future plays a large part; as can often be observed, this is especially so with individuals whose weak character does not allow them to influence events energetically. From the start this type tends towards the more complicated forms of prophecy and often creates a highly rationalised structure of omens. An extensive occupation with such things must help to fill in the emptiness of will. This product of the weak will can also be used, however, by energetic individuals to strengthen their power of resolution, as shown above.

Other kinds of authority serve as well to eliminate vacillation. In difficult cases, for example, many like to turn to a father confessor or some other adviser because they want to be relieved of troublesome doubt. If they reflect on their behaviour vis-à-vis these authorities, they understandably do not

realise its instinctive basis, and they subsequently try to justify their procedure by the higher insight of the person they asked for advice – an explanation which may even sometimes be correct. In cases of doubt, however, in which a more intelligent person is asked for advice, the problem is only shifted by another step; the question is what this more intelligent person should do if, with all due deliberation, he cannot reach a decision. The tendency and wish to come to a decision is also in the foreground elsewhere; for example, this can be derived from the fact that, in a vote, the president has a casting-vote if no majority has been reached. Perhaps the principle of majority itself serves mainly the purpose of eliminating conflict and bringing about some decision – whether it is the most intelligent one does not matter. For many it may mean the satisfaction of a longing for rest. Somebody may indeed approve the majority principle only because it enhances the ability to act; it is a beloved substitute for the unloved drawing of lots. The umpire too sometimes plays no other role. And when the Italians of the Middle Ages and Renaissance as a matter of principle often got the mayor from another town to end their internal fights, this was also probably the result of their wish for calm, and occasionally it may have been of little concern to the inhabitants of a town whether the man called in from outside was endowed with special insight.

We have seen that instinct nips doubt in the bud, that the belief in omens quickly removes it, and that some institutions of outwardly quite different character also have the partial effect of helping a resolution, some order of things, to break through, should insight fail. Also that simplicity, which does not see more than one possibility for action, has of course the same effect.

In the large centres of civilisation instinct has nowadays lost much ground, and superstition plays a minor role. Most of our contemporaries rely on their insight and want to leave the decision in all things to it once and for all. Their starting-point is the view that given enough thought one could at least determine which manner of action has the greater probability of being successful, should certainty be impossible. That there are cases in which one faces several possibilities of action quite helplessly, is denied or declared so highly improbable that no sensible man need give it any further thought. Men of this type are mostly of the opinion that if difficulties turn up, sharper thinking will have to lead to the goal; they completely fail to see that even the sharpest thinker can end up with several conclusions of equal value if premises are lacking. Whoever adheres to the belief that he can accomplish everything with his insight, anticipates in a way that complete knowledge of the world that Descartes puts forward as a far-off aim of scientific development. This

pseudorationalism leads partly to self-deception, partly to hypocrisy. Education and character support these errors which Descartes, who is usually considered to be the father of rationalism, managed to keep free of in the field of practical action, as we saw above. The pseudorationalists do true rationalism a disservice if they pretend to have adequate insight exactly where strict rationalism excludes it on purely logical grounds.

Rationalism sees its chief triumph in the clear recognition of the limits of actual insight. I tend to derive the widespread tendency towards pseudorationalism from the same unconscious endeavours as the tendency towards superstition. With the progress of the Enlightenment men were more and more deprived of the traditional means which were suited to making unambiguous decisions possible. Therefore one turned to insight in order to squeeze an adequate substitute out of it with all possible force. In this sense pseudorationalism, a belief in powers that regulate existence and foretell the future, as well as reliance on omens, have a common root. The pseudorationalists always want to act from insight and are therefore grateful to anybody who is able to suggest to them that they had acted from insight. This disposition of mind explains sufficiently the striking lack of criticism with which, for example, election speeches of parliamentarians are received. The listeners are glad, so to speak, if they can make up their minds in favour of something with a good conscience; this desire is mostly of a primary nature. If the speaker is aware of this fact, his action becomes a farce; his aim then is only to suggest rationality. People have already begun psychologically to analyse the suggestive effect of the orator, especially of the politician. The arguments with which the orator operates can be put side by side with the shape of the hat he chooses for gaining the sympathies of the members of his his party. The question now is what will happen if psychological knowledge becomes so widespread that most citizens see through the apparatus of suggestion. Through this psychological enlightenment, suggestion may possibly be paralysed, and men are then incapable of receiving the suggestion of insight. If they do not return to superstition, to instinct or to absolute simplicity, nothing remains but seizing an auxiliary motive where insight does not reach far enough; either one is content with arguments like: "Something must happen, let us do this or that, whatever occurs to us, after having eliminated what we have already recognised as wrong," or, when the point is reached where insight fails, one draws lots in style, or leaves the decision to some moment which has nothing to do with the matter in question.

But woe to the statesman who behaved like this publicly. If, in a concrete case, he came to the insight that he could not decide between two alternatives

and therefore wanted to decide by lot, he would expose himself to the reproach of frivolity or cynicism. Popular feeling would be deeply hurt; it demands either the continuation of old traditions or rationally founded changes. In this respect one must keep in mind that the modern statesman is much more conscious of his inadequate insight than the statesman of the past. The statesmen of the past often embraced the total knowledge of their time and were often the leading political economists, while today the statesman must be active in fields which are doubtlessly better known by others than by himself. For example, while Colbert and Turgot are numbered among the most significant political economists of their time, Bismarck as an economist is certainly not on a par with Marx. Political activity demands so much energy nowadays that a great politician can hardly be at the same time a great theoretician. The men who direct the destinies of states usually do not have the greatest insight, and those who do have greater insight mostly have nothing to do with leading. Nevertheless tossing a coin to decide is considered frivolous, and the more frivolous, the more important the matter in question is. Even people who otherwise lack all piety and tradition are usually morally outraged if one suggests to them to decide by lot where insight is at an end. The attitude of Thomas Hobbes in the matter of religion therefore rarely finds approval. His idea that some order is better than none enrages every pseudorationalist who hopes to reach a decision by an adequate measure of thinking. Hobbes' intolerance is purely external, a means to an admitted political end. He simply feels unable to decide which of the positive religions is preferable. It appears to me that this behaviour of Hobbes is the only one possible for an honest rationalist in many affairs of life; however, whether rationalism is at all suited to regulate public life is another question. But once tradition and community feeling are weakened, there is no choice but that between rationalism, which undoubtedly leads to drawing lots, and pseudorationalism which falsifies thinking and feeling.

