

The Laws of Dialectics

A Reply to Discussion

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THE discussion which has continued in these pages since November last year (with two brief amnesties in June and September) has raised a number of complications and side-issues which it would be very interesting indeed to follow up—not to mention what I take to be a few red herrings. In reply I shall not try to deal with all or even most of the questions that have been raised. Nor shall I try to answer back one or two remarks which I take to be censorious rather than argumentative. I shall simply try to re-state some of the points which seem to me of key importance for contemporary Marxist discussion on the laws of dialectics. Anyway, a “reply” is only a sort of resting place in a discussion and not a termination of it.

Testing the Truth of What We Say

The main point is that any statements or generalisations have got to be *tested*. And if they are to be tested we have got to know *how* they can be tested.

The main reason for saying this is that unless we recognise the necessity of subjecting whatever we say to tests, and are willing to subject it to appropriate tests and to alter or modify it in accordance with those tests, we can say whatever we like. The field is then open, not only to dogmas, but to every kind of vague confused and waffly talk. Indeed, the principle of “testability” is the first and most essential principle of a *scientific* approach. And it is by adopting this principle that scientific methods of thinking and investigation have advanced, and overcome obscurantism, superstition and the dictates of arbitrary authorities.

The purpose of my original article, which started up this discussion, was to insist that what we Marxists call “the laws of dialectics” must be subject to tests, and that our formulations of such laws must be worked out and modified in accordance with testing them. It simply will not do to say, as in fact we very often have said, “Marxism says . . .”, as though Marxism having said it provided a sufficient warrant for its truth. We have to test what Marxism says; and, as is the case in any department of the search for scientific truth, we have to develop what Marxism is to say in the light of testing and checking its statements.

Following from this, my purpose was to point out that to validate and develop our conceptions of

the laws of dialectics we have got to get clear as to exactly *how* they are to be tested. It will not do just to say “They are well tested, practice demonstrates them”, and so forth—for that is only another version of the dogmatic “Marxism says . . .”. If they *are* well tested, if they *are* demonstrated, we have got to be able to show *how* they are tested, just *what* has demonstrated them.

And this point raises, of course, some rather difficult questions, which are at the heart of all contemporary philosophical discussion in so far as it is in the least concerned with a scientific attitude, namely, questions as to *the nature of tests and the differences between one sort of test and another*.

I must confess that in raising these questions I took it for granted that there *are* laws which are of the nature of “laws of dialectics”, that they are scientifically important, and that Marx and Engels have provided us with rough formulations of some of these laws which are worthy of respect. A lot of critics of Marxism deny this altogether. However, my idea was that if we can show how these laws are tested we shall thereby also show that there *are* such laws, that they are scientifically important and, moreover, in just what their importance consists.

In reading the discussion, I thought I could detect on the part of some comrades a reaction of (shall I say?) slight irritation (not to say in at least one contribution considerable indignation) that such questions as these should be raised at all. The laws of materialist dialectics are an integral part of Marxism, and are well enough tested already! So why raise awkward questions which serve only to cast doubt on these laws and, because it is so difficult to answer them, only result in “a host of phrases which swirl with the density of a London smog”?

I think that this discussion, with all its side-issues and digressions, has demonstrated one point very conclusively indeed—and that is that, though we may most of us agree in principle that statements should be tested, we are not at all clear as to how particular statements such as those purporting to express “laws of dialectics” have been or should be tested, and therefore are not at all clear as to what exactly these statements state or how they are to be used.

It therefore seems to me that, so far at least, the discussion is a valuable one, and that we shall have

to go on working on these problems. Unless we do so we shall not be able to make out at all a convincing case for Marxism in the face of the demands of contemporary scientific thinking.

Different Laws, Different Tests

In my article I approached the problem of trying to work out how laws of dialectics are tested, and so of showing their conformity with objective reality, by the method of distinguishing between different kinds of laws—where the kind of test appropriate would be determined by the kind of law being tested.

