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a Journal of Dialectical and Historical Materialism

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*Call for Papers and Participants*

# Conference on the Global Economy and the National State

## Hanoi, 9–10 January 2003

**Sponsored by the Ho Chi Minh National Political Academy and *Nature, Society, and Thought***

This international conference on 9–10 January 2003 will be held within the framework of a conference and study tour, 5–19 January 2003. The study tour will provide a unique opportunity for participants to acquaint themselves with the principal features of socialist transformation of economic, political, and cultural life in several regions of Vietnam.

It will be possible to attend the conference without joining the study tour or submitting a paper. Requests for information on submission of papers and details of the conference/study tour should be directed to *NST*, University of Minnesota, 116 Church Street S.E., Minneapolis, MN 55455-0112 or by email to <marqu002@umn.edu>.

# Materialism and the Contemporary Natural Sciences

**Robert Steigerwald**

If the defeat of the Russian revolution of 1905 left a deep depression among revolutionary intellectuals and caused some of them to flee from materialism into the arms of religion and idealism, it is hardly surprising that the much more disastrous and important defeat of European socialism some ten years ago is accompanied by similar manifestations. Some recognizable symptoms of theoretical decay occurred in advance of this defeat; although they were not the primary reason for the catastrophe, they must be counted among its many causes. I refer here not only to what began under Gorbachev, but also to the theoretical dogmatism that had built up over a long period and that later characterized the political immobility of the Brezhnev era.

In the Gorbachev era, a concept was introduced that gave up essential parts of historical materialism, Marxist political economy, and the theory of scientific socialism. If humankind in general takes the place of specific classes, if policy can be founded on a universal human morality, if all this can be realized because capitalism in its inner nature has become peaceable and therefore the future of the human species lies in the coexistence of the two systems, if the necessity no longer exists for overcoming capitalism by socialism, then the Marxist analysis of capitalism is wrong. In that case, morality and the political will of the leading forces and classes become dominant in policy over

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the material basis. That is the end of Marxist historical and social theory.

Once again a fundamental debate on materialism is taking place, especially in Marxist philosophy. This theory is often questioned against the background of new scientific hypotheses, theories, and perceptions, and this new intellectual material is undoubtedly a challenge for Marxist philosophy. (The challenge is today even greater, in actuality, for nonmaterialist philosophical schools and tendencies.) Engels noted in *Ludwig Feuerbach and the End of Classical German Philosophy* that materialism must change its form with each epoch-making discovery in the sphere of the natural sciences (1990, 369). Since then, many epoch-making discoveries, hypotheses, and theories have emerged that individually and collectively demand the development of materialist philosophy. In 1908, Lenin produced a first treatise on this matter with *Materialism and Empirio-criticism* (1962).

I suggest at least the following such new facts of natural science:

–The special theory of relativity and the general theory of relativity.
–Quantum theory and quantum mechanics.
–The group of self-organization theories (including the theories of chaos, catastrophe, and synergy).
–The theory of self-reproducing prebiotic giant molecules.
–New efforts to clarify the process of biological evolution.
–New approaches to organism development resulting from evolution research.
–Important new neuroscientific research (or information) on the mind and the brain.

The discussion of the new problems for materialism assumes once again an answer to an old question: How in general must we understand the relationship between philosophy and the specialized sciences? Shall we follow so-called analytical philosophy, which says that the specialized sciences are competent for the researching of real facts and that philosophy here can find no object? Philosophy is then reduced to analyzing the language we

use to pursue science. (Logical examinations may be also be included.)

Or shall we follow the widely acclaimed constructivist philosophy? It analyzes our means of gaining knowledge–that is, terms, models, patterns, and theories that serve our understanding of the world. Very different versions are to be noted, such as that of Hugo Dingler (1952). Dingler first derives geometry from the manual and technical production of planes, etc., and then concludes that such operations can only be possible because of the existence of ideas behind the production, with the result that this version of constructivism becomes idealism. In a second version, radical constructivism, our mental instruments of production have no connection to the extramental–which necessarily leads to solipsism.

Yet another version follows Husserl, and locates the origin of our intellectual tools in the "life-world," or "life-world reality." These are empty phrases; we must ask, what is meant by "life-world," and from what is it derived? Again another version accepts the materiality of the tools of gaining knowledge and recognizes that consciousness is technologically determined. Here the transition to a materialist position seems possible. Finally we have to ask, what is the object of philosophy, how does it differ from the specialized sciences, and what do philosophers do when they work–that is, philosophize?

If Planck, Einstein, Heisenberg, Schrödinger, C. F. von Weizsäcker, Haken, Eigen, Prigogine, and others–as scientists–deal with subjects traditionally belonging to philosophy; and if they treat them as philosophical subjects (especially Planck, Einstein, and Heisenberg), this reveals the existence of an object of philosophy not taken care of by the analytical or constructivist approach.

Of course, philosophy must endeavor to use clean tools of work, clear instruments of thinking, and in this regard can learn from analytical and constructivist philosophy. The tools of exact thinking cannot be equated with the objective reality to which they refer. But also the opposite error must be avoided: We cannot ignore that they not only are a product of the subject, that is,

our construction, but that within them occurs the connection of the subjective with the objective; only then do they gain the power of reality. Philosophy ("thinking about thinking," as Hegel called it) transcends the analysis of the subjective side of the process of perception, and deals with the subjective side in its connection with the object.

When philosophers work, of course, they do not measure, weigh, calculate, and experiment with objective things. Their business is to test our mental tools of production. But are there characteristics that the thinking-tools of the specialized sciences possess that are generally applicable to each scientific act of cognition? The question seeks in the process of cognition the general, which transcends each of the special kinds of perception or research–the conception of laws or the principle of causality, for instance. Then the question is about the relationship of such means to the reality to which they refer, even about this reality itself, and the means for investigation that are applied in the specialized sciences, and if these means can also be generalized, for instance, in the concept of practice. While using these mental tools, philosophers may also experiment with thoughts as natural science does (just think of Einstein's thought-experiments on the general theory of relativity). But this is an entirely different way of establishing the mental tools from that which is needed in analytical philosophy. And all this leads to the question of whether an overall objective reality and general patterns of development exist. If so, they would then be genuine objects of philosophy. In other words: If philosophy thinks about matter, space, time, quality, and quantity, it reflects first of all objective connections. To be able to do so, to perceive the generalizable in the results of the specialized sciences, philosophy must make an effort to stay in close contact with the sciences if it itself is to be scientific.

### *Materialism and relativity theory*

The special theory of relativity is based on the fact that the speed of light is the limit for the speed of material systems. Moreover, the speed of light is the same regardless of the relative motion of the source of light toward or away from the system.

The relative speed of two independently moving objects, when calculated by adding or subtracting the speeds of each in some coordinate system, depending on whether they are approaching or receding from each other, becomes increasingly invalid as the speeds take on values closer to the speed of light. This is only possible if in a process of acceleration approaching the speed of light, the space-time conditions of the moving system change in such a way that the division of distance by time approaches the value of the speed of light. This again signifies that absolute space and time do not exist independently of a material frame of reference. In his general theory of relativity in 1915, Einstein established that the properties of space and time are both necessarily connected with the distribution of matter.

In his studies of the dialectics of nature, Engels had already defended the view, held before him by Feuerbach, that space and time were inseparable qualities of matter (he used the word "matter," not "mass"). So this actually must not shock materialists. It was the conclusion that was shocking–that mass, space, and time alter in connection with processes of motion.

But of course Engels could not discuss the far-reaching results that derive from the relativity theory. In 1908 Lenin, even though he discussed works close to the theory of relativity, like those of Poincaré, referred only to the variability of mass with speed (1962, 260)–one of the results of Einstein's 1905 paper on the special theory of relativity–and concluded that this was not a problem for the dialectical-materialist concept of matter.

From Einstein's theory of special relativity, another conclusion follows: that the speed of light, as a limiting speed of moving objects, can only be understood from what is changing in a system, that is, from the energy of mass in motion. When the speed of an object increases, its mass also increases. As a result, successive incremental increases in speed require successively greater incremental increases in the energy added to the moving object. As an object approaches the speed of light, its mass increases without limit so that an infinite amount of energy–an impossibility–would be needed to reach the speed of light. Dialectical materialists have often misunderstood this, because they

have confused the relationships among mass, energy, and matter– that is to say, qualitative attributes of matter–with matter itself! Mass and energy are not modes of matter but attributes (or properties) of matter, since there is no mode of existence of matter that does not have both mass and energy associated with it.

Energy and mass are often treated as interchangeable with each other because of their proportional quantitative relationship in Einstein's formula $E = mc^2$. Energy is the measure of the capacity of a physical system to undergo change from one mode of existence to another (Marquit 1980, 83). Mass is related to the inertial property of matter–that is, mass is a measure of the resistance of a material object to a change in velocity (Newton 1934, 1:2).

The proportionality of mass and energy was important for the utilization of nuclear energy. It is mentioned here because it is another confirmation of the special theory of relativity. It was confirmed as a proof through practice that spoke and still speaks in favor of this theory.

At this point, the relationship between the general and the specific must be considered. Comprehension of matter in general must be distinguished from the concrete knowledge we gain from physical, chemical, biological, and social matter in certain historical contexts. A term used in natural sciences to signify what is known at the time about matter is the *specific*. This knowledge was, of course, different in the last century from today. To use an analogy: The universe and those ideas we have of it in certain historical periods are to be distinguished. Where do I see the analogy to the special (and also to the general) theory of relativity? Consistent materialist thinking says that the universe neither has been created nor will it dissolve into nothing. How can terms that refer to something measurable–as do the terms *space* and *time*–be applied to something that in principle is not measurable? Or else someone first must show me how to measure the infinite! Measuring only works in relationship to something concrete that we extract from the infinite and use as a ruler. But is it not obvious that in relation to the infinite, every quantified size is trifling? It is a paradox to speak of space and

time involving the infinite, for both terms derive from the concrete state of the universe we live in. They are something specific, not to be identified with the general they belong to. We can see this already when, to be able to speak about the infinite, we need the denial of space and time. We can only speak of them by smuggling their negation into the comprehension of them. This often happens unconsciously: *infinite* or *endless* means *not ending*. As some philosophers and physicists at the turn of the century subordinated the general (matter) to the specific (the changing forms of mass, energy, elements), "matter" suddenly got "lost." Theoretical physicists who do research on problems of cosmology say that space and time had their origin in a "big bang." Materialists take offense at this, because in a way it ends with the thesis that God created the world out of nothing.

But is this logical? When physicists speak about what they know about their object of research and say they are talking about *matter*, they substitute their concrete knowledge of aspects of matter for matter itself (as suggested above).

Now I once again come back to the subject of space and time. Space and time, as they exist in the "known" universe (including the way we are built into them) actually do have their origin in the "big bang." But just as the present state of the universe "known" to us began with the "big bang" hypothesis (I deal here only with the general hypothesis, not its many different versions), but not the universe "in itself," thus also our ideas of space and time have their beginning with this "big bang." But this is only the concrete appearance of matter. Matter itself includes more, is even more general than the "known" universe and conceptions of time and space acting within it. As far as I can see, we have not yet have created terms for this, unless we are satisfied with the negative definition *un-ending* or *not-ending*.

In any case, we must not destroy the relationship of the specific and the general by subordinating the latter to the former. All those who believe that space and time exist "in themselves," that these are not simply the terms used for their concrete appearance

in the universe known to us today but had their origin in the "big bang," also make the mistake of confusing the general with the specific.

This leads us to the general theory of relativity. The special theory of relativity does not deal with gravity. It is known, however, that inertia and gravity act on moving bodies: If a car brakes, inertia keeps moving it forward–we all know the problem. So when analyzing processes of motion, one cannot ignore the effects of inertia and gravity. Einstein assumed that gravity and inertia are identical. Without mass, neither gravity nor inertia exists. Whether changes of a moving system depend on one or the other of the two forces (which are identical anyway) cannot be distinguished, and in any case both are due to the mass present.

The general theory of relativity led to a new cosmological theory, which I refer to here only insofar as it is essential for the present purpose. Shortly after formulating his general theory of relativity, Einstein concluded that the universe was finite in size. In 1917 he introduced a "cosmological constant" into his equations to ensure that the size of the universe was static. In 1922 a Soviet mathematician, Aleksandr Friedmann, made a correction to Einstein's work (Einstein at first resisted but then subsequently acknowledged his error) and showed that according to the corrected theory, the universe was expanding. Friedmann laid the basis for what proved to be three models of such states of motion. The first says that the universe is expanding with sufficient energy that gravity cannot brake this process. If we follow the second model, expansion under the effect of gravity at a certain point comes to a halt, and a process of contraction begins. The third model assumes that the rate of expansion gradually slows down to zero without reversing. Which of these models is true presently cannot be said with full certainty, but four discoveries made independently of each other presently support the assumption that the universe is in a process of indefinite expansion. These are: the Doppler red-shift of cosmic objects, discovered by Hubble; the distribution of elements in the universe; background radiation in the universe, which is kind of

a thunder of the big bang; and, recently, the temporal sequence of the appearance of elements in the universe.

This hypothesis of expansion allows us to calculate backward to the time when the known mass of the universe was concentrated into a space of unimaginably small size, the pressures and temperatures of this cosmos-soup finally producing the big bang that initiated the process from which the present state of our universe is derived.

Some consequences and problems merit discussion here.

The idea that the universe, though expanding, has a definite size is associated with the concept of the curvature of space–that is, space that closes upon itself. This is quite contrary to our intuitive notions of geometry as reflected in Euclidean geometry.

It follows from both Euclidean geometry and from Einstein's general theory of relativity that a "straight" line is the shortest distance between two points. It is also the case in Einstein's theory that a beam of light traces out a "straight" (more precisely, a geodesic) line. But if mass attracts other masses, and a beam of light on its way from the sun to earth passes close to a planet, the beam will be slightly deflected by the gravity of the planet, and will bend away from its original path. And since the whole universe is filled with mass, we find these deflections everywhere, affecting the qualities of space and time. This has caused much controversy about the sense in which we can consider Euclidean geometry valid. Some consider it as mere idealization and assume the real geometry of the universe to be quite different because of its curvature. Others point out that physics as a measuring science cannot renounce this geometry.

Discussions about the geometrical consequences of the general theory of relativity deal especially with the thesis of the curvature of the universe. If the universe is curved, in analogy to the curvature of the surface of a sphere, what then exists outside this curved space? Perhaps in answering this question in the future, we shall encounter the problem of the general and the specific. At the present time we can answer that the question implies an error in conception. It applies the idea of Euclidean (a so-called flat) three-dimensional space to a geometry that is not

Euclidean. There is no inside or outside any more than there is an inside or outside *along* the circumference of a circle or an inside or an outside *on the very surface* of a sphere. If there were two-dimensional creatures living only on a two-dimensional surface such that of a sphere, they could not imagine an inside or outside–that is, the existence of something not entirely within their two-dimensional space. So the question is without meaning.

At the time of the explosion, the matter of the universe was squeezed into such a tiny space that relativity theory, which does not deal with infinitely small quantities, cannot be applied to yield the properties of space and time. In a certain sense, it loses its validity, and for the exploration of this state of the universe the second of the two fundamental physical theories of the twentieth century must be applied, namely, quantum theory. Quantum theory deals with the states of the microworld, so that its laws are also valid in this state of matter.

Let us consider some things about the "big bang." Some followers of materialism proceed with the method of Palmström,[1] that what must not be, cannot be–because theologians and idealists interpret the big bang as the beginning of the world, as a creation by God, and therefore as evidence of God. Pope Pius XI, in particular, involved himself with this. Some materialists, seeing the theologians' and idealists' interpretation of the big bang as contradictory to materialism, simply deny that the big bang occurred and are eagerly receptive to arguments that negate it.

But looking at it philosophically, we see that if the big bang really did occur, it does not necessarily imply anything concerning the creation of world by God. It only implies that in the process of development of the universe, qualitative changes took place, and that the big bang was one of them.

Any other conception would contradict the universality of causality. Philosophers of nature who are no followers of dialectical materialism see this in the same way. Bernulf Kanitscheider, a philosopher at the University of Giessen, opposing the idea of the world's creation out of nothing, writes:

> Nothing, if we are allowed to use this monster of a term, is no real object that could be brought into any lawful connection with physical matter. No "something" can be connected with "nothing." The ontological reason for this is simple. Negative things do not exist, to no thing belongs an antithing, nor to the complete system an antisystem; there is no object named "nothing" opposite the universe. Since from a conceptual fiction nothing can originate, the conception of origin already has semantically changed if the new object has not originated in a former physical state. (Kanitscheider 1981, 449)[2]

Mario Bunge calls the thesis of the reasonless origin of things pure magic (Kanitscheider 1981, 449). Again Kanitscheider: "It makes no sense to imagine that natural laws can be pulled out of the world like whalebones out of a corset, and then to watch, how the lawless matter is tumbling down" (467).

To conclude from the necessity of an origin for each single thing or phenomenon the necessity of an origin for the whole is a faulty application of causality for two reasons: First, it is true that each member of a club must have had a mother, but it is not correct to conclude from this that the club must also have had a mother. In this example the whole is perceived as a mechanical addition of its parts and is treated the same way as its parts. Second, it is not reasonable to assume that the world needs an origin (supposedly God) for its existence, but that God himself needs no origin. You cannot apply the essence of an argument, causality, and at the same time ignore it.

An analysis of the cosmological and astrophysical materials leads to the conclusion that an explanation of the world needs no God or any other creator, that there is no indication of a state of nothing having preceded the existence of our universe. As Hawking writes:

> One could say: "The boundary condition of the universe is that it has no boundary." The universe would be completely self-contained and not affected by anything outside

> itself. It would neither be created nor destroyed. It should just BE. (1996, 175)

Philosophically this signifies a confirmation of the fundamental positions of materialism.

### *Quantum theory*

Quantum theory, initiated by Planck and further developed by Bohr, Einstein, Heisenberg, and Schrödinger, tells us that subatomic particles exhibit both corpuscular and wave-like properties. These two qualities exclude one another—that is, they can never manifest themselves simultaneously in the same experiment. These characteristics remain puzzling even today.

The Heisenberg uncertainty principle couples the precision with which the position of a particle is determined with a spread in the momentum of the particle. The greater the precision to which the positions of particles are localized, the greater the spread of the momenta. It is impossible, therefore, to impart to a particle simultaneously an exact position and an exact momentum. Statements can only be made about collections of such microobjects, and for this purpose a special mathematical theory of motion, quantum mechanics, is necessary for the microworld.

Wave-corpuscle dualism and the uncertainty principle, briefly described here, lead to philosophical problems. Exact physical experiments have proved that microobjects behave both like waves and like particles, qualities that in macrophysics cannot be possessed by one and the same object. But the dialectical contrariety of microobjects can only exist if both qualities occur together in the same object at the same time in the same experimental setup. This has never been observed. For a long time, wave-particle dualism was not viewed as a problem by dialectical materialists, since it seemed to prove the contradictory character of microobjects. The uncertainty principle was more troublesome since the spread in observed values of identical physical setups appeared to undermine determinism. Quantum mechanics, in contradistinction to Newtonian physics, was often taken as proof that events on the subatomic level do not occur

objectively and independently of the observer, but are bound to the act of observing. This was a widely shared opinion during the first period of the Copenhagen interpretation of quantum theory, but was later seen in relative terms by Bohr and Heisenberg. Max Born's remark that "the motion of particles follows probability laws, but probability itself develops according to causality" (Born 1969, 239) disproves the agnostic pseudoconsequences of quantum mechanics in a way that is acceptable to materialists. We shall return to this question later in this article.

### *Theories of self-organization*

The thermodynamic theory of evolution says that in all processes involving energy conversion, part of the energy is devaluated, which takes place physically as a change from molecular order to molecular disorder, a process also described as an increase of entropy, entropy being a measure of this disorder. We are therefore dealing with a continuing process of degradation of energy to an increasingly greater degree of disorder and disorganization. This thermodynamic evolution theory contradicts the fact that biological evolution is not associated with an increase in disorder and disorganization. The biological evolution theory seems to contradict basic natural laws and therefore could be considered as a breakdown of natural law that could only be explained by the intervention of a supernatural power.

