

THE WORK/ENERGY CRISIS AND THE APOCALYPSE



MIDNIGHT NOTES

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The members of the collective who assisted in this *APOCALYPSE* were George Caffentzis, Monty Neill, Hans Widmer, **john willshire**.

Many friends helped in the writing, editing, producing and reproducing of this issue and the collective, we mention only one, Robi Gutman, but may the Horsemen pass them *all* by unharmed.

The next issue of *MIDNIGHT NOTES* will deal with the developing sexual, racial, geographical and technological physiognomy of the U.S. working class and its new expressions.

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— *MIDNIGHT NOTES*, Vol. I, #1, *STRANGE VICTORIES: THE ANTI-NUCLEAR MOVEMENT IN THE U.S. & EUROPE* (soon available only in Xerox form).

— *MIDNIGHT NOTES*, Vol. I, #2, *NO FUTURE NOTES: THE WORK/ENERGY CRISIS & THE ANTI-NUCLEAR MOVEMENT* (available only in Xerox form).

NO FUTURE ISSUES: Regular Subscribers will get the next three issues of *MIDNIGHT NOTES* for \$4.00. Those who wish to have a good word put in for them to the Horsemen, send more — we need it.

MIDNIGHT NOTES

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The wood cuts come from Albrecht Dürer's *DIE HEIMLICH OFFENBARUNG IOHNNIS (THE REVELATION OF S. JOHN). APOCALIPISIS CUM FIGURIS*, printed in 1498. Many thought that the dawning of the sixteenth century would end an old world... it did. By the way, the torture of St. John took place in Rome before the Porta Latina during the persecution of the Christians by Domitian, but St. John suffered no harm, and was the only one of the apostles to die a natural death.

SCIENCE, CAPITAL AND APOCALYPSE

The litany of natural stuffs — petroleum, natural gas, uranium, coal, wood, water, sunlight — apprehension about their limits, joy in their abundance, scepticism about their benefits, pass for the bulk of “analyses” of the “energy crisis” that “we” face. Whereas in the '50s and '60s Nature was “under control” and the robots (e.g. Hal in 2001) were rebelling, now it appears that Mother Nature is turning a new face: instead of the obedient, invisible and infinitely malleable material of social development, the terrestrial abode seems stingy and treacherously seductive. For the energy crisis is usually traced to two problems:

(a) the “limited” or “finite” amount of fossil and uranium fuels in the earth;

(b) the increasingly “surprising” discovery of interactions between the use of these fuels and their biological and social effects.

Although the analysts place different emphases on these two “problems”, their “solutions” usually address both. Indeed, the “great energy debate” (at least what passes for it) is a confrontation between the *anti-limitationists*, who are anxious about the rapidly approaching abyss of zero-oil-coal-natural-gas-uranium and are ready to introduce any “way out”, however untried, and the *collective interactionists*, who argue that the “balance” or “fabric” of Nature is so intricate and fragile (to mix metaphors) that any of the schemes of the anti-limitationists would drive Mother Nature into a schizophrenic breakdown.

From this debate one would presume that these are momentous times. They are, but not in the way that is being implied. On the one side, the anti-limitationists cringe in terror at the prospect of a “day the earth stood still” repeated so often that “civilization” (sometimes with the proviso “as we know it”) collapses into an age of social anarchy — starvation, rape, murder and cannibalism. (“What’s new,” we might ask . . .) On the other side, stand the equally apocalyptic interactionist envisioning of huge floods let loose by the CO₂ “hot house” effect or the end of all biological life due to the depletion of the ozone layer causing a tidal wave of high-energy radiation to penetrate the chromosome linkings and breakdown the proteins, or a festering mutant jungle released by the radioactive wastes of nuclear reactors. Conclusion: either social anarchy or natural anarchy, “take your choice” we’re told. But *must* we choose? Are these *our* alternatives?

This debate with its apocalyptic overtones indicates a *crucial crisis for capital* and its attempt to carry through a major reorganization in the accumulation process to overcome it. The Apocalypse is no accident; whenever the ongoing model of exploitation becomes untenable capital has intimations of mortality *qua* the world’s end. *Every period of capitalist development has had its*

apocalypses. Here I’m not referring to the micro-apocalypse of death: everybody dies and even if everybody dies at the same time (I mean *everybody*) what’s the problem? The earth becomes a cleared tape and why should the angels grieve?

I *am* talking about those functional apocalypses that mark every major change in capitalist development and thought. For the Apocalypse approached at other times in the history of capital, when (as in the last decade) the class struggle reached a level that jeopardized capital’s command.

In the seventeenth century, a pervasive premonition of apocalypse was voiced by the “philosophers”, “astronomers” and “anatomists” (i.e., capital’s planners) in the face of the revolutionary upheavals of the newly-forming proletariat that was being introduced to the capitalist discipline of work. In this phase questions of inertia,⁰ time and order were paramount. The working class seemed full of inertia, lacking inner control mechanisms and manageable only by external forces. Capital’s concern with its apocalyptic potentialities can be seen reflected in Newton’s theory of the solar system: the planets revolve around the sun, but their revolutions continually deviate from the equilibrium path because of the random, irregular gravitational impulses they communicate to each other. Ptolemy’s crystal suddenly looked like a mob that with *this-and-that*, slowly, imperceptively, became unruly, though it was nominally dominated by the gravitational field of the sun. The deviations accumulated to a point when some planets would spin off into the stellar depths while the others would dive into the sun’s inferno. Hence Newton’s argument for the necessity of God’s existence, whose function in the universe was to prevent this catastrophe by periodically returning the planets to their equilibrium orbits via a true miracle. The solar system was the “Big Watch” and God was not only the watchmaker but also the watch repairer, otherwise the mechanism, through its blind obedience to the laws of inertia, would snap and break however finely wrought. God must intervene to create orderly time from chaotic mixtures of inertia and attraction. Given the universal identification of God with the state in the seventeenth century, it is not hard to decipher Newton’s prescription for the state policy *visa vis* the apocalypse portended by its “wandering stars”, the proletariat. (A prescription Newton embodied in his job as the inquisitor and torturer of counterfeiters for the Royal Mint).

In the Newtonian period capital’s main task is the regularization of time as a precondition for *lengthening the working day*. Medieval production time was circular and the pacing of work and “rest” fixed by “eternal” seasonal and diurnal

dichotomies. Summer and days could not be stretched, winter and nights could not be shrunk at will. Newton and his fellow "century of genius" planners had to create a non-terrestrial work-time, that would be the same in winter and summer, in the night as in the day, on earth as it is in heaven. Without this transformation of time, lengthening the working day would be impossible to imagine, much less impose "with fire and blood".

By contrast, the "revolutions" and organizational forms thrown up by the working class in the first half of the nineteenth century spelled the end of a period where profits could be created by stretching the working day to its limit. Capital had to "revolutionize" the technical and social conditions of production to turn the proletarian revolt against work into an intensively productive working day. Absolute time was no more of the essence, productive intensity was. Capital could no more complain that the working class was inert, unmotivated or tending to rest. The class was on the move, scheming, energetic, volatile. If the work-house prison sealed from "the elements" was the first laboratory of work, the working class was clearly blowing out the sides of the container and destroying the experiment. The problem was no more how to confine workers *as long as possible* but how their energy and revolutionary *heat* could be transferred into work. Not surprisingly Thermodynamics, "the study of energy, primarily with regard to heat and work", becomes *the science* after 1848.

Thermodynamics begins with Sadi Carnot's attempt to determine the possibilities and limits of creating productive work out of heat and energy when in confining it, it explodes. His leading idea is that if a mass is exploding you should give it a way out so organized that it will push a piston and thus do work for you. Carnot's analysis focused upon an idealized version of Manchester's "demonic" steam engine and attempted to determine under what conditions the expansion/compression cycle of a gas would give a maximum amount of work. Carnot's cycle, thus, became a representation of the cycle of class struggle that was taking shape in the nineteenth century, putting the working class' wage demand at the center of the "business cycle".

Carnot's laws of thermodynamics grew out of his memoir and led, as Ariadne's threads, out of the "crisis labyrinth." For Physics is not only "about" Nature and applied "just" to technology, its *essential* function is to provide models of capitalist development, i.e., models for the organization of work. The ultimate nature for capital is *human* nature while the crucial element of technology is *work*. The First Law of Thermodynamics, e.g., did not simply recognize that though energy has many forms (not just "mechanical"), each can be transformed into the other without loss. Its consequences impinged on capital's conception of labor power. A more general view of energy was

imperative if the technical and social conditions of production were to be "revolutionized", for the old mode of production assumed a fixed limit on the forms of energy that could generate work. This new Law taught capital a generality and flexibility in its productive arrangements that it did not even experiment with in the First Industrial Revolution.

Like Darwin's discovery, Gustav Mayer's first enunciation of the law of the conservation of energy occurred in a typical nineteenth century way: on an imperial voyage to the tropics:

A sailor fell ill of some lung disease. Mayer bled him, observed that venous blood was a brighter red in the tropics, much closer to arterial, and concluded that metabolism drew less oxygen from the blood in hot climates because maintenance of body temperature required less heat.¹

In Mayer's perspective the sailor's body was the mediator of manifold forms of force that are "indestructible, variable, imponderable". Though the forms of force and energy would change their transformations they conserved the basic quantity of production, energy. The concept of energy is thus defined on such a level of generality and abstractness that an enterprising spirit would see the possibility of producing work from novel, untoward sources.

While the infinite multiplicity of energetic forms inspired a tremendous optimism in capital's search for new work forces, Thermodynamics laces this high with arsenic: the Second Law. An ominous version goes like this: a perpetual motion machine completely transforming the energy of the surroundings into work without any loss *is an impossibility*. The Second Law however has even darker consequences than deflating capital's dream of getting work for free (having workers "living on air"). It states that in any work-energy process less and less energy becomes available for work. ENTROPY (the measure of work inavailability) INCREASES. Clausius put it in cosmic form: "The energy of the universe is constant; the entropy of the universe increases to a maximum."²

The Second Law announced the apocalypse characteristic of a productivity-craving capital: THE HEAT DEATH. Each cycle of work increases the unavailability of energy for work. As the efficiency of the heat engine depends on the distance between heat input and heat output, the Second Law predicts a slow, downhill leveling of heat-energy differences, (on a cosmological scale) until there are no more *flows* of energy for work. "The world is living on its capital" and all around is the whisper of the impending silence. This image of an undifferentiated, chaotic world had a two-fold echo: in the rhetoricians of mass culture like Henry Adams ("the so called modern world can pervert and degrade the concepts of art and feeling, and that our only chance is to accept the limited number of survivors — the one in a thousand born artists and poets — and to intensify the energy of feeling within that radiant center"³), and in the pragmatic thought of Taylor. The Henry Adams' mourned

over the loss of accumulated values that, at best, could only be "saved" in the leveling of social and cultural differences announced by "energy's dissipation" into a heat death apocalypse, Taylor instead saw the essence of a project: productivity is efficiency. His answer to the second law (if not absolutely, relatively) is not "conservative", it is a "revolutionary" attempt to create a far more efficient organization of work and to perfect the intermeshing of worker with environment. Taylor attempted in practice what Carnot did in theory: test the limits of an efficient transformation of energy into work. In a typical American fashion, he turned to the man-machine instead of its reflection in the machine-machine. Once again, it seemed that the apocalypse could be averted if Action was taken. This time, however, it was not the action of God *qua* super-State, but capital's planning in its own self-conscious, scientific analysis: scientific management.

Newton's apocalypse and Clausius' apocalypse do not simply have analogical connections with capital's crisis in their respective periods. The theories they derive from do not merely have contingent or ideological relations with the contemporary, on-going organization of work. *Capitalist crises stem from refusal of work*. Thus, in times of crisis new analyses of work, new schemes for overcoming resistances to it become imperative. Physics, in this context, does not have a separate content, but provides definite analyses of work and new plans for its organization. Its "models" may appear abstract but they are directly related to the labor-process.

Newton's parable of the transformation of working class inertia into work and his appeal to God *qua* State to restore equilibrium under centripetal and centrifugal pressures is a general methodological scheme. The relation of thermodynamics to work is more explicit. The WORK of thermodynamics and the WORK of capital are no mere homonyms. Capital faces working class resistance to work in continuously new ways as this resistance changes in its power and organization (though it may seem "impotent" and "chaotic"). Capital is concerned with physical work because the labor-process is the transformation of labor-power (energy, inertia) into labor (work). This is the "eternal necessity" of capital and physics provides models for overcoming "resistances" and measuring-rods of levels of crisis. The Apocalypse is an extreme measure of the failure of these models. Capital's problem in the nineteenth century changes from that of Newton's time in the same way the resistance of inert machines shifts into the chaotic energy of random micro-particles. Essentially, however, it remains the same: what is the possibility, limit and method of creating useful work ("order") out of the "almost natural evasion, subversion, resistance and covertness of the working class.

Capital's despair is always hypothetical, yet

always virtually existent. This is the multiple function of the apocalypse. It serves not only as a parameter for the on-going process of work organization and experimentation, it serves also as a reminder and a threat. A reminder, because capital's control is contingent, and revolutionary potentialities exist at each instant. A threat, because it attempts to project the destruction of capital as the destruction of the universe (as in the heat death). As long as the "elements" of the working class are attached to the totality, the apocalypse is the extreme point where opposites meet in avoidance. It is capital's threat, if we go too far, to take us all down with it. If we annoy God too much, if we agitate too much, if we become too unavailable for work, then the "mutual destruction of the classes" is used as a club to bring us back into line. But must the molecule fear if the engine dies?