I am afraid that some readers felt like grandmothers being instructed how to suck eggs when I began by pointing out the differences between the sort of laws passed by parliaments and the sort of laws discovered by scientists. I am sorry, for I did not mean to insult their intelligence. My intention was simply to try to make clear, in the most obvious instance I could think of, that there *are* different kinds of law, and that the word “law” is customarily and correctly used in more than one sense. So from that I went on to distinguish other kinds of law, the distinctions between which are equally important though not always so obvious, and in particular laws of natural science, laws of logic, laws of mathematics, and laws of dialectics.

I tried to point out not only respects in which these different sorts of laws are unlike one another, but also respects in which they are like one another. For I think it would be equally misleading to fail to appreciate likenesses as it is to fail to appreciate differences.

In particular, I tried to show that laws of dialectics are *unlike* laws of nature, and *like* laws of mathematics and logic, in respect of their not implying *predictions* as to what will or will not happen in any particular cases. And at the same time I tried to show that they are *like* laws of nature, and *unlike* laws of mathematics and logic, in as much as they nevertheless do purport to *tell us something about how things are*, such as “that things change and are interconnected”. This last-mentioned difference is shown, as I said, by the fact that laws of dialectics, like laws of nature, are formulated meaningfully in words, whereas mathematical and logical formulae make use of “formalised symbolism”.

Now it seems to me evident that laws of dialectics, which do *not* imply predictions as to what will or will not happen in particular cases, *cannot possibly* be tested in the same sort of way as laws of nature, which *do* make such predictions and are tested precisely by finding whether or not such predictions are realised. It is equally evident that the same applies to laws of logic and mathematics. And finally, it is again equally evident that, however

laws of logic, mathematics and dialectics may be tested, there are not only none of them tested *in the same way* as laws of nature, but they are not tested *in the same way* as one another.

So there we have the problem of tests. And it seems to me that, as regards laws of dialectics, this not only places fairly and squarely before us the problem of working out how these laws *are* tested (concerning which, whatever some comrades may like to proclaim, there has always been ambiguity and dubiety), but also indicates the road along which we may hope to answer that problem and, in answering it, to get clearer about just what sort of laws the laws of dialectics are and what is their practical importance.

I tried to indicate the sort of answer which in my opinion may be given. But I would like to stress that in my opinion the most important thing is *to recognise the problem*. On that basis we may hope to correct mistakes in trying to answer it. But if the problem itself is not recognised we shall never answer it, and Marxist theory will remain undeveloped in that respect, with mere slogans and proclamations taking the place of scientific demonstrations.

Necessity, Possibility and Impossibility

Emile Burns, in his contribution, says he would not dispute much of what I said about the distinctions between different kinds of law. And much of it was, I confess, painfully obvious. In particular, Emile Burns himself stresses what I take to be the most important point, and which was originally stated by Engels, namely: “Laws of dialectics do *not* tell us what to expect in concrete circumstances”. So here we have a basis of agreement. What he does dispute, however, and what he thinks even shows “a certain departure from materialism”, is what I said about the *sort of test* which is applicable in the case of laws of dialectics. But I do not think it is I who have departed from materialism, but Emile Burns who has departed from the recognition of distinctions which it is necessary to make in order scientifically to *develop* the principles of materialism.

I maintained, and continue to maintain, that it is a peculiarity of logic and mathematics, and also of dialectics, that “it is not possible even to *imagine* anything happening which did not accord with them”. This is to stress the characteristic of correctly formulated principles of logic, mathematics and dialectics that they are *necessary*—and consequently that any test of them must be a test of their *necessity*.

As regards logic and mathematics, this is a point that was recognised very early on in the development of scientific thought. Thus, for example, “All A is B” *necessarily* implies “Some A is B”. It is

not the case that we simply find, from repeated experience, that whenever all A is B there is no A to be found which is not B. On the contrary, the above logical principle expresses a *necessary* truth which *cannot possibly be falsified*, the falsification of which *we cannot possibly imagine*.