It is an empirical question how the auxiliary motive meets the test in practice. Its general acceptance could, for example, have the effect that one already uses it at a time when reflexion might still perfectly well make headway. This danger looms in other cases too when there are substitutes for drawing lots, for example, in the form of religious measures. Already the Greek poet warns:

"First set to work yourself, then call the gods for help."[3]

How far the auxiliary motive allows the full intensity of action to evolve depends on the psychological constitution of the individual. Whether the auxiliary motive will one day find general acceptance is still the question.

Today it is already of actual importance for the wise man who is conscious of the incompleteness of his insight, who refuses superstition, and who nevertheless wants to act decisively. Only the auxiliary motive can strengthen his will without demanding the sacrifice of his honesty. He need not artificially constrict his field of vision to be able to be active. The man who hesitates to use the auxiliary motive, who refrains from its use, cannot be helped. So it is also with the man who cannot make up his mind whether to start with 'yes' or 'no' when counting buttons. But this is not an objection to the auxiliary motive; it is not a generally accepted principle that everyone can be helped.

The auxiliary motive is well suited to bring about a kind of rapprochement between tradition and rationalism. While formerly omens and lots had some inner significance, they have now become purely means. But the procedure has remained the same. The adherent of the auxiliary motive will never regard the traditional man, the man who follows his instinct, with that feeling of superiority that characterises many pseudorationalists. He may perhaps even regret that the period of community life, in which tradition and instinct were decisive, has ended and possibly can even treat the auxiliary motive as a substitute that became necessary because rationalism developed. In this sense instinct, tradition and auxiliary motive are in common opposition against pseudorationalism. The application of the auxiliary motive needs a prior high degree of organisation; only if the procedure is more or less common to all will the collapse of human society be prevented. The traditional uniformity of behaviour has to be replaced by conscious cooperation; the readiness of a human group to cooperate consciously, depends essentially on the character of the individuals.

Let us go back to the parable of Descartes. For the wanderers lost in the forest, who have no indication at all as to which direction to follow, it is most important to march on energetically. One of them is driven in some direction by instinct, another by an omen; the third will carefully consider all eventualities, weigh all arguments and counter-arguments and, on the basis of inadequate premises of whose deficiencies he is unaware, he will in the end, his head lifted in pride, take one definite direction which he considers the correct one. The fourth, finally, will think as well as he can, but not refrain from admitting that his insight is too weak, and quietly allow himself to decide by lot. Let us assume that the chances of getting out of the forest are the same for the four wanderers; nevertheless there will be people whose judgment of the behaviour of the four is very different. To the seeker after truth whose esteem of insight is highest, the behaviour of the last wanderer will be most congenial, and that of the pseudorationalist third wanderer most repellent.

In these four kinds of behaviour we can perhaps see four stages of development of mankind without exactly claiming that each of them has come fully into existence. But some things will become clearer when we try to clarify the essential features of the four periods, of instinct, of authority, of pseudorationalism, and of the auxiliary motive. Today we live in the period of pseudorationalism; but we can already observe clear indications of decay. Many believe that they can count on a new upsurge of religion, while others expect a return of a more instinctive life. But there are also those who believe that the collapse of our civilisation is unavoidable. If I now try to attribute a future to the auxiliary motive, the culmination of rationalism, I do so on the basis of the following deliberation. We can construct utopias in different ways; we can either think of a further development of the most developed forms; or we can look for germs of future forms. For example, one could elaborate the view that we are approaching a time in which all national events would be systematically precalculated. It would lead us too far to show that it is very improbable that such conditions would begin soon. But we can also discern new movements that have not yet reached full development though they exist, in the way that rationalism already had adherents in the Middle Ages though its future was not predicted. Since it is very difficult to have any idea of some new intellectual trend, it is certainly advantageous to deal more seriously with the possibility that perhaps one day the auxiliary motive will strongly influence private and public life.

Descartes lived in a period of change. At that time one began the all-out fight against instinct and tradition without realising the functions of these forces. In the field of moral action Descartes himself has, as we saw, on the one hand consciously acknowledged tradition, on the other hand, approved of the auxiliary motive. In this a consistent rationalist can follow him. As far as rationalism has a future at all in the moral field, the conscious recognition of its limits and the introduction of the auxiliary motive are unconditional assumptions. But whatever the future may be like, it is well worthwhile to discuss the question, how rationalism and defective insight can be combined with the help of the auxiliary motive.

NOTES

[1] [The expression "parrot who draws the 'planets'" likely means to draw up a horoscope, the planets setting the zodiac so as to prophesy or tell a fortune. The only literary reference of note occurs in Shakespeare, *Comedy of Erorrs* (Act IV, scene 4, line 42f) where the phrase 'to prophesy like the parrot' occurs. Neurath's allusion is probably to

be found in the German and Austrian circuses of the early twentieth century, where parrots were used by fortune tellers to randomly pick out slips of paper with words written on them from a bowl. – Ed.].

2 [Neurath is quoting the last strophe (minus the first two lines) of Schiller's poem, 'Die Weltweisen' (first called 'Die Taten der Philosophen'):

> Doch weil, was ein Professor spricht,
> Nicht gleich zu allen dringet,
> So übt Natur die Mutterpflicht
> Und sorgt, dass nie die Kette bricht,
> Und dass der Reif nie springet.
> Einstweilen, bis den Bau der Welt
> Philosophie zusammenhält,
> Erhält sie das Getriebe
> Durch Hunger und durch Liebe.]

3 [Neurath is freely adapting a fragment of Euripides: *Αὐτός τι νῦν δρᾶ, χοὔτω δαίμονας κάλει· τῷ γὰρ πονοῦντι χὠ θεὸς συλλαμβάνει*

(You accomplish something now yourself, and thus call upon the god;
And truly the god brings safety to those who toil.)