This apparent contradiction was solved some years ago by the theory of self-organization pioneered by Ilya Prigogine, a physical chemist and Nobel prize laureate.

If a molecular system is undergoing changes while in a state that is far from equilibrium, it can display two tendencies as it moves toward equilibrium. First, just as an automobile engine exhausts gas to the atmosphere, the molecular system can release unordered energy to its environment, resulting in an overall increase in entropy. The energy fluctuations within the system can encounter bifurcation points, at which paths open for the formation of more highly ordered structures, the formation of which entails energy release to the environment outside the system. The

stability of ordered structures arises because the energy required to disturb them has already been dispersed to the environment and is no longer readily available. This process leaves open the possibility of the formation of another, still higher level of organizational structure. In this way, the contradiction between the two theories of evolutionary development is resolved, both strictly following natural laws.

There is no need for a miracle, for a divine, supernatural act to explain biological development. The only possibility of avoiding this conclusion would be the statement that the laws ruling it have been created together with the world by an extrahuman force. But then reasonable arguments for the possibility and necessity of this extranatural power must be found, and that cannot be established by scientific means.

The question then arises: Does this conception of evolution not also imply the impossibility of predicting the future development of social systems, since at such a bifurcation point the system staggers, fluctuates, tries to replace the old order by a new one, but with no certainty about what will be chosen? Does this not disprove the materialist historical conception that socialism is the system that follows capitalism? This question alone is challenge enough for materialism in historical and social theory.

Wherever the materialist historical conception is viewed as a theory of an unalterable, mechanical sequence of several social systems, that at bifurcation points only a predetermined, one-dimensional process could develop, then this theory has been made into a monster, deserving the criticism it receives. Hawking correctly warns against the arbitrary application of natural laws to society: “One has to keep the investigation of the fundamental laws of science and the study of human behavior in separate compartments” (1993, 136). Murray Gell-Mann, Nobel laureate in physics (creator of quark theory), referring to the terms *chaos* and *energy field,* writes that such conceptions of modern theories and hypotheses of natural sciences have turned originally “useful concepts into meaningless clichés” (1994, 27).

I also wish to recall the consequences of trying to transfer perceptions from biological evolution theory, especially

Darwin's, to society. It is true that theories that contradict fundamental physical laws cannot be correct. Higher forms of systems that have undergone evolutionary development, such as biological and social systems, have in common the tendency to reproduce themselves. Self-organization is an especially high level of development, possible only if in such a system changes do occur (for example, mutations in biological systems); otherwise the systems would stagnate. These changes are the material of evolution, leading to a competition among viable systems. In this competition, the systems that survive are those that are best able to adapt to the conditions in which they exist.

Yet important differences exist, as has been pointed out by Ebeling:

1. The "testing" of different principles for the activity of nonhuman living organisms is not subject to the moments of consciousness that occur among humans in a social context as they seek ways for optimal satisfaction of certain needs.

2. In the social sphere, technical or social variations or mutations begin in the mental sphere with thought experiments that can be combined with real experiments. This we do not find in prehuman evolution.

3. In the social sphere, the selection among possibilities of development already begins during a stage in which actions are planned on the basis of values that follow from theoretical and ethical standards, unlike biological systems (the simulation of chances of survival of prebiotic or primitive biotic systems follows other norms).

4. These valuations in the social sphere utilize collective knowledge, which today increasingly has a worldwide nature, with the result that on the one hand, development is accelerated, while on the other isolation causes great harm to the isolated system (1990, 671 ff).

With this background, let us look at what happened in 1989 and the following years. Was there a multiplicity of choices for the systems that were collapsing? Was it really impossible to foresee what would follow the breakdown?

Despite somewhat different conditions and despite differences in the quality of the leading persons in most of the state systems that collapsed, the question of property became the pivotal factor, so that the former socialist ideological-political superstructure was destroyed and replaced with a capitalist one. At the bifurcation point that was arrived at in the social sphere, not only did unforeseeable processes take place, but class forces encountered each other in a struggle for their interests, as is projected in the materialist conception of history and the theory of scientific socialism.

It should be mentioned, finally, that theories of self-organization do not at all maintain that, in principle, the way would be open in any direction at a bifurcation point. If they said this, all self-organization conceptions would fail in regard to one principal question. The abstract mathematically defined possibilities to synthesize living substances from the available atomic materials are so many that the time since the big bang would not have been sufficient to try them all. These abstract possibilities, however, are limited for mathematical reasons.

### *The transition from prebiotic to biotic macromolecules*

The source of the origin of life is also an old controversy between materialism and idealism. It is no wonder that among natural scientists, materialists have tried repeatedly to solve this problem. And indeed, the materialist position has essentially been substantiated by Manfred Eigen's discovery of macromolecules with the ability to store the information necessary for their self-reproduction. Thus they possess the basic qualities of living matter. Eigen was awarded the Nobel prize for his discoveries. In the chemical development of the earth, two groups of chemical substances provided the essential combination for the origin of life. One was the nucleic acids that were the precusors to RNA (ribonucleic acid), and the other the amino acids that could be catalyzed into proteins (chains of amino acids) by the RNA. The chemical and physical properties of nucleic acids and proteins are rather well understood. It is generally believed that

the further development of RNA led to the formation of the self-reproducing molecule of DNA (deoxyribonucleic acid). The elaboration of DNA and the processes associated with it have earned several Nobel prizes. The DNA molecule, the carrier of the hereditary genetic codes, has the form of a double helix, a structure resembling a spiral staircase with banisters on both sides (the Greek word for spiral being "helix"). The two banisters are made out of units called nucleotides, containing a sugar (deoxyribose), a phosphate group, and one of four nitrogenous bases: adenine (A), guanine (G), thymine (T), and cytosine (C). The "stairs" consist of hydrogen. These hydrogen bridges or bonds are less stable than the bases. At the same time, bases swimming in the liquid surrounding the double helix and possessing a chemical affinity with it can displace the more weakly linked hydrogen bonds and lock into the "banisters" like electrical plugs fitting into sockets. The bonds then open in a zipper-like manner with the two strands separating; the bases in the surrounding liquid surrounding each strand lock into place to complete a double helix with each of the strands. This doubling process of self-reproduction occurs on the basis of natural laws. Although we do not yet have all the answers to questions about the origin of self-reproducing molecules, the principal issue of the way living matter arises from nonliving has been clarified.

Reproduction, in which DNA, RNA, and proteins are involved, is complex and is an example of the interdependence of many processes. Natural biochemical and biophysical laws are the basis of these processes, but the ways in which reproduction takes place and the resulting new organisms are related to the evolutionary and individual history of the organisms involved. These processes are worthy of a dialectical-materialist analysis that could prove important in the further development of the philosophy.

### *The process of biological development*

Living matter obviously has a great potential for change, the characteristic of all matter. In the adjustment of the organism to continuous changes within itself and in the environment in which

it lives, the changes that promote the integrity of the organism are likely to persist and result in structural and functional changes of the organism that may affect the reproductive process on all levels, including the biochemical–that is, genes and proteins–so that offspring are also changed in relation to the characteristics of the environment. These changes in the genes and proteins are also affected in the new individual by the environment in which it lives, so that those changes may or may not remain active. In all the integrative effects of changes within and outside the organism, the activity of the organism is potent in the processes of change and persistence in the species. Changes in genetic material favorable for the organism's interaction with its environment are carried forward genetically and thereby remain available for subsequent activities. This means that organisms undergo a kind of learning process. They are thus the subjects and objects of evolution. They remain within environments that offer them favorable conditions, which implies a sort of recognition of such conditions, in contradiction to the autopoiesis conception.

The Darwinist view of survival of the fittest has been entrenched as indubitable knowledge, as was the case in an earlier time when the overturning of the Ptolemaic system by Copernicus collided with mass consciousness as well. New thinking about the evolutionary process has questioned whether natural selection is the only and fundamental process in evolution. Developmental processes as focal points in the process of speciation, the activity of the individual organism, and the concept of epigenesis as incorporating environmental as well as developmental histories of change have been stressed by a number of investigators. The positing of a mechanical-materialist dichotomy between genetic (sometimes termed "evolutionary") factors and environmental factors is decried by many, but the persistence of a genetic determinist view is evident. "Pure environmentalism" and "pure hereditarianism" are denied, but the search for genetic bases for complex human behavior is supported financially by genomic programs. Neither the materiality of the environment nor of the organism are being challenged by

the aforementioned reference to a kind of learning process. Only another subject-object relationship is being elaborated, or more accurately, the internal conditions of the organism are seen as determined. This is only part of the old dialectical thesis that development arises from the inner contradictory moments. The dialectical thesis also sees development as arising from external contradictory moments.

### *Important new neuroscientific research on "the mind and the brain"*

Neuroscience has been able to show that our sense organs transmit chemical/electrical signals to the brain, not pictures or copies of environmental stimuli. The dominant view is that the brain is autonomous, responding to the environment on the basis of its internal processes and according to them only. The brain "makes" the environment. I am speaking about the conceptions of Maturana, Varela, von Foerster, and others.

They start with the thesis that cognition is a biological activity and has to be treated as such. This is based on the assumption (first made in 1826 by Johannes Müller, not by the above scientists) that the specific quality of our sense organs is that they act on our perception. Müller had already combined this with a Kantian interpretation, saying that we therefore are unable to perceive the world outside of us in its objective being; autopoietics tells us the same thing. In Greek *auto* means *self* and *poiein* means *to make*; autopoietic systems thus are systems created by themselves.

The findings of neuroscience are new requisites for the reflection theory of knowledge. It is necessary to examine the results of their research, in which it is clear that the nervous system responds in organized ways to the experiences of the organism as it acts in its environment, as for example, when a human does problem solving, or focuses on one or another set of visual stimuli.

Must materialism fail because of criticism of reflection theory? It would be foolish to combat the material discovered through research on the brain. But it is another thing to deal with

conclusions drawn from the facts of the natural sciences applied to the field of epistemology.

Of course, the special qualities of our sense organs influence our perception. But cognition is not only based on the passive reflection of environmental stimuli. It is also a result of our activity within our environment. Activity and perception must not be torn apart. Reflections during activity are basic to the adjustment of the organism to changes in the environment as a result of its activity. The organism "evaluates" the sensual information and makes changes in its activity to conform to the new information. The processes of integrating the reflections and the changes in the environment and the organism's activity have evolved from those of unicellular (acellular) organisms in which the response to the environment is transitory and not integrated for later experiences and behavior, as in the amoeba, to the highly organized and integrated activity of the nervous system in humans.

I cannot with the best of will understand how the new brain physiology can sink into solipsism in relation to cognition.

Let us look at our own experience. Touching a hot stove brings a quick withdrawal from its surface. This takes place at first independently of our will and with knowledge of the possible ensuing pain and damage it becomes an established pattern. The laws that govern such activity are the same for all organisms: the intensity of the stimulus brings about a withdrawal. When the organism is organized with a nervous system that can integrate immediate and past experience and plan future activities, the activity of withdrawal becomes elaborated in new patterns.

That something other than the biophysical and biochemical laws were operative here should not be forgotten or neglected in our attempts to understand organismic activity. Individuals do not react to the environment passively; they are active in it. Recognizing the differences in the level of complexity and developmental patterns, we see that each organism is continuously adjusting to internal and external changes. By studying

those similarities and differences among organisms we may arrive at law-governed behavior.

There is a relationship between the sensual and the rational stages of human behavior. The path does not only run from the senses to the inner world of the brain, but also vice versa. We only perceive when our sensual perception already contains rational moments. The inner world of our brain is more and more taken out of its total isolation. We do not perceive as isolated beings. We are participants in a collective experience. And we observe what others do, beginning with the first moments of our life, asking ourselves why they do it, why this way and not another way, trying it ourselves, trying this and then something else, and we keep learning, learning, and learning. One can say that there is no behavior that is not theory-laden because of this social/societal experience.

The brain that has the capacity for rational activity evolved as a function of the millenia of hominid experience with members of its own species, with the animals and the environment in which they lived. However, the organization, the neural structures, and functions that develop in any individual are unique and reflect the biochemical history of the specific parents and of the life lived by the individual. Studies based on the relationship between the material base of organismic structure and function and the material base of the social/societal processes that bring about the development of the individual are difficult to obtain. If the studies of this relationship are not based on dialectical and historical materialism, they swindle us, and contradict reality. We cannot fall back on Fichte's words, "The worse for the facts," but the facts will instruct us in a painful way about incorrect inferences of the products of the activity of our brain.

Moreover, even in the earliest stages of human life we find forms of mental anticipation of results of self-activity, some kind of simulation of the action before it is carried out, in order to establish what kind of results are to be expected. This is complemented by the observation of the behavior of other organisms, for instance, parents. All this leads to a collection of knowledge

for success, which again limits the principal multiplicity of the environment for the organism in question. This results in a direction to the gathering of knowledge, successful knowledge, which means an approach to "representation," to reflection of the environment within the organism. In the case of human beings a principally new situation arises. Their self-activity is action in, and shaping of, the environment. With this, the mere gathering of experiences turns into the recognition of causality, of essential correlations (*post hoc* [after this] turns into *propter hoc* [because of this]). This is the basis of law-governed cognition. It all takes place in a social connection. It is bound up with speech, which creates an entirely new form of transmission, social transmission, based on language passed on through education. All this makes possible not merely a reflection theory that was already an enormous philosophical achievement at the time of Democritus, but a reflection theory that is appropriate to today's level of knowledge.

***Construction of terms and philosophical constructivism***

I have already mentioned the extensive interest in the conception of philosophical constructivism, and also have touched on some of its versions. One aspect that I neglected is the effect of the "Copernican revolution" initiated by Kant. Until then, epistemology assumed that our perception is directly of the object; Kant replied that we only "constitute" the object by means of certain mental instruments that we possess a priori–ideas of space and time, causality, categories, and so on–which implies that we do not perceive the object in its objective being. This view implies that all our perceptional efforts in principle cannot be detached from mental constructions like terms, models, hypotheses, and theories. If we correctly combine this with the thesis that perception, as well as any other kind of human activity, is practical activity and arises only in connection with practice, we come to the conclusion that our cognition is actually a form of construing reality, and not merely its illustration or reflection.

A direct path to objective reality is indeed impossible for us. We always put material or mental instruments of production between reality and ourselves. Not all representatives of this conception want to do without "reality," even if they have cut off the direct way to it. They build it up again in their consciousness and call this a conception of *internal realism.* Some use a spongy word that seems to be a term without being one. They speak of *Lebenswelt* ("lifeworld" or "lifeworld reality," or simply just "life" or "reality"). This cannot be the objective reality that exists outside of consciousness and independently of it, because the way to it on the basis of this conception remains a secret.

As a consequence of this ambiguous basic concept, self-deception cannot always be excluded if, while using the word *life* or *reality* one thinks of something material, and while using the word *practice,* one thinks of material, productive practice. In any case, social reality in historical materialism means something else. It means material and social production by humans in their exchange with the world of nature outside themselves.

Followers of constructivism reply to Marxists, in part justly, that they would equate with objective reality those instruments of thought, such as terms, models, and theories, that we create for research to "constitute" the "objects" of research.

I think that we have to hold a serious theoretical debate on this. For if it were not true that we are dealing with the dialectics of subject and object when we place instruments between us and objective reality, we would end up with either a totally subjective idealism or a mechanical materialism.

A starting point for such discussion is the insights that are shared with Marxist philosophy: all our material or mental activities are bound with means of a material or mental character that we place between ourselves and the objects of our actions. In our mental activity, we deal with terms, models, hypotheses, and theories. We create them in order to make the things we want to act upon easier or even possible to deal with, to make them comprehensible, to make them free from disturbing additions– that is, under idealized conditions to make them ready for being

investigated by us, for example, by experiment. Thus everything we do involves the construction of material or mental tools. This construing and this dependence of our knowledge on such construing is acknowledged by these other schools. The only problem is that they remain in this sector. The reason often given for this is the so-called epistemological paradox. According to this paradox, when a comparison is made between a nonmental material thing and its mental representation, we are never able to leave the mental sector, so that we are never able to prove that the thing and the illustration correspond to each other. In the best case, the entirety of such mental constructions is recognized as determined by our culture, by our "lifeworld," by the "lifeworld conditions." But this leads to many questions: What are, in this case, life, culture, lifeworld, and lifeworld reality? Where do they come from? How did they become the way they are? What is the basis of their origin and their development? Varying a famous question from Kant, we could ask: What do the conditions for the possibility of such construing consist of? This is the point at which the principal philosophical analysis, the basic clarification, would have to begin.

### *Some philosophical problems arising from developments in physics*

In the dispute between materialism and idealism (in its theoretical and anthropomorphic religious appearance), if I see it correctly, three major questions occur. At least two of these questions have found important new answers, which undermine the basic positions of idealism. I am referring to (1) the question of the finiteness or infiniteness of the universe in time and space, (2) the origin of life, and (3) the origin of the mind.

If we consider the recent results of science, idealism has lost ground, to express it cautiously. Also in regard to the question of the derivation of the mental from the nonmental, important new research material has been gathered, even if this question has not been entirely solved; yet we also must ask if a complete solution will really be possible. The work of the Argentinian materialist

philosopher Mario Bunge on the mind-body problem contains, in my opinion, essential plausible results (1980).

Whether this state of affairs is helpful for materialism depends on whether philosophy can really be divided into the two fundamental lines: materialism and idealism. There are only a few exceptions that are excluded from this division, because they presuppose in a dualistic manner two basic kinds of objects, one material and the other mental. But even here we find within the concretely worked-out system tendencies in which one or the other of these dominates, so that we indeed are not permitted to characterize such a system as clearly either materialism or idealism, but still see that within the system one or the other of the two fundamental lines triumphs. Lenin, referring to certain parts of Hegel's great *Logic,* once noted that this most idealistic work can in large parts be read like a materialist work. And Kant's epistemology is, as Lenin also noted, materialist with the assumption of the *thing-in-itself,* but idealistic in its conditions for the possibility of establishing what it is.

The developments in natural science described here have led to extensive and fundamental philosophical debates. The theory of relativity led to questioning of classical mechanics, and its treatment of space and time. Far-reaching effects came from quantum theory. The development of and debates over quantum theory are of great philosophical importance in many ways. The mechanistic-materialist view of the world that most scientists had accepted unconsciously or consciously, and the classical physics coupled with it, were in contradiction to the new physical discoveries. The evolution theories of thermodynamics and biology seemed to demonstrate a basic contradiction between living and inanimate matter. Developments in biology also led to fundamental philosophical discussions. Controversial conceptional discussions in philosophy followed these scientific developments.

### *The reality problem*

Natural processes, and nature itself, seem unproblematic to the so-called normal faculty of cognition in the sense that nature,

with the laws and forces governing it in its spatial and temporal existence, is accessible to cognition. On this basis, a more or less conclusive and scientifically founded view of the world arose in correspondence with the assumptions of classical physics. Only at its extremes–down "below" in the microuniverse, and up "high" or "outward" in the universe–did it need further development, further perfection. Our common sense, using ordinary language, seemed adequate to give us a description of this world in a coherent way. This so-called normal attitude toward perceiving nature presupposes that our ability of cognition directly interacts with nature and directly procures knowledge about nature for us.

This is not the case. Before World War I, when scientists tried to get on the track of the atom, many important conditions were lacking for the fulfillment of this task. Rutherford knew that within the atom there must be a nucleus and electrons. Therefore he tried to approach the unknown by imagining that the atom could be formed similar to the solar system. Instead of the atom, which was not yet accessible to him, he used as a model what was already known in order to consider what was unknown.[3] In subsequent work with this model, in improving it, in the attempt to remove incompatibilities between the model and the actual atom, scientists used not only current knowledge of the atom, but went far beyond what we began with, by assuming quantum physics at the outset. The new world picture built up in this way also had to be most accurate scientifically to serve highly specialized fields. (Strictly speaking, this took place in part earlier; one can go back to the previous work in mathematics by Riemann.) This was more accurate and specialized than what we deal with in everyday language. In the microphysical world, we encounter objects that we describe partly with concepts from the macrophysical world, so that the question of the interconnection between both domains arises. These microphysical objects, however, have a real existence even though they have properties that cannot be described in terms of macrophysical concepts.