Of course, such a necessary principle accords with experience. Of course it is (because it must be) in conformity with objective reality. And, of course, logical concepts like the concepts of "all" and "some" are not drawn from the inner resources of our minds independent of experience but are the results of the practice of grouping and classifying things, just as mathematical concepts are the results of counting and measuring. But we do not demonstrate such principles or test them in an *experimental* way, but by a demonstration or test of their *absolute necessity*.

If we overlook this distinguishing character of *necessity*, as applying to some sorts of laws but not to others, then we ignore the findings of several centuries of scientific thought and bring not clarification but complete confusion into our materialist philosophy.

Emile Burns wants us to believe that, before people knew arithmetic, they could "imagine" aggregations of things in which "two plus two" did not equal "four". He then caps this by saying that now we know that the earth is not flat we cannot even imagine that it should be flat. Yet how can one give meaning to saying "The earth is a sphere" if one cannot even imagine its being some other shape? Indeed, one cannot give any meaning to the sentence "The earth is *not* flat" unless one gives meaning to "The earth *is* flat", or in other words can imagine a flat earth.

Such plausibility as Emile Burns' statements possess comes only from ambiguities in the uses of words—in this case, of the word "imagine". This is shown by the conclusion which he draws from his premises, namely, that what we can or cannot "imagine" is "a historical question of the growth of men's knowledge".

Evidently, he is thinking of "imagination", and using the word, as though in a purely psychological context. "What we can imagine" then depends on what sense-impressions we have received, what we have been told, and what we customarily believe. Thus a person blind from birth cannot "imagine" colours. And someone brought up with certain beliefs can easily imagine a flat earth with lots of angels flying around above it before the throne of God, whereas an exceptionally unimaginative student from the polytechnic finds such things extremely difficult to imagine, because they contradict the whole set-up of the world as he has been taught to imagine it.

Similarly, anyone can imagine cases of two lots of two things being brought together and not making four (for instance, if you divide four heaps of sand into two lots of two heaps, and then heap them all together, you will not get four heaps but only one heap). And if he does not know, or rather *does not understand how to use*, arithmetic, he may then claim that two plus two do not always make four.

But all this does not mean that a situation which really contradicts "two plus two equals four" is imaginable, any more than that a flat earth is unimaginable. For when one talks of being able to imagine a flat earth, and not being able to imagine a world out of accord with the principles of logic and mathematics, one is not talking about the *psychological* facility or otherwise with which, owing to one's environment and training, one can imagine or not imagine something, but one is talking about the *possibility* or *impossibility* of constructing a consistent description of a certain state of affairs.

This is not "possibility" or "impossibility" relative to one's particular beliefs and aptitudes—as when someone might say: "I can't possibly formulate a flat earth theory because I know the earth is not flat and that the theory would contradict science". It is *unqualified* possibility or impossibility. And the impossibility of describing any aggregation of things such as to contradict the laws of arithmetic is *absolute*, and not relative to one's knowledge of arithmetic and belief in its laws. In that sense it simply cannot be imagined, whereas a flat earth *can* be imagined.

Subjective and Objective Tests

It is always very important in any serious discussion to pay very strict attention to distinctions in the uses of words, or all sorts of confusions will result. Thus it often presents a genuine problem in scientific discourse, that the speaker, lecturer or writer must either invent some new-fangled word specially to express what he wishes to convey, or else he must use some already existing familiar word in a sense appropriate to the scientific context. The second course is often chosen. For example, the familiar words "force", "mass" and "energy" are used in mechanics in such a sense. This is generally quite well understood by those using these words, so that they do not get confused, nor argue at cross-purposes, due to interpreting, say, the word "force" when used in the context of mechanics as though it meant the same as when the same word is used in the context of, say, politics.