Euripides, *Hippolytus*, Fragment 435 in *Fragmenta Euripidis* . . . Edited by Friedrich Wilhelm Wagner. Paris: Didot, 1846. p. 722. – Ed.].

OTTO NEURATH

ECONOMIC WRITINGS
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OTTO NEURATH

14. SOCIALIST UTILITY CALCULATION AND CAPITALIST PROFIT CALCULATION*

> In a future society where class opposition has vanished the time spent on production of the various objects would be determined by their social utility.
>
> Karl Marx, *The Poverty of Philosophy*

In the remarks made by socialist and anti-socialist political economists mention is made ever and again of 'rationality', of the need to base all truly effective economic orders on the rational comprehension of production and its results. If therefore the socialist economy claims to be effective, it should be possible to prove its success by calculation with a single unit. Is this correct? Let us consider the capitalist profit calculation. What does it achieve, what could it achieve in principle?

What we find given are human beings with certain rights: human beings who own land, others who control machines and factories, human beings who control only their own hands, others who also own a few tools, finally the sick, the old and the young. All these human beings live, they receive housing, food, clothing, knowledge, health care, entertainment and much more, mostly by buying it for money. For certain people – the sick, the old and the young – the family and the social whole take over part of the care. For the life of the individual to be a happy one it is extremely important to have sufficient amounts of money. Nearly everything can be bought, goods well beyond the most luxurious daily consumption, even the power of rulers, for instance, by someone's becoming an entrepreneur or banker. Thus an industry can be transformed most easily if one has ownership of the leading companies of a trust, less easily if one merely possesses the relevant knowledge.

In the capitalist order everybody is concerned to use their money so as to live most successfully. Those who live on meagre means will

scrutinise their expenses, perhaps to make savings. Those who have more money than they need for daily life will acquire new sources of money in order to use the moneys that then come to them either for the improvement of their personal lives or the increase in their power. In order to see whether one has managed well or badly, one determines what one possesses in terms of money and monetary values at the beginning and at the end of the year. The difference is the gain or the loss made that year. From the standpoint of the economic order of capitalism it is utterly reasonable to make this calculation. Those who at the end of the year possess less money than at the start have managed their economic affairs badly in the capitalist order in any case, for, put aside, the sum of money, thought of as a quantity of gold, say, would have remained constant. Thus people will lend money only if they can be sure that the receive back more than they gave. Of the many ways in which money can be used, the borrower will choose those that will produce the greatest amount of money beyond the sum borrowed. (There is no need to discuss here what in the capitalist order renders it possible that someone should make more money from less.)

The money calculation of the capitalist entrepreneur is based on the fact that everything can be bought in the market (raw materials, labour power, patent, land, etc.) and that everything can somehow be sold (boots, dresses, machines, water, etc.). For every individual enterprise it is always possible somehow to determine its balance. The profit of the entrepreneur is increased sometimes by increasing, sometimes by decreasing the production, even sometimes by destroying goods already produced. The money balance says nothing about how the amounts of money are created. It is possible for an economy to exhibit a constant upward trend in terms of its balance sheets while the prodution is in permanent decline and the life of everybody becomes ever worse. The amounts calculated in gold can increase while everyone lives more badly than before. Thus it is possible that a money calculation made for all enterprises and for the state's own undertakings shows a positive balance, but that the people as a whole suffer.

Suppose the concentration of the capitalist order would lead to the existence of just one central bank and one related central trust. Then it would be possible to devise a money calculation according to which the entire economy made a rich profit even while it collapsed in its entirety! In cooperation with the central trust, the central bank could fix the figures for raw materials and produced goods so that a profit results.

Already today we can see that a trust or a cartel sells its own coal to its own iron works sometimes cheaper, sometimes more expensively, depending on what is of greater advantage to it. Restoring an enterprise to profitability can be effected such a way that many people go hungry, even die, while the money calculation stays healthy. Dead people do not figure as negative entries in the capitalist profit calculation!

The money calculation of the economic order of capitalism is very precise in terms of money sums, but it tells us nothing about the true 'wealth' of a people, neither about the use made of sources of raw materials nor about the distribution of the the goods produced; it tells us nothing about the rise or fall in the rates of deaths and diseases or about whether people feel better or worse.

The socialist economy, by contrast, is concerned with 'utility', with the interest of the social whole and the welfare of all of its members with regard to housing, food, clothing, health, entertainment, etc. To this end it seeks to employ the given sources of raw materials, the extant machines and labour power etc. Right at the start it must be determined what this is, the 'interest of the social whole'. Does it include the prevention of the premature exhaustion of coal mines or of the karstification of the mountains or, for instance, of the health and strength of the next generation? Once that has been determined at least in outline, it makes sense to ask what is the best use of the existing raw materials, machines, labour power, etc. One has to find the best way to achieve a non-wasteful exploitation of the coal mines, to ensure the health of the next generation, etc.

Now how can this 'best use' be calculated in a socialist economic order?

For such a socialist calculation there does not exist a unit of the sort which capitalism finds in money. Some had the idea to introduce a certain amount of labour as a unit. But how could this make it possible for the excessive exploitation of a coal mine to figure as a negative entry in the balance? How could a quantity of electricity which a river provides us with be entered as an increase in amounts of labour units? Or the increase in wind power used in the running wind mills? Again and again consideration is given to one or another type of socialist economic calculation with a single unit in order to show, for instance, that the type of economy I is less advantageous than the type of economy II, for I provides 1000 but II provides 1500 units. No author has yet devised a calculation for the entire economy (as Popper-Lynkeus did

schematically for his economic plan), instead they rest content with abstract formulations or with a very partial calculation without showing how the calculation of the whole would proceed. This should make us suspicious: let us consider the matter in detail.

Let us suppose that everything which is dealt with in a socialist economy can be measured in units, even one's well-being; suppose that one would be able to say that a certain picture gives somebody three and two thirds times as much pleasure as somebody else and thus give exact calculations of the qualities of life. However implausible, let us assume this to be possible.