On 12 March 1895, Engels wrote a letter to Conrad Schmidt in which he discussed the relation of knowledge of the world to

objective reality itself in terms of concepts created by us. Engels wrote in part:

> The reproaches you make against the law of value apply to *all* concepts, regarded from the standpoint of reality. The identity of thought and being, to express myself in Hegelian fashion, everywhere coincides with your example of the circle and the polygon. Or the two of them, the concept of a thing and its reality, run side by side like two asymptotes, always approaching each other yet never meeting. This difference between the two is the very difference which prevents the concept from being directly and immediately reality and reality from being immediately its own concept. But although a concept has the essential nature of a concept and cannot therefore *prima facie* directly coincide with reality, from which it must first be abstracted, it is still something more than a fiction, unless you are going to declare all the results of thought fictions because reality has to go a long way round before it corresponds to them, and even then only corresponds to them with asymptotic approximation. . . .
>
> Or are the concepts which prevail in the natural sciences fictions because they by no means always coincide with reality? From the moment we accept the theory of evolution all our concepts of organic life correspond only approximately to reality. Otherwise there would be no change: on the day when concepts and reality completely coincide in the organic world development comes to an end. The concept fish includes a life in water and breathing through gills: how are you going to get from fish to amphibian without breaking through this concept? And it has been broken through. (1942, 527, 530)

In material production, we place instruments between ourselves and nature. From Hegel comes the designation of these instruments as means, as the means between us and nature, as our mediated effect on nature. Analogous with this is the widely used concept of means of thought. For example, Brownian

motion or the splitting of the atom can be simulated by means of models in order to understand them better, to approach the real object in this way. Yet the atoms are not only split in the model, but also in reality. We can use models in experiments. In some fields we are only able to work with models. But the real object of microphysics is the microobject, even if it can only be examined by means of models. The statement that something is a model does not yet define its epistemological nature. The model is inserted between subject and object; it is elaborated; the results of this elaboration are then transcribed. The question is how far can this procedure be carried on. The essence of an object of cognition is not embraced by the model. The question is to what extent are the means of cognition and the object of cognition related to each other, to what extent is knowledge gained, do the model and the modeled object correspond to each other? Models are supposed to mediate between our knowledge and nature, to help us in the same way as in material production, to come to new "products," new knowledge, in intellectual production.

This actually does not mean that we do not know anything about nature itself, that we cannot come to know it. The problem of reality is posed. Of course it could not be posed if the models of which are speaking were like that, for example, of a miniature railway that originally corresponded to a real railway, but only in miniature. But this miniature railway just models the known, copying it as exactly as possible. The previously mentioned models of science indeed are also constructed in analogy to known things, but do not copy the object to which they refer, since it is not yet known with the same precision (except for some unusual cases). The task here is to provide an increasingly exact understanding of something still unknown. On the other hand, would it be possible argue the matter if the problem of reality were a closed book, or only a closed book?

Thus the problem of reality exists in two aspects, since there is no thought that is detached from reality and since we do not know with certainty if our thinking corresponds to reality.

Two major groups of philosophical positions should be mentioned, a realist one and a positivist one. The difference between

them concerns the understanding of the real itself. For the group of positivism, the real consists of what we consider as the observed (of course, by experimental investigation using scientific/technical apparatuses), whereas realism assumes that not only what is observed exists, but that there is, or can be, something more essential than that.

In both groups we find variations. Within realism, we find variations concerning the question of what should be considered real. For materialism, it is not possible that material nature arises from the immaterial, since it exists independently of our consciousness. For *critical realism,* the real is ultimately dependent on spirit (from God, or an objective, absolute idea; thus it is an objective idealism).[4] For *internal realism* the real is the material of our mental processes, which amounts to a subjective idealism.

Within positivism we find varying positions about what the observed elements consist of. After all, they always are attributed to the epistemological subject. Within so-called Machism (empirio-criticism), they are understood as sense data; in the versions of linguistic analysis, as subjectively judged forms of speech; in logical empiricism, as logical structures detached from the real.

The question discussed up to this point primarily concerns whether outside the world of our thoughts, another world still exists and what it is like. Moreover, we have the question about what mental activities are needed to open up this world to our cognition. We are concerned here with the epistemological question, in distinction to the ontological one.

Reality forced the makers of models, the scientists, to change their model if they wanted to find out what was real, and during the history of science, again and again, models that had come into contradiction with reality have had to be abandoned or modified. But how could something have a compelling effect if it did not exist? Thus we are dealing with model builders, models, and reality in a three-sided relationship, with correlations among them, with the activity produced by the constructor and mediated by the model aimed at reality. The constructor, mediated by the

model, meets with the resistance of reality and is thus forced to change the model in order to gain more exact knowledge about reality. As a result, a model having proved to be useful cannot be entirely free from the correspondence, the resemblance, the copy, the representation of what has been modeled, that is, reality. Thus it contains the subjective as well as the objective.

Several positions also emerge in regard to the subject and the process of cognition. Here too, we can divide them into two major groups, one which affirms cognition and one which (in varying degrees) denies cognition.

We cannot say that every kind of realism includes the affirmation of cognition. Critical realism can accept cognition only within certain boundaries, because the objective spiritual being creating reality principally remains inaccessible to cognition, and in the best case can be characterized by a series of negations (as *not* mortal or *im*mortal, for instance), thus indefinable.

Internal realism–and we must ask if it deserves this name since, after all, it reduces reality to the world of our thoughts!–allows in the best case a hypothetical outside world, but denies its perceptibility, as Kant does with his epistemology.

Human beings have a direct access to nature, namely the nature of their own bodies, since they themselves are also part of nature. Elementary life activity takes place by direct and indirect material exchange with nature and within nature. Human access to nature is possible on the basis of those physical and intellectual tools created by humans. These tools are used only to accomplish the purpose intended. The activity aims at, or corresponds to, that part of nature that is supposed to be influenced by the mediating tools. To express it another way: In the course of humanity's historical and social processes, "references" have congealed and are thus saved. The intellectual tools indeed do not exist outside of consciousness. Thus they differ from the material ones, but still represent something objectified in the sphere of the mental. Thanks to speech and social processes, consciousness includes the accumulated "references" of nature. In a mediated way we therefore possess knowledge of nature itself. These intellectual means enable us to transmit such

knowledge, so that it is proper to distinguish, but not to tear apart, the work of the natural sciences and epistemology. This process of acquiring knowledge always occurs in a social context. There is no production "in itself"–it is always socially determined production. Therefore the material and intellectual tools are always socially influenced. As a consequence, work in the natural sciences includes its models, idealizations, and so on; it is influenced by society. Insofar as social influences necessarily contain a connection to group interests, work in the natural sciences has roots in nonscientific conditions, which, at the same time provide the orientation for scientific work. Also by reason of this, a strict division between natural and social sciences cannot be maintained. From all this it follows that we can receive deeper knowledge about nature "in itself" not only through philosophy, but also through the work of natural sciences.

### *The problem of law*

The history of physics and its influence on philosophy has led to a better understanding of determinism, in which cause and law are the same. With great success, this understanding allowed the assumption that a body could be idealized as a point and that its states of motion could be described exactly if its position and momentum at a given time were known. With this information, it would also be possible to calculate precisely the further course of motion of this moving body.

The understanding of causality became identical with this comprehension of natural laws. This corresponded to our experiences billions of times, and led in our consciousness to the opinion that there was a necessary causal connection between these conditions, so that an interruption of this causality (by chance) seemed impossible. This kind of causality, this inevitable necessary connection between cause and effect, was considered by Kant as a necessity of thought. The consequence for philosophy and the natural sciences was the assumption that causality was exactly the same as cause and effect. From this it would be possible to derive an exact prediction of the behavior

of objects. In the nineteenth century, Engels, following Hegel, already had commented with mockery on the mechanistic character of this kind of causality conception. Lenin, following Hegel, writes that cause and effect "are merely moments of universal reciprocal dependence of universal connection" of events, "merely links in the chain of development of matter," and that this "interconnection" is "only one-sidedly, fragmentarily, and incompletely expressed by causality" (1961, 159). When physics advanced to the microphysical sphere, problems arose. In the case of large objects, it makes sense to treat such an object for certain purposes like a point. But in reality they are not isolated, indivisible, individual objects, but complexes of objects, of atoms and molecules, for instance. Among them, correlations exist; they form systems, entities, and the laws resulting from this are not observed if this complex object is only seen as a single point.

This was changed when the observation of the interior of such a system began. But difficulties arose from the circumstance that the correlations of the elements of such a system again were dealt with only by shifting the former way of thinking into the interior of the system: so the elements now appeared as indistinguishable, similar individuals correlated to each other as in classical physics.

Even before the new problems arose in physics, we were forced to treat wave phenomena within the framework of corpuscular classical mechanics. Then wave mechanics was born. So two kinds of mechanics coexisted, corpuscular mechanics and wave mechanics. But the microphysical objects display both wave and corpuscular qualities. They are not identical "points." Their behavior as a whole is influenced by chance. Therefore another kind of law is necessary.

Laws are a special case of universal interaction. Interaction makes the derivation of laws possible. The conceptions of causality and law thus developed historically. The conception of law in classical physics is based on strict continuity: the link between the causing force and resulting effect cannot be interrupted at

any point. But Planck's quantum of action cannot be arbitrarily small, which does not allow continuity in microphysical processes, so that we find "quantum leaps," that is, interruptions of continuity in these processes. The conditions for classical causality therefore do not exist here. Strictly seen, all physical occurrences are based on such quantized foundations. Objective reality, after all, possesses a quantized nature, with all its consequences, especially the consequence of uncertainty. So here a conception of law is necessary other than that in macrophysics.

The objects of macrophysics are ensembles of microobjects. So the macrophysical laws after all must have roots in microphysical reality. They are borderline cases of microphysical laws just as Euclid's geometry is a borderline case of the geometry necessary in relativity theory. We can neglect this in common practice because microphysical effects do not simply sum up, but are partially equalized in processes involving innumerable microparticles, so that laws become possible for the macrosystem that are not just a summary of the laws of the particles entering into it. At the same time, the peculiarities of microphysics contain the possibility of the accidental. Accident is an objective correlation between different occurrences, a correlation that does not result from the essential inner conditions of the occurrences. Accident itself is not without a cause. So it is not absolutely accidental. Otherwise it would not be possible to determine the quantity of Planck's quantum of action *h;* it would be an absolutely accidental quantity on one day, and another on the next day! But accident includes different possibilities, and each of them has its own necessities. In face of the multitude of particles forming a complete system, multiple interactions and correlations can develop that are not necessarily connected with the total system. In self-organization processes, accident is even a determining factor for the development of the system. At those turning-points of the system (the bifurcation-points), where the system is faced with different possibilities for its further development, the direction of development will be decided by a process arising from its inner conditions, which, in reference to

the total system, nevertheless must be considered as accidental. In this way accident creates necessity.

In discussing questions concerning the problem of law, we met different types of laws, especially those that act differently in the macrophysical and microphysical spheres. The macrophysical laws represent strictly continuous relations between objects and causing forces, and are called dynamic laws (from *dynamis,* meaning force). They allow only one possibility of how a law is realized. They do not involve accident. Their corpuscular "point" character is conveyed by treatment of the objects as individual objects, whereas the laws of microphysics act in a collective way.

This is demonstrated by a special quality of the microphysical laws: they have a statistical character. Statistical laws in microphysics have a different nature from laws in classical physics. And they have a totally different character from the classical causal laws. A complicated dialectics of accident and law can be found here. I shall demonstrate this with an example that does not deal with the type of probability used by quantum theory, but gives an idea of the set of problems encountered. If we throw dice thousands of times, we find that each of the faces with one to six dots occurs about a sixth of the time. We can predict this statistically, but not the result of a single throw. And if we repeat the throwing of dice some thousands of times, we can also predict the relative frequency of the results, but not the result of a single toss at a given time; we also cannot assume that a second series of throws would reproduce the same sequence of individual throws.

We find statistical characteristics in both classical and quantum physics, but in different ways, so that we are speaking about a primary and secondary form of statistics. The difference is as follows: In classical physics (for instance in thermodynamics), statistics is used because of the multitude of objects involved (such as molecules of a gas). Single particles can no longer be considered as being in a clearly arranged order, so that in principle, we cannot examine their individual behavior. In quantum

physics, the uncertainty principle rules out our even considering this possibility.

The statistical laws of microphysics indeed must regulate the behavior of the particles/waves forming the system, and therefore: they must require a necessary, reproducible, essential (in regard to the behavior of system as a whole) connection (*dynamic aspect*); they must require that the behavior of the individual particles/waves have a random character (*stochastic aspect*); they must require that the randomness in the behavior of a single particle/wave reflect certain probabilities, which means that the randomness is subject to the laws of probability and is not causeless, not miraculous (*probabilistic aspect*) (Hörz, Röseberg, et al. 1980).

Full acquaintance with the newly discovered laws of the statistical kind was not without its difficulties, since it seemed that it opened the door to agnosticism by its thesis of limited faculty for human cognition. But this is not logical. If we realize that in nature laws exist that force us to change from the causality conception of macrophysics, not to conceptions of noncausality, but to another form of causality, then we are not dealing with agnosticism, but with the possibility of cognition.

Limits in human cognitive abilities are not the reason for applying stochastic laws; neither are these laws just to be accepted temporarily until they can be replaced by classical causal laws. The difficulty is that the old conception of law is linked to a certain interpretation of causality. If it turns out that in the microphysical sphere such simple causality does not exist, the pattern of classical laws itself comes into question (in this sphere). Then it is not possible–on the basis of the laws of nature and not because of limits in human cognitive faculty–to make compelling predictions by means of stochastic laws that refer to a particular case of subatomic behavior. It belongs to the essence of stochastic laws that also the improbable can take place, so that our knowledge of stochastic laws may become more and more exact, without, however, allowing compelling simple causal explanations of the older kind.

It is obvious that this new conception of causality and laws can also have consequences for social laws.

### *Some final remarks*

In examining the importance to materialist philosophy of the natural science theories discussed here, I have tried to seek out aspects that they have in common and any connection among them, to see if they possess something like an "inner logic."

These theories and hypotheses all examine occurrences outside and independent of our consciousness. Consciously or not, the theorists working on these questions assume materialist positions. All of them not only examine the motion, but also developments of the respective spheres of objects. But the development processes on one level proceed to those on another, higher one. So we are not dealing with a collection of examples of development, but with a system of development that reaches from the "big bang" to the origin and evolution of living matter. This is a confirmation of the thesis that all spheres of objective reality are exposed to motion and development; in the words of Engels in the 1870s, *"motion is the mode of existence of matter"* (1987, 55). This objective reality forms a coherent entity. In it we find dynamic relations, in which the elements change, having their own motions. We find this, starting with the smallest elements of matter up to the farthest and biggest cosmic objects, and also in their internal structure. Some common characteristics appear that occur again and again within these dynamic processes, from motion of a physical nature to systems of social life. Therefore it is possible to point out these common characteristics from the totality of theories and hypotheses analyzing these spheres, and in this way approach a more profound understanding of the real processes of matter.

If the objective common characteristics of the developmental processes are characterized as *objective dialectics,* the theoretical generalizations should be called *subjective dialectics.* Thus it would be philosophy for the purpose of intellectual grasping, generalizing, and interpreting the knowledge that the specialized sciences have ascertained about their objects. All these processes

result from the relationships between different forces that as a rule are complementary as well as mutually exclusive. The theories of self-organization, of autopoiesis, of catastrophes (free from their exaggerations and unjust overstatements), the new view of biological evolution–in brief, the transition from the primacy of outer effective factors to the inner ones–are not only significant steps for the explanation of new occurrences, but also for the clarification of their origin, a result of the activity of internal contrary forces or conditions, which again means that we find a genuine dialectic of problems and answers.

The two aspects of the second law of thermodynamics, the hypothesis of a universe oscillating between expansion and contraction, the efforts to comprehend the nature of subatomic particles with conceptions like that of complementarity, the contradictory relation of dynamic and stochastic laws, and also the contradiction between relativity and quantum theory, cannot be appropriately combined with philosophies of a nondialectical and nonmaterialist kind. We find further developmental stages of dialectical contradictions in the internal relations of forces in galaxies, the planetary system, and the structure of atoms, all of which have their inner coherence guaranteed by the entity of forces contradictory to each other. The discussed theories and hypotheses, in their own special fields, give answers to the question about why and in what way the emergence of the new takes place (without something new emerging there is no development), and about which laws lead in a particular direction (without this there would no development). They substantiate the possibility and the necessity of suddenly occurring innovations. They show that evolution takes place even within the most seemingly motionless parts of nature.

As a rule, the steps for the development of the new and the direction of development that follow from the theories and hypotheses are connected with suddenly occurring breaks, phase changes, etc. The emergence of the new includes breaking with the former as well as keeping linked to it; the latter already results from the conservation laws. If during the emergence of the new a breaking of symmetries occurs in some sector, the

conservation laws produce a compensation in another sector. The relation between these two processes is to be examined. Prigogine's interpretation that self-organization is not possible without the export of entropy can be used as an example.

If at a bifurcation point during a process of self-organization, a break with the former state takes place, the transition from a continuous to a discontinuous mode of observation with an appropriate mathematics becomes necessary. If we assume that nowhere do we find plain continuity and stability, that everything is in motion, and that motion itself after all takes place in a quantized mode, the mathematical method must integrate breaks and discontinuity. We find such mathematics in the conception of fractals. The conceptions of self-organization, the conceptions that assign a determining role to the activity of inner factors instead of outer, are new scientific affirmations of the old dialectical theses, as well as the conceptions of the general connection of all things and appearances. That the clarification of life's origin supplies materialism with strong arguments is certainly obvious.

As a whole, the position of practical negation of any postulated human cognitive limits, which also characterizes the new science, as well as the application of the criterion of practice as the ultimate instrument of verification (and the intensive application of induction), all confirm materialism.

This should not be interpreted to suggest that new scientific theories and hypotheses would not bear new and difficult problems for materialism. The dialectical aspects that have been discussed indeed include such problems. Possibly another theoretical approach will come that makes the wave-particle dualism appear in an entirely new light. New surprising discoveries cannot be excluded from problems concerning determinism. The concept of law must be adapted to the new results of research, not only in natural science, but also in the social sciences. Here also new dialectical aspects are to he seen. On the one hand, they can be seen in those views that only retrospectively speak of laws, because in regard to the future everything seems to be open–as chaos theory might suggest. On the other hand, they can

be seen in the conceptions of Haken and Thom, according to which structures, forms, etc. exist that also have effects on future developments, so that processes are not totally undetermined.

This text is a revised abridgement of the second main part of my book *Abschied vom Materialismus?* Second edition, Bonn: Schkeuditz, 1999.

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**NOTES**

1. Reference to a German poem by Christian Morgenstern, "Die unmögliche Tatsache" (The Impossible Fact), in which a man named Palmström is run over and killed while improperly crossing an intersection. Upon contemplating the circumstances of his death, he reasons that the car that ran him over should not have legally been there. He then concludes that he is not dead because "what must not be, cannot be."—Ed.

2. Translation of quotations from non-English sources in the Reference List were made by the translator.

3. In the discussion that follows, I do not deal with differences in the kinds of models or the difference between material and theoretical models.

4. The author is referring here to the historically dominant variety of critical realism in Europe, which is akin to a form of neo-Thomism. See Hörz, Röseberg, et al. 1980, 165–77.—Ed.

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# MARXIST FORUM

## Additonal Papers from the Beijing Philosophy Symposium (October 2000)

In the last issue of *Nature, Society, and Thought* (vol. 13, no. 2), we published four papers that had been presented at the International Symposium on Marxist Philosophy and the Twenty-First Century held in Beijing, 30–31 October 2000, under the sponsorship of the Institute of Philosophy of the Chinese Academy of Social Sciences. In this issue we present an additional five papers from this conference.