Precisely this applies to the use of the word "imagine", when one says that a situation contrary to the laws of logic and mathematics is unimagin-

able, whereas a flat earth is imaginable. Emile Burns simply tries to interpret these more or less self-evident statements as though one were using the word "imagine" in a psychological context.

Necessary principles cannot possibly be falsified, we therefore cannot even imagine their falsification—that is to say, it is impossible to construct a consistent description of a relevant state of affairs in which they do not apply. Hence, as I have said, the test or proof of such principles cannot be the same as that of laws which *can* be falsified, such as the laws formulated by natural sciences. It must be a test or proof of their *necessity*, the *unimaginability* of their falsification or non-application.

Emile Burns immediately objects that such a test is only "subjective", and that to propose it is "a departure from materialism". Why? Because he understands "imaginability" and "unimaginability" in a purely subjective, psychological, relativist way.

If there is a "departure from materialism" here, it is *his*, not mine. At the same time, I cannot see why, when there is some question in dispute in a discussion between materialists, it should always be said that one or the other is guilty of "departure from materialism". I do not think that "materialism" is so rigid an intellectual straitjacket that there is not plenty of room for clearing questions up as between materialists.

That a world out of accord with logic or mathematics is unimaginable is not the consequence simply of our peculiar psychology—as it is a consequence of psychology if one experiences a psychological block in trying to imagine a flat earth. It is because any statement of ours which violates these laws is and must necessarily be out of conformity with objective reality, because what it says is the case is demonstrably and absolutely impossible.

The difference between "subjective" and "objective" tests may be hard to define with full precision, but is clear enough in principle. To apply a subjective test is to apply a test of whether or not something fits some psychological need or capacity of ours, and so is irrelevant to the question of conformity with objective reality outside us. An objective test is so devised as not to depend on peculiarities of the psychological make-up of the tester.

Scientific principles are validated by objective tests. And the problems I raised in my article are problems of the *objective* test of the principles of materialist dialectics.

The special point I made, in bracketing them in this respect with logic and mathematics, was that this must be an objective test of *necessity*—that the laws *necessarily* hold, and not only that experience *does* not falsify them but that it *could* not.

As regards logic and mathematics it is, of course,

psychologically quite possible, and it is often done, to propound illogical theories, to make statements violating the laws of logic, and to make numerical statements in defiance of mathematics. When that is done the theories and statements in question do not fit the facts. But the mistake is not the same as that made in saying "The earth is flat", which does not accord with the fact that it is not flat. The point is that such theories and statements *could not possibly* fit the facts, however different the facts might be from what they actually are. My contention is that theories which go against materialist dialectics not only *do* not fit the facts but *could* not. To trace the error in such theories one must look not only for misapprehensions about particular facts, but misapprehensions about universal necessities of the structure and laws of interconnection and development of the objective world.

The Test of Practice and Conformity With Reality

In his second *Thesis on Feuerbach* Marx said: "The question whether objective reality can be attributed to human thinking is not a question of theory but is a practical question. In practice man must prove the truth, i.e. the reality and power, the 'this-sidedness' of his thinking".

You can take that as a dogma, or you can take it as a challenging statement, challenging us to find just how in practice to "prove the 'this-sidedness' of our thinking", and to make our thinking, from the most trivial analysis of facts to the most general and universal principles, conform with objective reality.

At the start of our discussion Emile Burns said: "The test, the proof, of any law, whether mathematical or otherwise, is whether or not it produces results that are in conformity with objective reality". I do not think that merely to say "test whether or not it produces results that are in conformity with objective reality" goes very far to meet the challenge which Marx posed. For it is one thing merely to *say* "test", and quite another thing to *do* it.

Presumably one always gets "results" and tests their "conformity with objective reality" in the course of practice. But the way we get and check results from the laws of the natural sciences, and the way *they* conform with objective reality, *is not the same* as with the mathematical sciences. It is not the same either with the social sciences as with the physical sciences. And it is not the same with the laws of dialectics as with those of any of the special sciences.