What of the "energy crisis" and its apocalypses? The first thing to note is that the term "energy crisis" is a misnomer. Energy is conserved and quantitatively immense. There can be no lack of it. The true cause of capital's crisis in the last decade is work or, more precisely, *the struggle against it*. The proper name for the crisis then is the "work crisis" or, better, the "*work/energy crisis*". For the problem capital faces is not the quantity of work *per se*, but the ratio of that work to the energy (or labor power) that creates it. Capital is not just a product of work. Capital is the process of work-creation, i.e., the condition for transforming energy into work. Energy has within it a restless activity, an unpredictable microscopic elusiveness, antagonistic, indifferent as well as productive of the work capital so desperately needs. Though the eternal cycle of capitalist reality is the transformation of energies into work, its problem is that unless certain quantitative levels are reached, the relationship expressed in the work/energy ratio collapses. If entropy increases, if the availability of the working class for work decreases, then the apocalypse threatens.

The *forms* the apocalypse takes in this crisis are crucial. They signal both a warning and a specific threat, as the heat death apocalypse inspired Taylorism and the Newtonian centripetal/centrifugal catastrophies dictated certain features of mercantilist state intervention. What do the anti-limitationists and interactionists allow for decoding the present crisis? The first step in the decoding must lie with "Nature". It *appears* that Nature and its stuffs are an independent pole, given and distinct from capital — its "raw" material, as it were. From the exhaustion curves of oil or natural gas it appears that a black hole is absolutely devouring them. But for capital, Nature *qua* Nature is non-existent. *Nature too is a commodity*. You never have oil, or natural gas, or even photons that do not take a commodity form. Their commodity reality is what is crucial; even when you talk of the Earth or the solar system you cannot speak of a non-

capitalist reality. The energy problem is unequivocally a problem of capital and not of "nature" or "Nature and Man". OUR problem is to see that capital's difficulties in planning and accumulating spring from its struggle against the refusal of work (the multi-dimensional subversion

of the orderly transformation of energy into work). Thus, according to our decoding, through the noise of the apocalypse, we must see in the oil caverns, in the wisps of natural gas curling in subterranean abysses, something more familiar: the class struggle.

A. ONE'S APOCALYPSE IS ANOTHER'S UTOPIA

To decode the messages of the apocalypse we should see that both the anti-limitationists and the interactionists demand a complete change in the mode of production. They are "revolutionaries" because they fear something in the present mode that disintegrate's capital's touch: a demand, an activity and a refusal that has not been encompassed.

The anti-limitationists focus on the "need" to end the oil-auto-assembly line economy of the post-war era. Taking "the father of the H-bomb", Edward Teller's "Energy-A Plan for Action"⁴ as indicative of their position we see that by the beginning of the next century they would have a completely different world of production compared with the '70s. Consider some proportions. (See graph #1) In 1973 electricity production demanded 25% of the total energy of the U.S. while transportation (excluding auto production) demanded 25%. There was a rough balance between these two sectors in the last decade. Teller, on the contrary, envisions a radically new system where electricity would demand 50% of the total energy, with transportation reduced to 11%. (The "raw

material" would come from a vast increase in Western coal strip mines and the use of nuclear reactors.) This would involve a complete reorganization of production and reproduction, though the number of workers necessary to supply the fuel and run the power plants would undergo relatively minor increases. Teller argues not only for a substantial increase in "energy" consumption, in line with the historical trend, but for a radical shift in the structure of work. What he has in mind is revealed by his "Manpower Requirements":

No matter what popular opinion asks us to believe, technology will be crucial for human survival. Contrary to much of our current thinking, technology and its development is not antithetical to human values. Indeed, quite the opposite is true. Tool-making and the social organization it implies are very deeply ingrained in our natures. This is, in fact, the primary attribute that distinguishes man from other animals. We must continue to adapt our technology, which is, in essence, our ability to shape nature more effectively in order to face the problems that this human race faces today. It is for this reason that the development and expansion of technical education is so important. It is only through the possession of high skills and the development of educational systems for the acquisition of these skills that human prosperity can be insured.

Teller envisions a new "New Atlantis" with a priesthood of highly "skilled" scientist-technicians surrounded by an army of "craftsmen" who monitor, develop, and control the automated production processes with computer networks.

This is a sample of how his vision would work:

Computers have been introduced in central control stations to control interties for the purpose of optimizing the use of energy by drawing at any time of the cheapest available source of electricity. These computers are also beginning to be used to store and display data about the state of the major components of the generating plants and transmission lines. This will help the dispatcher to make the right decisions, for instance, by accepting a local and temporary brownout, or even blackout, rather than permitting an overstrained system to breakdown.

We have here a centralized neural society where the work process is integrated at the speed of light in reverberating feed-back circuits modulated to prevent total breakdown. Capital finally finds its etymology. Teller spells the end of the ass-kicking truckers' songs, the lyric of the stoned highway at 3 AM; everything is concentrated now, controlled in the wires of an air-conditioned brain. For the

Energy Demand and Supply
(All figures in quads per year = 10^{15} BTU's per year)

GRAPH #1

Demand	1973 Actual	1985 Target	2000 Example
Electricity ¹	19.8	33	85
Residential & Commercial ²	15.4	18	20
Industry ³	18.2	24	30
Non-Energy ³	3.4	6	15
Transportation ²	18.8	22	20
Subtotal-Domestic	75.6	103	170
Export	2.0	15	30
Liquids	0.5	6	11
Gas	0.1	0	0
Coal	1.4	9	19
Totals	77.6	118	200
Supply			
Liquids	35.2	39	50
Conventional	22.2	35	30
Shale	0.0	2	15
Synthetic	0.0	1	5
Imports	13.0	1	0
Gas	23.6	29	25
Conventional	22.5	28	20
Synthetic	0.0	2	15
Imports	1.1	1	0
Converted ⁴	0.0	-2	-10
Coal	15.0	33	50
Nuclear	0.9	12	60
Hydroelectric	2.9	3	5
Other	0.0	2	10
Totals	77.6	118	200

1. Primary fuel demands—energy consumed by the electric utilities to produce electricity.

2. End-use sector totals exclude electricity consumed.

3. Includes 0.3 quads of liquids not accounted for in 1973. The item "non-energy" is the production of materials such as fertilizer and plastics which use coal or hydrocarbons for their substance rather than as a source of energy.

4. Gas which is converted to synthetic liquids (methanol).

internal-combustion engine, after all, has been an enormous source of "decentralization" of desires that cannot be tolerated, for it seems to lead to catastrophe.

Teller's apocalypse flashes the desolation of an oil-starved assembly line economy, his utopia is an electronic techno-nuclear model of capital allowing for a new leap in accumulation. Yet one's apocalypse is another's utopia. We see this when we turn to the interactionists, who argue that any step down Teller's path leads to human annihilation. The Odums, an ecologist and a social worker, serve as a precise counter-pole to Teller for they are extremists even among interactionists.⁵ They agree with Teller that the assembly line economy is over, but argue that the future holds no technological solution to declining "energy". They dismiss both the solar energy enthusiasts and the fusion freaks. In their view, "various schemes for harnessing solar energy turn out to be installations based mainly on fossil fuels, with their main energy flows not really supported by the sun." Their argument against the possibility of fusion power is certainly original: "Fusion could be disastrous to humanity either if it were so rich that it gave too much energy, or if it took all our capital and gave us no net energy." If it failed and all the energy eggs were in the fusion basket, disaster would follow; but if it were successful it would release such an intense energy flow that too much energy would be required "to maintain control as it is diluted to the intensity of the human system." The very price of success would guarantee disaster.

Thus "we" can neither remain with the present mode of production based upon dwindling reserves, nor can the path of "technological leap" save the system. They propose a new mode of production, a "steady-state and low-energy" economy, bringing the human race into a safe equilibrium with Nature. The price for survival, however, is not only the disco beat:

To become adapted to the steady state, people will have to give up their restlessness and their insistence on the large, the new and the different. But the young people who tried to form a low-energy subculture to avoid the excesses of the high-energy growth period will also have to change. More work will be expected from each individual in the low-energy society because there will be fewer machines.

Examples of the Odum's steady-state utopia are rain forests, coral reefs and the "uniformly cold bottom of the sea (near freezing)", as well as pre-industrial-India agricultural villages. The common element in such systems is "a great diversity; intimate, highly organized symbiotic relationships; organisms with complex behavior programs by which they serve each other; well timed processing of mineral cycles that do not lose critical materials; and highly productive conversions of inflowing energy."

"The Octopus' Garden in the Shade" becomes the solution to the energy crisis.

Here are some features of the steady-state economy that more precisely describe the Odum's vision:

- Growth-stimulating industries are eliminated.
- Less emphasis on transportation.
- Balanced governmental budgets.
- Miniaturization of technology to use less energy.
- Decrease in public and private choices and experiments.
- Urban construction will be replaced by separate and smaller houses.
- Farms use more land, less fuel and more hand labor.
- Properties of high concentration of energy will decrease: crime, accidents, law enforcement, noise, central services, taxes.

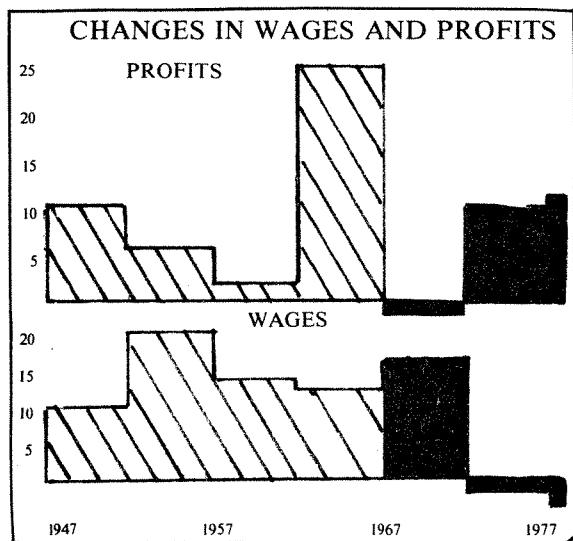
No more cities, no more travel, no more factories, no more power plants, and *presumably* no state. Just the quiet labor-intensive life on Jim Jones' farm (after they've seen Paree?). The necessary restructuring of employment to realize this utopia is obvious. Unemployment in the "growth and luxury industries" will "shift people to agriculture" with wages being steadily cut and unions taking on the role of employment transformers.

It all sounds so wholesome, a world apart from the nuclear-computer-philosopher-kings of teller! Spots on apples! Birds and Bees! Nature's watchful eye assures a fair day's work for a fair day's pay instead of Teller's electronic-eyed cyclops monitoring our neural hook-ups tottering on the edge of breakdown. However, there is a coldness here, for all the cosiness, reminiscent of the H-bomb's daddy; an anger, a fear that Teller and the Odums share. They offer opposite revolutions of production, apocalypses and utopias, but they agree on one thing: the present state of capital has had it, not only because it has lost its "energy" but because there is too much "chaos", uncontrolled behavior, too many demands and not enough work.

This commonality emerges sharply in what appear as marginal remarks upon the "youth" of the '60s and '70s. Both anti-limitationists, and interactionists agree: they are lazy! So Teller complains of "an antiscientific trend among young people," while the Odums (in a passage quoted above) clearly expect the fuck-off young rebels to get down to work. Their deepest commonality however is that, like the apocalypticians of the past, problem in Nature. On the one side the raw limit of energetic stuffs, and on the other side the "ecological" catastrophe induced by industrial development. They postulate a limit either on the natural "input" (fuel) or on "output" onto nature (pollution). But once again we cannot read their fears and solutions straight, for in their text Nature is identified with *Capital pure and simple*. They never declare the obvious: *capital is a relation of struggle*. Once this translation is made, their sybilline visions can be deciphered and their ominous somberness dispelled. *Their* limits are not *ours*.

B. DECODING THE APOCALYPSE

The decoded message of the Apocalypse reads: Work/Energy. Both sides of the "great energy debate" want to rebalance the ratio, but what *unbalanced* it in the first place? If the "energy crisis" began in 1973 the logical place to look is the period immediately before. What was happening to work/energy then? . . . a capitalist catastrophe in commodity production and the reproduction of labor-power. Need we take out the old film strips? The ghetto riots, the Panthers, campus "unrest", SDS and the Weatherpersons, a strung-out imperial army, DRUM in Detroit and the West Virginia wildcats, the welfare office sit-ins, the shooting of Andy Warhol, SCUM, the Stonewall blowout, Attica. Let graphs 2 and 3 suffice:



GRAPH #2

The first deals with a historic transformation in the wage profit relation, the second depicts the changed relation between defense and "social" expenditures. Both indicate that the late '60's and early '70's saw the inversion of long term trends.

If we look, e.g., at the two decades between 1947 and 1967 we see that in this period wages and profits intimated the fulfillment of an American Capitalist Dream: the class struggle can be bypassed, wages and profits can grow together, perhaps not at the same rate, but in a long-term growth equilibrium path. The Keynesian strategy of matching real wage increases with productivity increments seemed to succeed. To each his own, and thou wilt be satisfied. 1967 through 1972 was the shocker: for the first considerable period there was a decline in profits. This decline appeared at the cost of increased wages. The bets were off. Once again wages seemed antagonistic to profits as in the bad old days of Ricardo and Marx (lately exhumed by Sraffa). This period marked the end of the "social peace" worked out with the return of the vets from Europe and the Pacific into the plants. It was not, however, a period

of wage "explosion" (as it could be characterized in Germany, Italy and France). Rather, it involved a mathematical inversion and the return to the zero-sum game of wage negotiation that seemed transcended by capital's game-theorists during World War II and immediately after.

The second chart (#3) deals with the state's function as the general guarantor of the average rate of profit. This requires that the State oversee the reproduction of the working class and provide for proportionate revenues. The bottom graph indicates the quantitative increase in the state's "share" of the total social value. It is not surprising that it should increase during the Vietnam war. What is surprising is that at the very moment the war was ongoing, the proportion of "defense" spending dropped dramatically.

