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OTTO NEURATH

# PHILOSOPHICAL PAPERS 1913–1946

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# 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, χοὕτω 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.].



# ON THE CLASSIFICATION OF SYSTEMS OF HYPOTHESES

## (*With Special Reference to Optics*)

Everyone who takes up theory of science or the history of the sciences feels oppressed by the profusion of facts. Early on, a start was already made with the classification of stones, plants and other objects, though at first only according to rather superficial characteristics; but the systems of human thought that engaged in these things were for a long time simply accepted without any systematic classification. Though one worked at history of botany, history of chemistry, history of mineralogy, history of zoology, one did so as one still works today at history of literature. Once the biographical factor came to the fore, so again did the subject treated. Of course groupings of complexes of ideas were formed, but this was not always preceded by sufficient analysis. There were wild growths of new classifications when the traditional ones were altogether abandoned. There was no continual cooperation of scholars in the field of the history of science.

If, for example, we want to inform ourselves about the views of an age concerning physics – including our own age – it is bad that we are forced to read through ten to fifteen books that always contain much in common. It would be of the greatest value if there was a presentation that made us aware of what there is in common, which often is hidden under all sorts of covers, so that the differences of the individual theories would stand out more clearly. Here and there a physicist undertakes something of this kind for educational purposes; but this undertaking remains isolated, and there is no continuation of the work. The same is true in nearly all fields of knowledge. Especially in psychology, complaints are made that it is difficult to take into account what the different psychologists have in common.

Of course, historical presentation suffers from this. What is the cause of this phenomenon? So far we have not developed a special technique for the analysis of trains of ideas. By a lucky thrust, great historians often gain deep insight, but such achievements can only be insufficiently utilised and above all can hardly be furthered; all too often knowledge is built on a basic view of which the scholar himself is not aware. If the unconscious knowledge could

Translation of Neurath 1916 [ON 82].