In what way does *arithmetic*, for example, "conform with objective reality"? Certainly not at all in the same way as, for example, *chemistry* does.

And how do we “get results” from it? Again, not in the same way.

From two and two, put together in a certain way, we get four. And from hydrogen and oxygen, put together in a certain way, we get water. In the case of hydrogen and oxygen we test that that is so by an experiment—we perform the prescribed experiment and bang! there is some water. But we do not either establish or test “two plus two equals four” by experiment, nor do we get “four” from “two plus two” by any sort of experimental interference with external objects but by an entirely different kind of operation—the arithmetical operation of addition, done with signs or symbols.

And so we *use* the arithmetical formula “ $2+2=4$ ” in an entirely different way from the chemical formula “ H_2O ”. The latter formula, like all laws of natural science, guides expectations by making predictions. It leads us to expect that the chemical analysis of water will always yield two parts of hydrogen to one of oxygen. But anyone who supposes that an arithmetical formula in a similar way guides expectations is making a very crude mistake, and simply *does not know the use* of such formulae.

Thus, as I have already said, “ $2+2=4$ ” does not predict that bringing together two lots of two heaps of sand will make four heaps of sand. Its relevance would rather be, for example, not to the *number* of the resulting heaps but to the *weight*. But even so, the formula makes no prediction—it does not *predict* that the weight of the final heap will be equal to the addition of the weights of the component heaps. Whether it was equal or not would be ascertained by an experiment. And supposing it were *not* equal? The use of the arithmetical formulae would then come into play, because in that case they would enable us to *calculate* the weight *lost* in the operation, and set us on the path of looking for the causes of the loss: it might be that some grains had been misplaced, or it might (as does not happen with sand, but was found to happen in nuclear reactions) put us on the track of a physical law governing loss of mass in the case of certain sorts of combinations and reactions.

Exactly as I said in my article, the *use* of mathematical formulae is in *calculation*. And it is not the case (as Emile Burns seems to suggest, and to suggest Engels suggested, though of course Engels knew his arithmetic too well to have suggested anything of the sort) that the correctness of the formulae used for calculation is tested by the realisation of the predictions for which the calculations are used. On the contrary, in making predictions from scientific laws, and in making the necessary corrections in the formulations of laws if predictions fail, we *rely absolutely on the correctness*

of the formulae used for calculation. That is one reason (it is not the only reason, for they are interested in formulae for their own fascinating sakes) why mathematicians have been to so much trouble to devise the most rigorous methods for the construction and proof of mathematical formulae. Science, to conform with objective reality, must possess the most reliable and well-proven instruments of calculation.

That is the way in which mathematics, like all parts of science, develops as an essential component in the development of human practice, and not divorced from practice. As Marx said, “in practice man must prove the truth, i.e. the reality and power, the ‘this-sidedness’ of his thinking”. And in practice man does so. So far as mathematics is concerned, its “conformity with objective reality” is proved by the fact that, first, its abstract concepts of numbers and quantitative relations are derived from our practical dealings with and efforts to master objective reality, and not invented arbitrarily by the power of the mind alone; and second, that it provides the proven scientific tool for making calculations as required in practice for establishing the correct reflection of objective reality in our thinking, and for a variety of practical techniques.

Materialist Dialectics as a Scientific Discipline

When it comes to materialist dialectics (and incidentally, I agree with Edward McHugh that “dialectics” must be “materialist”, though I cannot see why the necessary truth that dialectics properly worked out is materialist should prohibit one from continuing to use the single word “dialectics”) the established and well-recognised fact that dialectical laws do *not* imply any particular predictions in particular cases proves quite conclusively that such laws are *not* testable in the same sort of “empirical” way as are laws of the natural sciences. Of course, “experience verifies them” and they are “very well established in practice”; but it would be completely mistaken to suppose that experience and practice have established, or ever possibly could establish, laws of dialectics *in at all the same way* as laws of natural science are established.