# The Era of Revolution in Human Nature

## Gao Qinghai

Human nature is very special. Human beings evolve from matter, but transcend matter, and can dominate it; humankind is a kind of life, but can transcend the limit of life and is always pursuing eternity. It cannot be said, therefore, that human beings are not matter, nor that they are matter; what we can say is that humanity is a kind of life that transcends life and a kind of matter that transcends matter. From the hundreds of different statements about the nature of humankind in philosophical history, we can induce two basic approaches. One insists on the transcendence of human beings, which must lead to the deification of the human race; the other insists on the origin of human beings, which must lead to their materialization. These two ways make a person a combination–one half angel and the other half beast.

For many centuries, human beings have understood themselves in these two ways. In my point of view, these two abstract ways of understanding human nature are the important reason that leads to misfortunes and disasters in relationships among people and between people and nature in our time. In the twentieth century, human beings gave full play to their ability to reason and developed their creative ability in all aspects; in the nineteenth century, science, technology, and production undoubtedly made unprecedented progress. On the other hand, the twentieth century was also bogged down in all kinds of crises, which have showed the weaknesses of human nature

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completely. These crises, such as ethnic conflict, religious persecution, the menace of nuclear weapons, environmental pollution, and ecological imbalance, have been endangering the base of human survival. Faced with all these problems, we must reconsider how we should understand and develop human nature. What is our goal as a species, and what future or destiny is waiting for us?

The essence of human nature has been developing and becoming perfected in the course of a long history. Until the present, I think, human beings have been realizing human nature in a one-sided way. In the modern period, human societies have undergone many important revolutions: religious in the sixteenth century, philosophical in the seventeenth century, political in the eighteenth century, social in the nineteenth century–and, in the twentieth century, a revolution in material production and science and technology. All these revolutions have liberated humanity in different directions, but on the other hand, they also have shaded other possibilities of human development and resulted in a new repression of human nature.

The ideas of deification and materialization of human nature are based on the imperfect historical state of humankind. After a long time, we should become more mature and develop an all-sided understanding of human nature. We must realize the reintegration of human nature. The difficulties confronting human beings can only be solved through developing human nature in an integrated way. Karl Marx's idea of total human development is not only the demand of history, but also the need of reality. In this meaning, I think, the revolution of human nature should be a very important topic in the new century.

In order to make people understand and give full play to an integrated human nature, we must renew the basic idea of human nature, change the traditional understanding of deification and materialization of human nature, and reconstruct a new idea of human nature. The following are, in my personal view, the most important points:

1. We must change the way of understanding human nature from a materialized to a human mode of thinking. Human beings

have a special nature and can only be understood by a human mode of thinking according to human nature. If we use a materialized mode of thinking to understand human beings, human nature will without doubt be lost.

Objective nature is decided by nature; it is single, unchanging, and finite, but humanity creates itself, can change itself in the course of history. As Marx and Engels said, what human beings are is decided by their mode of production (1976, 50–54). For a long time, people have been accustomed to the materialized mode of thinking, and are inclined to understand human beings in this way. Even today, many people cannot get rid of this abstract thinking; when they seek to understand human nature, what they are always seeking is a single and unchanging nature. This is the inevitable result of the materialized mode of thinking. So we must first destroy materialized thinking; this destruction is the important premise of understanding human beings in an integral way.

2. In order to distinguish humans from animals, we must break through the idea of biological single-fold life and construct the idea of a twofold life.

Human life originally evolved from animals, so human beings do not differ from animals in this aspect. What really distinguishes human beings from animals is the change in their way of existence. We can say that the animals' way of existence is characterized by adaptation, but humans create their own means of livelihood and survival environment by themselves through their own labor, so their way of existence is characterized by self-creation. This human way of existence means changes in the relationship between life and environment and between life and nature: life was originally one part of the environment, but now the environment becomes one part of life; life was dominated by nature originally, but now human life is decided by humans themselves; the meaning of life was originally to last the cycle of natural life, but now humanity can transcend the cycle of natural life to realize eternal value.

These are changes in quality, which means that life has liberated itself from nature and humans from life. In this meaning,

human beings are no longer animals that yield to natural instinct; they become dominators who can decide their own life activity, just as Karl Marx said:

> The animal is immediately one with its life activity. It does not distinguish itself from it. It is *its life activity.* Man makes his life activity itself an object of his will and consciousness. He has conscious life activity. It is not a determination with which he directly merges. Conscious life activity distinguishes man immediately from animal life activity. It is just because of this that he is a species-being. (1975, 276)

We can now come to this obvious conclusion: human life has been twofold and is no longer single-fold; human beings create a new life that can dominate life on the basis of biological life. If we call the former *material life*, we can call human life *species life*. In the past, the principal reason that people thought of humanity in terms of materialization or deification was that they only understood life in the sense of material life. Only when we form the idea of twofold life can we understand humankind's unique species nature of seeking eternity, and so understand humankind's special existential value and living meaning.

3. In the relationship between people and nature, we must change from the subject-object dichotomy in thinking about humanity and the world to the idea of species and thinking about human beings and the world as an organic whole.

Humans live between heaven and earth, with a special existential way that creates their own means of livelihood through practical activities, and makes them exist among universal relations. Practical activities not only make individuals get together to form a whole, but also make humanity and its world become a whole. In their practical activities, human beings exchange meaning and essence besides material, energy, and information between themselves and the external world; through these exchanges, nature becomes humankind's inorganic body, natural power becomes the tremendous energy for human use, the essential reason humankind is so powerful. In this meaning, the nature

of human beings is twofold: on the one hand self-centered, and on the other hand open to the outside world; on the one hand, they evolve from nature and become independent, and on the other hand, they realize the essential unity and combine into a whole with nature. The pursuit of the oneness of heaven and humanity through practical activity is the basic meaning of the species nature of human life.

The Western tradition has long held the idea of the subject-object dichotomy. This idea of subject-object dichotomy is one important reason for today's environmental destruction and ecological crisis. We cannot solve this problem through pronouncing that "the subject is dead," as some philosophers have said. As we said before, the key point of these problems is the abstract understanding and expanding of human nature in a one-sided way. We can only solve these problems through understanding and developing integral nature in a integral way.

Marx once generalized the development of human beings into three historical modalities: the first, the modality of human dependence; the second, the modality of human independence relying on material; the third, the modality of the free individual character that is based on everybody's total development and their common social productive ability becoming their social wealth (1987, 90–91).

These three modalities can be understood as the unfolding of the species-nature of humans historically and logically. Humankind reaches the individual-centered stage only after the group-centered stage, and the extreme of individual-centered stage means the beginning of the self-conscious species-centered stage. We are now in the time of individual-centered modality, but all the existential crises we face today have showed that the individual-centered modality is heading for its doom after giving full play to its creative energy. Human beings will go into the species-centered age; we must have a correct understanding of the current situation and form a new idea of the human being in the attempt to bring the species-centered modality sooner.

The twenty-first century is an era of the revolution of human nature. This means the liberation of humanity from abstract and

one-sided ideas and wrong conduct dominated by outdated ideas of human nature to realize the reintegration of human nature, whereby "man appropriates his comprehensive essence in a comprehensive manner, that is to say, as a whole" (Marx 1975, 299). When all people are dissatisfied with reality, the revolution of human nature will become inevitable.

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# Contemporary Chinese Philosophical Methodology and Marxist Philosophy

**Sun Zhengyu**

As we make cautious inquiries about the future of Marxist philosophy in the intersection of the centuries, it must have special significance for us to review the contemporary Chinese philosophical process and the philosophical logic it contains, and also to look forward to the philosophical future indicated since China instituted a policy of reform and opening to the outside world. The contemporary Chinese philosophical process in its entirety may be summarized as follows: (a) re-understanding Marxist philosophy; (b) understanding philosophy itself openly; (c) reconstructing Marxist philosophy creatively. These three stages of the philosophical process represent theoretically both the course of history of contemporary China and the course of the spirit of contemporary Chinese philosophy. Here I shall primarily look forward to the new century's Marxist philosophy from the viewpoint of the contemporary Chinese philosophical process.

I divide fifty years of contemporary Chinese philosophy into three stages: (1) before the 1980s–philosophy of the textbook; (2) during the 1980s–philosophy of textbook-reform; and (3) after 1990–philosophy of post-textbook. The reason that philosophy in the first thirty years after the founding of our People's Republic can be designated as "philosophy of the textbook" is that during that whole period the current textbook, *Principles of Marxist Philosophy,* was regarded as the model theoretical

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system of Marxist philosophy, the standard of differentiating Marxist philosophy from non-Marxist philosophy, the guide for constructing the various secondary subjects in philosophy, and the grounds for regulating public political life, economic life, cultural life, spiritual life, and social life.

With China's turn from a planned economy toward a market-oriented economy since the policy of reform and opening to the outside world in the 1980s, Chinese philosophical investigation turned logically from the philosophy of the textbook to the philosophical reform of this philosophy. A philosophical debate concentrating on the subjects of *subjectivity* and *practical materialism* gradually came into being.

The theoretical intention of practical materialism is worth studying profoundly. Superficially, it is a problem of *appellation* in Marxist philosophy, but in substance, it is a problem of the *orientation* of Marxist philosophy–that is, a problem of how to understand Marxist philosophy. The reason that the formulation of *practical materialism* has the significance of *orientation* for re-understanding Marxist philosophy is that its theoretical intention crystallizes the most important theoretical achievements of Chinese philosophical circles in the debates of the decade of the 1980s.

If we use the method of four divisions as given in the textbook *Principles of Marxist Philosophy,* we will find the following: In the sense of worldview, *practical materialism* emphasized understanding the relationship between human beings and the world, thinking and being from the viewpoint of practice, and therefore a reform of the theory of worldview in textbook philosophy. In the sense of epistemology, *practical materialism* emphasized understanding both the practical and cognitive relation of subjects to objects from the viewpoint of subjects and stressed the functions of choosing, reflecting, and constructing the subjects, which made the *theory of active reflection* obtain truly real activity. In the sense of dialectics, *practical materialism* emphasized disclosing the contradictions between humans and the world, thinking and being, subject and object, the subjective and the objective in the course of human existence and

development, and stressed the reflective mode of thinking and the critical essence of dialectics. In the sense of theory of history, *practical materialism* emphasized understanding the law of historical development from human historical action, not regarding the *law of history* as detached from human historical action, and explained all philosophical questions in terms of historicity of human existence so as to reunify worldview, epistemology, theory of value, and the theory of history in terms of practice.

We can generalize Chinese philosophy in the 1980s as a process from the starting point of reforming the current textbook, *Principles of Marxist Philosophy,* through re-understanding and reconstructing Marxist philosophy to achieve finally the rich and generous theoretical intention of *practical materialism*. The basic philosophical logic being contained in this philosophical process is a transition from re-understanding Marxist philosophy to re-understanding philosophy itself. Thus the problem of *philosophy-view*–that is the problem of philosophy's self-understanding–has emerged in the 1990s.

From the viewpoint of philosophical process, two important generalizations may also be made about Chinese philosophy in the 1990s: (1) it brought about a great transition from *consciousness of system* to *consciousness of problem*; (2) it brought about a great transition from the *hot-spot problem* and *focal-point problem* to the resonance of *one problem* and *all problems*.

Consciousness of system was the dominant consciousness in Chinese philosophical circles throughout the 1980s. The so-called hot-spot problem and focal-point problem were all closely related to the consciousness of the problem of reconstructing systems. The most striking mark is that the so-called hot-spot problem and focal-point problem in the 1980s, such as the problem of material ontology and practical ontology, the problem of the theory of reflection and the theory of selection, and the problem of historicism and nonhistoricism, were bitterly debated as the central problems of the four divisions of the system–that is, materialism, epistemology, dialectics, and view of history. Moreover, *practical materialism*, which had significance for the orientation of Marxist philosophy, was justly presented as a

reconstruction of the explanatory principle of Marxist philosophy. However, the consciousness of system for reconstructing Marxist philosophy had no actual possibility of such reconstruction in the 1980s, because it required at least three other important theoretical premises besides its historical premise–that is, having sufficient theoretical resources, finding real theoretical predicaments, and forming a novel theoretical train of thought.

The inadequacy of theoretical resources was due to the inadequacy of systematic study of Marxist philosophical texts as well as the confinement of the field of vision merely to Marxist philosophy texts. The important presupposition of how to understand Marxist philosophy is how to understand philosophy itself: it is because scholars have no wide field of vision and open understanding that they cannot reconstruct the Marxist philosophical system on the contemporary level. Thus the primary task for reconstructing Marxist philosophy should be the self-understanding of philosophy in terms of the contemporary background. Thus it is no accident that Chinese philosophical circles have been gradually focusing in the 1990s on the self-understanding of philosophy.

That Chinese philosophical circles regarded the *philosophy-view* as their focusing point since 1990 first of all stimulates a comparative study of Marxist philosophy, Chinese traditional philosophy, and Western philosophy, and brings about the resonance of one problem (that is, the problem of the self-understanding of philosophy) and all problems (that is, openly speaking of every kind of philosophical problem). This resonance made philosophy prosper in the 1990s in putting forward creative philosophy, quasi-principle philosophy, branches and departments of philosophy .

The self-inquiry of philosophy initiates reflections on problems of fundamental theory of philosophy such as the following: (1) problems of philosophy's theoretical character, objects of study, mode of thinking, living base, factional conflicts, and social functions; (2) problems of philosophy's ontology, epistemology, truth-view, value-view, history-view, and development-view. Along with inquiry into these problems of

fundamental theory, advances in creative theory in Chinese philosophical circles took place in the 1990s and the resonance of one problem and all problems comes into being in the area of fundamental theory.

Many scholars of Chinese philosophy in the 1990s emphasize the reform of the strongly fortified state of the subsidiary subjects of philosophy and combine the principles of Marxist philosophy with the history of philosophy. As a result, the so-called quasi-philosophy principle emerges. At the same time, so-called specialized philosophy comes into being and finally constitutes the resonance of one problem and all problems .

The great transformation of Chinese philosophy from the consciousness of system to the consciousness of problem and therefore the resonance of one problem and all problems provide Chinese philosophy in the twenty-first century with two stable bases: (1) these two points lead Chinese philosophical circles away from simple, abstract, and empty philosophical debates and provide important theoretical preparation for philosophical development in the new century; (2) these two points prescribe that the development of Chinese philosophy in the new century will follow the philosophical logic revealed by the contemporary Chinese philosophical process–that is, to reconstruct Marxist philosophy creatively in the new century in terms of the self-understanding of philosophy and the resonance of one problem and all problems.

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# Marxism, Globalization, and the Historical Balance of Socialism

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### *1. Revolution: The economic sphere and the political sphere*

A fundamental problem runs throughout the history of the Communist movement. The revolution did not take place at the highest levels of capitalist development where Marx, on the whole, expected the transition to socialism. What, then, is to be done? The social-democratic "solution" of handing political power back to the bourgeoisie or, worse still, to a semifeudal or semicolonial class is of course to be rejected. Aside from this, the imbalance determined by the lack of revolution in the West has been historically faced in three different ways.

The first two are sufficiently well known. The country in which the Communists have gained power can be used, in the first place, as a base for extending the revolution to the highest levels of capitalist development. Or, recognizing the unfavorable relationship of strength at the international level, Communists may identify the main task as building, in the country in which power is obtained, the new social system called upon to replace capitalism. The first choice refers back to Trotsky; the second to Stalin. There is. however, a third choice: the more or less backward country in which the Communists have conquered power is committed, primarily, to the programmed development of the

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productive forces in order to bridge the gap with the advanced capitalist countries and proceed to the construction of socialism. This is the way chosen by the People's Republic of China from 1978 onwards.

According to the *Communist Manifesto,* once victory has been achieved, "The proletariat will use its political supremacy to wrest, by degrees, all capital from the bourgeoisie, to centralise all instruments of production in the hands of the State, i.e., of the proletariat organised as the ruling class; and to increase the total of productive forces as rapidly as possible" (Marx and Engels 1976b, 504). Marx, who looked at the highest levels of capitalist development, did not see any contradiction between these two tasks. But, with the advance of "globalization," dominated by the United States, this contradiction shows itself clearly; a developing country radically nationalizing the means of production today would close itself off hermetically from the capitalist market, remain cut off from the most advanced technology, and would certainly not be able to resolve the problem of the development of the productive forces. The *Manifesto* again, after having called attention to the "new industries . . . that no longer work up indigenous raw materials" affirms that their "introduction becomes a life and death question for all civilised nations" (488). In the given conditions, therefore, it becomes inevitable for a socialist country to make more or less ample concessions to the world from which it intends to import technology and many essential elements in the process of modernization.

Even though necessary for a socialist country that does not wish to condemn itself to permanent economic backwardness (and military impotence) and, therefore, wants to overcome its previous semifeudal and semicolonial condition, the policy of openness allows the emergence of a bourgeois social stratum that prospers while not being indifferent to those sectors of the population that continue to endure conditions of life and work typical of the third world. A phenomenon never before seen in history is created in this way. Antonio Gramsci had already noted this in

relation to the New Economic Policy (NEP), introduced in his time in the USSR: a politically "dominant" class finds itself "on the whole in a condition of life inferior to that of determined elements and strata of the dominated class." The mass of the people who continued to suffer a deprived life is disoriented by the sight of the "fur-coated NEPman with all the wealth of the land available to him"; and yet this should not be a reason for scandal because the proletariat just as it is not able to conquer power, cannot even maintain it if it not capable of sacrificing particular and immediate interests to the "general and permanent interests of the class" (Gramsci 1971, 129–30; cf. Losurdo 1997, 249–50).

In the face of this "never before seen in history" phenomenon, however, a certain "Left" believed it was a re-conquest of power by the bourgeoisie. In reality, in 1957 Mao Zedong synthesized the attitude that the Communist Party should take in confronting the bourgeoisie in this way: "Spending a little money, we shall buy this class. In buying this class, we have deprived it of its political capital and so it has nothing to say" (Mao Zedong 1977, 387). For Lenin, too, what characterized the NEP was the imbalance between the political sphere (with the rigorous control of political power by the Communist Party) and the economic sphere (where the presence and influence of a social bourgeois stratum, more or less ample and more or less strong, is felt). The understandable anxiety about ending this imbalance led to the premature end of the NEP in Soviet Russia and of the "new democracy" phase in People's China. The consequences were without doubt negative as far as social and economic development was concerned; on the other hand, the permanence or increase of this imbalance, as a consequence of the still-necessary compromises with the internal and international bourgeoisie, creates a situation dense with unknowns and dangers to which it is incorrect to turn a blind eye.

Not only is there no immediate coincidence between the economic sphere and the political sphere, but another phenomenon, analyzed acutely in the *German Ideology*,

intervenes to render the revolutionary process even more complex. Marx and Engels call attention to the division of labor within the bourgeoisie between sectors directly engaged in economic activity on the one hand and "branches of labour directly belonging the state" the "ideological professions" on the other (1976a, 77, 77 n). They underlined that in determined circumstances this division can become a "cleavage that can even develop into a certain opposition and hostility" (60). This is what occurred in France with the Jacobin radicalization of the revolution. Only through a complex and contradictory process was the bourgeoisie able to absorb "all [more or less] ideological professions" (77 n). During Robespierre's years and the Jacobin terror it was not really a social class that exercised power but a group of intellectuals, an ideological and political stratum, that because of a series of circumstances (the enthusiasm and mobilization of the masses raised by the revolution, the state of exception provoked by the invasion of the counter-revolutionary powers and the civil war), became in some measure autonomous with respect to its own social class.

Something analogous occurred during the revolutions of the twentieth century: the Communist Party tended to become autonomous with respect to the proletariat and its allied classes, to which it still continued to be connected with more or less solid or tenuous links. But it is precipitous to use this fact to conclude that power had already been conquered by a "new class," a "new bourgeoisie," or an organically and obstinately antipopular "bureaucracy." This attitude believes itself to be faithful to historical materialism but in reality is unable to develop a materialist analysis of the consequences that the permanent state of exception in which the socialist countries found themselves, together with other objective and subjective factors, produce on the formation of governing strata. More than a social class, it was the Communist Party that held power, an intellectual and political stratum that certainly always runs the risk of being sucked back by the dominant classes at the international level, as has happened in Russia, for example.