"War" and "defense" are an essential, though unrecognized, part of the reproduction of labor power, which can dictate the death of millions of workers. Auschwitz, Dachau, Belsen, were extermination factories whose product — the suffocation and cremation of millions of bodies — was an essential moment in Nazi capital's "labor policy". The reproduction of labor power should not be identified as the reproduction of "human bodies" and "beings". Moreover, *"social welfare" spending by the state can be defense spending.* Indeed, this second aspect was apparent in the late '60s. Another war was being fought white-hot in the streets of the USA that needed immediate attention. Hence the precipitate increase in "social welfare" expenditure, i.e., "transfer" payments (but what is not a transfer payment in this system?) to deal with women, blacks, youth, who were increasingly refusing the way they were being reproduced. This chart indicates that whether you call it "war" or "welfare", the process of ensuring a population accepting the large-scale wages, profits and productivity relations as well as the microrelations of love, job, discipline and quiet dying was in crisis. Not only was the work/energy ratio immediately in trouble, it was in more serious trouble over the long run.

Trouble, however, inspires thought and capital's thinkers turned with new apprehension to the work/energy ratio. Now a ratio is an expression of a two-sided relation and can be looked upon from either side. From capital's point of view, the work/energy ratio is a more generalized form of the exploitation (or profit) rate. The crisis appears through these lenses as a decade-long, from the mid-60s to the mid-70s, plunge of profit rates. What were the causes of this decline? From the humblest industry gab and gripe sheets to the mathematical stratosphere of capital's computer self-consciousness the answer comes in reverberations: TAXES and TIMIDITY.

The state is taxing "us" to death while "we" all too often take the "safe and secure path" that guarantees a small profit (but slow "growth") instead of attempting risky, long-term ventures that *really* pay-off. The statistics showed this. Taxation on profits (calculated on "current production" profits) rose from 40% in 1965 to 60% in 1974. At the same time, the risk of investment fell. If we take as the measure of "risk" the interest rate on debt and equity corporations must pay to raise financial capital it is clear that capital collectively became chicken. The interest rate decreased from 8% in 1966 to 4% in 1972-73. Capital's "claims" to its share of income were decreasing while what was claimed had to be increasingly given over to the state. U.S. capital appeared to be catching "the British disease".

W.D. Nordhaus, in his celebrated article "The Falling Share of Profits",⁶ appeals to Keynes' subjective theory of investment to explain why the interest on investment faced such a decline. According to Keynes, the capitalists must overcome their "ignorance of the future" through calculation of "mathematical expectations", second-, third-(and even higher) order judgements on the "average opinion" of other capitalists in the investment market, and finally with "animal spirits", i.e., capital's "spontaneous urge to action rather than inaction". In agreement with this Keynesian existentialism, Nordhaus claims that the fall in profits was due to an extra-ordinary period of calm in capital's heart and mind:

The answer seems to me to lie in the general dissipation of the fear of a new Great Depression. For many years after the Crash, investors justifiably worried about a repetition of those events. Even as late as March 1955 when the fear might have reasonably faded, the statement by Prof. Galbraith that the Great Crash could repeat itself was sufficient to send the market into a temporary panic — or so he claims. Since that time, however, the memory of the bad old days has dimmed, and this freedom from fear may well provide a rationale for the post-war movement in the cost of capital.

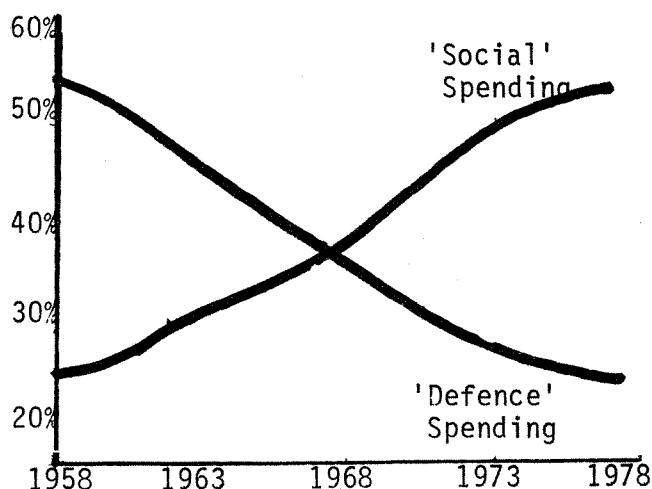
Presumably, in the different psychic "climate" prevailing in the post-WWII era, investors became more confident in the future, had a new sense of guaranteed horizons, the risk factor seemed reduced. Thus, (according to this theory of profits) the expected returns on investment fell. For if risk is high the investor demands high profits, if the risk is low, he will settle for lower profits. What had brought about this freedom from fear, what psycho-analytical therapy had the capitalist mind undergone? Nordhaus does not explain, but to any therapist this much should be obvious: the healer must be paid his dues. In this case the healer of capital's long term fears was the state and the "dues", taxes. This is why the major structural transformation of the GNP was in the share of the State. The Federal budget increased from 10% of GNP in 1940 to an average of 20% in the period

between 1960 and the present. In other words, by investing in the reproduction of labor power the State exorcised the trauma of the Depression (and its potentially revolutionary consequences), and the increased tax on corporate profits was its fee. Every step capital takes in feeling more secure leads to a loss of profit.

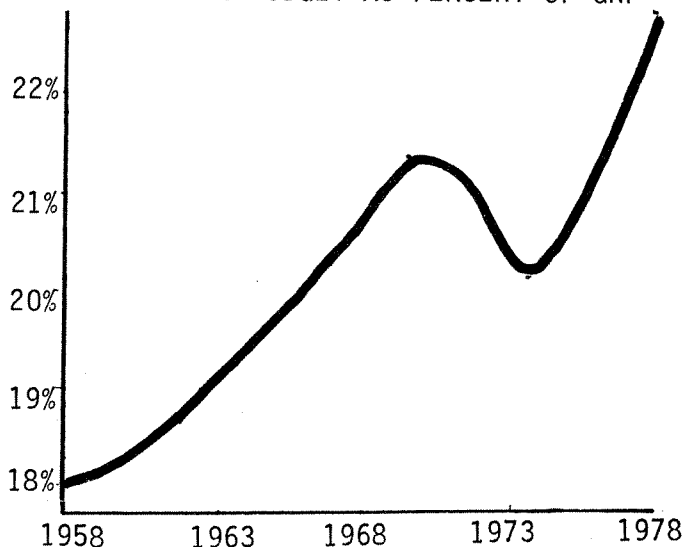
But why should capital fear, why is investment risky, and the future so obscure? Why, indeed, must capital *have* "animal spirits" in the first place? Is this a metaphysical truth? Not really, because there are risks of *different* sorts. Some are dealt with in an almost mathematical manner, e.g., in fair toss gambling or in predicting the weather. You calculate future probabilities from past data, lay down your money and wait for the outcome. Such risks are not what Keynes is talking about. There are also strategy-game risks, those you take when

GRAPH #3

DEFENCE VERSUS "SOCIAL" SPENDING AS PERCENT OF FEDERAL BUDGET



FEDERAL BUDGET AS PERCENT OF GNP



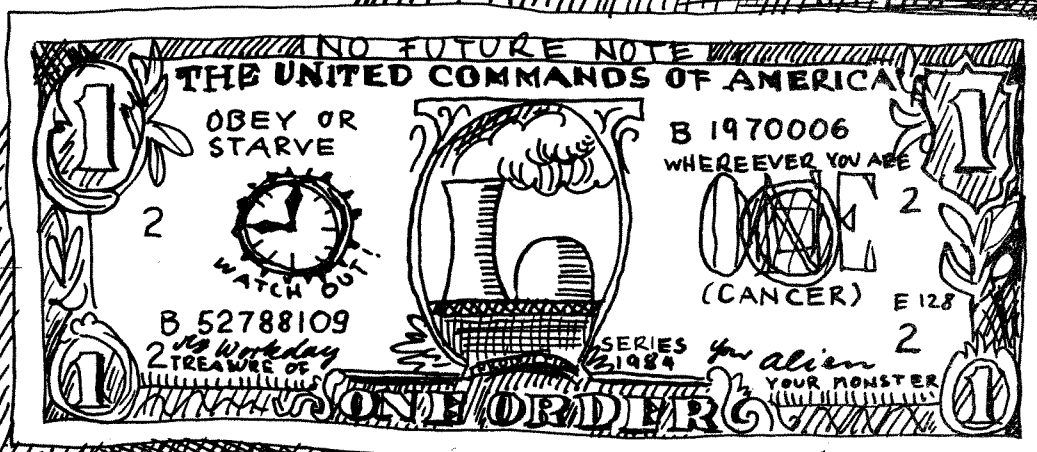
you depend upon (or reply to) the actions of another player in a game where *all the players agree to and are governed by the same rules*. Here you cannot simply go upon past behavior; any game with a rich enough set of rules and positions can present completely novel situations and this forces you to speculate on the *strategy* of your opponent, to read out his likely move. This involves a risk, but the risk is encompassed in the network of rules that bind you with your opponents and allies (who may be continually turning into each other). This risk, typical of the poker game, is also calculable, as von Neumann showed. There is however a final risk that is not dependant upon mathematical expectations nor upon considerations of strategy because your opponents are neither predictable nor in agreement about the rules. Here, you have no clear basis for judging their future behaviour in response to your moves. This is a totally new kind of risk that requires "animal spirits", a "spontaneous optimism", an "urge to action" or, perhaps, a "will to power". *This is the class struggle.*

Keynes worried about capital's "state of confidence" during the Depression *not* because it involved a downturn in the business cycle, however steep. Such dips in capital's life are to be expected and capitalized upon. What concerned Keynes was the altogether novel "sixth sense" capitalists had to develop in their investment decisions after the revolutionary wave that followed the First World War. This involved shifting attention from risks "outside" (market fluctuations, weather, mineral discoveries, etc.) to risks "inside" (working class attitudes, training, work habits) the process of social production. The State had to intervene in Keynes prescription because of the increasing realization that the working class was not

predictable nor "part of the game" but powerful enough to rip up the rules. The mixture of taxes and timidity are a direct consequence of Keynes' recommendations.

Since the New Deal the State by careful use of collective bargaining, nuclear terror, FHA loans, had increasingly reduced the risks of investment. Hence the reduced interest on capital, for cooling capital's anxiety inevitably reduced the pay-off of its projects. The transformation of the composition of the federal budget from "defense" to "welfare" in the '60s indicated, however, that not only would the State's "taking care" have an increased cost, but that the direction and nature of working class insubordination was changing in new, unpredictable ways. The period between 1967 and 1972 showed that the cost of calmness was increasing to a point where the therapy was ruining the patient. Freud never wrote that therapy could create the anxiety it was reducing. While the interest on capital followed the historical post-WWII trend, capital began to confront the fact that this trend meant euthanasia. Moreover, confidence was diminishing in the effectiveness of the State's therapy when applied not to the traditional line workers, the veterans of Flint, Guam and McCarthy, but to altogether new subjects. Just what did those blackpowerlonghairdopesmoking-flagrantqueerhousewifelesbians want!

Between the mid-60s and mid-70s, the tax-timidity syndrome intensified. The relation between state and individual capital proposed by Keynes was in crisis. Capital was in a knot, a double bind, and it attempted to cut it in October 1973. The relaunching of the profit rate depended upon capital taking the initiative, cutting out its most vulnerable areas and, most crucially, *quit playing by its old rules.*



C. THE KEYNESIAN CRISIS

What was the relation between state and society during the "Keynesian" period? What distinguished US Keynesian planning was its concern with the *reproductive* sector. This was because US capital did not have an experienced working class whose production and reproduction had been bargained over for centuries. The waves of immigration and genocide barely gave any demographic and geographic constancy to rely on. The US working class was inevitably "volatile" and "unstable", almost a "thing in itself".

The basic realization of US Keynesian policy was that the enormous accumulation of fixed capital embodied in the assembly-line factories required a proportionate accumulation of capital in the working class ("human capital" as it was called later). Once capital reaches River Rouge dimensions, the short-term disciplinary effect of unemployment is more than counter-balanced by the long-term loss in the productivity of workers. And it was exactly in this productivity that profit was to be found. The obsession of New Deal planners was that the long stretches of unemployment would sap the "work ethic" from the latest generation of factory operatives who had undergone the rigid education of the line in the '20s. (*You can learn a line job in a day, but it takes years to learn a life-line!*) This discipline could not be kept in "cold storage" until individual capitalists were ready for it; it depreciated and could turn inside-out explosively. Thus the ultimate profitability of capital based on increasing the productivity of work made "mass unemployment" intolerable.

Not only must labor power be produced, it must be reproduced. The housewife becomes the correlate of the line worker in the Keynesian equations. Standardly, the housewife is taken as the consumer, but the Depression planners were more concerned with her as the producer of a "very special article", the ability for work of a factory worker. This requires *capital*, the home. It was exactly the capital that was disintegrating during the Depression as more and more women left home, divorced and in general "gave up". The Keynesians saw that no high-intensity line worker would work or *return to work* without an equally high-intensity reproduction process. The assembly line is peculiarly vulnerable to individual variations of work pace: the rhythm must be kept off the job as on. Regular meals, regular fucks, regular shits are essential for the gearing of labor power and capital in a stamping plant.

Not only had unemployment to be "conquered" but the real wage, which the working class "defended" during the starkest years of the Depression and later forced up, could be capitalized upon. If wage increases could be used to capitalize the home, this would eventually increase the productivity of labor, hence increase profit. Here we have the basis of a class deal: happy workers, happy capital, a compromise! The Keynesian system is delicately balanced upon the symbiosis of home and factory and the use of the wage not only for working class subsistence but as a form of investment for capital.

The dynamic equilibrium between home and line

EULOGY FOR THE AUTO

The crystalization of this symbiosis was the car and truck. Not only were they the concrete vehicular mediators between home and line, they were a combined home-line itself. On the basis of the car-truck economy you get the space-time geometry of American Keynesian society: the car is a little home on wheels and a little factory you can sleep in. The workers at Flint in 1936 recognized this when they took to sleeping and cooking in the hulks of half built Chevys. A car is an ambiguous piece of capital, a tool *and* a plaything: a serious, expensive and heavy piece of machinery *and* bedroom, dining room and kitchen; something highly standardized and then deeply personalized. The nomadic tribe of truck drivers are the paragons of this economic geometry, they created a work-life society of speed on the basis of this crystalization. (In 1950 the real revenues of railroads and trucking were almost identical, while in 1976 trucking was pulling twice the money the railroads made; in 1960 trucking had fewer employees than railroads in 1977 it had more than twice as many.)