My contention was, and is, that laws of dialectics are *necessary* laws—and that what has to be proved is their *necessity*: not simply that in fact many processes of the objective world go dialectically, but that they *necessarily* go that way, so that dialectics provides *necessary* principles for materialist understanding of the real world.

This is why, for the working out of materialist dialectics, it is not and cannot be sufficient merely to produce *examples* of dialectical processes. (Incidentally, this is not an original idea of mine, and not a “revisionist” interpolation, for it comes from

Lenin's *Philosophical Notebooks*.) This is not to say that examples are not needed. They are needed, and they need to be studied, for two reasons. First, we get to *understand the significance and application* of dialectics through examples (just as one learns other disciplines through examples). Second, a part of the way we *test* the formulations of dialectical laws is through examples—for the study of examples is indeed a method of testing that the laws as formulated do apply, in other words, a method of ensuring that in working out dialectics we “keep our feet on the ground”.

But as regards the *necessity* of materialist dialectics, which is what is to be proved, the test is, as I said in my article, “the test suggested by asking the question: ‘How could it *not* apply?’”. I then tried to show (and will not repeat it here since the discussion has brought out nothing to contradict this general point) that the recognised formulations of laws of materialist dialectics *are* susceptible to this test. It is by this means that we can hope to prove the *necessity* of materialist dialectics, *both* as “a law of thought” *and* as a law objectively realised in nature and human society.

I would like to add three supplementary points of explanation, arising from the discussion.

First, I said at the end of my article that “the study of dialectics is concerned with the most general categories with which all scientific thinking must operate—the categories of motion, connection, quantity, quality, polar opposition, and so on”; and that in this way, as Engels said, materialist dialectics should be “developed as the science of interconnections”.

In the discussion Mike Steadman pointed out that the so-called “principle of causality” would also qualify as a “category principle”. That is so indeed; and in my opinion, therefore, the working out of the meaning and implications of “the principle of causality” is a part—and an essential part—of the discipline of *materialist dialectics*, “developed as the science of interconnections”. Causality is one of the categories of materialist dialectics.

But Mike Steadman's point immediately raises the question (besides other questions which he raised about definitions) of what exactly *is* “the principle of causality”. What does it say? What does it imply? He does not answer this question—for which I do not blame him, for not only am I too unable to answer it, but I know of no treatise where it has been satisfactorily answered. The fact is that we can often make good use of the word “cause” in particular contexts, but we possess no demonstrably correct formulation of the general “principle of causality”. Yet although he does not know, and consequently cannot say, exactly what

“the principle of causality” is or says, Mike Steadman proceeds to suggest that it is, or may be, “falsifiable” (like the law of conservation of energy, which he says is “a category principle”, and which I say is not).

On this I would like to comment that we should try to formulate “the principle of causality” as a *necessary* principle, so as to be sure *both* that the principle as we formulate it is a necessary “law of thought” *and* that it correctly reflects objective reality. That this has not been done does not mean that we should not try to do it, nor that we could never succeed. In my view, if “the principle of causality” is formulated in such terms that it is evidently falsifiable, that is a sign that it is *not* correctly formulated. The inadequacy and incorrectness of certain formulations of “the principle of causality”, like for example, the traditional ones which imply what is called “strict determinism”, is proved by the fact that good scientific theories can be formulated which do not employ the principle as formulated but contradict it.

Now this seems to me to show that the demand for “proof of necessity” in the formulations of materialist dialectics is a creative and constructive demand. The point about it is that it is a method of *developing* our materialist principles by testing the correctness and completeness of their formulations in such a way as to go on to improve and extend them.

This leads me to a second point, the one which John Lewis made when he said that “I am not at all sure that the laws (of dialectics) as we formulate them are exhaustive or even the most important”. I would go further than that (as I think John Lewis would too, despite the cautious words he used), and say that I am sure that “the laws as we formulate them” are *not* exhaustive. And I would be inclined to go even further, and say that an *exhaustive* formulation of such laws could *never* be accomplished (any more than a similar feat could be performed in mathematics).