### *2. "Armed propaganda" and "civilization war" in the process of globalization*

But now we must turn our attention to the international scene. How is the ongoing process of globalization to be read? In the *Communist Manifesto* we already find the observation that "all old-established national industries have been destroyed and are daily being destroyed" to be dislodged by new "industries that no longer work up indigenous raw material, but raw material drawn from the remotest zones; industries whose products are consumed, not only at home, but in every quarter of the globe" (Marx and Engels 1976b, 466). The history of capitalism is the history of the world market and increasing globalization. This is how Marx described it. The West achieved its planetary dominance by "turning Africa into a warren for the commercial hunting of black-skins," who were then compelled to work as slaves on the land that became available as a result of the annihilation or the deportation and massive thinning-out of the American Indians. A part of the aborigines continued to suffer "enslavement and entombment" in the mines (Marx 1967, 751), carrying out an essential role in the further triumphal march of the West. Torri writes:

> Above all, from the fifteenth century onwards, the Europeans used American silver to acquire goods in one part of Asia and re-sell them to other parts of the same continent or on the eastern coasts of Africa. It was mainly thanks to this work of inter-mediation that the Europeans were able to multiply their initial financial capital. (2000, 256)

This was then employed for both acquiring goods and promoting the technological development fundamental to the industrial revolution. These operations were obstructed by the persistent deficit of the English commercial balance in the relations with India and China; but here the conquest of Bengal and the Opium Wars intervened to reverse the financial flow to the advantage of Great Britain (256–8).

The internal upheavals in the West were also more closely interconnected. The crisis of overproduction in England in 1847

provoked in the following year the outbreak of revolution that, starting from France, spread throughout continental Europe. At the beginning of the 1860s, the U.S. Civil War and the consequent blockade of cotton exports from the Southern states ruined the English textile industry, causing mass firings. Neither the English Channel nor the Atlantic Ocean was able to block the spread of crisis and conflicts from one country to another. There is nothing to be amazed about: The "world market," as the *Manifesto* continued to underline, was replacing "old local and national seclusion and self-sufficiency" (Marx and Engels 1976b, 488).

When we read in Marx about the tragedy of India involved in a process that today we would call globalization, we are led to think about the Africa of today. Under the thrust of "English steam and English free trade," and even more of the "British soldier," the direct military violence, the traditional "family-communities . . . based on domestic industry and with self-supporting power," "myriads of industrious patriarchal and inoffensive social organisations," fall irremediably into crisis and are "thrown into a sea of woes, and their individual members losing at the same time their ancient form of civilization and their hereditary means of subsistence" (Marx 1968, 88). The triumphal march of free exchange is at the same time the funeral parade of a society that sees its "entire framework" collapse. One nation after another is overwhelmed by a tragedy without precedent in its history: it is "the loss of his old world, with no gain of a new one" (Marx 1968, 84).

In tracing this rather crude picture of globalization, Marx warned against the tendency to idealize the societies overwhelmed by this process; they are characterized by an "undignified, stagnatory and vegetative life" and, in the case of India, "contaminated by distinction of caste and by slavery"; while the penury and subjection of the great mass appear as a "never changing natural destiny" (Marx 1968, 89). The internationalization of the economy is also a stimulus not only to overcoming backwardness but also to unifying the human race. "The bourgeois period of history has to create the material basis

of the new world–on the one hand the universal intercourse founded upon the mutual dependency of mankind, and the means of that intercourse; on the other hand the development of the productive powers of man and the transformation of material production into a scientific domination of natural agencies." It is a question then of overthrowing with "a great social revolution" or at least contrasting and limiting with incisive struggles "the supreme rule of capital" in this process of globalization and development of material riches (Marx 1968, 131).

We have seen the economic dimension of the process of globalization, but the military dimension should not be overlooked. We are in the presence of a process, Marx observed, punctuated and accelerated by the recourse to "armed . . . propaganda" and to "civilization war," such as that unleashed by Great Britain against China to open its ports to the goods coming from London and, primarily, to impose the free trading of opium coming from the "compulsory . . . cultivation" of this drug introduced into India by the English colonists (Marx 1968, 320, 361). Rosa Luxemburg observed later, with regard to the formation of the capitalist world market, "It seems that at least here, 'peace' and 'equality' represent the *do ut des* [I give so that you may give] the reciprocal nature of the interests, 'peaceful competition,' 'civil influences.' But the peaceful character of these transformations is pure appearance." As indeed the Opium Wars and the consequent "progress of international commerce in China" demonstrate: "Each of the more than 40 treaty ports has been paid with rivers of blood, massacres and ruins" (Luxemburg 1968, chap. 28, 383, 392).

Very different, instead, is the picture outlined by John Stuart Mill. The complete seriousness with which the liberal thinker celebrates the Opium Wars as a crusade aimed at defending the consumer even more than the producer or the merchant, and therefore as a contribution to the cause of the unification of the world under the banner of the free market, acts as a counterpoint to Marx's bitter sarcasm about the "civilization war" (Mill 1972, 151). A thesis repeated again in the twentieth century by a patriarch of neoliberalism like Ludwig Mises: "That from the point of

view of the liberals it is not correct to place obstacles even in front of the trade in poison because each of us is urged to abstain through free choice from pleasures that damage the organism. All this is not so infamous and vulgar as socialists and anglophobes maintain" (Mises 1922, 220–21 n).

Three years before Mises wrote these words, the United States saw the triumph of Prohibition, particularly dear to the prophet of neoliberalism who nevertheless seemed not willing to authorize China to invade the country that opposed the free sale of alcoholic drink. The 1922 text had, however, no doubts about the fact that the liberal West has a full right to "sweep away governments that, adopting commercial restrictions and bans, tried to exclude their subjects from the advantages of participating in world trade, and so worsening supplies to all mankind" (Mises 1922, 221).

It is as well to keep in mind that this is not a mere economic process. Consider the Opium Wars against China: a liberal like John Stuart Mill celebrated them as a crusade aimed at defending the freedom of the consumer even more than that of the producer or merchant (1972, 151) and therefore as a contribution to the cause of world unification under the banner of the free market. Imposed by Great Britain upon India, opium was exported to China, from which a torrent of money flowed that enriched the finances and relaunched the productivity of English industries still further. The "world market" had taken an even more radical shape than Mill envisioned. Opium from the Orient also burst into London and the other industrial towns; it served to camouflage the hunger of workers' families, calm the cries of hungry children, and even became sometimes the instrument of an "ill-disguised infanticide": breast-fed children "'shrank into little old men' or 'wizened like little monkeys.'" On these horrifying details from the official reports, Marx commented: "We see here how India and China avenged themselves on England" (1967, 399 n. 2).

In Marx and Mill we can see two notably different descriptions of the process of globalization.

### *3. Globalization and geopolitical conflicts*

In our time, the elements of conflict present in globalization, far from being dissolved, are clearly more accentuated. The *Communist Manifesto* developed its analysis at a moment when no movement of emancipation was to be seen in the colonies. Under these conditions, relations between countries were, or seemed to be, more or less equal with a more or less homogeneous level of development. Now, however, globalization is also an instrument with which the great powers try to regain control of the economy of countries that have shaken free of colonial dominance. We can read in the U.S. press this significant admission: globalization is an "aggressive program" that aims at "facilitating takeovers of indigenous industries and agriculture" by the industrial and financial colossuses of the strongest capitalist countries (Pfaff 2000).

Let it be clear that the expansionism is not only economic. It has been noticed that in the eyes of NATO, one of Belgrade's greatest crimes was its refusal to "adopt the neo-liberal model imposed by globalisation" (Ramonet 1999). We can read in the U.S. press the invitation to Israel to make no concessions about the Golan Heights "without Syria opening to the world" and beginning "privatizing and deregulating" (Friedman 1999). The gunboats stimulate the process of globalization even when remaining in the background. The direct use of military force is the exception rather than the rule.

At the outbreak of the Cold War, the United States had already developed a strategy upon which it is worth reflecting. Emerging exhausted from the Second World War, the Soviet Union was blackmailed with the Marshall Plan in May 1947. If they did not wish to lose the credits and commercial exchanges they urgently needed, the Soviets had to "open their economy to Western investments, their markets to Western products, their account books to Western administrators." They were forced to "accept economic and media penetration" from the countries preparing to constitute NATO (Ambrose 1997, 10). Not by

chance–an observation that again can be read in the U.S. press–the launching of the Marshall Plan took place during the same period as the founding of the CIA and served to finance "anti-Communist politicians" and "pro-American propaganda, disguised as independent foreign publications and broadcasts," to finance "psychological warfare" as well as "covert action" by the spy agency and its real and proper "measures short of war" (Fitchett 1997).

In other words, the Soviet leadership faced this alternative: either a subordinate integration into the capitalist world market or condemnation to a policy of technological apartheid and a more or less radical embargo. Truman spoke of the Marshall Plan, which was giving a ponderous development to globalization between the two shores of the Atlantic, as the other side of the coin of the policy of "containment" (Ambrose 1997, 10). Or, to cite a U.S. political analyst of our time, "the strongest motive for trade liberalisation . . . was always political and strategic"; i.e., that GATT, the predecessor of the present World Trade Organisation (WTO) was "clearly meant to be the commercial counterpart to the pan-Western strategic alliance against the Soviet Union" (Luttwak 1998, 142–3).

The defeat of the Soviet Union during the Cold War (or the "Third World War") has not ended Washington's policy. The U.S. political analyst already cited has commented with pleasure that, given the exclusion of China from the WTO up to now, "the United States is still free to assume protectionist measures against it": "with a metaphor, it could be affirmed that the blockage of Chinese imports is the nuclear weapon that America has trained against China" (Luttwak 1999, 151). But the policy to follow, once the great Asiatic country is admitted into the WTO, is ready: "to shift China," Washington must know how to combine "gunboats, trade and Internet investments," and, it is understood, the password of economic and political "democratizing" (Friedman 2000).

We are, therefore, in the presence of a two-pronged strategy, with one arm busy exercising a terrible economic, political, and

(in the background) military pressure on the country concerned, while the other promotes infiltration and destabilization,

In conclusion, it is true that today, even more than yesterday, globalization is not at all a process without conflicts or one that cancels the importance of the national question. In underlining as early as 1848 the increasing "universal inter-dependence of nations," the *Communist Manifesto* warned of the "industrial war of extermination between nations" (Marx and Engels 1976b, 488, 509). Indeed, the "universal inter-dependence of nations" has prevented neither the catastrophe of the two world wars nor the gigantic process of national emancipation of oppressed peoples that has concerned the entire planet. Still today, to cite this time a review close to the State Department, "the growing inter-dependence of the world does not necessarily establish greater harmony" (Nye and Owens 1966, 24).

### *4. Three literary genres in Marx's discourse*

It is, therefore, also for reasons of an international character that the process of constructing a socialist society reveals itself to be much longer and more tortuous than Marx and Engels predicted. Precisely because of this, it is as well to remember their teachings to avoid losing strategic orientation. To clarify the new difficulty we encounter here, let us take three excerpts. The first, from the *German Ideology*, sees communism as a society in which every constriction, every form of the division of labor, and even work as such have disappeared, so that every individual can "do one thing today and another tomorrow, to hunt in the morning, fish in the afternoon, rear cattle in the evening, criticise after dinner" according to one's own wishes "without ever becoming hunter, fisherman, shepherd or critic" (Marx and Engels 1976a, 47).

Let us now see what happens, according to the *Communist Manifesto*, once capitalism has been defeated and overcome at the international level: "In place of the old bourgeois society, with its classes and class antagonisms, we shall have an association, in which the free development of each is the

condition for the free development of all" (Marx and Engels 1976b, 506).

Finally, a section of the *Critique of the Gotha Programme* predicts and augers, after the overthrow of the bourgeoisie's power in a single country or group of countries, a period of transition under the banner of the "revolutionary dictatorship of the proletariat" (1989, 95).

It could be said that we are in the presence of three different literary genres. The excerpt from the *German Ideology* recalls the utopian novels that accompanied the initial development of the socialist movement and, indeed, the protest of oppressed social groups. The other two excerpts both refer to the historical-political genre, but with one essential difference. The evocation of a great revolution able to change the face of the world forever and to emancipate radically every individual and the relations between individuals–this discourse refers to the long-term development of humanity as a whole. The excerpt from the *Critique of the Gotha Programme*, instead, is concerned with the concrete and immediate measures that the proletariat, after taking power in a determined country or group of countries, has to take.

What can and must we do today with these three different literary genres present in the discourses of Marx and Engels? The first, the utopian novel, is the expression of a protest that has not yet become conscious of itself; if, during the phase of the struggle against the *ancien régime*, it had a positive role of mobilization to play, in the successive phase of constructing the new order it can, however, become a hindrance. The other two kinds of discourse are essential, but the fact that they refer to different historical times must not be forgotten. The most superficial attitude is to contrast the poetry of utopia of the long-term prospect with the prose of immediate tasks. For example, appeal can be made to the thesis of the free development of every individual to condemn or discredit the political power that has emerged from the revolution, which naturally has to know how to confront the maneuvers of imperialism and the other dangers that threaten it. Once contrasted with the tasks of the present, the long-term discourse becomes reabsorbed into the utopian novel genre. The

concrete history of the new postrevolutionary society that seeks to develop itself among contradictions, tentative solutions, difficulties, and errors of every kind, is condemned as a whole as a degeneration and betrayal of revolutionary ideals. Such an attitude, which condemns the real movement in the name of its own fantasies and dreams, deprives Marxism of any real emancipating power.

This power can express itself only on two conditions: a) the utopia needs to be purged of its unrealistic elements and reabsorbed into the long-term discourse; b) this discourse must know how to indicate the solution of present-day tasks without obstructing or rendering solution impossible with expectations and pretences that do not correspond to the objective situation. At the same time, it must never lose sight of the strategic perspective.

In the political field, properly speaking, in order to affirm the "free development" of every individual claimed by the *Manifesto*, Marxists must liquidate forever the argument (dear to both "real socialism" and the "cultural revolution") that, once popular power has been assured, the formal guarantees of freedom would become deprived of significance or real importance. But recognizing the rule of law and human rights does not mean bowing acritically to the sovereignty of Washington. Its pretence of imposing the Western political model throughout the world can be exposed by citing the liberal U.S. philosopher John Rawls, who, in calling for the subordination of equality to freedom, subjected the principle he had himself formulated to an important limiting clause: it is to be considered valid only if "a certain level of wealth has been attained" (1971, 542). That is to say, in countries still insufficiently developed, it is logical that social-economic rights, the right to live, have priority.

Think about the catastrophe occurring in Russia today. According to official United Nations documents, the average length of life in Russia is around ten years shorter than in China. Imperialist circles, engaged in inflicting upon China the same fate already reserved for the USSR, are working on a significant reduction in the average length of life and on the premature

death of a fifth of the world population. It would be a catastrophe for the economic and social rights, apart from the national rights, of the Chinese people. There is no doubt that the "free development" of the individual can come about only through the reinforcement of popular power in the socialist countries today.

Even at the level of economics, properly speaking, it is necessary to interweave the long-term prospect with immediate tasks. We have seen that in order to develop the productive forces and break imperialist encirclement, a socialist country is constrained to import industry and technology from the advanced capitalist countries; on the other hand, it must not lose sight of the fact that both the social relations and ideologies characteristic of the world that is to be overtaken penetrate these industries and technologies. It is a question, therefore, of social relations that must be contained and controlled from this moment on. For an entire historical period, Marxist analysis relating to regional imbalances and the intensification of labor and of the exploitation produced by capitalist development will be the critical mirror, not only of capitalism, properly speaking, but also of how much capitalism is implied in any transition towards a different society. Yet this precious critical mirror could become a distorting mirror if it equalizes, in a homogeneous judgment of condemnation, the reality of a capitalist country and the reality of a developing socialist country that must face contradictory tasks.

### *5. Human rights and "human-rights imperialism"*

I have stressed the problems of constructing and defending socialism. But what challenges await Marxism in the West? Some time ago, a U.S. trade union exhorted the Washington administration to block with all means the transference of key aerospace technology to China on the pretext that such a transference would have a negative impact on the levels of employment in the United States (Anonymous 1995). This trade union is an heir of the yellow trade unions affected with nationalism and xenophobia that, at the turn of the twentieth century, preferred to fight against immigrants rather than against

the capitalists. We have to do here with a trade unionism and a Left that, according to Engels, are in reality acritical exponents of "a nation which exploits the entire world" (Marx 1983, 344).

Lenin issued another warning in *Imperialism* (1974, chap. 8), to which, in the West, even those who refer to Marxism are often deaf. Waving the banner of human rights, the great capitalist powers have succeeded in giving a particularly seductive face to their pretence to hegemonism. In truth, this is not a completely new phenomenon. Consider the history of British imperialism when its expansion allegedly wanted to "render wars impossible and promote the best interests of humanity." Cecil Rhodes expressed himself in this manner, synthesizing the philosophy of the British empire as "philanthropy plus 5 percent" (Williams 1921, 51–52), where "philanthropy" is synonymous with "human rights" and the 5 percent stands for the profits that the English capitalist bourgeoisie made or proposed to make through colonial conquests while waving the banner of "human rights."

The banner today flying over U.S. expansionism is not very different from that of Rhodes. By the explicit admission of its ideologues, it is a question of "defending American values and interests" in every corner of the world (Hoagland 1996). So we are witnessing a paradox: for a long time the United States was among the countries most committed to economic and political-ideological protectionism. In the midnineteenth century, in order to develop its national industry, Washington did not hesitate to take upon itself even the conflict with the Southern states in the Civil War; on the political-ideological level, in the period from the French revolution up to McCarthyism, all radical and revolutionary democratic currents were denounced as "un-American" and their followers persecuted as guilty of contaminating and infecting a country happily enjoying exceptionalism and an exclusive and sacred destiny.

In our day, however, the United States aims at transforming the entire world into a "free market," open to "made in the USA" goods, "values," and hegemonism. Affirming itself at the planetary level, the free-market policy involves the undisturbed spread

of soft power, defined by a review close to the State Department as the "ability to achieve desired outcomes in international affairs" without resorting to military force (which remains, however, in the background). In this way, the U.S. administration can attain its ambitious aim: much more than the twentieth century, the twenty-first century will be the "American century" par excellence, "the period of America's greatest preeminence" (Nye and Owens 1996, 20–21; 35 n).

"Free market imperialism," for which theorists of U.S. protectionism reproved Great Britain in the nineteenth century (Steel 2000, 21), is strictly bound up with "human rights imperialism" (Huntington 1996, 195). What does it matter, for Washington, if this means the dismantling of the socialist state and the liquidation of economic and social rights sanctioned by articles 22–26 of the Universal Declaration of Human Rights, proclaimed by the UN in 1948? And what does it matter if it also means the liquidation of the aim of "developing friendly relations between nations," already sanctioned with particular solemnity in the preamble to the Universal Declaration of Human Rights?

It is as well to reflect upon the modality of this march of free-market imperialism and human-rights imperialism. The tragedy of Sandinista Nicaragua is exemplary. In its time, the United States subjected it to a military and economic blockade, the mining of its ports, and an undeclared but bloody and dirty war, contrary to international law. In the face of all this, the Sandinista government was forced to take limited measures of defense against external aggression and internal reaction. And here Washington immediately raised itself up as the defender of the democratic rights being trampled upon by Sandinista "totalitarianism." It makes you think of the executioner who, once having completed the execution, is scandalized by the pallid and cadaverous color of his victim. A grotesque attitude—and yet there is no lack of beautiful people on the Western Left to join in with the executioner's scandalized cry and condemn the "liberty-destroying" measures of the Sandinista leaders, whose

room for maneuver was progressively reduced and annulled. The result was elections in which the Nicaraguan people, already impoverished and exhausted, more than ever with a knife held to their throats, "freely" decided to yield to their aggressors. An analogous technique was used and is still being used against Yugoslavia. Will it then be the turn of Cuba and other countries?

Unfortunately, just as Great Britain could enjoy the support of an "imperial Christianity" (Hobson 1965, 234) that went as far as to applaud the Opium Wars, so today we can see a kind of imperial Left operating, which sometimes does not hesitate to demand sanctions against China in the name of "human rights"! The privileged target of Lenin's struggle was precisely the imperial Left. Will those in the West who refer themselves to Marx be able to take his lesson into account? Or will the beneficial and necessary rediscovery of the substantial value even of "formal" liberty and of the rule of law bring about a fearful theoretical and political regression?