The car became the model of the intermeshing of

machine and worker throughout the social factory. The spatio-temporal freedom and power it delivers in the hands of *male* workers, the decentralization of life it provides, had to be, and was, countered by even more precise termini of life. The home schedule and the work schedule increasingly was timed to the minute. It is no accident that the car for Neil Cassidy, in Kerouac's *On the Road*, became the expression of all that was anti-capitalist, anti-home, anti-factory because he saw in it a potentiality that existed in the metal but was fought by all the levels (from the "car mortgage" to highway police radar). . . the transformation of the productivity of labor into the freedom *from* labor. But the '60s went further. The distance between Cassidy's drive-away Cadillac and Kesey's Merry Prankster bus reveals the distance between two periods of working class discovery. . . and Cassidy's difficulty in bridging it: LSD approaches light speed while benzedrine and wine 120 mph. Ginsberg, who was always wiser in these matters, saw the mediator in the van of *Wichita Sutra*, perhaps. Kerouac went home and died.

required a precise meshing of the variables of wage, factory work and housework. In the period from the late '60s to the mid-70s the mesh began to tear. Divorces, for example, accelerated with the wage, which revealed a new tension between the poles of the Keynesian synthesis, but "surely nothing that would be enough to cause a crisis." The trouble with the Keynesian equilibrium however is that it is supremely vulnerable to such lapses (perhaps more vulnerable than to a "small" nuclear war). They were "boom" years, but not for capital. Not only did the struggle in the factories, homes and streets

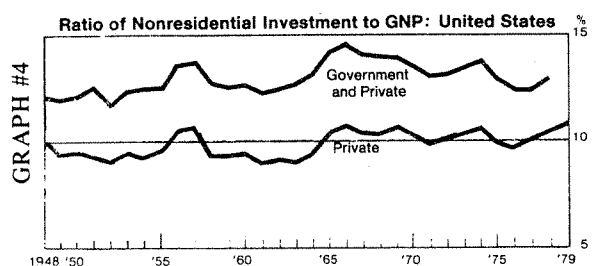
force capital to pay more for factory work, increasingly, capital had to pay, through the state, *directly* for reproduction work that had previously come financed via the male, factory wage. Women and young people would no more "naturally" do what they used to do under the direction of husband and daddy. Thus, though there was an enormous increase of energy generated by the working class during that period, it proved especially resistant to the transformation into work. There was a precipitous drop in the work/energy ratio, this was translated into a "profits crisis" and a subversion of the axioms of Keynesianism.

D. PRICES AND VALUES

Capital's response to this invasion of entropic energy was not a "strike", an "investment freeze" or the beginning of an era of "slow investment economies". Allowing for the recession of 1974, investment since 1973 (relative to GNP) has sustained and even surpassed the levels prevalent in the '60s (for all the crocodile tears of the business journals). There has been, however, a shift in the *composition of investment*, which to many, capitalists and workers, *appears* as a lack of investment. Why? Simply because fewer people see it. (See graph #4)

What has been seen by everyone, however, is the leap of the *relative*, as well as *absolute* price of "energy" commodities (in the form of oil, natural gas, coal, uranium as well as electricity). Inflation has *directly* attacked working class income by reducing the "average" real wage, but the changed *ratio* of energy prices to *other* prices has an immense *indirect* effect on the composition of the working class and organization of exploitation. Consider these relative price changes (graph #5):

All throughout the post-WWII period up until 1973 a rough equality obtained between price increases in the industrial and energy sectors. From 1973 to the present a major structural change



occured. Though both price series went up, the industrial price index rose by approximately 100% while the energy price index rose by more than 200%. Along with these price changes have gone parallel changes in the relative "sales" and "profits" of the two sectors.

These numbers are the hieroglyphics of capital's response to the struggles of the late-60s and early 70-s, they spell the end of the assembly-line-auto-home political economy, the end of the "blue collar" line worker/housewife nexus, the end of the delicate machine of Keynesian society. By giving primacy to the energy sector, capital can command an enormous amount of work because this command takes place *away* from the actual scene of exploitation. It almost feels ghost-like and it short-

GRAPH #5

PRODUCER PRICE INDEXES—MAJOR COMMODITY GROUPS: 1950 TO 1978

[1967=100. Prior to 1961, excludes Alaska and Hawaii. See also *Historical Statistics, Colonial Times to 1970*, series E 23 and 24]

YEAR	All commodities	Farm products	Processed foods and feeds	INDUSTRIAL COMMODITIES		YEAR	All commodities	Farm products	Processed foods and feeds	INDUSTRIAL COMMODITIES	
				Total	Energy ¹					Total	Energy ¹
1950	81.8	106.7	83.4	78.0	87.1	1965	96.6	98.7	95.5	96.4	95.5
1951	91.1	124.2	92.7	86.1	90.3	1966	99.8	105.9	101.2	98.5	97.8
1952	88.6	117.2	91.6	84.1	90.1	1967	100.0	100.0	100.0	100.0	100.0
1953	87.4	106.2	87.4	84.8	92.6	1968	102.5	102.5	102.2	102.5	98.9
1954	87.6	104.7	88.9	85.0	91.3	1969	106.5	109.1	107.3	106.0	100.9
1955	87.8	98.2	85.0	86.9	91.2	1970	110.4	111.0	112.1	110.0	106.2
1956	90.7	96.9	84.9	90.8	94.0	1971	114.0	112.9	114.5	114.1	115.2
1957	93.3	99.5	87.4	93.3	99.1	1972	119.1	125.0	120.8	117.9	118.6
1958	94.6	103.9	91.8	93.6	95.3	1973	134.7	176.3	148.1	125.9	134.3
1959	94.8	97.5	89.4	95.3	95.3	1974	160.1	187.7	170.9	153.8	208.3
1960	94.9	97.2	89.5	95.3	96.1	1975	174.9	186.7	182.6	171.5	245.1
1961	94.5	96.3	91.0	94.8	97.2	1976	183.0	191.0	178.0	182.4	265.6
1962	94.8	98.0	91.9	94.8	96.7	1977	194.2	192.5	186.1	195.1	302.2
1963	94.5	96.0	92.5	94.7	96.3	1978, May	207.9	215.7	202.5	207.3	319.7
1964	94.7	94.6	92.3	95.2	93.7	1978, June	209.4	219.5	204.6	208.5	322.8

¹ Fuels, related products, and power.

circuits the nodes of class power accumulated in the factories, mines and streets. For this reorganization *centralizes* the *accumulation* process while at the same time enormously *decentralizes* the *exploitation* process. By developing the energy sector capital is able to exert its magnetic command and extract surplus from every "pore" of the social fabric; every coffee shop, every apartment, every sweat shot must pay for energy costs.

The very *image* of the worker seems to disintegrate before this recomposition of capital. The burly, "blue collared" line worker seems to blur in the oil crisis, diffracted into the female service worker and the abstracted computer programmer. The large concentrations of factory workers that proved so explosive are dispersed, the specific gravity of the worker's presence is dramatically reduced. And it all feels so different! Your wages go up but they evaporate before you spend them, you confront your boss but he cries that "he has bills to pay", and, even more deeply, *you don't see your exploitation any more*. On the line, you literally could observe the crystalization of your labor power into the commodity, you could see your life vanishing down the line, you could feel the materialization of your alienation. But in the service industries your surplus labor seems to be non-existent, even "non-productive", "just" a paid form of "housework", cleaning bed pans, massaging jogger's muscles, scrambling eggs. While in the "energy/information" sector you seem to be engulfed by the immense fixed capital surrounding you, it feels as if you were not exploited at all, a servant of the machine, even "privileged" to be part of "brains of the system". These feelings disorient struggles as the vast spatial migrations "to look for a job" disaggregate militant circles, the old bastions are isolated and appear archaic, almost comic.

Finally, these price indices summarize the beginning of a shift in the organization of reproduction. A "society" built on autos is not like a "society" built on computers, McDonalds and nukes, where by "society" we mean the *entire reproduction process*. The new form of life dictated by the primacy of the energy/information sectors, like the struggles against it, is only beginning to be formed.

The "rationality of the energy crisis" for capital as a response to (and an attack on) working class struggles against the poles of Keynesian "auto-industrial" society will be shown below. However, an important objection to this account could be made immediately: *if capital can, at will, change and manipulate energy and industrial prices on the basis of multinational corporate power, i.e., independent of the amount of work that goes into the production of commodities, then we must abandon work and surplus value (exploitation) as our basic analytical categories*. Marx would be an honored but dead dog. We would have to accept the position of Sweezy and Marcuse that monopoly organization and technological development have

made capital independent of the "law of value", (viz., that prices, profits, costs and the other numerology of accounting are rooted in (and explained by) the work-time gone into the production of the commodities and reproduction of the relevant workers). Capital, it would seem, can break its own rules, the class struggle is now to be played on a pure level of power, "will to domination", force against force, and prices become part of the equation of violence, arbitrarily decided like the pulling of the trigger. We disagree with these "monopoly power" theorists; *work and exploitation still remain the basic determinates of motion in capitalist development* whether you deal with computers and nukes or spades and cotton gins.

How then, do we explain the apparent freedom the capitalists seem to have in setting oil *prices* independent of the labor that goes into the production of oil (i.e., its *value*)?

The divergence of prices and values is nothing new. On the contrary, it has always been an *essential aspect* of capitalist rule. Values (work-time) must be *transformed* into prices and this transformation is *never* one-to-one. *The essence of the transformation of values into prices is that though capital extracts surplus value locally, it does not let those who do the extracting command and expend this surplus value*. The hand of Capital is different from its mouth *and* its asshole. This transformation is real, but it causes illusions in both the brains of capitalists and workers (including you and me!) It all revolves around *mineness*, the deepest pettiness in the Maya of the system. For capital appears as little machines, packets of materials, little incidents of work, all connected with little agents of complaint, excuse and hassle. Each individual capitalist complains about "*my*" money, each individual workers cries about "*my*" job, each union official complains about "*my*" industry; tears flow everywhere apparently about different things, so that capitalism's house is an eternal soap opera. But mineness is an *essential* illusion, though illusion all the same. Capital is *social*, as is work, and pitiless as Shiva to the complainers, but needs their blindness to feed itself. It no more rewards capitalists to the extent that they exploit than it rewards workers to the extent that they are exploited. There is no justice for anyone but itself.

The transformation of values into prices is ruled by capital's instinctual demand to "get its just recognition". For the body of capital has many different limbs, organs, arteries and veins, nerve strands, sensors and processers, each with its organic composition, its own need to be fed-back. The needs, balances, proportions and ratios they imply *must* be met — or else it would not see its illusions.

How much surplus value goes to a particular organ of capital is determined by *its organic*

composition: the mixture of dead and living labor that is found there. Lets take three examples: a nuclear plant, an autoplant, and a local "greasy spoon" restaurant and bar. Each is a machine with different needs and different products. The bar needs Jack Daniels, while the nuke needs refined U-235; the restaurant and bar needs an easy-talking bartender and a speed-freak grillman, the auto plant needs welding bonders and line workers. All these "needs" have histories derived from struggles. The nuke "needs" to have a "two man rule" in monitoring all vital operations; the autoplant "needs" guards at the gates and computers assessing the speed of flow to detect slowdowns; the restaurant "needs" dishwashers that can't talk English. The struggles are written in the machine; they create the *need for redundancy* since the struggles are a noise that keeps the message the machines send out from being reliable and eternal. Each of these mixtures of living and dead, animal and mineral, energy and work, can be measured in a mathematical proportion roughly corresponding to the ratio of the value of constant capital (the value of the means of production) and the value of labor power (the value of the wages). A typical nuclear worker works with about \$300,000 worth of equipment, a typical autoworker mixes with about \$30,000 worth of other machines, while a typical restaurant-bar worker uses \$3,000 worth of "means of production". Yet, the wages of the typical autoworker and nuke plant worker are almost the same, while that of a restaurant-bar worker is officially half (although the inclusion of tips would increase it). Clearly the differences in capital per employee swamp out the differences in wages and we see a segmentation in the skeleton of capital delineated in the exponential *powers* of the organic composition: 10^3 , 10^4 , 10^5 . Let us call these the low, average and high sectors of capital and consider the following chart (graph #6):

GRAPH #6

	C/V	S	Type of Work
High	10^5	Transfer	Programmer Engineer
Average	10^4	Relative	Assembly Line
Low	10^3	Absolute	Clerical McDonald Masseuse

There is much to say of these vertebrae of capital, but let us concentrate on the work/energy relation in each of these sections. In the average section there is an *obvious* relation between the energy put in, the work that comes out and the profit gotten from it. It is clear to the autoworker that a speed-up

increases the flow of cars off the line and GM's profits. There appears to be here a one-to-one relation between increased investment in machinery and the productivity and intensity of work. This is the range of *relative surplus value*. The worker here can see his exploitation via the speed of the line. In the low sector the length of the work day becomes important. This is the area of *absolute surplus value* where the work comes by storing the energy of the worker within the job as long as possible. The problem here is that the worker cannot see the surplus. The local restaurant might kill its employees with overwork and still look like it's making "no money". The boss may be as depressed as his workers and poring out his energy "for nothing". Thus the tears of the small business types, the "hard working" sector of capital. Finally, there is the high sector. There enormous profits are made, but not off the workers who operate the nuke plants *per se*. True, they earn their wages on the way from the parking lot to the control room, but the amount of surplus value "produced" in the ensuing eight hours is absolutely minuscule, though relatively enormous! Where do their profits come from?