Suppose a society is given certain amounts of land, factories, machines, vehicles, workers, etc. Suppose it is capable of relating all these elements to each other and accordingly it could gain certain amounts of machines, factories, etc., in the current year, reduce its stock of coal to a certain degree and make available for choice by the population certain amounts of housing, food, clothing, education, health care, etc. But different possibilities obtain. In order to decide between them, their effects on the lives of the people would have to be calculated. Accordingly, an individual's housing, food, clothing, entertainment, health, etc., would be represented by a figure, that of another as a second figure, such that in the end one would arrive at a sum for the whole society. Then one could determine that in one case the totality of the qualities of life is greater than in another. In addition, one would have to consider the calculation of stocks, the deterioration of machines, etc. These could also enter the calculations as units of qualities of life if one considered their influence on the future: for instance, by determining that the increase in certain stocks most likely produces this or that increase in the quality of life of everybody.

Yet one would also have to take note of wear and tear and the expenditure of energy (chemical, electrical, human, animal, etc.) so that one would have two results: first, the sum of qualities of life created; second, the sum of energy expended. Next one would have to detemine how highly, as it were, a unit of life quality rates in expended units of energy. Then, given our assumption, we could compare the measures of the various socialist economic orders with each other by calculating, for instance, the units of energy per unit of life quality for every one of the measures. This is, after all, the goal which socialism seeks to approximate. In reality, however, the calculation of life qualities will be possible only by using estimates and empathy, never exactly.

Having reached this point though, we must stop. It is impossible to go beyond this and arive at a 'profit' and 'loss' calculation as we know it in the capitalist order. The concepts 'profit' and 'loss' have lost their meaning. Take the example of a company taking over the cutting of trees in a forest: tools will be worn out and human beings will be used to deliver wood for the social whole. How should one calculate whether the amount of wood delivered is 'equivalent' to the tools and the labour power used? Further: if such a calculation would be possible and if it showed that 100 units of wood can only be produced by the expenditure of 200 units of energy (labour and tools), would one then stop the production of wood? There might come a time in which it would be impossible to live without such waste, be it that an ice age begins or other emergencies befall us. All we can do is to find the best way of living, but it makes no sense to make entrepreneurial calculations of losses.

'Costs' in the capitalist sense and the 'negative quantities' of socialist calculation do not come to the same thing. In the capitalist order, both the labour expended and the raw materials that are used up appear in the same way as 'costs', for the entrepreneur spends money on both. For socialism, there is but one type of expense and that is the displeasure of work or the work-related sickness, etc. Beyond that there is only the increase or the decrease in the outcome. The work that is expended is a negative quantity as displeasure, whereas the raw materials which are not used remain without consequence (result nil) and only become positive quantities by being used. In our present capitalist order an entrepreneur pays money in order to lay an electricity line across somebody else's land even though that person is not thereby inconvenienced. Payment for this belongs to the 'costs'; in the socialist order, however, there are no 'negative quantities' in this case.

The 'positive quantities' of the socialist order also do not come to the same thing as the 'profit' of capitalism. Savings in coal, trees, etc., beyond amounting to savings in the displeasure of work, mean the preservation of future pleasure, a positive quantity. For instance, that coal is used nowadays for silly things is to be blamed for people freezing in the future. Still, one can only give vague estimates. Saving certain raw materials can become pointless if one discovers something new. The future figures in the balance sheets of the capitalist order only in so far as the demand is anticipated. The freezing people of the future only show up if there is already now a demand for future coal. Just as before,

capitalism cuts down the forests even if the consequence may be karstification in a hundred years. In the tropics, and elsewhere, capitalism engages in over-exploitation without any care. In short, for capitalism such savings would mean a loss of profits.

In the capitalist economy every individual enterprise has its money calculation and profit or loss. In the socialist society it is only possible to estimate whether an economy as a whole of a certain structure is to be preferred to another. In a socialist economy the productivities of an engine factory and an agricultural enterprise cannot be compared, as they can be, by means of the balance sheet, under capitalism. Whether one should expand an engine factory or an agricultural enterprise only follows from what total plan is preferred. The distribution of the productive forces follows only from the economic plan, never from the comparison of different individual enterprises; it could be necessary to expand the technologically substandard agricultural enterprise while a first-class engine factory must be closed.

Organisationally this means that accounting in the capitalist economy leads to the balance sheets for individual enterprises, but not in the socialist economy. There accounting only shows the quantities of machines, oil, raw materials, labour hours, etc., used by an enterprise and what was achieved thereby in terms of finished goods, half-finished goods, waste. And the economic inspector of the central administration can test the technical rationality only on the basis of technical rules, for instance, by determining that a certain amount of rails could be produced with less coal and labour. But whether, say, an increase in the production of rails for the cost of decreasing the production of sewing machines would be economical is something that cannot be arrived by calculation. In addition, it is the case that commonly at the end of a production period other circumstances obtain than at the start. There will be new types of machines, the quantity of industrial and agricultural production will have changed, stocks will have increased and decreased. Finally, steam engines cannot be compared in a calculatory way with hay and tree trunks.

To sum up. The goal of individual enterprises in the capitalist economy is the maximum gain of money and because of this money calculation makes sense, namely, to establish whether the maximum has been reached. In a socialist economy the goal is the maximum of happiness and quality of life for everyone, of utility, and because of this the calculation of utility, happiness and quality of life makes sense. (As far as we

know this is impossible to do in units.) By contrast, the calculation of labour units, even if it were possible, makes no sense given the goals of a socialist economy, for these are the increase in quality of life, not labour. It is only possible to reckon an economic order higher or lower than another in terms of their effects on the quality of life when both are considered in their entirety.

The place of money calculation in individual enterprises under capitalism is taken by calculation in kind, with its estimation of utility, of the entire economy under socialism. Marx never misunderstood this fact, he never spoke of calculation with a single unit in the socialist economy, nor did Engels. Both only knew the planned organisation of the economy, the expenditure of labour and the use of raw materials and tools in the interest of the utility for the whole.