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# Tasks of Materialist Dialectics

**Erwin Marquit**

### *The concept of matter and class struggle*

In formulating his materialist conception of history, Marx pointed out that it is not our consciousness that determines our being, but, on the contrary, it is our being that determines our consciousness.

According to Marx, ruling classes maintain the stability of exploitative property relations by means of an ideological and material superstructure. In its revolutionary struggle to wrest control of the state from the feudal lords, the bourgeoisie was able to employ the material resources it accumulated under the capitalist relations of production in the cities and towns. Under capitalism, the ruling class uses not only the material components of the superstructure such as the police, the national guard, the courts, and the prisons to enforce its exploitative property relations. A vital part of its mechanism of social control is the ideological superstructure involving the dominant legal, political, religious, artistic, or philosophical forms that it relies upon to force acceptance of its exploitative property relations.

The working class, deprived of the product of its labor by the dominant bourgeois property relations, does not accumulate material resources from the goods it produces. What it does accumulate, however, is its ability to organize mass movements that can be transformed into a material force able to challenge

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the dominance of the capitalist ruling class. Trade unions and political parties of the working class are the principal material organizations of class struggle. They become an effective material force capable of bringing about a revolutionary change only when set into motion with a class consciousness rooted in the scientific understanding of the process of social evolution leading from capitalism to socialism. The basic difference between "academic Marxists" and Marxist (or Communist) academics is that the former are content to limit themselves to "consciousness raising," while the latter unite consciousness raising with the strengthening of *material* organizational forms of class struggle. "Theory," wrote Marx, "also becomes a material force as soon as it has gripped the masses" (1975, 182).

The dialectical unity of theory with practice expressed here by Marx illustrates why Engels could note that dialectical materialism is the scientific method for studying changes in nature, society, and thought. It is largely as a result of contributions by Marxists that physics textbooks during the past thirty years have finally begun to describe physics as the science for studying changes in the physical world rather than its unchanging nature (invariances). As a method of scientific thought, dialectical materialism also cannot be static, but it too must develop as our knowledge of nature and society deepens. The setbacks to socialism in Europe can be attributed partly to a stagnation in the theory of scientific socialism, which was also reflected in a mechanistic approach to its philosophical framework. Without constant revitalization, our theory will wither and die.

### *Dialectical and formal logic*

In the twentieth century, Lenin's *Materialism and Empiriocriticism* provided us with a profoundly dialectical study of materialism. Marx, Engels, Lenin, and Mao, however, left us only brief or incomplete discussions of materialist dialectics. Some years ago, at a gathering of Marxist-Leninist philosophers in the United States, the question was asked, "What is the most important subject that needs clarification in our philosophy?"

The answer was unanimous: the most important question needing clarification is the nature of dialectical contradictions.

Why was this answer unanimous?

Perhaps the principal reason for the unanimity was the popularity among Western philosophers of science of Karl Popper's attack on the dialectics of Hegel and Marx in the second volume of his work, *The Open Society and Its Enemies* (1962). Although Popper's polemic was directed mainly against Marx and Engels's historical materialism, his strongest argument was against dialectical logic–in particular, against Hegel's acceptance of dialectical contradictions as logical contradictions and Hegel's identity of opposites. And indeed, similar polemics against this aspect of dialectics can be found in the 1952 work of the Catholic philosopher Gustav Wetter, *Dialectical Materialism* (1958).

Again, why should Marxist-Leninists be concerned about such attacks on dialectics?

The primary purpose of these attacks is to undermine the acceptance of Marxist-Leninist historical materialism in general, and scientific socialism in particular. The logical system that underlies historical materialism is, of course, materialist dialectics. Just as Lenin wrote, "It is impossible completely to understand Marx's *Capital,* and especially its first chapter, without having thoroughly studied and understood the *whole* of Hegel's *Logic*" (1961, 180), no understanding of historical materialism is possible without knowledge of the materialist dialectics on which *Capital* is based.

Marx and Engels, of course, did not simply take over Hegel's logic, but as Marx noted,

> my dialectic method is not only different from the Hegelian, but is its direct opposite. To Hegel "the life-process of the human brain, *i.e.,* the process of thinking . . . is the demiurgos of [that is, a deity creating–E.M.] the real world, and the real world is only the external phenomenal form of "the Idea." With me, on the contrary, the ideal is nothing else than the material

> world reflected by the human mind, and translated into forms of thought. (1967, 19)

(Lenin, of course, understood this and therefore could not have meant that one had to accept Hegel's idealism along with his logic, but the developments of the revolutionary movement in Russia caused him to interrupt his project of producing a major work on dialectics, and only his incomplete notebooks remain.)

A philosophical task to be completed in the twenty-first century is the reexamination within the sphere of Marxist-Leninist philosophy of the connection between Hegel's idealism and his acceptance of logical contradictions as part of his concept of identity of opposites. Hegel needed the identity of opposites in order to unfold the world from "the Idea." In his *Science of Logic,* he did this by employing a logical contradiction that asserted the identity of "pure being without determination" (a variant of "the Idea") with differentiated being (1969, 440). While the unity and interpenetration of opposites is the heart and soul of both idealist and materialist dialectics, the logical contradiction that asserts the identity of undifferentiated being with differentiated being is not needed by dialectical materialism, which starts with the world in its differentiated form. Materialist dialectics not only does not need the concept of undifferentiated being, but rejects the possibility of the existence of any such state of existence, since this would mean the absence of contradictions.

In his own discussion of the formal-logical law of identity, Hegel noted that $A = A$ is a tautology unless $A$ is at the same time different from $A$, that is, there must be both identity (in one sense) and difference (in another). He therefore characterized the law of noncontradiction as the other side of the law of identity (Lawler 1982; Hegel 1969, 416). A nucleus is identical with the orbital electrons of an atom in the sense that both are electrically charged components of the atom. It is the difference in the nature of their charges, however, that binds them together as a unity of opposites.

Unfortunately, Engels opened the door to the attacks on materialist dialectics by carrying over from Hegel the only example of a logical contradiction in the classics of Marxism. In an obvious reference to Zeno's paradoxes of motion, Hegel wrote:

> Something moves, not because at one moment it is here and at another there, but because at one and the same moment it is here and not here, because in this "here," it at once is and is not. (1969, 440)

In *Anti-Dühring,* Engels wrote:

> True, so long as we consider things as static and lifeless, each one by itself, alongside and after each other, we do not run up against any contradictions in them. . . . But the position is quite different as soon as we consider things in their motion, their change, their life, their reciprocal influence on one another. Then we immediately become involved in contradictions. Motion itself is a contradiction: even simple mechanical change of position can only come about through a body being at one and the same moment of time both in one place and in another place, being in one and the same place and also not in it. And the continuous origination and simultaneous solution of this contradiction is precisely what motion is. (1986, 111)

In this citation from Engels we encounter two problems. One problem is his assertion that formal logic applies only to static situations, but breaks down in the case of motion. Hegel argued only that formal logic must be looked at dialectically.

The second problem is that Engels viewed the contradictory character of spatial motion as an objective contradiction, which Hegel did not do consistently. After a similar characterization of motion in his *Vorlesungen über die Geschichte der Philosophie,* Hegel wrote: "What makes the difficulty is always thought alone, since it keeps apart the moments of an object which in their separation are really united" (cited in Lenin 1961, 259). To this comment by Hegel, Lenin added:

> We cannot imagine, express, measure, depict movement, without interrupting continuity, without simplifying, coarsening, dismembering, strangling that which is living. The representation of movement by means of thought always makes coarse, kills–and not only by means of thought but also by sense perception, and not only of movement, but every concept. And in that lies the *essence* of dialectics. And precisely *this essence* is expressed by the formula: the unity, identity of opposites. (259–60)

What is striking here in the passages from both Hegel and Lenin is the distinction made between motion as an objective process of spatial motion and the subjective perception of this motion, raising the question of the objectivity of the logical contradiction used to characterize motion.

A discussion of this problem was begun in the Soviet Union in the 1960s, the prime mover of which was the late Soviet logician and Hegelian scholar, Igor Narskii. Ten papers on the subject were published in the Soviet journal *Filosofskie nauki.* Narskii's summary of these papers can be found in *Filosofskie nauki,* no. 2 (1965) (English translation in *Soviet Studies in Philosophy* 4, no. 3 [1965/66]:24–33).

From this discussion two Soviet schools on dialectical logic emerged. One was associated with Narskii and the other eventually with E. V. Ilyenkov. In Ilyenkov's view, dialectical contradictions were indeed objective logical contradictions (see, e.g., his *Dialectical Logic* 1977, 334–35). Ilyenkov's school dominated the Soviet philosophical community. The conditions under which the debates took place were such that the Narskii school could never explicitly, but only obliquely, express their viewpoint that dialectical contradictions were not logical contradictions because this would seem to run against the Engels passage in *Anti-Dühring*. This caution persisted even as late as 1989, when, sitting on a park bench with Narskii in Moscow, I was discussing a paper of mine in which this view was presented (Marquit 1990). Narskii would only say, "I agree with it asymptotically." I replied, "You mean you agree with it but are unwilling to say so." Narskii simply smiled.

In the 1970s and 1980s, among my philosopher colleagues in the German Democratic Republic, who generally considered themselves supporters of the Narskii school, a similar caution existed. They published German translations of at least two of Narskii's books, but never published papers of their own on the subject.

### *Conclusion*

It should be one of the tasks of Marxist philosophy, as we enter the twenty-first century, to seek clarity on the question of the relationship between dialectical and formal logic. I raise this question now because dialectical materialism must be presented and defended as a scientific methodology appropriate for investigating all fields of human activity. If we are to base our projection of the socialist future of humanity on the dialectical- and historical-materialist worldview, we must strive for the ideological hegemony that is necessary for the realization of this future. The universality of dialectical materialism as the basis for the sciences of nature, society, and thought must be continually demonstrated.

The principal task of Marxist philosophers is, of course, the application of Marxism's methods to the existing reality, in order to make this philosophy relevant to the needs of our peoples. Nevertheless, an organized effort must also be made to enrich its foundations as our knowledge of the world expands. For example, quantum physics has already resolved Zeno's paradoxes in regard to spatial motion–namely, a moving object does not have a uniquely defined spatial position at every instant, so that the philosophical problem of the nature of physical motion or change has to shift from the primacy of states to the primacy of motion. However, this is not the place to enter into this discussion in detail.

The Soviet discussion on the nature of spatial motion was begun in the 1960s in order to resolve the relationship between formal logic and dialectical logic. No generally accepted resolution was reached. We should therefore address the question of this relationship anew.

In my earlier paper on this subject (1990), I suggested that Hegel applied the concept of identity of opposites in the form of a logical contradiction so that he could force the identity of undifferentiated being with differentiated being. The material world in its differentiated form would then be the realization of God's idea. In my view, the problem is not with the principle of identity of opposites, but with the distortion of its meaning to serve Hegel's idealist worldview. An important task confronting materialist dialectics is to deepen the understanding of this principle. Also needed is further elaboration of the contradictory character of dialectical contradictions and their role in formal logic.

The attacks of bourgeois philosophy against dialectical materialism did not vanish with the collapse of socialism in Europe. Deng Xiaoping stressed that a market economy itself is neither socialist nor capitalist. This does not mean, however, that in a mixed market economy such as China's, the capitalist forces will not strive to seize ideological hegemony, and thus control the ideological superstructure necessary to replace the present dominance of socialist relations of production with capitalist relations. The spirited defense and further enrichment of dialectical and historical materialism must be a paramount goal of Marxist philosophy in the twenty-first century.

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# Dialectics in Contemporary Philosophy

**Vladimir I. Metlov**

In the *Cambridge Dictionary of Philosophy*, first published in 1995 and reprinted twice in each of the following three years, the article "Dialectic" is exhausted by an indication "See Socrates." This reference gives us the immediate impression that in speaking about dialectic we are dealing with something entirely obsolete. This reflects the general attitude to dialectics as it was formed in the final decades of the twentieth century. The following appeared fifty-two years ago in the journal *Dialectica*:

> The idea of dialectic is thus becoming a core of the modern scientific thinking. But it has overcome the framework of this thinking to become the central element of a philosophy which envelops the plurality of the knowledge. (vol. 1, no. 1)

What has changed sufficiently in this period to justify a disdainful attitude toward the dialectic? Why this quasi-general rejection, or oblivion of dialectics? Nothing is now more important than dialectics as the mode of theoretical reasoning, and unfortunately nothing is ignored so universally in our time. The question "why" must be posed, and the responses to these questions are partly the same as those given already in the nineteenth century:

> In its rational form it is a scandal and abomination to bourgeoisdom and its doctrinaire professors, because it includes in its comprehension and affirmative recognition

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> of the existing state of things, at the same time also, the recognition of the negation of that state, of its inevitable breaking up; because it regards every historically developed social form as in fluid movement, and therefore takes into account its transient nature not less than its momentary existence; because it lets nothing impose upon it, and is in its essence critical and revolutionary. (Karl Marx, *Capital*, New York: International Publishers, 1967, 1:20)

This critique must lead us to a critique of material reality. This is not the unique cause–the fear of dialectics had led to great attacks against it that unfortunately impressed a large number of philosophers, former dialecticians; and, finally, the defense of dialectics confronting these attacks has been too superficial to stand up to the critiques. Dialectics could be regarded as compromised, too, by its use in the Soviet Union, when it was employed as a means to justify the social and political decisions and actions of the ruling party, or, as it may be better to say, when the critical potential of materialist dialectics was never employed in all its power.

There is another reason for neglecting dialectics: in fact, dialectics is so organically incorporated in some branches of contemporary science that its independent development as a pure philosophical discipline seems to be entirely useless.

However it may be, both of the major philosophical tendencies of our time during all the period of their development assiduously eliminated dialectics from their theoretical context and this elimination was conditioned, in its turn, by the elimination of the subject-object, consciousness-matter problems. The actual crisis of philosophy is not in a lesser measure due to a quite determined character of subject-object relations than the similar crisis of philosophy in Kant's epoch. Husserl speaks about this crisis in the words of Kant: "the contrast becomes frightful between renowned defeat of the philosophy, on the one hand, and, on the other hand, continuous and more and more powerful flux of the successes, theoretical and practical, of the positive sciences" (Edmund Husserl, *La crise des sciences*

*européennes et la phénoménologie transcendantale*, Paris: Gallimard, 1976, 16).

The negation of dialectics is thus going along with the negation of the validity of the so-called basic question of philosophy, the relation of subject-object, material-ideal. In other words, the negation of dialectics is coextensive with the negation of the validity of the subject-object and material-ideal relations. The most recent negation is the elimination by phenomenology and existentialism of the classical subject of epistemology in the preimperialist era–*man*. For bourgeois theoreticians a new concept of subject, not individual, was completely inaccessible. But with the negation of the subject comes the negation of the object. The last remark can involve us in a problem of explication of such steps and lead to the problem of method: what are the conditions leading to the negation of subject-object and its relations? It seems that in symbolizing social life in the epoch of imperialism, we are easily subordinated to this process and reduce philosophical activity to manipulation with language. "Linguistization" of philosophy is a fact of our intellectual life.

By *dialectics* we mean first of all the mode of thinking and acting represented in such works as *Phenomenology of Spirit* by Hegel and *Capital* by Marx. Of course, we should add, too, a practical activity of some social forces. In spite of the radical difference in the positions represented in these works, we can certify some common features that remain: the most important of these is an understanding of dialectics as an interaction of the subjective and objective, consciousness and *thing*, ideal and material. The first steps toward this kind of an understanding of dialectics are made in *Modern Times* by Kant. What follows from a correct understanding of Kant's philosophy?

It should be noted that dialectics is characterized now in our country and it seems to me–with some exceptions–abroad too, as a paradigm of the nineteenth century. The time when all Soviet philosophers vowed fidelity to the materialist dialectics of Marx and Lenin is over. This rejection, however, was produced under the influence of very superficial arguments, without serious analysis. It was possible only because the assimilation of

dialectics was extremely superficial and formalized. Meanwhile it is very important to determine exactly what in dialectics as it was cultivated in the USSR, in Russia, deserves to be rejected and what part of it remains valuable. It is important to stress the Kantian character of dialectics as it was developed in the USSR. It seems to me that the so-called laws of dialectics were treated like the a priori forms of Kant, being applied universally to all spheres of reality without analysis of the real possibility of such an application. These laws were not deduced from the fundamental properties of the relations "subject-object" and "material-ideal," on the basis of material praxis as these are treated in the Marxist tradition, while all the properties of the relations described by these laws were reduced to the properties of the relations "subject-object" and "material-ideal."

There are some other more fundamental reasons for this description of the state of official dialectics in our country. Among these reasons the most important is a rupture, a gap, between theory and practice, word and deed, the most disgusting of all bourgeois vices, theoretically reflected with classical plenitude in the works of Kant. What follows from the incorrect understanding of Kant that was widely diffused in the Soviet Union? The loss of the integral, dynamically developed object, the thing. Instead of this we have either object without movement or movement without object.

It should be noted that attempts were undertaken to create something that could be designated as formal dialectical logic with its own laws of thought, violating the laws of classical formal logic. The failure of dialectics in the Soviet Union was the failure of the Kantian version of the dialectic. By the Kantianism of the Soviet version of dialectics we mean the preservation of the most obsolete features of Kant's philosophy. We can say that the Kantian form of dialectics is completely surpassed by the development of social and scientific life, and we should take a step in the direction of Fichte and Hegel, and then Marx.

It is important to note that the Kantianism of the approaches to dialectics in the USSR does not mean a correct understanding of the real contribution of Kant to dialectics.

What is most interesting for dialectics in Kant's philosophy in general, and what is the major peculiarity of the Kantian dialectic? It should be stressed that in spite of all the imperfections of this form of dialectics, the Kantian approach to the problem has one clear advantage–a clearly expressed dependence of the very appearance and the peculiarities of dialectics in general and the dialectical contradiction (or *antinomy* in Kant), in particular, as the central concept of dialectics upon the character of the relation between subject and object in the process of knowledge. An examination of the transcendental logic of Kant allows us to elucidate its very important–although surface–difference from traditional formal logic, and as a consequence the difference between the contradiction in formal logic and what is called *contradiction* in dialectical logic. Kant himself represents this difference as follows: transcendental logic deals exclusively with the laws of understanding and reason insofar as they deal a priori with objects, while general logic deals with empirical knowledge and the pure knowledge of reason without any difference.

It is useful to note that the discussion of the difference between the two kinds of logic in Kant occurs in the framework of a discussion concerning the criteria of truth, a question that in its turn is examined in the context of the relation of knowledge and object. Transcendental, or dialectical, logic is in principle a logic on two levels, a logic of the interrelation of subject and object, matter and consciousness–a peculiarity that makes quite evident the incorrectness of its juxtaposition with formal logic, which, according to Wittgenstein, could be introduced into a machine because of its objective, one-level character.

Fundamental misunderstanding of this fact is expressed in an attempt (as already mentioned) to construct some sort of logic that could qualify in an entirely contradictory manner as formal dialectical logic. It is evidently a *contradictio in adjecto* [contradiction between noun and adjective]: dialectical logic can only be a logic of an interaction of the subject and object and can by no means be formal logic.

However the actual crisis in philosophy may be appreciated, it is difficult not to pay attention to the fact that an intellectual movement that could be characterized as an attempt to overcome the relation of subject and object did not lead us to a solution of the problems identified as symptoms of the crisis.

It should be noted that the same steps were undertaken in other branches of scientific knowledge and also in art and literature–for example, in the foundations of mathematics and in surrealism. David Hilbert and Luitzen Brouwer are representative figures here in mathematics, and Salvador Dali and André Breton in painting and literature.

What kind of justification could we give for a step from Kant to Fichte and Hegel and further? It seems to me, first, that the internal situation in the philosophy of our day obliges us to undertake this step. Contemporary philosophy is undergoing a profound crisis, finally reducible to two well-known major tendencies–logico-analytical and phenomenologo-hermeneutical –and to the loss of the object of philosophy. With the rejection of subject-object, material-ideal as the major question of philosophy, contemporary philosophy is left with language as the only subject of philosophy. The major drama of contemporary philosophy is just this phenomenon. Perhaps we may better say that in contemporary philosophy, the object coincides with the language in which it is expressed. But in this case it is susceptible to paradoxes similar to those known from the foundations of mathematics and formal logic. At any rate, we can certify the contradictions proper to the development of both of the traditions of contemporary philosophy mentioned above.