Surplus value is *transformed* into the nuclear industry by the divergence of prices and values. As Marx points out, social capital needs an *average rate of profit* while individual capitals must be rewarded differentially according to the amount invested in each organ. But each organ has a different amount of constant capital in it. Those organs with a high capital investment per worker need an above average amount of surplus value fed-back into them, those with an average amount of investment per worker requires an average feed-back, while those with a low amount of capital 'need' only a low return.

"Equal weights and Equal measures", says social capital over the lamentations of its Jobs in restaurants, sweatshops and construction companies. "I only recognize myself," "I am I" booms capital out of the whirlwind and the petty bosses slink away with their boils. *This feed-back justice is determined by prices*. Commodity prices in the High industries are always greater than their values. Low industry commodity prices are always below their value. High industries "suck up" the surplus value produced at the bottom of the system through this price structure. The diversion of price and value makes it clear that *extraction of surplus value and command over the expansion of the surplus are different operations*. The boss of Alice's restaurant can complain but he *must* still pay his electricity and heating bills (though he tries hard to avoid it). Like Job, the petty boss recognizes a higher power he cannot deny for though it hurts him he would be annihilated if it abandoned him. So he must pay this power tribute, however unjust it appears. He perhaps even glimmers on the deeper, larger schemes of the Savage God, though it crusheth him.

E. THE DEDUCTION OF THE "ENERGY CRISIS": A THEORETICAL INTERLUDE

The divergence of prices from values shows how there is a *possibility* of an energy price rise versus other prices without abandoning a work-exploitation analysis of capitalism. For by investment in the High sector to escape assembly-line insubordination, women's refusal of housework and urban insurrections, the High sector attracts higher commodity prices. But why did the profits crisis *actually* require an "energy" crisis" and not simply the traditional tools of the capitalist cycle? Why was the profit-fall-unemployment-wage-rate-reduction-profit-rise sequence (i.e., the "old time religion" of capital), which retains the general physiognomy of the system, not adequate anymore?

The answers to these questions has many parts but one thing is clear: the source of the crisis is in the breakdown of the Keynesian factory-home circuit that was the basis of the post-WWII political economy. Capital, like an amoeba, contracts in areas of acidity and expands in more nutritious and bland waters. In the profits crisis decade the areas of acidity concentrated in two spots: (a) the assembly line production in "middle level" manufacturing and extraction industries, (b) in the "home" where reproduction work is centered.⁷ Capital experienced the crisis of profits both as a *local* and *global* irritant as well as a decline in its self worth and "castration" by the big-bad State (the tax timidity syndrome).

A typical "common sense" response to the questions of this section is that the taxation-timidity syndrome has brought on a chronic **PRODUCTIVITY CRISIS** of which the energy crisis is one instance. From the winged words of corporation executives, from the pulpits of economic Poloniuses, the same evil is identified and decried: *the collapse of productivity*. But are the sermons total myths? YES, myths indeed, in the narrow sense of "productivity".

If by "productivity" we mean (as econometricians do) "real" output per working hour, then capital had no productivity problem. On the contrary, the post-WWII period has seen a productivity boon, at least compared with the 1914-1947 period which saw two wars and the Depression. Moreover, though both periods showed comparable increases in output per hour, the previous one showed a greater increase in the real wage and a reduction in the work week. If the performance of the first period had been repeated in the second, the work week would now be 27.8 and the average real wage would be substantially higher. (See graph #7)

Further, in the energy crisis period (1973-present), though output per work hour was rising slower than in the past, real wages lagged even

CHANGES IN WAGES, PRODUCTIVITY AND WORK WEEK

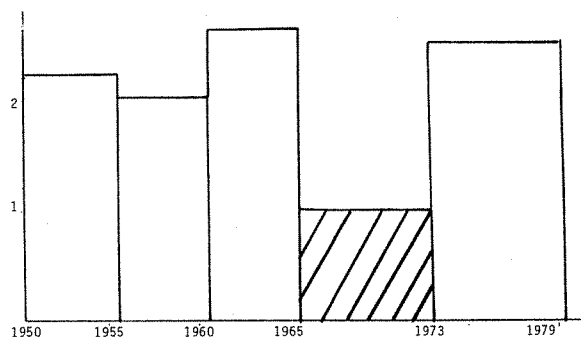
GRAPH #7	CHANGES IN REAL OUTPUT PER PERSON HOUR	CHANGES IN REAL WAGES	CHANGES IN WORK WEEK
1914-1947	+107%	+103%	-31%
1947-1979	+91%	+66%	-11%

behind this pace. *But capital is not interested in output per se, it is interested in its share.* The relation between changes in real profit and changes in productivity shows the statistical anomaly of the 1965-1973 period. (See graph #8). In the post-WWII period up to 1965, year-to-year changes in profits tended on the average to be twice as much as changes in productivity; but in 1965 they began to equalize. Only after 1973 did the ratio return to its historical position. This shows that the 1965-1973 period cut down the attractive power of profits and further disintegrated the profits-wages ratio. Somewhere there was a leak. Everywhere there was the search for the thief of profit. Youth, women, blacks, the "collapse of the work ethic", were the likely suspects. Consider the sage words of Ford's Malcolm Denise in December of 1969:

Nowadays employees are (1) less concerned about losing a job or staying with an employer; (2) less willing to put up with dirty and uncomfortable working conditions; (3) less likely to accept the unvarying pace and functions on moving assembly lines; (4) less willing to conform to rules or be amenable to higher authority. Furthermore, the traditional U.S. work ethic — the concept that

GRAPH #8

CHANGES IN REAL PROFITS VERSUS CHANGES IN PRODUCTIVITY



hard work is a virtue and a duty — has undergone considerable erosion There is also, again especially among the younger employees, a growing reluctance to accept shop discipline. This is not just a shop phenomenon rather it is a manifestation in our shops of a trend we see all about us among today's youth.⁸

The wind was full of such lamentations! "LSD will eat up the line!" "The feminists will wreck the family!" The blacks want everything!" . . . *ad nauseum*.

When output per hour collapsed in mining and began to slow down in auto, steel and rubber, the volume on the capitalist dial was turned up a few notches. But the source of complaint was *not* output per hour but *profit* per work hour. The share of profits in productivity increases was in peril . . . Hence the need for a total change in the structure of prices and work. For this was not another statistic, but the basis of the relation between working class and capital. As our introduction pointed out, a satisfactory matching of productivity to profit has been the essence of capitalist strategy since the end of the nineteenth century. Any serious disturbance of this strategy puts into question a century of that capitalist wisdom embodied in the "Marginal Theory of Value and Distribution".

Capitalism is a system of margins, accelerations, of changes, differentials; not flows, but flows of flows. Thus, the appearances, though obvious and bemoaned, did not tell the tale. Capital is abstract, and its snapping is *at first* abstract as well, for the problem is not speed but lack of impulse. The 1965-1973 profits crisis stopped not the flow, but the flow of flows. To understand the strategy of accumulation that was put in jeopardy by the class struggle of that period we must do some investigation of capital's mind, not so much psychoanalysis as theoretical eavesdropping.

"Marginal Theory", the economics we get in every introductory course, significantly appears on the scene at the very time of the explosion and slaughter of the Paris Commune. It claims that in order for individual firms to maximize profits and for the accumulation process to flow throughout capitalist society, wages and profits must be correlated with the ever increasing productivity of social labor. In other words, productivity increases achieved by new technological leaps, more "efficient" organization of work in factories, mines and farms, more "scientific" planning of family, school and health, had to be shared with the working class. Capital could not appropriate it all. A classic application of this strategy is the early Ford wage policy that combined relatively capital-intensive, mass production techniques with bonuses for punctuality and a "clean family life". Without such schemes, the worker turnover rate which was approaching 300% per year would have interminably broken the continuity of the line (the very basis of its productivity). Nobody is born an auto worker, they must be made, and their production in the home must be planned. Ford understood the other side of Marginal Theory: not only must wages be used to "induce" workers to accept the discipline of the assembly line, but with higher wages the working class can become a dynamic consumer and push the system to higher

levels of production (hence profitability, since a concentration of fixed capital such as River Rouge requires continuous utilization to pay off). Once wages are as dynamic as social productivity the working class becomes a production agent integrated into the capitalist system through the consumer-goods market. Reproduction becomes a "dynamic force of production" instead of merely guaranteeing the subsistence of labor power.

Marginalist Theory has been criticized by Marxists as a subjective mathematization of vulgar economics ideologically motivated to slay Marx. Bukharin calls this theory, "the ideology of the bourgeoisie who has already been eliminated from the process of production."⁹ In reality, it is the strategy of introducing the working class into the process of consumption. Marxists did not see that the legitimizing purposes of marginalist's theory were tangential, and that its primary purpose was to provide a new strategy to capital, in front of a radically different class struggle. By the 1870's and the Paris Commune's volcano of desires, it became clear that the working class could not be taken as a separate, almost-natural species, with fixed needs that might or might not be satisfied depending on population growth. As Marx's 1867 *Value, Price and Profit*, suggests, in this period the struggle for the *normal* working day was slowly yielding, in the most advanced sectors, to the struggle for wage increases.

The class forces were entering into a new constellation. To see this, let us get back to basics. The working day resolves itself into two magnitudes:

$$\frac{V}{S}$$

V represents the amount of social labor time necessary to reproduce the working class in its capitalist function, S is the surplus labor capital appropriates in the working day. This unpaid labor, the secret of capital, appears in many forms, not only in the factory but in the kitchen, the ghetto street and the laboratory. Mathematically, the class struggle resolves itself *for capital* into the relation between V, S and V+S. The object is the accumulation of surplus, S, and there are only two ways of increasing it: *absolutely* and *relatively*. *Absolute surplus value is appropriated by lengthening the working day, V+S, without changing V.* This was the type of surplus value developed in Newton's time. But capital's ability to generate absolute surplus value was undermined by the working class struggles for a "normal" work day, i.e., the "ten hour" and "eight hour day" campaigns. Capital's response was relative surplus value which is appropriated by reducing V relative to S while leaving V+S constant or even decreasing it. Relative surplus value is the type of production that is at the basis of thermodynamic's investigation of work/energy.

It can only be produced by constant revolutions in the forces and relations of production, requiring

the application of science, memory and skill at every linkage. Marx saw the turn to relative surplus value as the *necessary tendency* of capital:

The increase of the productive forces of labor and the greatest possible negation of necessary labor is the necessary tendency of capital . . . The transformation of the means of labor into machinery is the realization of this tendency. . . In machinery, objectified labor itself appears not only in the form of product or of the product employed as a means of labor, but in the form of the force of production itself. . . The transformation of the production process from the simple labor process into a scientific process, which subjugates the forces of nature and compels them to work in the service of human needs, appears as a quality of *fixed capital*. Thus all powers of labor are transposed into the powers of capital.¹⁰

The Marginal Theory reflects capitalist strategy in the era of relative surplus value. "Productivity" becomes a central political category, "efficiency" the battle slogan in the regulation of the class relation as the shillobeth of "unproductive" was hurled at the feudal landowners by the early bourgeoisie. Thus Jevons, the "father of Marginal theory", saw it as a statistical thermodynamics accounting for the transformation of energies (in the form of desires, pleasures and utilities) into work. For him the capitalist system is a gigantic social steam engine that turns the millions of separate energetic impulses of the working class into accumulated capitalist power. It took a relatively short time for this theory to enter into the curriculum of the capitalist manager. Its pedagogical function is immediately evident even in its abstract form (despite the eternal complaint of the "shirt sleeve" business economists against their theoretical colleagues) for it accustoms capital to a fluidity in productive arrangements, the expectation of constant change in productive relations (aimed at destroying nodules of working class organization) and an appreciation of its own abstractness. At the same time, the theory taught a complementary lesson: the working class could no longer be merely *resisted*, repressed and killed when it struggled; it had to be allowed a dynamic function in the system of productive relations and the market . . . the struggle could and *had* to be used.

This theory, e.g., showed capital how unions could be used instead of being outlawed and crushed whenever they appeared. For it maintains that unions cannot increase wages beyond the productivity of labor *in the long run*, because wages are ultimately controlled by supply and demand in labor market. At worst, unions are innocuous; at best, though they may hurt individual capitalists, unions, by bargaining over wage and working conditions, can spur changes in the organization of work and stimulate productivity.

Consider Bohm-Bawerk, the Austrian Finance minister and discoverer of the "error in the Marxian system" (i.e., the deviation of prices from values). In 1914 he wrote:

If the entrepreneur finds his hands tied by the price of labor, but not in regard to the physical equipment of his factory, and he desires to adopt the presently cheapest combination of factors of production he will prefer a combination different from the one used before, one that will enable him to make savings in the now more costly factor of labor, just as, for example, an increase in the cost of land may cause the transition from extensive to intensive methods of cultivation."¹¹

In other words, if unions force wages up, this will force the capitalist to reorganize production by making it, e.g., less extensive and more intensive in time, (for space becomes time when we go from land to work). Unions can force a transition from absolute to relative surplus value and become a factor in the development of capital, provided they are attuned to the system: don't agitate too much, don't desire too much and most important "get down with us". Although the variety of tactics capital uses to attune the working class are barely mentioned in the textbooks and treatises, the "entrepreneur" should figure it out himself: sometimes head bashing, sometimes prime ministerships. What was crucial was the strategy that was taught to generation upon generation of capitalists: one doesn't fight the class struggle any more with the tactics of Scrooge.

Such a century old strategy is not abandoned easily. Even the so-called "Keynesian revolution" did not question the importance of linking wage and profit increases with productivity increases. Keynes saw that it was crucial for "collective capital", the State, to intervene and guarantee this correlation, should the individual capitalists refuse. Yet throughout the 60s and 70s Marginal Theory was systematically attacked in debates on capital's theory. "What", say the marginalist economists, "can't wages and profits grow and twine together like tendrils from the graves of dead lovers?"