NOTES

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THE COLLECTED WORKS OF

F·A·HAYEK

VOLUME

15

THE MARKET AND OTHER ORDERS

Edited by

Bruce Caldwell

THREE

THE USE OF KNOWLEDGE IN SOCIETY[1]

I

What is the problem we wish to solve when we try to construct a rational economic order? On certain familiar assumptions the answer is simple enough. *If* we possess all the relevant information, *if* we can start out from a given system of preferences, and *if* we command complete knowledge of available means, the problem which remains is purely one of logic. That is, the answer to the question of what is the best use of the available means is implicit in our assumptions. The conditions which the solution of this optimum problem must satisfy have been fully worked out and can be stated best in mathematical form: put at their briefest, they are that the marginal rates of substitution between any two commodities or factors must be the same in all their different uses.

This, however, is emphatically *not* the economic problem which society faces. And the economic calculus which we have developed to solve this logical problem, though an important step towards the solution of the economic problem of society, does not yet provide an answer to it. The reason for this is that the 'data' from which the economic calculus starts are never for the whole society 'given' to a single mind which could work out the implications, and can never be so given.

The peculiar character of the problem of a rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess. The economic problem of society is thus not merely a problem of how to allocate 'given' resources—if 'given' is taken to mean given to a single mind which deliberately solves the problem set by these 'data.' It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative

[1]Reprinted from the *American Economic Review*, vol. 35, September 1945, pp. 519–30. [This essay was reprinted in F. A. Hayek, *Individualism and Economic Order* (Chicago: University of Chicago Press, 1948), pp. 77–91.—Ed.]

importance only these individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge which is not given to anyone in its totality.

This character of the fundamental problem has, I am afraid, been obscured rather than illuminated by many of the recent refinements of economic theory, particularly by many of the uses made of mathematics. Though the problem with which I want primarily to deal in this paper is the problem of a rational economic organization, I shall in its course be led again and again to point to its close connections with certain methodological questions. Many of the points I wish to make are indeed conclusions towards which diverse paths of reasoning have unexpectedly converged. But, as I now see these problems, this is no accident. It seems to me that many of the current disputes with regard to both economic theory and economic policy have their common origin in a misconception about the nature of the economic problem of society. This misconception in turn is due to an erroneous transfer to social phenomena of the habits of thought we have developed in dealing with the phenomena of nature.

II

In ordinary language we describe by the word 'planning' the complex of interrelated decisions about the allocation of our available resources. All economic activity is in this sense planning; and in any society in which many people collaborate, this planning, whoever does it, will in some measure have to be based on knowledge which, in the first instance, is not given to the planner but to somebody else, which somehow will have to be conveyed to the planner. The various ways in which the knowledge on which people base their plans is communicated to them is the crucial problem for any theory explaining the economic process, and the problem of what is the best way of utilizing knowledge initially dispersed among all the people is at least one of the main problems of economic policy—or of designing an efficient economic system.

The answer to this question is closely connected with that other question which arises here, that of *who* is to do the planning. It is about this question that all the dispute about 'economic planning' centers. This is not a dispute about whether planning is to be done or not. It is a dispute as to whether planning is to be done centrally, by one authority for the whole economic system, or is to be divided among many individuals. Planning in the specific sense in which the term is used in contemporary controversy necessarily means central planning—direction of the whole economic system according to one unified plan. Competition, on the other hand, means decentralized planning by many separate persons. The half-way house between the two, about which many people talk but which few like when they see it, is the delegation of planning to organized industries, or, in other words, monopolies.

Which of these systems is likely to be more efficient depends mainly on the question under which of them we can expect that fuller use will be made of the existing knowledge. This, in turn, depends on whether we are more likely to succeed in putting at the disposal of a single central authority all the knowledge which ought to be used but which is initially dispersed among many different individuals, or in conveying to the individuals such additional knowledge as they need in order to enable them to dovetail their plans with those of others.

III

It will at once be evident that on this point the position will be different with respect to different kinds of knowledge. The answer to our question will therefore largely turn on the relative importance of the different kinds of knowledge; those more likely to be at the disposal of particular individuals and those which we should with greater confidence expect to find in the possession of an authority made up of suitably chosen experts. If it is today so widely assumed that the latter will be in a better position, this is because one kind of knowledge, namely, scientific knowledge, occupies now so prominent a place in public imagination that we tend to forget that it is not the only kind that is relevant. It may be admitted that, as far as scientific knowledge is concerned, a body of suitably chosen experts may be in the best position to command all the best knowledge available—though this is of course merely shifting the difficulty to the problem of selecting the experts. What I wish to point out is that, even assuming that this problem can be readily solved, it is only a small part of the wider problem.

Today it is almost heresy to suggest that scientific knowledge is not the sum of all knowledge. But a little reflection will show that there is beyond question a body of very important but unorganized knowledge which cannot possibly be called scientific in the sense of knowledge of general rules: the knowledge of the particular circumstances of time and place. It is with respect to this that practically every individual has some advantage over all others because he possesses unique information of which beneficial use might be made, but of which use can be made only if the decisions depending on it are left to him or are made with his active co-operation. We need to remember only how much we have to learn in any occupation after we have completed our theoretical training, how big a part of our working life we spend learning particular jobs, and how valuable an asset in all walks of life is knowledge of people, of local conditions, and of special circumstances. To know of and put to use a machine not fully employed, or somebody's skill which could be better utilized, or to be aware of a surplus stock which can be drawn upon during an interruption of supplies, is socially quite as useful as the knowledge

of better alternative techniques. The shipper who earns his living from using otherwise empty or half-filled journeys of tramp-steamers, or the estate agent whose whole knowledge is almost exclusively one of temporary opportunities, or the *arbitrageur* who gains from local differences of commodity prices—are all performing eminently useful functions based on special knowledge of circumstances of the fleeting moment not known to others.