This last thought has found its expression in some very interesting works, in particular, *Pour la connaissance philosophique* (Paris: Jacob, 1988), by the former professor of the College de France, Gilles-Gaston Granger. According to this author, philosophy is a kind of a knowledge without an object. We know that, according to Hegel, metaphysics is reduced to a method. In this case, the method is becoming the object of philosophy, especially when we are realizing that a method is a consciousness of a form of movement of the content. We must

ascertain that this point of view is only possible on the basis of a dramatic separation of subject and object, of social alienation.

The most important fact, however, is that the drama of contemporary philosophy is routed, just as in the time of Kant, when the lot of philosophy was compared with that of Hecube in its inability to solve the problem of subject and object, of the ideal and material. In the end, this is a drama with roots in social relations, in the division of labor into intellectual and physical; it is a reflection of these social relations. In place of solving this problem, we see different attempts to discard it as obsolete. This attitude is common for the philosophical tendencies that at first sight seem quite opposite. Heidegger and Wittgenstein represent in this case identical positions.

The situation in philosophy finds its counterpart in the different fields of scientific knowledge: beginning with physics and finishing with psychology, passing through biology, history, medicine, mathematics, and economics. In practically all branches of contemporary science, we find a situation that could be characterized as a loss of the object of such and such a particular science and the appearance of antinomies identical to the conflict of the antinomy of pure reason in Kant. This is the case, as we have said, in art and literature also; it is the spirit of the age.

It is quite natural to think that if we meet in the development of contemporary philosophy and contemporary sciences problems identical to ones that Kant tried in vain to solve, we should use post-Kantian approaches for solving these problems. Only by following post-Kantian philosophical approaches are we able to obtain the object of science and philosophy lost by Kant in philosophy and by scientists when they took the step in their different fields analogous to that taken by Kant in philosophy –namely, including a subject activity as a moment essential for the characteristics of the object. Thus, to obtain an object means to solve a contradiction, the conflict in an antinomy, according to Kant, which is in the origin of a destruction of a former understanding of the object.

Facing the acute crisis of contemporary philosophy, which is incapable of solving the contradiction between its two major trends, we are obliged to accept materialist dialectics as the only possible solution. This crisis is just like the crisis of rationalism and empiricism, analyzed by Kant, but not solved by him. The loss of the object of corresponding philosophical tendencies and the gap between subjective and objective is very close to the content of the crisis of philosophy in the time of Kant.

From the very beginning, we should stress that it is impossible to understand the object of our research without dialectics. Dialectical reasoning is now used in all the sciences. We presuppose that a knowledge of the object of our research is important not only as a goal in itself but essentially for practical reasons. It is easy to show the validity of this affirmation by analyzing the situation in economics, medicine, history, mathematics, physics, biology, etc. In all these fields, more precisely in their foundations, we find a kind of contradiction that develops normally in two directions: developmental, representing the methodological, subjective, aspect of science, and foundational, dealing with a thing, an object.

It is easy to show that this schism is produced by a particular kind of relation between subject and object and under this aspect closely resembles the corresponding situation in philosophy. It may be better to say that it represents properly philosophical aspects of scientific research.

It explains why the crucial problem of dialectics is the problem of the object, or, better, the problem of thing, regarded in historical context. This position unites different kinds of dialectics–for example, the dialectic of Plato and the dialectic of Kant and Hegel. We insist on this character of dialectics by trying at the same time to show that the major defect of research in the field of dialectics in our country is a limitation of the problems of dialectics to the relation between formal-logical and dialectical contradictions. Research in this field shares the destiny of research in dialectics in general: a break between theory and practice that was characteristic of several stages of our social development, had as an immediate result a canonization as

objective laws of being and knowledge of the three well-known laws of Hegelian logic. It also meant their isolation from the authentic context in which a discussion of these laws only could make sense–the context of the subject-object, material-ideal relation, the context of praxis, activity or the social subject. Apart from all these consequences, we should also indicate the loss in this kind of dialectics of its critical, revolutionary character.

In regard to the concept of dialectical contradiction, this rupture between theory and practice has had as an immediate consequence the reduction of all the problems of dialectical contradiction to the problem of its logical and linguistical expression, and then to the problem of the relation between a dialectical contradiction and a formal-logical contradiction. Formulated and solved in this manner, the problem of dialectical contradiction turned out not to be connected with an analysis of social contradictions and even the contradictions/antinomies in the foundations of different sciences, the origin of which was immediately linked with the change of the position and role of the subject in the process of knowledge, the crisis of an objectivism of the preceding paradigm, a loss of the object. Immediately connected with this defect is an ahistorical vision of dialectics. Even the greatest of the dialecticians, Hegel, shares this defect when he insists on the definite character of the Kantian collisions, the conflict (*Widerstreit*) of the antinomy of pure reason.

We should not think that the break between theory and practice meant an absence of an analysis of social reality and different sciences by the former dialecticians; the point is that these dialecticians usually used an extremely simplified model of the interrelation of the theoretical and the practical. The question was about application of the theory of dialectical contradiction, treated as if it was completed in its content, to an external material regarded also as fully completed.

In this way dialectical contradiction was eliminated from the historical context and, what was more important and more fundamental, from the context of the relation "subject-object," "material-ideal." Thus, the problem of the dialectical contradiction led away from the great philosophical problems and became

an object of the fruitless debates between the representatives of the formal and dialectical logics respectively. The best book on the subject in the Soviet literature, that of G. S. Batishchev (*Protivorechia kak kategoriia dialekticheskoi logika,* Moscow, Gos. izdatel'stvo "Vysshaia shkol," 1963) could not avoid another defect, namely, the affirmation that recognition of the dialectical contradiction is necessarily connected with a negation of the contradiction on a formal-logical level.

Just in this form the problem of dialectical contradiction became an object of a dull and pretentious critique by Karl Popper. According to Kant, transcendental logic–the Kantian version of dialectical logic–is not indifferent to things, to the difference of formal logic. Of course, we may reject the specifically Kantian understanding of the thing, but with this understanding we can already enter a much broader context of discussion of our problems than with only a pure gnoseological or formal-logical context. The development of what was most fundamental in Kant's transcendental logic, namely, the relation of subject and object, and finally, material and ideal, in the framework of classical German philosophy, is connected with the appearance of the social aspect both of the *antinomy* and of the *thing-in-itself*. Fichte and Hegel show not only an interest in the abstract activity of the subject, but regard this activity in its politico-economic form. This is a kind of a synthesis of philosophy and political economy, but most essential to stress is the comprehension that the proper context of dialectical logic necessarily includes an extratheoretical element, namely the thing.

It should be noted that Kant's conception of the thing-in-itself is connected organically with his antinomy of pure reason. The appearance of an antinomy is a justification for the introduction of the thing-in-itself in the Kantian system. In the form of a critique of the objectivism of materialist empiricism, the antinomy of pure reason is represented in fact already in the preface to the second edition of *Critique of Pure Reason*.

It is difficult not to pay attention to the fact that the thing-in-itself, as a loss of the thing in epistemology, correlates with a

loss of the thing of another type, of a socioeconomic nature. Adam Smith ascertains a loss of control by a producer of the thing produced because of the quite definite character of social relations, because of the division of labor. An antinomy in political economy is formed in exactly this way, taking the form of a conflict between mercantilism and physiocratism. The crisis of science in physics–a form that is better known to us–in fact began as a crisis of political economy. It can be noted that the crisis of political economy allows us to understand better, I dare to say, the extratheoretical character of dialectics in its relation to the thing. This motive in the post-Kantian development of philosophy will take the form of an overcoming of the gap existing between *I* and *thing*, and the abstract subject of the *Critique of Pure Reason* gives up its place to the political-economic subject of Fichte, Hegel, and then Marx.

At the same time we must note that in the period immediately following the October Revolution in Russia, we have some very dialectically interesting and important results in different fields (biology, linguistics, psychology, literary criticism. etc.) that indicate the organic connection of dialectics in its origin and development with the revolutionary situation and revolutionary transformations in society. Thus, we can stress that a materialist parameter of the functioning of dialectics is radically important for the existence of dialectics. We can also cite enormous material from different fields of current scientific investigation that confirms the absolute necessity of a dialectical approach to the problems raised by these investigations.

Changes in the concepts of subject and interrelationship of subject and object have immediate repercussions on the concept of the dialectical contradiction. I do not wish to speak about Fichte and Schelling to illustrate this proposition. Only one remark concerning Fichte: it is useful to confront the dialectic of *I* and *non-I* with the well-known "Liar" paradox to understand better the character of the solution of a contradiction in a process of knowledge.

Traditionally, Hegel has always been the most popular dialectician. Everyone–those who try to assimilate dialectics and those

who try to refute it–turns to him. Hegel was the main object, for example, of Karl Popper's antidialectical exercises in "What is dialectic?" The central point of his analysis is a confrontation between the Hegelian conception of the dialectical contradiction and the proposition of noncontradiction of formal logic. Popper thinks that the law of contradiction (noncontradiction) of formal logic is an obstacle to an assumption of dialectics. Thus, Popper concerned himself with what was becoming the most discussed topic in Soviet philosophy.

It should be noticed that Hegel gives us some opportunity for such an interpretation. He uses the term *contradiction* of formal logic to designate dialectical contradiction. Kant is more careful here, using the term *Widerstreit* (*collision* or *conflict*) for what Hegel calls *dialectical contradiction*. Also inconsistent is the antihistorical position of Hegel in his relation to the initial stage of the development of dialectical contradiction represented by Kant's antinomy: he ignores the necessity of the development, out of the thesis and antithesis, of the antinomy preceding its sublation (*Aufhebung*). Engels remarked that of course history is developing dialectically, but dialectics must wait a long time for the history. This means that what is called *contradiction* in dialectics does not represent something accomplished once and for all, but that it is something developing, passing through different stages that are determined in their turn by the character of the relations between subject and object.

At the same time it is easy to see that the contradiction of dialectical form appears in Hegel's *Logic* as conditioned by several types of relation between subject and object, as a form of development of the interrelation of *I* and *thing*. It excludes, thus, any kind of collision with formal logic and its laws.

The most essential steps made by Hegel, as opposed to Kant, are: first, his conception of the thing that includes as its proper aspect a relation to the subject; second, his understanding of the relations existing between the *thing* and subjectivity–two kinds of reflection in which dialectical contradiction is realized. The existence of reflection in the Hegelian concept of dialectics is common to the concept of materialist dialectics and is a

consequence of subject-object, material-ideal relations proper to every concept of dialectics. It is not accidental that the main tendencies in contemporary philosophy (that is, existential-phenomenological philosophy, on the one hand, and logico-analytical, on the other) ignore these relations. These concepts are, as a consequence, antidialectical.

I should like to point out that the existence of reflection in Hegel makes all the more necessary the task of delimiting it from the Marxian conception of reflection. On the basis of such an analysis, it is possible to oppose the closed teleological system in Hegel to the open conception of materialist dialectics in Marx.

I must stress that contradictions in contemporary scientific knowledge represent with striking exactness all the peculiarities of the Kantian antinomy. I limit my treatment of this subject here to a comment concerning the role of the methods of post-Kantian philosophy for a solution of so-called contradictions in the foundations of scientific theories.

The break between theory and praxis mentioned above has as its consequence the dualism of the so-called main question of philosophy (Engels, Heidegger) and the core of dialectics, the doctrine of the dialectical contradiction. The relation "material-ideal" was analyzed, as a rule, outside the context of dialectics, and dialectical contradiction, as has been indicated, was analyzed outside the context of the great philosophical questions.

This dualism had a pre-Kantian conception of the relation of subject and object as its foundation. The insolubility of such an approach, which originated the Kantian theoretical approach, was for some time hidden by the fact of the confrontation of contradictions of the opposed levels—subjective and objective. This "solution" changes nothing in the problem. Only on the basis of practice can we make some progress in the comprehension of both the thing and the subject. But one result of this progress is the understanding that so-called dialectical contradictions cannot be expressed on the linguistic level. Only an interrelation of the subjective and the thing, material and ideal, on the basis of material practice gives us a general form of existence of the dialectical contradiction and dialectics in general.

We should stress, too, that authentic development of materialist dialectics necessarily leads us to a particular vision of the destiny of philosophy: it ceases to be an independent discipline and becomes a proper aspect of dialectical motion.

Materialist dialectics represents a sublation (*Aufhebung*) of philosophy, not a Heideggerian or analytical end of metaphysics, but an annihilation and at the same time a conservation of the philosophical in another form. Thus dialectics, incorporated in science and other forms of human activity, ceased to be only a philosophy. At the same time, an entirely new image of science emerges.

In addition, it is important to note that this is an effective use of the materialist method as a critical approach to reality, and indicates the necessity of a materialist approach to the phenomena of theoretical life. Kant and Heidegger are examples of the application of this method: the *thing-in-itself* as a reflection of the economical thing lost by the producer, and "the language is the house of being" as a reflection of a global penetration of finance capital in all the spheres of social life, as a particular case of all-embracing symbolism. This kind of analysis has roots in a profound tradition: Aristotle speaks about chrematistic as economic sophistry. Is it not possible to think that the Heideggerian formula "language is the home of being" can appear only in a society where finance capital dominates productive activity? Does it not represent a sort of a philosophical chrematistic?

The immediate task of contemporary philosophy is to become Marxist–that is, to become sublated in the synthesis of philosophy and the other branches of human activity. The best way to accomplish this task is to criticize these branches. This does not mean to reject or condemn them, but rather, first, to clarify the conditions of origin of the criticized tendencies in the natural and social world, and then to transform these conditions into a new world order.

Philosophy is destined to become materialist dialectics and thus to cease being only a philosophy. To return to Marx now means to introduce in our practice critical and revolutionary

elements, in other words, to do the same things that Marx did in criticizing political economy.

Socially speaking, dialectics is realized in the process of abolishing private property, as a process of restoring the integral personality. It is very important to remember that our thinking on the basis of private property is necessarily waning. Thinking on the basis of private property will die. Dialectics is becoming a synonym of thinking, and thus a transition from the symbolism of private property to the materialization of communist society.

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# BOOKS AND IDEAS

## *by Herbert Aptheker*

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### More on a great life

Late last year there finally appeared the second and concluding volume of David Levering Lewis's *W. E. B. Du Bois: The Fight for Equality and the American Century, 1919–1963* (New York: Holt, 2000; 715 pp., cloth, $35; Owl Books, 2001, paperback, $20). The first volume appeared six years ago; it was awarded the Pulitzer Prize, as has this second volume.

Volume one was rather weak; it has been carefully evaluated by Professor Sterling Stuckey (*Souls* 3 [spring 2000], 62–79). Among other faults it contains a false account of my editing the Du Bois *Autobiography*. Although Lewis was in my office and in my home, and although I made all I had available to him, he never mentioned his charge that I altered Du Bois's manuscript, as given to me by Shirley Graham Du Bois. An awful fault for which forgiveness is very difficult.

But volume two is better. Indeed, on the whole, I think it is a good book. It is especially splendid when it quotes Du Bois, which Lewis does often and at length.

I wish here, however, to confine myself to certain errors and omissions. Quite wrong is the assertion (527) that Doxey Wilkerson and I "proposed an arrangement sanctioned by the Party hierarchy" involving Du Bois's work. This is false; there was no such arrangement. And the action of Du Bois in joining the Communist Party was, of course, his own decision. When he

was asked if it was to be made public, he replied positively and notice of it did appear at the time in the *New York Times*.

On the whole, the discussion of Du Bois's editing *An Appeal to the World* (1947), which represented a description of the oppression of Black people in the United States, and of the impact of the *Appeal*, is well done. A notable omission, however, is that of the earlier appeal to the world, coming from the National Negro Congress in 1946, which contained a detailed factual presentation of the reality of the special oppression of the African-American people (written by me). I was, at the time, sharing Dr. Du Bois's office at the NAACP, and the relationship of the appeal by the National Negro Congress to that of the subsequent appeal by the NAACP should not be omitted.

Lewis's treatment of the three-volume fictionalized account of Du Bois's life is completely inadequate. This is mentioned twice: on page 545, the reader is told that Du Bois began working on this in 1949 and it eventuated in the three-volume *The Black Flame*. On page 569 we read that "*Mansart Builds a School*, the second volume of the historical trilogy, Du Bois had continued during the years of internal exile, appearing from Aptheker's *Masses and Mainstream* press in the fall of 1959."

The facts concerning *The Black Flame: A Trilogy* are as follows: in the spring of 1955, Du Bois asked me to read the manuscript of the trilogy; it then totaled 1,200 typed pages. (The typing was done by Elizabeth Lawson–one of the splendid unsung heroes of the radical movement.) Having read the manuscript, I suggested that, the times being what they were, it was not likely that a commercial publisher would undertake issuing so controversial a book by so notorious an author. I added that the magazine *Masses and Mainstream,* of which I was an editor, had been able to publish a few books, including his own *In Battle for Peace* in 1952, telling of his trial and acquittal. I said we would undertake the publication of *The Black Flame* in three volumes, to be issued one volume at a time with an interval of two years between each book.

Du Bois thought it would be worthwhile to try respectable publishers. He did so; in most cases he received no response.

Harper & Row sent him a printed postcard indicating lack of interest. Du Bois showed this to me and was near tears. We then proceeded as I have stated.

Volume one, *The Ordeal of Mansart*, appeared in March 1957; volume two, *Mansart Builds a School*, in November 1959, and the final volume in April 1961.

In a preface to the 1976 reprint by Kraus-Thomson of the three volumes, I remarked that the work was "a unique monumental interpretation of what it meant to be a Black person in the United States from the 1870s through the 1950s as offered by the most distinguished such person then living." I added, "It says much of the dominant society in the United States in the 1950s that such an effort by such a man was not even considered for publication by any 'respectable' publisher."

It is a marked failure of Lewis's biography that it treats this entire matter in the manner I have described.

The final published book of his that Dr. Du Bois lived to see is not mentioned by Lewis. This is *An A B C of Color: Selections from Over a Half Century of the Writings of W. E. B. Du Bois* (Berlin: Seven Seas, 1963, 214 pages). The selections were made by Du Bois himself. The original manuscript was mailed from New York City. Du Bois was informed that no manuscript had arrived. Appeals to the post office in New York were unavailing. Du Bois prepared another copy and took this with him on his final journey to Ghana in 1961. The manuscript was mailed from London and was received in good time by the Berlin publisher. Several bound copies reached Du Bois in 1963, shortly before his death, and Shirley told me that he was immensely pleased.

The creation of that book, the history of its journey, and the fact of its publication by the German Democratic Republic belong in a biography of Dr. Du Bois.

The final years of Dr. Du Bois's life are largely ignored on the one hand and poorly told on the other. I will offer some of the missing facts.

The purpose for which Dr. and Mrs. Du Bois went to Ghana in 1961 was to work on an Encyclopedia Africana. Du Bois had projected this concept back in 1911. To tell its history does not

belong here except to note that the effort got no further than the issuance in 1945 and 1946 of a *Preparatory Index* of the subjects such an encyclopedia might contain.

When Du Bois's disciple, Kwame Nkrumah, became the prime minister of a now independent Ghana, the thought developed of his taking charge of the encyclopedia project there. The idea of the residence of the Du Boises for a time in Ghana to start this effort was supported with enthusiasm by the heads of Nigeria and Mali.

In 1961 the U.S. Supreme Court upheld the provision of the McCarran Act denying passports to Communists and "fellow travelers." Hence Dr. Du Bois's passport was no longer valid, but there was a 60-day period between the announcement and the implementation of the Court's ruling. In that critical period, Mrs. Aptheker and I were asked to help resolve this problem.

Nkrumah was called, and he replied, "Come when you can; whenever you come, you honor Africa." There remained then the need to resolve all questions at home and to proceed to Ghana within the time indicated. Fisk University purchased a substantial part of Du Bois's library. Dr. Du Bois stated that I was to edit his correspondence; might this be sent to the Apthekers' home? Mrs. Aptheker said this could be done, and therefore well over 100,000 components of Du Bois's papers were shipped to us (and we spent many years putting the papers in usable order}. Fay arranged the travel requirements and about ten days after the Doctor had announced Communist Party membership, the Du Boises set off for Idlewild (not yet Kennedy) airport with the Apthekers driving them.