Just as statistical surveys were proclaiming the long run success in linking *real* wages with productivity, there was increasing disquiet in the councils of the wise. By the early 70s it was obvious that profits and wages were again antagonistic, as in the days of absolute surplus value. Profits were not gathering a normal share of productivity increases and, even more ominously, the institutions of bargaining essential for the equilibrium (the unions and social-democratic parties) were subverted or bypassed by the struggle. Welfare struggles, ghetto revolts, wildcats, factory occupations and a "breakdown" in discipline from the army to the university (reflecting a "disorder" in family and sexual relationships) all moved outside the orbit of union-management corridors and club house crap tables. Though the absolute content of these struggles took seemingly opposite poles:

THE END OF WORK — PAY FOR ALL THE
WORK WE DO

MAKE LOVE NOT WAR — LOVE IS WORK
FREEDOM NOW — NO MORE FREE WORK

capital was more concerned with their "non-negotiability", their "unreasonableness". Capitalism lives on the future and the immediate quality of these demands spelled: NO FUTURE, WE WANT IT NOW! What might have appeared as slight statistical shifts had the nature of auguries from the tangled guts of date charts and computer printouts. Productivity was no more guaranteed by the new class forces, who sniffed the astronomical level of accumulation achieved, and were demanding it all and now.

As in the epistemology of pragmatism, irritation leads to thought, and these demands rubbed capital's managers raw. Lucky for capital, the needed thought had already risen to consciousness. Piero Sraffa had developed a system that suggested a strategy radically different from the Marginalist. Like all genuine capitalist responses to working class struggles, Sraffa's took up the class' demands, but with a twist of its intent. Just as early capital took the Diggers' anti-landowner slogan: "Those who don't work should not eat" and turned it against them, the new capitalist strategy takes the working class' refusal of work, and relativizes it to itself.

Sraffa's strategy begins with capital's perception of the crisis as an inability to link, in a balanced way, wage and profit growth with productivity changes. Sraffa argues that wages and profits must be considered *antagonistic* magnitudes. In Marginal Theory, on the contrary, the wage is a payment for the use of a certain "factor of production" labor, to its *owner*, the worker; while profits are payments for the use of invested capital (in the form of machines, raw materials or money) to its owner, the capitalist, i.e., wages and profits are theoretically *independent* of each other. The Marginal theory begins with the individual firm and each factor, labor and capital, contributes to the firm's production and is presumably rewarded accordingly: "a fair day's work for a fair day's pay" and "a good tool is worth its hire".

Sraffa, instead, considers the capitalist machine *as a whole*, with its total inputs and outputs, its food and its shit. He has the total output cut in two: wages and profits. The wage is part of the total value appropriated by the whole working class. His image is that the capitalist machine (a complex intermeshing of material and work flows, transfers, creations and interruptions) stops at every period and drops out a total product, *then* capitalists and workers *struggle* over how much each gets. No more "to each his own", now it is *lex talonis*, dog packs and the wolf packs warring over the carrion. *But* there is a limit as to how little workers can get. They must receive enough of the total product to subsist and reproduce their race. The wage, then, must be divided into *two* parts:

We have up to this point regarded wages as constituting of the necessary subsistence of the workers and thus entering the system on the same footing as the fuel for the engines or the feed for the

cattle. We must now take into account the other aspect of wages since, besides the ever-present element of subsistence, they may include a share of the surplus product. In view of the double character of the wage it would be appropriate when we come to consider the division of the surplus between capitalists and workers, to separate the two component parts of the wage and regard only the "surplus" part as a variable.¹²

The "subsistence" part of the wage is reminiscent of the classical notion of the wage (e.g., Ricardo's "natural price of labor . . . that price which is necessary to enable the laborers, one with the other, to subsist and to perpetuate their *race*, without either increase or diminution.")¹³ By its nature, the subsistence wage is not proportional to the *amount* of work done, though it is fixed by the constraints of the particular productive system and the presumably fixed (quasi-biological) needs of the "race of workers". The necessity of a subsistence wage reflects a problematic truth individual capitalists try to elude, but capital as a whole cannot: in order to work, you must remain alive *even though you are not working*. This is the final "externality" of capitalist production. It is the pollution of non-work eternally produced by work that somebody must "clean up".

Classical economic theory led to "the iron law of wages", but discovered that iron can melt under intense heat. Thus, Marginal Theory conceded that the wage can be a variable as long as its variability is ruled by the productivity of labor. For Sraffa, on the contrary, the variable part of the wage arises from the existence of a total surplus, produced by the production apparatus as a whole, beyond mere subsistence. Sraffa argues that the "race of workers" struggles with capital to appropriate part of this surplus independent of *its* productivity. This "surplus wage" is a sort of "political wage", for it is not determinable within the system of *technical* relations of production. With Sraffa, Bohm-Bawerk's confidence that the wage will *in the long run* be determined by the "free" market of labor is exploded. Sraffa's framework describes a world where the working class has effectively broken the tie with productivity and the relationship between wages and profits is strictly antagonistic. With Sraffa, capital conceptualizes a situation where the quantity of the total machine's production is no longer proportional to the amount of work squeezed out of the working class: the wage becomes independent of work. It spells the end of the Marginalist's attempt to justify profit as a "fair reward" for capital's contribution to the production process. Nothing is due to capital, everything must be fought for. We reach here that situation of great class tension anticipated by Marx in the last century:

Real wealth manifests itself, rather — and large industry reveals this — in the monstrous disproportion between the labor time applied, and its product, as well as in the qualitative imbalance between labor, reduced to a pure abstraction, and

the power of the production process it superintends. Labor no longer appears so much to be included within the production process; rather, the human being come to relate more as a watchman and regulator to the production process itself."¹⁴

When the productivity of labor increases beyond certain limits, Marx argues, any attempt to use "labor time" as the measure of wealth fails and "exchange value ceases to be the measure of use value". Capital finds itself in its deepest contradiction:

On the one side, then, it calls to life all the powers of science and nature, as of social combination and of social intercourse, in order to make the creation of wealth independent (relatively) of the labor time employed in it. On the other side, it wants to use labor time as the measuring rod for the giant social forces thereby created, and to confine them within the limits required to maintain the already created value as value.¹⁵

When working class struggle pushes capital to a point where necessary work time approaches zero, Sraffa's system can be profitably applied.

What can determine the wage in such a situation if not productivity? Sraffa turns to the old discussion of the Corn Laws, i.e., to the manipulation of the wage by control of the relative prices of commodities. He argues that prices are *fixed* by the wage rate; at the same time, given commodity production, the wage rate can also be determined by exchange relations between commodities. As long as capital has the power to relate prices it has the power to control how much of the (surplus) "political" wage the working class will appropriate. *But not just any commodity will do.*

Sraffa distinguishes between two types of commodities: basic versus non-basic. Basic commodities enter into the production of all commodities, while non-basic ones do not.

These (non-basic) products have no part in the determination of the system. Their role is purely passive. If an invention were to reduce by half the quantity of each of the means of production which are required to produce a unit of a "luxury" commodity of this type the commodity itself would be halved in price, but there would be no further consequences; the price relations of the other products and the rate of profit would remain unaffected. But if such a change occurred in the

production of a basic commodity which does enter the means of production, all prices would be affected and the rate of profits changed.¹⁶

In other words, if one wanted to influence the wage (and hence the profit) rate, it would make no sense to change the price of Pennsylvanian coo-coo clocks or even of stereos and TVs, i.e., the "consumer durables" that have proven so crucial to the development of the system in the past. A Sraffa-type strategy must employ energy commodities (e.g., oil and electricity) since they enter directly or indirectly into the whole spectrum of production from fertilizers to computers. *"Energy" commodities are basic commodities.* Thus, any attempt to affect the wage-profit relation in a period when Marginalist Theory is inoperative must involve price changes of basic commodities.

This excursion into Sraffa's theory explains why the profits crisis of the 1965-1972 required an energy crisis. *Only with price changes of the energy commodities can the average real wage be reduced and investment moved from lower organically composed industries to the High industries.* Such price changes dispose of both global and local irritants affecting the profit rate, since they reduce the general wage (whether paid on the job or through welfare checks, pensions, unemployment checks) and, at the same time, reduce the share of value that goes to the Average and Low industries. Energy plays a central role *both* in the wage commodity "bundle" (heating, food, etc.) *and* in the production of "capital" goods. To change its relative price is inevitably to affect the *average* rate of profit, instead of cyclically returning to a predetermined profit rate. The profits crisis heralded not another fluctuation around a given "long run" average rate of profit, but a *fall* in the average that could not be dealt with on the basis of the Keynesian wage-inflation cycle that coordinates real wages and productivity via the "money illusion". No "State Bank induced" inflation or "monopoly capital" pass-along of wage increases would deal with the surprising totality and novelty of working class struggle. The essential mechanism to reshape the system had to be an energy price transformation that would effect the profits crisis both globally, in the realm of social reproduction, and locally, in the closedown of insubordinate factories.



F. THE MANIFOLD OF WORK: REPRODUCTION

Sraffa's distinction between basic and non-basic commodities is essential to our explanation of the energy crisis as a response to working class attack on capitalist accumulation in the late 60s and early 70s. However, there is one crucial flaw in Sraffa's theory. Capital does not produce *things*, "commodity bundles", "finite pies", or *physical* shit but values, work. It is a system for the exploitation of time, life and energy. Though we have reached the period when all the "powers of science and of nature, as of social combination and of social intercourse" are integral to the process of production, capital has in no way gone beyond its measuring rod — work-time — as Sraffa suggests. The "law of value" has not been repealed; on the contrary, it rules with the greatest rigor. Similarly, the relation between capital and the working class is not a "pure power relation" (like that between DeSade's aristocrats and their subjects) but one in which work remains the basis of capital's power. What is transformed by the change in basic commodity prices is *work* from the Low sector to the High sector.

For the energy price rise strategy to succeed an enormous amount of work must be produced and extracted from the Low sectors in order to be transformed to capital available for the High sector. In order to finance the new capitalist "utopia" of "high-tech", venture-capital-demanding industries in the energy, computer and genetic engineering areas, another capitalist "utopia" must be created: a world of "labor-intensive", low waged, distracted and diffracted production. The price rise would be reduced to paper unless it imposed a qualitative increase in shit work. This is the crisis *within* the crisis. Can energy price hikes be backed up with the requisite work? In this juncture, as always in capital's history, a leap in technology is financed out of the skins of the most technologically starved workers. Those in the anti-nuke movement who have as their slogan "Nukes destroy, Solar employs" are wrong. A nuclear society requires an enormous increase in work, not *in* the plants or the fuel cycle, of course, but in the capitalist environment. Utilities might invest in nuclear plants and the engineers and guards necessary to run them, but the investment goes not guarantee a given "return". For profit to be made out of such a "high-tech" investment, it must be transferred from "low-tech" exploitation. As always, "Accumulation of wealth at one pole is . . . at the same time accumulation of misery, agony of toil, slavery, ignorance, brutality, mental degradation, at the opposite pole."¹⁷ The resolution of the energy crisis requires the destruction of the old type of line worker and the creation of a new

figure of exploitation. Where is this work to be extracted from? Or rather, from whom?

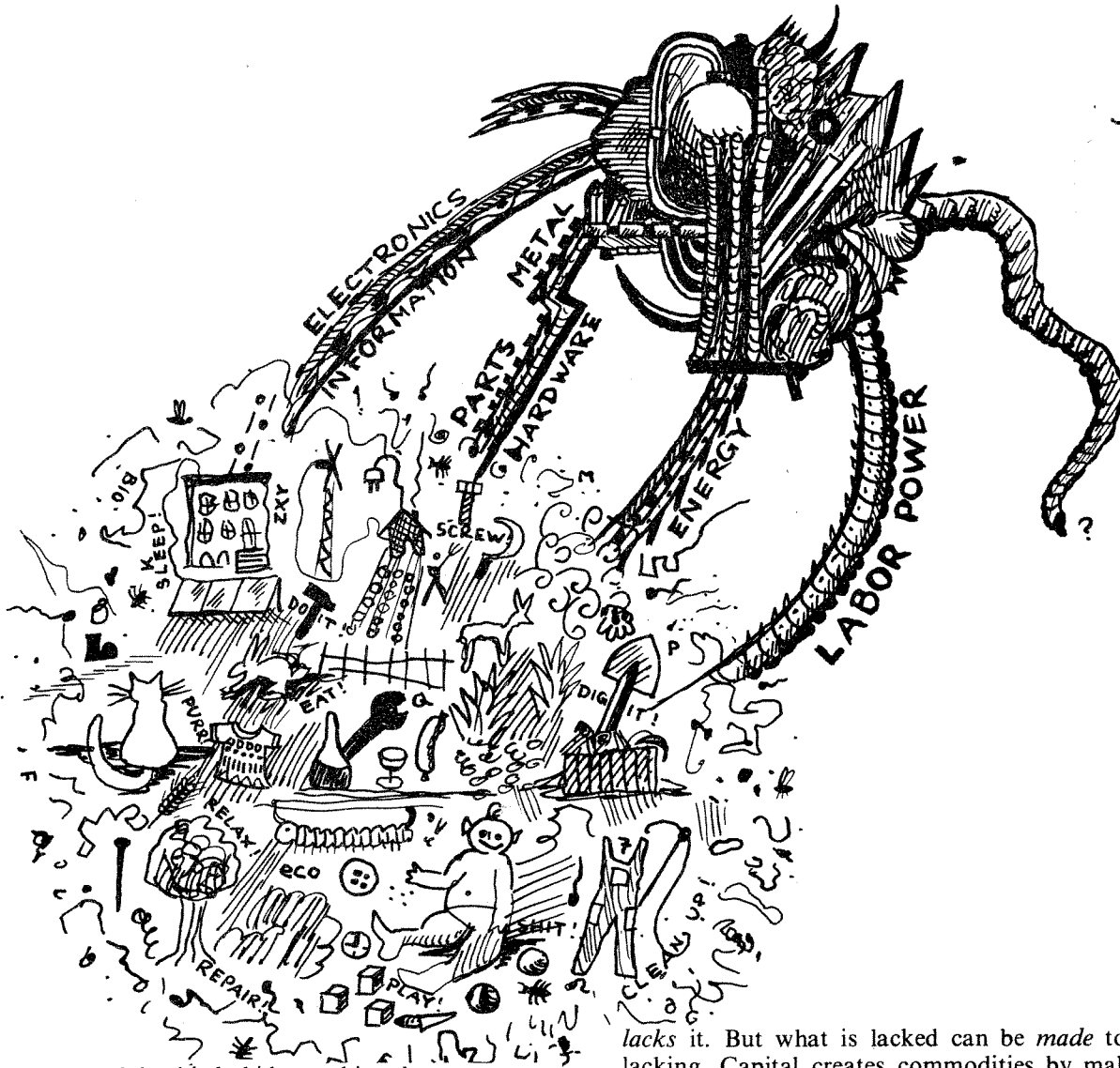
Capitalist development feeds on the energy of the working class, on its revolutionary disgust. Ironically, capital's answer was provided by the struggle itself. If the profits crisis had its epicenter in the fission and explosion of line workers and housewives, then its resolution had to use these energies against themselves. Such is the capitalist dance called the dialectic. To the men who said, "Take this job and shove it" capital responded by closing auto and steel plants; to the women who said, "Hit the road, Jack" capital responded with the "service sector" job. The increasing refusal to accept the Oedipal wage relation by women and youth forced a complete re-organization of the wage and the structure of work. The energies released by women's revolt against unpaid labor in the home have been the basis of the enormous expansion of a low organic composition sector which has provided the work necessary for the energy price transformation. Women's revolt, while revealing their exploitation through the Oedipal wage, opened a new path for capitalist development.