It is a curious fact that this sort of knowledge should today be generally regarded with a kind of contempt and that anyone who by such knowledge gains an advantage over somebody better equipped with theoretical or technical knowledge is thought to have acted almost disreputably. To gain an advantage from better knowledge of facilities of communication or transport is sometimes regarded as almost dishonest, although it is quite as important that society make use of the best opportunities in this respect as in using the latest scientific discoveries. This prejudice has in a considerable measure affected the attitude towards commerce in general compared with that towards production. Even economists who regard themselves as definitely immune to the crude materialist fallacies of the past constantly commit the same mistake where activities directed towards the acquisition of such practical knowledge are concerned—apparently because in their scheme of things all such knowledge is supposed to be 'given.' The common idea now seems to be that all such knowledge should as a matter of course be readily at the command of everybody, and the reproach of irrationality levelled against the existing economic order is frequently based on the fact that it is not so available. This view disregards the fact that the method by which such knowledge can be made as widely available as possible is precisely the problem to which we have to find an answer.

IV

If it is fashionable today to minimize the importance of the knowledge of the particular circumstances of time and place, this is closely connected with the smaller importance which is now attached to change as such. Indeed, there are few points on which the assumptions made (usually only implicitly) by the 'planners' differ from those of their opponents as much as with regard to the significance and frequency of changes which will make substantial alterations of production plans necessary. Of course, if detailed economic plans could be laid down for fairly long periods in advance and then closely adhered to, so that no further economic decisions of importance would be required, the task of drawing up a comprehensive plan governing all economic activity would be much less formidable.

It is, perhaps, worth stressing that economic problems arise always and only in consequence of change. As long as things continue as before, or at least

as they were expected to, there arise no new problems requiring a decision, no need to form a new plan. The belief that changes, or at least day-to-day adjustments, have become less important in modern times implies the contention that economic problems also have become less important. This belief in the decreasing importance of change is, for that reason, usually held by the same people who argue that the importance of economic considerations has been driven into the background by the growing importance of technological knowledge.

Is it true that, with the elaborate apparatus of modern production, economic decisions are required only at long intervals, as when a new factory is to be erected or a new process to be introduced? Is it true that, once a plant has been built, the rest is all more or less mechanical, determined by the character of the plant, and leaving little to be changed in adapting to the ever changing circumstances of the moment?

The fairly widespread belief in the affirmative is not, as far as I can ascertain, borne out by the practical experience of the business man. In a competitive industry at any rate—and such an industry alone can serve as a test—the task of keeping cost from rising requires constant struggle, absorbing a great part of the energy of the manager. How easy it is for an inefficient manager to dissipate the differentials on which profitability rests and that it is possible, with the same technical facilities, to produce with a great variety of costs are among the commonplaces of business experience which do not seem to be equally familiar in the study of the economist. The very strength of the desire, constantly voiced by producers and engineers, to be allowed to proceed untrammeled by considerations of money costs, is eloquent testimony to the extent to which these factors enter into their daily work.

One reason why economists are increasingly apt to forget about the constant small changes which make up the whole economic picture is probably their growing preoccupation with statistical aggregates, which show a very much greater stability than the movements of the detail. The comparative stability of the aggregates cannot, however, be accounted for—as the statisticians occasionally seem to be inclined to do—by the 'law of large numbers' or the mutual compensation of random changes. The number of elements with which we have to deal is not large enough for such accidental forces to produce stability. The continuous flow of goods and services is maintained by constant deliberate adjustments, by new dispositions made every day in the light of circumstances not known the day before, by B stepping in at once when A fails to deliver. Even the large and highly mechanized plant keeps going largely because of an environment upon which it can draw for all sorts of unexpected needs: tiles for its roof, stationery for its forms, and all the thousand and one kinds of equipment in which it cannot be self-contained and which the plans for the operation of the plant require to be readily available in the market.

This is, perhaps, also the point where I should briefly mention the fact that the sort of knowledge with which I have been concerned is knowledge of the kind which by its nature cannot enter into statistics and therefore cannot be conveyed to any central authority in statistical form. The statistics which such a central authority would have to use would have to be arrived at precisely by abstracting from minor differences between the things, by lumping together, as resources of one kind, items which differ as regards location, quality, and other particulars, in a way which may be very significant for the specific decision. It follows from this that central planning based on statistical information by its nature cannot take direct account of these circumstances of time and place and that the central planner will have to find some way or other in which the decisions depending on them can be left to the 'man on the spot.'

V

If we can agree that the economic problem of society is mainly one of rapid adaptation to changes in the particular circumstances of time and place, it would seem to follow that the ultimate decisions must be left to the people who are familiar with these circumstances, who know directly of the relevant changes and of the resources immediately available to meet them. We cannot expect that this problem will be solved by first communicating all this knowledge to a central board which, after integrating all knowledge, issues its orders. We must solve it by some form of decentralization. But this answers only part of our problem. We need decentralization because only thus can we ensure that the knowledge of the particular circumstances of time and place will be promptly used. But the 'man on the spot' cannot decide solely on the basis of his limited but intimate knowledge of the facts of his immediate surroundings. There still remains the problem of communicating to him such further information as he needs to fit his decisions into the whole pattern of changes of the larger economic system.

How much knowledge does he need to do so successfully? Which of the events which happen beyond the horizon of his immediate knowledge are of relevance to his immediate decision, and how much of them need he know?

There is hardly anything that happens anywhere in the world that *might* not have an effect on the decision he ought to make. But he need not know of these events as such, nor of *all* their effects. It does not matter for him *why* at the particular moment more screws of one size than of another are wanted, *why* paper bags are more readily available than canvas bags, or *why* skilled labour, or particular machine tools, have for the moment become more difficult to obtain. All that is significant for him is *how much more or less* difficult to procure they have become compared with other things with which he is also

concerned, or how much more or less urgently wanted are the alternative things he produces or uses. It is always a question of the relative importance of the particular things with which he is concerned, and the causes which alter their relative importance are of no interest to him beyond the effect on those concrete things of his own environment.

It is in this connection that what I have called the 'economic calculus' (or the Pure Logic of Choice) helps us, at least by analogy, to see how this problem can be solved, and in fact is being solved, by the price system. Even the single controlling mind, in possession of all the data for some small, self-contained economic system, would not—every time some small adjustment in the allocation of resources had to be made—go explicitly through all the relations between ends and means which might possibly be affected. It is indeed the great contribution of the Pure Logic of Choice that it has demonstrated conclusively that even such a single mind could solve this kind of problem only by constructing and constantly using rates of equivalence (or 'values', or 'marginal rates of substitution'), that is, by attaching to each kind of scarce resource a numerical index which cannot be derived from any property possessed by that particular thing, but which reflects, or in which is condensed, its significance in view of the whole means-end structure. In any small change he will have to consider only these quantitative indices (or 'values') in which all the relevant information is concentrated; and, by adjusting the quantities one by one, he can appropriately rearrange his dispositions without having to solve the whole puzzle *ab initio* or without needing at any stage to survey it at once in all its ramifications.