I think that one of the great gains which would ensue from taking more seriously, and going more exhaustively into, the question of the basis and *test* of materialist dialectics, is that we would thereby rid ourselves of narrow dogmatic formulations, which mislead honest workers by telling them “Here are three (or possibly four) laws, and if you learn them by heart and apply them you have all the wisdom the proletariat needs”; and that we would then understand that dialectics is concerned not only with “change” and “interaction” and “quantity” and “quality” and “contradiction”, but with necessity and accident, form and content, thing and process, substance, causality and, indeed, the entire range of categories we employ in getting

to know and to master the real world, a range which is limitless, inexhaustible.

As for the “finality and precision” of formulation which John Lewis also queried, I think that we can hope to achieve sufficient precision for our purposes at given stages of the development of knowledge on given topics, but that there can be no such thing as finality.

Use and Applicability of Materialist Dialectics

Lastly, what about the use and applicability of materialist dialectics?

Peter Simple said in the discussion that we are “confused” if we regard the principles of materialist dialectics “as necessary for all valid thought in the world of science”. For “if so they are indispensable”—and yet natural sciences make great progress without scientists being explicitly aware of these laws. The real confusion here is in the contribution of Peter Simple, and it is just like saying that the laws of locomotion cannot be necessary for successful walking because so many people walk without having studied the laws of locomotion.

Marx and Engels began to study the laws of dialectics as they are exemplified in the methods and discoveries of the sciences (and far from their never having said anything about “the dialectics of nature”, they said that the same dialectical laws as are exemplified in the processes of nature must be exemplified in those of society). The purpose of this study was, and is, to *abstract* and formulate *these general and necessary laws*.

And what is the use of that supposed to be? It is certainly not that by formulating abstract principles of materialist dialectics we produce *formulae* for making discoveries which could not have been made otherwise. Materialist dialectics does not add any new ingredient to standard scientific method, but the formulation of its principles is a formulation of principles already implicit in that method and already applied whenever and wherever that method is successfully applied. The point is simply that at certain stages of development it becomes useful and, indeed, indispensable to turn attention from the practice to the principles—to *reflect on what we*

are doing, to *study the necessary principles of it*, because of difficulties, confusions and errors that have arisen in doing it.

As Engels said in his time, all sorts of difficulties and contradictions were arising in the theory of physics, just because of pre-conceived idealist and “metaphysical” notions which were in contradiction with the necessarily dialectical character of the objective physical processes. This is still true. But especially valuable and important was the abstract study of materialist dialectics in relation to the sciences of *society*—for Marx and Engels were able to expose the traditional *anti-scientific* conceptions (rooted in the prejudices of exploiting classes) which prevent the development of a genuine science of society, or of scientific socialism.

Peter Simple tells us (but the italics are mine): “For Marx, when you study a particular situation and frame certain ideas about it which determine your actions, the actions create a new situation in which the former ideas no longer hold and you have to frame new ones. This *and only this* is what dialectics means for Marx.”

But surely the practice of socialism does not lead us continually to conclude that our theory of scientific socialism does not hold and that we must invent a new theory—though it does, of course, lead to the enriching and correction of the theory. What dialectics meant for Marx, and ought to mean for us, is not hopping from one idea to another, but is the working out and validation of the general principles for framing ideas in conformity with objective reality to guide our practice.

The revolutionary socialist movement is a movement not merely to remedy particular grievances but to reshape the whole world, to reshape human society and by doing so to complete so far as we can man’s mastery of nature. For this we need the fullest grasp, the fullest mastery, of all the principles of scientific thinking. And we cannot proceed with a few adages such as “adapt new ideas to new situations”, or “test whether it produces results in conformity with objective reality”, but must study *how* to test and retest, to work out on a sure foundation and make more precise, the necessary principles of valid thought and effective action.