The "Oedipal" wage is the wage paid to the male worker for his reproduction which also, though in a hidden and distorted manner, is to reproduce his wife and children *and* which gives him real power over them. The structure of the nuclear family is buried in this wage, the whole complex of power relationships between men and women is summed up in a number. But it is another example of the illusory nature of the wage.

The wage — economists say — is "the price of labor", but what is this price about? \$5 an hour, \$200 a week, \$10,000 a year, \$400,000 a life . . . what does the money *per* time really pay? Does *any* amount pay for *your* life-time? Not really, it merely pays the time it takes to make you:

The value of labor-power is determined, as in the case of every other commodity, by the labor-time necessary for the production, and consequently also the reproduction of this special article. So far as it has value, it represents no more than a definite quantity of the average labor of society incorporated in it . . . the value of labor power is the value of the means of subsistence necessary for the maintenance of the laborer.¹⁸

So says Marx, but here he's wrong. For the production of labor-power does not "reduce" to a bundle of commodities, the means of subsistence. *Labor is also necessary to produce this "special article"*, that must be included in the value of labor-power. It is the essential micro-work, largely feminine, unpaid and thus invisible. Housework . . . from raw to cooked . . . washing, fucking, cooling tempers, picking up after the bash, lipstick,



thermostat, giving birth, kids, teaching them not to shit in the hall, curing the common cold, watching the cancer grow, even lyric poems for your schizophrenia . . . sure Marx points out that there is a "historical and moral element" in the quantity of the means of subsistence, but his servant girl and Jenny seemed to come for free.

Why the micro-invisibility and virtual character of housework? Simply because, as long as capital didn't have to pay for it, it could repress the demands of the female houseworkers and have the sexual poles of the working class at each others' throats. Only when women refuse to do this work does capital begin to recognize it and pay it, i.e., only when women struggle against this work does it become a commodity. For the primary way capital recognizes itself is in the mirror of the commodity form, and the necessary condition for something to be a commodity is that it satisfies a desire "real or fancied".

However, something cannot be desired *if* it is there, being *qua* being, pure facticity, *if* it is natural. Something cannot be a commodity unless someone

lacks it. But what is lacked can be *made* to be lacking. Capital creates commodities by making what is natural, un-natural, as in the case of land. But there is a complementary operation of making what is *un-natural*, natural. These two operations have been applied to work. Regular waged work is desired by capital, it needed it, wanted it and can be denied it by a struggle: hence it is un-natural, a commodity, paid. However:

In the case of housework the situation is qualitatively different. The difference lies in the fact that not only has housework been imposed on women, but it has been transformed into a natural attribute of our female physique and personality — an internal need, an aspiration, supposedly coming from the depth of our female character. Housework had to be transformed into a natural attribute rather than be recognized as a social contract because from the beginning of capital's scheme for women this work was destined to be unwaged.¹⁹

When women refuse to do "what's natural" *then* their services become commodities for capital, whole industries are born. Similarly, at the moment black lung disease began to become "unnatural for

a coal miner" when the miners' struggle refused the "constant concomitance" between their job and slow suffocation, the respirator industry "took off". So capital develops both from our death and our refusal of it, appears. *The revolutions of desires that lay behind the tides of capital's technological "creative destruction" are rooted in the refusal of the working class to just be.* This is the dialectical harmonic that joins class struggle with capitalist development. This general correlation applies to this crisis as well.

At the very moment when Nature "refuses to give its gifts in abundance", the "Nature" within society, the woman, refuses its place. The fights, the visits to the therapist, the affairs, the divorce, the welfare line, the service sector job meet the oil price hikes. The destruction of Oedipus is not just a psycho-analytic comedy, it is out of the revolt of the women and children and the wandering of the men that capital must create commodities in order to generate the work, and surplus value, essential for this period. A dangerous and even desperate ploy? Perhaps. But these are "apocalyptic" times.

Take jogging for instance. Men now know that the wife, or even mommy, will not necessarily be around after the open heart surgery, and that the cost of a private nurse would be prohibitive, especially given that the very requirements of a steady job over a few decades (which would make the private nurse possible) call for a care-and-feeding that only the now non-existent family can provide. So you jog, you "take care of yourself". The same is true of women, as there is no insurance, no steady man's job with fringes, no regular wage coming. Part time jobs just don't provide. So you jog. Even the kids jog from the start since they've learned the facts of life early. At the end of the day, you invest your hour around the park, reproducing yourself since no one else will do it for you for free any more. But around this twilight act revolve whole industries, new health technologies, new clothing for jogging in the rain, new sneakers, massage specialists, health clubs, etc.

Indeed, as the death fear mounts, as you know that Colonus does not wait, but the leukemia, the I.V. and the oxygen tent remain, a new industry around death develops: death nurses guiding you through the "five stages" calmly, for it is all preplanned and researched, massaged with a cocktail of morphine and whisky on the tray. As the family evaporates, the most explosive industry is that of the body. Not accidentally, we see that independent of the ups and downs of the business cycles, "health services" have nearly doubled in employment in the crisis to fill up the vacuum. In this industry there are approximately 4 million women and about one million make workers. The scene is obvious: your former wife, mother or sister is now doing something that she used to do for free, but now she gets paid for it. What was natural before is problematic now and you wonder if

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anybody will answer as you press the button beside your bed.

Unfortunately for capital, labor power needs a body, it "pre-supposes the living individual" and so capital must keep us alive in order to make us work (and die) in its monitors. But there is nothing automatic about living, work must be done to carry it on, and when the women of the family stop their work somebody must pick it up. Take the question of food . . . certainly its price has a crucial impact on the wage, but an equally important factor is brought in by the question "Raw or cooked food?" Who is to cook it, serve it and talk to you while you eat it? Mama? Increasingly it is the teen-aged Vietnamese girl at McDonalds', now that approximately half the meals in the U.S. are eaten outside "the home".

The "service economy" becomes the counter-pole of the "energy/information" economy and it's the *growth* sector of the crisis. This sector is but an extension and socialization of women's work in the home. In the Keynesian period the "institutions of the state" — schools, hospitals, jails and army were *supplements* to the home. They would take over when the "woman" failed, or finish off and standardize her work . . . Yet, at the hub, women's work in the home remained the fundamental producer of subsistence for the male worker. But with the work/energy crisis, the center cannot hold any longer. Increasingly the invisible work previously crystallized in the assembly lines appears *qua* work in the service sector. The Oedipal wage gets disaggregated. The "external" agencies and industries expand and become replacements instead of aids for the home.

Women's struggle against housework has forced a reanalysis of the wage and the reproductive work done in the home. Whereas before it was hidden in the male wage, now it takes on a separate status. The invisibility of housework, veiled by the wage is nothing new for the wage is designed to obscure:

The wage-form thus extinguishes every trace of the division of the working-day into necessary labor and surplus labor, into paid and unpaid labor. All labor appears as paid labor. In the corvee, the labor of the worker for himself and his compulsory labor for his lord differ in space and time in the clearest possible way. In slave labor, even that part of the working-day in which the slave is only replacing the value of his own means of existence, in which, therefore, in fact, he works for himself alone, appears as labor for his master. All the slave's labor appears as unpaid labor. In wage-labor, on the contrary, even surplus-labor, or unpaid labor, appears as paid. There the property-relation conceals the labor of the slave for himself; here the money-relation conceals the unrequited labor of the wage-laborer.²⁰

The slave's revolt has forced the master to recognize the slave's labor power as alien to him and has forced him to buy it, to pay for it. But in the wage another form of exploitation is again hidden. Mirrors don't all lie in the same way. Formal slavery is not the same as waged work. There are

forms of work organization that are impossible under slavery, types of rhythms that are not sustainable. Capital learned that the whip and chain are not the most profitable forms of work control. The slave is "inert", "invisible", "opaque", and he must be pushed around to get anything from him. It is capital's great discovery that "freeing" labor power actually leads to greater levels of exploitation, and its occasional returns to slavery (Nazi Germany, Jim Jones, Southwest immigration) have reconfirmed this truth. The free laborers' "freedom" gives capital a new dimension of movement while the slave sticks, is mechanically dependent upon the production process, is a machine among the machines and must be cared for when it breaks down.

Women's labor has had a formal status intermediate between the slaves and the waged worker, for she is technically free but actually unpaid. In some ways, her status is worse than the slave's for she was "the slave of the worker", instead of the master. But her revolt, while destroying the old system, creates the possibility of a new source of exploitation (as well as the possibility of capitalist catastrophe). For with the explosion of the service sector's extensions of housework, capital reopens a forgotten page in its history: *absolute surplus value production*.

Since housework has always been a "labor-intensive", low tech form of work, the service sector is low on fixed capital. (Sexual technology, e.g., has barely recovered the level of ancient Egypt in recent years and though billions have gone into the research of better methods of conception there has been next to no official research on the biochemical roots of pleasure, sexual or otherwise.) Hence the "low productivity" of the services, a fact used by some economists to explain the breakdown of the economy-wide productivity trends in the crisis. If relative surplus value productivity is not the source of exploitation, then capital must have recourse to time and the length of the work-day, i.e., absolute surplus value.

For there is a major problem in extracting relative surplus value from housework: although it can be industrialized, there are bottlenecks and anachronisms limiting its productivity. Take prostitution: though there are all sorts of tricks to make the john come faster, there must be some time-consuming contact and an immediate struggle over time (hence the pimp). In fact, the reproductive effect of many services seems to necessitate some minimum amount of time (like the limits imposed on agriculture by the seasons). Theoretically, these too can be disposed of in the same way that agriculture can be completely detached from seasonal cycles, but this would require a history of struggles that have not yet taken place. Hence service work, because of its unit by unit character, largely allows only absolute surplus value production.

This development of absolute surplus value work is not statistically evident because much of this work is "part time". This does not imply that a woman's working day is reduced by working part time. On the contrary, it means that an enormous part of the total housework women still do remains unpaid. In this transition period, capital is still interested in getting as much unpaid work as possible out of women *both* via the job and what remains at home. Thus we have women in the 70s, in the midst of a jungle of microcomputers, genetic technology, and fission reactors, with work schedules that would make Manchester operatives nervous: 6:30 get the kids and hubby ready, 9:00 on the "part time" job, 2:00 off the job and go to pick up kids, 5:00 make dinner, 8:00 school-time for Mommy to up-grade employment someday, 12:00 fuck and sleep (?) There is an enormous amount of surplus value in this schedule, though the energy to do it comes from the desire to get "from under the thumb" of hubby.

Housework then is externalized and waged. Surplus value is extracted directly from the labor-time of the women on the job in addition to her reproduction work being extracted from the male workers on the assembly line. With the growth of the service sector in the crisis, the "human capital" experiments of the Kennedy and Johnson administrations were either abandoned or curtailed, for the indirect method of capitalizing on housework was too uncertain. The State's idea in the 60s was that by investing in the home (via welfare, food stamps, etc.) women would do a proper level of housework with their children. But increasingly in the 70s the state was not willing to wait for the growing productivity of labor-power due to the human capital investment to produce the relative surplus value that would give a proper return to the investment.

As long as there was faith in the future, capital was willing to wait, sometimes a generation, to pick the fruits of the houseworkers' labors. However, the profit crisis showed that the future was in short order, it was no longer guaranteed. Thus, the surplus value of the housework had to be realized immediately, sucked up just at the moment of its exuding rather than the next day in the reproduced line worker or the next generation in the new cohort of workers entering the labor marker. It is at this point that the energy crisis enters. Big Mother Nature is now used to squeeze little Mother dry. If Big Momma is stingy and has turned cold, capital turns to little momma: "Help me out or we'll all go down together."

As women refuse this deal, as they demand "too much" for their work, as they refuse to do it properly and efficiently, the energy crisis collapses. As this final veil falls, capital is faced with a working class untorn by the poles of sexual powers. An apocalypse indeed.

G. THE MANIFOLD OF WORK: ANTI-ENTROPY QUA INFORMATION.

The female service worker meets her complement in the computer programmer and technician in the energy crisis. For while the most archaic forms of exploitation are resurrected by the energy price rise, at the opposite pole there is an intensification in the development of the instrumentalities of information and control. Why the rise of the computation industry at the peak of the energy crisis? In order to understand this development we must turn again to the work/energy crisis of the late 60s and early 70s.