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 favour of what other needs they ought to husband the supply. If only some of them know directly of the new demand, and switch resources over to it, and if the people who are aware of the new gap thus created in turn fill it from still other sources, the effect will rapidly spread throughout the whole economic system and influence not only all the uses of tin but also

those of its substitutes and the substitutes of these substitutes, the supply of all the things made of tin, and their substitutes, and so on; and all this without the great majority of those instrumental in bringing about these substitutions knowing anything at all about the original cause of these changes. The whole acts as one market, not because any of its members survey the whole field, but because their limited individual fields of vision sufficiently overlap so that through many intermediaries the relevant information is communicated to all. The mere fact that there is one price for any commodity—or rather that local prices are connected in a manner determined by the cost of transport, etc.—brings about the solution which (it is just conceptually possible) might have been arrived at by one single mind possessing all the information which is in fact dispersed among all the people involved in the process.

VI

We must look at the price system as such a mechanism for communicating information if we want to understand its real function—a function which, of course, it fulfills less perfectly as prices grow more rigid. (Even when quoted prices have become quite rigid, however, the forces which would operate through changes in price still operate to a considerable extent through changes in the other terms of the contract.) The most significant fact about this 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 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.

Of course, these adjustments are probably never 'perfect' in the sense in which the economist conceives of them in his equilibrium analysis. But I fear that our theoretical habits of approaching the problem with the assumption of more or less perfect knowledge on the part of almost everyone has made us somewhat blind to the true function of the price mechanism and led us to apply rather misleading standards in judging its efficiency. The marvel is that in a case like that of a scarcity of one raw material, without an order being issued, without more than perhaps a handful of people knowing the cause, tens of thousands of people whose identity could not be ascertained by months of investigation, are made to use the material or its products more sparingly; that is, they move in the right direction. This is enough of a marvel

even if, in a constantly changing world, not all will hit it off so perfectly that their profit rates will always be maintained at the same even or 'normal' level.

I have deliberately used the word 'marvel' to shock the reader out of the complacency with which we often take the working of this mechanism for granted. I am convinced that if it were the result of deliberate human design, and if the people guided by the price changes understood that their decisions have significance far beyond their immediate aim, this mechanism would have been acclaimed as one of the greatest triumphs of the human mind. Its misfortune is the double one that it is not the product of human design and that the people guided by it usually do not know why they are made to do what they do. But those who clamor for 'conscious direction'—and who cannot believe that anything which has evolved without design (and even without our understanding it) should solve problems which we should not be able to solve consciously—should remember this: The problem is precisely how to extend the span of our utilization of resources beyond the span of the control of any one mind; and, therefore, how to dispense with the need of conscious control and how to provide inducements which will make the individuals do the desirable things without anyone having to tell them what to do.

The problem which we meet here is by no means peculiar to economics but arises in connection with nearly all truly social phenomena, with language and with most of our cultural inheritance, and constitutes really the central theoretical problem of all social science. As Alfred Whitehead has said in another connection, "It is a profoundly erroneous truism, repeated by all copy-books and by eminent people when they are making speeches, that we should cultivate the habit of thinking of what we are doing. The precise opposite is the case. Civilization advances by extending the number of important operations which we can perform without thinking about them."[2] This is of profound significance in the social field. We make constant use of formulas, symbols, and rules whose meaning we do not understand and through the use of which we avail ourselves of the assistance of knowledge which individually we do not possess. We have developed these practices and institutions by building upon habits and institutions which have proved successful in their own sphere and which have in turn become the foundation of the civilization we have built up.

The price system is just one of those formations which man has learned to use (though he is still very far from having learned to make the best use of it) after he had stumbled upon it without understanding it. Through it not only a division of labour but also a co-ordinated utilization of resources based on an

[2] [Alfred North Whitehead (1861–1947) was a British philosopher, logician, and mathematician whose writings ranged from the monumental *Principia Mathematica* (1910–1913) with Bertrand Russell, to the popular *Science and the Modern World* (1925). The quote is from his *Introduction to Mathematics* (London: Williams and Norgate, 1911), p. 61. Hayek used part of the quote again at the head of chapter 2 of *The Constitution of Liberty*.—Ed.]

equally divided knowledge has become possible. The people who like to deride any suggestion that this may be so usually distort the argument by insinuating that it asserts that by some miracle just that sort of system has spontaneously grown up which is best suited to modern civilization. It is the other way round: man has been able to develop that division of labour on which our civilization is based because he happened to stumble upon a method which made it possible. Had he not done so, he might still have developed some other, altogether different, type of civilization, something like the 'state' of the termite ants, or some other altogether unimaginable type. All that we can say is that nobody has yet succeeded in designing an alternative system in which certain features of the existing one can be preserved which are dear even to those who most violently assail it—such as particularly the extent to which the individual can choose his pursuits and consequently freely use his own knowledge and skill.

VII

It is in many ways fortunate that the dispute about the indispensability of the price system for any rational calculation in a complex society is now no longer conducted entirely between camps holding different political views. The thesis that without the price system we could not preserve a society based on such extensive division of labour as ours was greeted with a howl of derision when it was first advanced by von Mises twenty-five years ago.[3] Today the difficulties which some still find in accepting it are no longer mainly political, and this makes for an atmosphere much more conducive to reasonable discussion. When we find Leon Trotsky arguing that "economic accounting is unthinkable without market relations"; when Professor Oskar Lange promises Professor von Mises a statue in the marble halls of the future Central Planning Board; and when Professor Abba P. Lerner rediscovers Adam Smith and emphasizes that the essential utility of the price system consists in inducing the individual, while seeking his own interest, to do what is in the general interest, the differences can indeed no longer be ascribed to political prejudice.[4] The remaining

[3] [Hayek refers to Ludwig von Mises's classic article, "Die Wirtschaftsrechnung im sozialistischen Gemeinwessen", *Archiv für Sozialwissenschaft*, vol. 47, 1920, pp. 86–121, translated by S. Adler as "Economic Calculation in the Socialist Commonwealth", in *Collectivist Economic Planning: Critical Studies on the Possibilities of Socialism*, ed. F. A. Hayek (London: Routledge and Sons, 1935; reprinted, Clifton: NJ: Kelley, 1975), pp. 87–130.—Ed.]