The details of Shirley and the Doctor's lives until his death in Ghana in 1963 are not in the Lewis book, but they are significant and belong in a life of W. E. B. Du Bois.

Du Bois had selected the excessively modest Alphaeus Hunton (who had been the secretary of the Council on African Affairs) to be his assistant. Dr. Hunton and his wife Dorothy proceeded to Ghana and the offices of the Encyclopedia were opened and the work begun.

At one point, the Du Boises went to the U. S. embassy in Accra to inquire if they might renew their passports. The clerk was quite rude, and told them they had no passports to renew and should return to the United States. Shirley, who had quite a temper, was restrained by Dr. Du Bois from assaulting the official idiot. Soon thereafter both became citizens of Ghana (although by law they retained U. S. citizenship).

Shirley was asked to take charge of Ghana's radio system and to initiate television in the Republic. With her characteristic energy she undertook this effort. Meanwhile, led by Alphaeus, work on the Encyclopedia proceeded.

In 1962 Dr. Du Bois's health began to fade. There were trips to Moscow, Budapest, and London in efforts to save him, but these were of no avail. On the day of the great demonstration in Washington, where Martin Luther King delivered his immortal speech, word reached the hundreds of thousands assembled that, as Roy Wilkins announced, "The man who had called us together has passed away." A moment of silence ensued.

At the state funeral, representatives from every embassy were present–except that of the United States. Shirley carried on as did Alphaeus, but in 1965 came the coup engineered by London and Washington, and the effort to create a progressive Ghana was aborted.

None of the above appears in Lewis's biography. His effort is, however, as I have indicated, sympathetic to Dr. Du Bois. The final pages in the biography are splendid. There Lewis writes:

> Du Bois was right to insist that to leave the solution of systemic social problems exclusively to the market is an agenda guaranteeing obscene economic inequality in the short run and irresoluble political calamity in the long run. (570)

Lewis's final words come from Du Bois's *Suppression of the African Slave Trade*, published in 1896. "Those who dominate the nation," the young Du Bois then warned, "tend to act as though they have gotten rid of a social problem, rather than

solving it." Such an attitude is dangerous, he continued, for solving a problem of profound social evil "may be postponed; it may be evasively answered now; sometime it must be fully answered" (571).

Du Bois was confident, at the close of the nineteenth century, that "sometime" the fundamental exploitative nature of the social order would be ended. In the ensuing century he was without a peer in that effort; in the twenty-first century perhaps "we shall overcome."

**The slaughter in Jedwabne**

The Polish town of Jedwabne was, after the German-Soviet Pact of 1939, in the Soviet area. Under the Soviets the townspeople were not maltreated, and Jews were in no way harmed. There was an anti-Soviet armed resistance, but it amounted to little. With the German-Soviet war, the town was quickly conquered by the Nazis. After the German occupation, the non-Jewish half of Jedwabne's population, with the approval of the Nazis, set about the systematic slaughter of the half who were Jewish. Almost none escaped. That is the story.

Jan T. Gross, the author of *Neighbors: The Destruction of the Jewish Community in Jedwabne, Poland* (Princeton, N.J.: Princeton University Press, 2001; 261 pages, $19.95) is very anti-Soviet, but these facts are indisputable. When the Germans attacked the U.S.S.R., the town was taken and the pogrom occurred.

About 3200 people died in Jedwabne and half were Jews slaughtered by Poles with the encouragement of Nazis. The book ends when, in August 2000, Polish authorities announced they would "open an investigation of the Jedwabne massacre and that any perpetrators found still alive and liable to prosecution would be brought to trial." The book closes with the hope that Poland now "is ready to confront the unvarnished history of Polish-Jewish relations during the war."

Perhaps.

**Hungry while employed**

Barbara Ehrenreich, the author of a dozen stimulating books, has here produced her most challenging one–*Nickel and Dimed: On (Not) Getting By in America* (New York: Metropolitan Books, 2001; 221 pp., $23).

Presenting herself as an unskilled worker, Ehrenreich obtained a job in Key West, Florida, as a waitress, working from 2 in the afternoon until 10 at night. With this pay she could not make ends meet and therefore took another from 8 in the morning to 2 in the afternoon. She existed in a trailer, barely covered the fundamental living costs, and found that her quarters meant that "desolation rules night and day."

From there Ehrenreich went to Portland, Maine, holding down two jobs to pay for the essentials of existence. And lastly, she tried Minneapolis, working for Wal-Mart, which pays $7 an hour, providing her barely enough to keep alive.

The Economic Policy Institute of Washington calculates that a living wage–with no luxuries–for an adult with two children is $30,000 a year; this is an amount that is not nearly approached by Ehrenreich in the jobs she managed to get.

Ehrenreich observes that "most civilized nations" provide "generous public services, such as health insurance, free or subsidized health care, subsidized housing and effective public transportation" at reasonable prices. But in the United States, the millions of working poor have none of these decencies.

And Ehrenreich took her jobs before the present downturn in the economy. She conveys her sense of profound outrage at the reality marking our social order. This is certainly to be welcomed, especially if it stimulates an awareness of the need for basic social change.

# Book Review

*Disciplined Minds: A Critical Look at Salaried Professionals and the Soul-Battering System That Shapes Their Lives.* By Jeff Schmidt. Lanham, Maryland: Rowman and Littlefield, 2000. 294 pages, cloth $26.95.

### *How the Ruling class exercises ideological control*

Marx and Engels observed long ago in *The German Ideology* that the ruling ideas of any epoch are those of the ruling class. This ideological control, exercised for centuries over the working class through control of the media, government, and other institutions, has never been absolute. It can be argued, however, that today its effectiveness is greater than ever, in large part because the monopolization of the media is much greater than ever. To counter this, there has always been (as Marx showed) and still is a struggle by the working class in behalf of its own interests. A major problem today, however, is the lack of unity in this struggle, a lack fostered and nurtured very effectively by the ruling class.

A major ruling-class weapon in keeping up this division is the separation between workers of the mind and workers of the hand. Although this distinction is never hard and fast (no work is purely of the mind or purely by the hand), one way to characterize it is by the distinction between "professional" and "nonprofessional" workers. The ruling class relies on its professional workers for creative ideological work; this group educates and works to shape the opinions of a much larger sector of the working class.

This group of "professionals" is not at all negligible in size. In the United states, for example, it numbers some twenty-one million and is the fastest growing sector of the working class.[1] One of the various ways to define what is meant by the term "professional" is by level of educational attainment, so that one can include doctors, educators, engineers, scientists, lawyers, writers–in short, anyone with a professional degree. The data on levels of educational attainment in the United States parallel the occupational data.[2]

It is inevitable in this age of ever-increasing monopolization that many professionals themselves become proletarianized. Of every nine professionals today, only one is a free practitioner; the rest are salaried employees (Schmidt 2000, 18). So the ideological control of the ruling class over the ranks of the professionals, while always of great importance to the ruling class, is of even more importance today.

A new book by Jeff Schmidt, *Disciplined Minds*, attempts a detailed look at just how this is accomplished. The usual means of ruling-class influence on the opinions of professionals and nonprofessionals alike is through control of the government and media. Beyond this, the ruling class has ideological control over the workplace and the extensive training of professionals; this control is the primary focus of the book (although this emphasis is not explicitly stated). Schmidt describes the professional programs and graduate schools of the universities as a system of "turning politically independent thinkers into politically subordinate clones" (4).

If one considers the beginning of a student's road to becoming a professional, the act of gaining admission to college or university, then it is clear tht admission criteria are not neutral. Such criteria must favor either the interests of the ruling class or of the multiracial, male/female working class. Schmidt does discuss the question of whose interests are served by selection criteria (105–12). Here, he discusses affirmative-action programs in a positive manner, arguing that they are necessary to overcome bias against working-class, female, and minority applicants.

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He is on less sound ground when he tackles the question of standardized tests, such as the ACT and SAT, used in the selection process. His position is that use of these tests should be abolished *because* they are a useful predictor of success in college. Colleges themselves, he argues, are biased, favoring with success persons having "white, middle-class, male-gendered attitudes and values" (182). Many criticisms of the SAT and ACT tests can be mounted, but Schmidt's criticism is hardly likely to advance the struggle for a more democratic selection process.

Further weeding-out and changing of ideological thinking occur as students progress through graduate school. This is done, according to Schmidt, primarily at the level of qualifying examinations. He uses as an example the qualifying exam in physics (Schmidt is himself a product of that process, having obtained a Ph.D. in physics from the University of California). Physics is a good example because it is a field supposedly free of political bias.

In the typical physics qualifying examination, which he studies in considerable detail, there is an "emphasis on quick recall, memorized tricks, work on problem fragments, work under time pressure, endurance, quantitative results, comfort with confinement to details, and comfort with a particular social framework. The exam de-emphasizes physical insight, qualitative discussion, exploration, curiosity, creativity, history, philosophy, and so on. "This forces the student who wants to be passed to adopt an industrial view of the subject, to view it as an instrument of production, to use it in an alienated way" (136). This helps ensure that "students who are willing and able to conform to the faculty's attitudes and values, which usually favor the status quo over social change, are less likely than others to get cooled out of professional training" (201).

Later, in the workplace (whether it be industry, government, or academe), the so-indoctrinated professional will continue his or her subordination by adopting "professional" behavior, namely, "the notion that experts should confine themselves to their 'legitimate professional concerns' and not 'politicize' their

work" (204).[3] In conflicts with employers, the professional is more apt to place the blame for these problems on management incompetence rather than on any fundamental conflict of interest. This attitude renders the professional employee weak as a force for his or her own defense, and impotent as a force for change in society (209).

Another aim of the book is to establish clearly the political nature of professional work. For instance, chapter 4 documents well how military and industrial concerns dominate "pure" or "basic" research in the United States–and by extension in the whole world.

Schmidt concludes with a section entitled "Resistance," in which he offers those beginning a professional career advice on how to avoid the brainwashing of the professional life. In a lighthearted style, Schmidt uses a U.S. Army manual advising captured American soldiers on how to avoid successful brainwashing by the "enemy," adapting it to give analogous advice to U.S. graduate students.

Overall, the book is a welcome addition to the libraries of Marxists and others seeking better understanding of the specifics of the ways the ruling class exercises ideological control. By knowing how the capitalist class divides nonprofessionals from professional members of the working class, one is better equipped to combat these divisions, and thus help to unite the whole working class.

Nevertheless, it is necessary to point out several flaws in the book, some of which show the need for a Marxist treatment of the subject.

1. Schmidt's approach is fundamentally anarchist, as illustrated when he remarks that "hierarchical organizations are fundamentally flawed" (271). He constantly emphasizes the *direction* and *disciplining* of scientists and professionals generally; this is the major focus of the book, as the title implies. He is concerned far less with the *content* of this direction, or whose interests it serves; his understanding lacks class analysis. With all the mistakes it made that paved the way for the downfall of socialism in the Soviet Union, that country was still a state

controlled by the working class. When Schmidt equates directed research in the Soviet Union with directed research in the United States (both, he feels, being equally reprehensible), he takes a classless approach (211).

2. Speaking as a physicist who has gone through training similar to Schmidt's, I must say that much of his criticism of this training is unconvincing. It does not seem to concern him that this same system of training (quite similar in the former Soviet Union and today's United States) has led in the past three-quarters of a century to space travel, and incredible advances in the theory of elementary particles, condensed-matter physics, astrophysics, etc. Nowhere in his book can one find any mention or appreciation of the accomplishments of modern physics (or, for that matter, of medicine, astronomy, engineering, biology. . . the list goes on and on). This is, of course, not to say that the system is perfect, nor that some of his points are not well taken. His analysis remains incomplete, however.

3. Although in one or two places Schmidt (rather casually) expresses support for unions, it is remarkable that in a book devoted to the ideology of professionals, not a word is said about the phenomenal trend toward unionization of the professional segment of the working class. Just a few indicators will show this. Since 1977, when the Department of Professional Employees was created in the AFL-CIO, union representation has fallen overall, but it has grown to 22 percent among the professional occupations (AFL-CIO Executive Council Report, 1999). The AMA's June 1999 decision to openly embrace collective bargaining and a union-style organization for doctors was of historic importance. Another historic event was the forty-day strike of 20,000 Boeing Corporation engineers, which ended in victory on 20 March 2000. Of course, the move toward unionization is in itself not an act of class consciousness, but it is a first step. In a typically leftist demonstration of desire to bypass steps on the road to revolution, Schmidt faults professionals for not seeing their conflicts with employers as part of a fundamental conflict between capital and labor (209).

*Disciplined Minds* is a free-wheeling, thought-provoking examination of how ideological control is exercised over an increasingly important section of the working class–the professionals. It is too bad that it falls short of fulfilling that task adequately.

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**NOTES**

1. According to the website of the Bureau of Labor Statisticds (July 2000, <www.bls.gov/webapps/legacy/cpsatab4.htm>), the broad category "managerial and professional specialties" increased from 22.6 percent of the work force in 1982 to 30.1 percent in 2000. All other occupational categories showed a decreasing percentage in that same period.

2. The percent of the population as a whole who have completed four years of college or more rose from 17.7 percent in 1982 to 24.3 percent in 1998, according to the U.S. Bureau of the Census (<www.census.gov/population/socdemo/education/tablea-01.txt>).

3. It is interesting to recall an incident in my own experience which shows how this "professional" attitude can sometimes be used to protect an iconoclast in academe. As a physics professor, I once offered a seminar on the Marxist philosophy of physics. Conservatives in the physics department mounted an attack on my right to teach such a seminar, trying to enlist the support of the university's philosophy department to criticize my credentials to teach such a seminar. The philosophers' reply was they could not vouchsafe an opinion on the matter inasmuch as they had no one in the department who was an expert in Marxist philosophy!

# ABSTRACTS

***Robert Steigerwald,*** **"Materialism and the Contemporary Natural Sciences"** –The collapse of socialism in the USSR and Eastern Europe has stimulated attempts to undermine the materialist foundations of Marxist philosophy by targeting a number of areas in the physical and biological sciences. Steigerwald examines these questions in relation to developments in several areas of the natural sciences, including relativity and quantum theory, thermodynamics of self-organization, origin of the prebiotic macromolecule, biological development, and physiology of the brain. He shows that a common dialectical-materialist methodological thread runs through developmental processes on all these levels of physical and biological development.

***Gao Quinghai,*** **"The Era of Revolution in Human Nature"**–The principal defect of present-day human nature is that it is one-sidedly material-centered rather than human-centered. The task that lies before us is the revolutionary integration of the material and social conditions of our existence in human self-consciousness in order to realize our total liberation.

***Sun Zhengyu,*** **"Contemporary Chinese Philosophical Methodology and Marxist Philosophy"**–Contemporary Chinese philosophical studies embrace the following three processes: (a) re-understanding Marxism philosophy, (b) opening up the understanding of philosophy itself, and (c) the creative reconstruction of Marxism philosophy. These three stages of the philosophical process represent theoretically both the course of history of contemporary China and the course of spirit of the Chinese people today.

***Domenico Losurdo,*** **"Marxism, Globalization, and the Historical Balance of Socialism"**–The industries and technologies that a developing socialist country must import from the advanced capitalist countries are not neutral, but are social relations that

then must be contained and controlled. Three kinds of discourse are present in the works of Marx: a utopian perspective, a long-term historical view, and the immediate tasks of the proletariat after the conquest of power. The emancipating force of Marxism is not displayed by contrasting the poetry of utopia, or the long-term project, with the problems of the present. It is necessary to reabsorb the utopia into the long-term discourse, which, in turn, must be able to orient the solution of present tasks without impeding or rendering them impossible with expectations and pretenses that do not correspond to the objective situation.

***Erwin Marquit,* "Tasks of Materialist Dialectics"**–A task facing Marxist philosophy in the twenty-first century is the defense and further development of materialist dialectics to reflect the deepening of our knowledge of the material world. An area of dialectics that needs particular study is dialectical logic, especially in regard to its relationship to formal logic. This is of special importance because bourgeois philosophy often singles out this area for its attacks on dialectical materialism.

***Vladimir I. Metlov,* "Dialectics in Contemporary Philosophy"**–The author discusses the roots of dialectics in the material praxis of social being, the role of an aspect of the subject-object relation in the determination of the peculiarities of the core of dialectics, the dialectical contradiction, and the social aspects of dialectical development. The author presents a critical discussion of the Kantian dialectic and argues for the necessity of passing to a more developed conception.

## ABREGES

***Robert Steigerwald*, « Le Matérialisme et les sciences naturelles contemporaines »** - L'écroulement du socialisme en Europe de l'Est et la fin de l'Union Soviétique ont stimulé les tentatives de saper les fondements matérialistes de la philosophie marxiste, en visant un certain nombre de disciplines de la physique et de la biologie. Steigerwald examine ces questions par rapport au développement dans plusieurs domaines des sciences

naturelles. Il étudie aussi ce problème dans la théorie de la relativité, la théorie quantique, la thermodynamique de l'auto-organisation, l'origine de la macromolécule pré-biotique, le développement biologique et la physiologie du cerveau. Il met en évidence que le matérialisme dialectique est la méthode générale qui permet de saisir à tous les niveaux, les processus de développement physique et biologique.

***Gao Quinghai,* «L'ère de la révolution de la nature humaine»** - Le défaut principal de la nature humaine actuelle est qu'elle se concentre surtout sur les objets, plutôt que sur l'être humain. La tâche à laquelle nous sommes confrontés est l'intégration révolutionnaire des conditions matérielles et sociales de notre existence dans la conscience humaine afin de réaliser notre libération totale.

***Sun Zhengyu,* «La méthodologie philosophique chinoise contemporaine et la philosophie marxiste»** – Les études philosophiques contemporaines en Chine comprennent les trois processus suivants: (a) re-comprendre la philosophie Marxiste, (b) élargir la compréhension de la philosophie elle-même, et (c) la reconstruction créative de la philosophie Marxiste. Ces trois étapes du processus philosophique représentent théoriquement aussi bien l'évolution de l'histoire de la Chine contemporaine, que l'évolution des esprits du peuple chinois contemporain.

***Domenico Losurdo*, «Le marxisme, la globalisation, et la perspective historique pour le socialisme»** - Les industries et les technologies qu'un pays socialiste en voie de développement doit importer des pays capitalistes industrialisés ne sont pas neutres, mais ce sont des rapports sociaux qu'il faut alors contenir et contrôler. On peut trouver trois types de discours dans les oeuvres de Marx : une perspective utopique, une vision historique à long terme, et les tâches immédiates du prolétariat après la prise du pouvoir. La force émancipatrice du marxisme ne se manifeste pas dans le contraste entre la poésie de l'utopie ou des projets à long terme, et les problèmes du présent. Il est nécessaire d'injecter la dimension utopique dans le discours à long terme, qui, à son tour, doit être capable d'orienter la

solution des tâches du présent, sans les entraver ou les rendre impossible à cause de prévisions et simulations qui ne correspondent pas à la situation objective.

***Erwin Marquit*, «Las tâches de la dialectique materialiste»** – Une tâche à laquelle la philosophie marxiste fait face au vingt-et-unième siècle est la défense et le nouveau développement de la dialectique matérialiste pour tenir compte de l'approfondissement de notre connaissance du monde réel. Un domaine de la dialectique qui mérite une étude particulière est celui de la logique, surtout en ce qui concerne ses rapports avec la logique formelle. Cela est d'autant plus important que la philosophie bourgeoise choisit souvent ce domaine pour attaquer le matérialisme dialectique.

***Vladimir I. Metlov,* «La dialectique dans la philosophie contemporaine»** – L'auteur examine les racines de la dialectique dans la pratique matérielle de l'être social, le rôle d'un aspect de la relation sujet-objet dans la détermination des particularités au cœur de la dialectique, de la contradiction dialectique, et les aspects sociaux du développement dialectique. L'auteur se livre à une analyse critique de la dialectique kantienne et se prononce pour la nécessité d'appliquer une conception plus développée.