[4] [Russian revolutionary leader and Marxist theorist Leon Trotsky (1879–1940) penned these words for an article published in 1932 in *The Militant* titled "The Soviet Economy in Danger", now reprinted in *Writings of Leon Trotsky—1932* (New York: Pathfinder Press, 1973), p. 276. Polish economist Oskar Lange (1904–1965) was a leading proponent of market socialism, a doctrine which purported to combine the efficiency characteristics of a competitive market regime with the redistributive aims of socialism. Acknowledging Mises's insight about the importance of

dissent seems clearly to be due to purely intellectual, and more particularly methodological, differences.

A recent statement by Joseph Schumpeter in his *Capitalism, Socialism and Democracy* provides a clear illustration of one of the methodological differences which I have in mind. Its author is pre-eminent among those economists who approach economic phenomena in the light of a certain branch of positivism. To him these phenomena accordingly appear as objectively given quantities of commodities impinging directly upon each other, almost, it would seem, without any intervention of human minds. Only against this background can I account for the following (to me startling) pronouncement. Professor Schumpeter argues that the possibility of a rational calculation in the absence of markets for the factors of production follows for the theorist "from the elementary proposition that consumers in evaluating ('demanding') consumers' goods *ipso facto* also evaluate the means of production which enter into the production of those goods."[5]

Taken literally, this statement is simply untrue. The consumers do nothing of the kind. What Professor Schumpeter's "*ipso facto*" presumably means is that the valuation of the factors of production is implied in, or follows necessarily from, the valuation of consumers' goods. But this, too, is not correct. Implication is a logical relationship which can be meaningfully asserted only

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prices as a tool for the rational allocation of resources, Lange proposed the erection of a statue in "On the Economic Theory of Socialism", in *On the Economic Theory of Socialism*, ed. Benjamin E. Lippincott (Minneapolis: University of Minnesota Press; reprinted, New York: McGraw Hill, 1956), pp. 57–58. In *The Economics of Control* (New York: Macmillan, 1944; reprinted, New York: Kelley, 1970), p. 67, the market socialist Abba Lerner (1905–1982) said about the price mechanism, "If it is appropriately used it induces each member of society, while seeking his own benefit, to do that which is in the general social interest. Fundamentally this is the great discovery of Adam Smith and the Physiocrats."—Ed.]

[5]Joseph Schumpeter, *Capitalism, Socialism and Democracy* (New York: Harper, 1942), p. 175. Professor Schumpeter is, I believe, also the original author of the myth that Pareto and Barone have 'solved' the problem of socialist calculation. What they, and many others, did was merely to state the conditions which a rational allocation of resources would have to satisfy and to point out that these were essentially the same as the conditions of equilibrium of a competitive market. This is something altogether different from showing how the allocation of resources satisfying these conditions can be found in practice. Pareto himself (from whom Barone has taken practically everything he has to say), far from claiming to have solved the practical problem, in fact explicitly denies that it can be solved without the help of the market. See his *Manuel d'économie politique*, translated by Alfred Bonnet, 2nd ed. (Paris: Marcel Giard, 1927), pp. 233–34. The relevant passage is quoted in an English translation at the beginning of my article on "Socialist Calculation: The Competitive 'Solution'", in *Economica*, n.s., vol. 8, May 1940, p. 125. [Cf. Hayek, "Socialist Calculation: The Competitive 'Solution'", in *Socialism and War*, ed. Bruce Caldwell, vol. 10 (1997) of *The Collected Works of F. A. Hayek* (Chicago: University of Chicago Press; London: Routledge), chapter 3, pp. 117–18. See also Vilfredo Pareto, *Manual of Political Economy*, ed. Ann S. Schwier and Alfred N. Page, translated by Ann S. Schwier (New York: Kelley, 1971). The passage Hayek refers to appears on p. 171.—Ed.]

of propositions simultaneously present to one and the same mind. It is evident, however, that the values of the factors of production do not depend solely on the valuation of the consumers' goods but also on the conditions of supply of the various factors of production. Only to a mind to which all these facts were simultaneously known would the answer necessarily follow from the facts given to it. The practical problem, however, arises precisely because these facts are never so given to a single mind, and because, in consequence, it is necessary that in the solution of the problem knowledge should be used that is dispersed among many people.

The problem is thus in no way solved if we can show that all the facts, *if* they were known to a single mind (as we hypothetically assume them to be given to the observing economist), would uniquely determine the solution; instead we must show how a solution is produced by the interactions of people each of whom possesses only partial knowledge. To assume all the knowledge to be given to a single mind in the same manner in which we assume it to be given to us as the explaining economists is to assume the problem away and to disregard everything that is important and significant in the real world.

That an economist of Professor Schumpeter's standing should thus have fallen into a trap which the ambiguity of the term 'datum' sets to the unwary can hardly be explained as a simple error. It suggests rather that there is something fundamentally wrong with an approach which habitually disregards an essential part of the phenomena with which we have to deal: the unavoidable imperfection of man's knowledge and the consequent need for a process by which knowledge is constantly communicated and acquired. Any approach, such as that of much of mathematical economics with its simultaneous equations, which in effect starts from the assumption that people's *knowledge* corresponds with the objective *facts* of the situation, systematically leaves out what is our main task to explain. I am far from denying that in our system equilibrium analysis has a useful function to perform. But when it comes to the point where it misleads some of our leading thinkers into believing that the situation which it describes has direct relevance to the solution of practical problems, it is high time that we remember that it does not deal with the social process at all and that it is no more than a useful preliminary to the study of the main problem.