The overflowing of working class energy imposed an energy crisis on a number of counts. First, energy prices, which are *basic*, have allowed capital to tip the wage/profit ratio in its direction and increase the average rate of profit. Second, these prices are the vehicle for the re-organization of the organic composition of capital, making the realization of profits insensitive to "immediate" factory worker's struggles. Third, the price transformation has made it possible to directly extract surplus value from the reproduction work. But this was still not enough. The mere fact that women were increasingly employed in the low sector of the economy did not guarantee that this would turn into profit, into capital. The mere fact that auto plants are closed does not mean that cars and trucks are no longer produced, they are just made with fewer workers. Finally, the mere fact of investment in the high tech areas does not mean that this investment will pay off, for the high organic composition sector is very sensitive to breakdown, indeed, catastrophic ones. Thus the energy crisis imposes a new premium on information, control and communication (transfer). The enormous decentralization of employment in the service industry has required a new methods of *transferring* surplus value from one end of the system to the other. The expulsion of the mass factory worker reintroduces the drive toward *robotization*. Finally, the concentration of productive capital in complex machines requires an intensification of self-policing and *conservation* of capital.

To better understand the simultaneous rise of the information processing industry with the service industry, we must descend into the volcanic heart of capital: the work process. Work kills, and *that* is a problem, for capital needs to be able to reproduce the work process. Production is linear, but it must go around. There must be a mechanism of "eternal return" in the work process that will bring it back into the initial position (so that it can be done again). Work kills but in each death there must be the seeds of its rebirth, a *cycle* of production and reproduction. As Mengele discovered, you can

work a human to death in a few minutes, but you won't be able to do anything with the scraps except as art-deco lamp-shades and inefficient fertilizer. Capital then must plan the reproduction of the work process on a continuing basis. As in Carnot's cycle, though only one stage accomplishes the thrust, the others are essential, to restore the engine to a position where work can be done *again*.

To do without the reproductive part of the cycle is capitalist suicide. Moreover, as the example of the early post-Columbian silver mines and the Nazi work camps show, there is no "instinct for survival", only conditions and thresholds. Capital can only approach the thresholds of survival with the utmost caution: *suicide* always beckons at the margin of survival. The pleasure of suicide that would rob the capitalist of his value becomes attractive to a worker when s/he can do nothing else.

To ensure the reproduction of production, however, it is not enough to reproduce the worker. Capital *too* must be preserved. Constant capital is an essential part of the production process which must be protected from workers' corrosive energies. Capital's drive to *self-preservation* and *self-reproduction* appears in the classical personality of the little capitalist: "the capitalist taking good care that the work is done in a proper manner, and that the means of production are used with intelligence, so that there is no unnecessary waste of raw material, and no wear and tear of the implements beyond what is necessarily caused by the work."²¹ The micro-capitalist is *so* concerned about his fixed capital because there is a constant threat of the worker who does the work "unintelligently", "sloppily" and is, above all, wasteful. For workers can not only kill themselves in times of frustrated struggles, they can always kill capital in its most embodied and vulnerable form: the machine. To control this most basic form of class struggle it is not enough to bring the cycle back to the initial state, it is all-important to bring about this return without "waste", "wear and tear", "loss of work", and "depreciation". For not only is work "expenditure" of energy that must be "reproduced", this expenditure must be controlled so that the amount of work required to reproduce the initial state is not excessive. This problem becomes agonizing when the constant capital reaches certain critical points of concentration, if the possibilities of rapid depreciation are not thwarted, investment in constant capital is the source of an enormous disaccumulation. This poses an exact limit on the energy price strategy: if the Low sector work is transformed into High sector capital and it becomes so concentrated and vulnerable that it can be immediately depreciated, the whole strategy collapses. Protecting constant capital is a primary

function of the information/computation industry.

We have already seen the game that can wreck the "energy crisis" strategy in the case of the nuclear industry. Consider TMI. To make up for the late start-up of the plant, its managers ordered it to be run at higher than normal capacity (for nuclear plants) from the beginning. Workers were often assigned to overtime and the intensity of "getting rid of the bugs" was beginning to wear. Then at 4:00 AM on an early spring morning a near meltdown. Thus in the process of producing a few million dollars of extra profit in its first few months of operation, Met Edison is suddenly faced with the need of shelling out almost a billion dollars just to get half of TMI operating again, and *that* with some difficulty. Here we have a situation where the amount of work needed to bring the nuclear plant back to the initial state, pre-4:00 AM March 28, 1979, will be many times the work produced by the plant in the first place. In fact, given the general work environment in central Pennsylvania, including the surrounding class composition, one might say that in no way will the plant be brought back to its initial state. In TMI we see that the energy crisis response to the class struggle is far from stable. Indeed, it introduces a novel form of class confrontation, or rather recalls the ancient "strife between workman and machine".

The *Accident* becomes a central category of the political economy of the energy crisis, but what is an accident anyway? Accidents are work situations in which the amount of work that goes into reproducing the initial state (of the work process) becomes extraordinary. Accidents demonstrate the mortality of the work process. But as the Kemeny Commission report, *Accident at Three Mile Island* noted,

... the major factor that turned this incident into a serious accident was inappropriate operator action, many factors contributed to the action of the operators, such as deficiencies in their training, lack of clarity in their operating procedures, failure of organizations to learn the proper lessons from previous incidents, and deficiencies in the design of the control room. ... The control room, through which the operation of the TMI-2 plant is carried out, is lacking in many ways. The control panel is huge, with hundreds of alarms, and there are some key indicators placed in locations where the operators cannot see them. During the first few minutes of the accident, more than 100 alarms went off, and there was no system of suppressing the unimportant signals so that operators could concentrate on the significant alarms. Information was not presented in a clear and sufficiently understandable form; for example, although the pressure and temperature within the reactor coolant system were shown, there was no direct indication that the combination of pressure and temperature meant that the cooling water was turning into steam.²²

Here Kemeny, a co-author of the computer-language BASIC, issues the latest edition of the old capitalist wail: "Workers are stupid, if only we

knew how stupid they are, if only we knew!" Machines breakdown, that's bound to happen, they depreciate after all, but such breakdowns are only "incidents"; what turns an incident into an accident is that the worker cannot or does not control the breakdown to bring the machine back to its initial state with no appreciable cost. The accident need not have happened. What stops accidents is immediately available knowledge, information and foresight and, most important, communication. Consider the following:

A senior engineer of the Babcock and Wilcox Company (suppliers of the nuclear steam system) noted in an earlier accident, bearing strong similarities to the one at Three Mile Island, that operators had mistakenly turned off the emergency cooling system. He pointed out that we were lucky that the circumstances under which this error was committed did not lead to a serious accident and warned that under other circumstances (like those that would later exist at Three Mile Island), a very serious accident could result. He urged, in the strongest terms, that clear instructions be passed on to the operators. This memorandum was written 13 months before the accident at Three Mile Island, but no new instructions resulted from it.²³

"If only we had told them, if only we made the new information part of our commands," goes the lachrymose bitching. But it is just bitching, as Kemeny knows, for though any *particular* accident, by definition, can be avoided, accidents in *general* are unavoidable. It is in the fact that not every process is reversible that time itself has a direction.

There is a deep relation between accidents, information, time and work. Marx described this relation in the following way: the means of production created no new value; at best, their value is transferred and preserved in the product. Machines merely wear out or transfer their energy to the new form produced. The work process therefore has two components: (a) production of "fresh value" (both surplus value and the reproduction of variable capital) and (b) the transfer and preservation of the value of the means of production. As Marx points out, work must do both (a) and (b) at the same time; though for different reasons:

On the one hand, then, it is by virtue of its general character, as being expenditure of human labor-power in the abstract, that spinning adds new value to the values of the cotton and the spindle; and on the other hand, it is by virtue of its special character as being a concrete, useful process, that the same labor of spinning both transfers the values of the means of production to the product, and preserves them in the product. Hence at one and the same time there is produced a two-fold result.²⁴

There are no machine-machines that create value out of nothing, no *perpetuum mobiles*; further, the value incorporated in the machines is continually wearing out, being transformed into "a new use value in which the old exchange-value re-appears". All the devices of the capitalist magicians end up as

corpses, not even the most ingenious thought can add a cubit to capital's stature:

The technical conditions of the labor-process may be revolutionized to such an extent that where formerly ten men using ten implements of small value worked up a relatively small quantity of raw material, one man may now, with the aid of one expensive machine, work up a hundred times as much raw material. . . . Such a revolution, however, alters only the quantitative relation between the constant and the variable capital, or the proportions in which the total capital is split up into its constant and variable constituents; it has not in the least degree affected the essential difference between the two.²⁵

The work process not only must expand and be reproducible, it must *conserve* old while creating new work. Computerization of a production process creates no new value: however, it makes it possible to make the variable part smaller while guarding against the too rapid exhaustion of constant capital. It is the mechanization of the "little capitalist" mentality. No elements of the production cycle must be wasted, neither the time of the workers nor the time of the machines. Capital must make the cycle smooth, efficient and as close to "reversible" as possible for it determines, in part, the rate of profit:

If the surplus-value is given, the rate of profit can be increased only by reducing the value of the constant capital required for commodity-production. So far as constant capital enters into the production of commodities, it is not its exchange-value, but its use value which matters. . . . the assistance rendered by a machine to, say, three laborers does not depend on its value, but on its use-value as a machine. On one level of technical development a bad machine may be expensive and on another a good machine may be cheap.²⁶

Concurrently, each aspect of work has its peculiar repulsion. As far as the process of preserving and conserving the value of the means of production is concerned, the tactic of refusal is obvious. As constant capital increases with the development of industrialization the gap between the value of the means of production and the *part* of the value used up during a unit cycle of production widens appreciably (think of the difference between an atomic power plant and a cotton gin). This leaves an enormous amount of capital *hostage* to the workers who have access to the machines. This intensifies with every new leap in the organic composition of capital, which is why slave labor cannot be incorporated in a highly capital-intensive process. For the gap between variable and constant capital would grow so enormous, i.e., the balance between the value of the slave and the value the slave could destroy would become so precarious, the slightest gesture of revolt would force capital's retreat. Capital, however, has organized the work process of "free laborers" in such a way that the hostage drama is rarely played out (one remarkable example to the contrary was the Flint "sit-down",

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or, better, "live-in" in 1936.)

There is an enormous amount of work involved in ensuring that the value of the means of production is slowly, efficiently and carefully transferred to the product. Not only must a fulfilled hostage drama be averted daily (for a Gdansk move is always beckoning); the invisible instants of revolt that continually pulsate through the work process wearing out the constant capital beyond "what is warranted" must also be constantly thwarted. Thus Kemeny's lament beseeches "more care", "more policing", "better training", "better information display systems", "emergency planning". In a word, greater "efficiency" in the wearing out of enormously concentrated, volatile, perhaps "critical," pieces of constant capital.

Eternal vigilance is necessary to attain the circularity of a perfect production process. But a work process is never completely reproducible. There is always some little "blow-out", some little "fuck up" that makes returning the system to its initial state a work process also. Capital always dreams of a *perpetuum mobile*, work from energy without loss. But time is asymmetric, the future is not going to be like the past. Through our refusals, our insubordination, all the plans come to nothing, all the machines wear out, breakdown. Capital's contradiction is that the very agents that create the "fuck up" possess the energies it needs. Only *we* are in perpetual motion: eternally energetic, crafty, obedient, cowardly, insolent, revolting, but always in a motion that is the only source of work, development, *surplus*.

A parallel deduction of the need for a tremendous development of an "information" industry during the crisis arises from Thermodynamics, the late 19th century science discussed in the Introduction. The paradox that has troubled capitalist science since the First and Second Laws of Thermodynamics is that though energy is conserved, the energy available for work in a system diminishes. Energy comes in *ordered grades*, thus what is essential is not its quantity *per se* but its *structure*. Some types of energy can easily be turned into work while others cannot. The amount of raw energy in the waters of a calm lake might be enormously greater than that of a slight wind blowing above it, but the wind can more easily be turned into work. The measure of the *inavailability* of energy for work is *entropy* which, within a closed system, increases to a maximum (the Second Law of Thermodynamics). This Law enshrines capitalist pessimism for it announces that the work creating process *degrades* energy invested in any and every system, including the human.

If we take a system as made up of millions of micro-particles, the Second Law can be rephrased as the constant tendency for an ordered structure of micro-particles to turn into a disordered chaos. In any system there is a constant "shuffling" of micro-

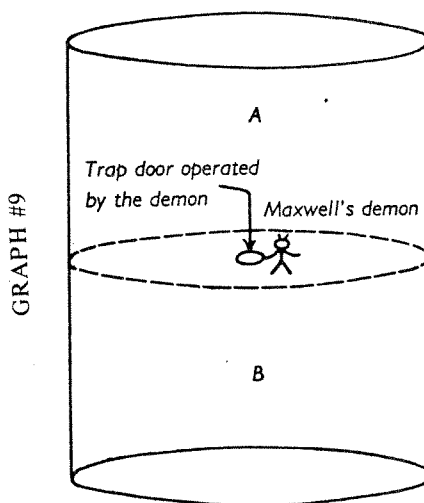
particles due to their eternal random motion eventually leading to a breakdown of any highly ordered structure. Schrodinger²⁷ gave a telling example of such "shuffling" on the human plane. Imagine an unruly mob that assaults a library of computer tapes for the fun of it and, while not taking away or destroying the tapes, simply rips them off from their assigned places to play games with them. At the end of the party the tapes are *conserved* but their order is totally destroyed. Further, the work of recreating that pre-riot order is as real as the work of making new tapes and can be even greater.

The problem, according to this branch of capitalist science, is that Nature spontaneously loves Chaos; it is a perpetual upsetting of plans, orders and wearing down of accumulated work, just like the lazy, anarchic, drunken, and riotous workers of the past. [If God is not on the side of the working class, certainly Nature is its darling.] Systems that apparently upgrade energy are eventually doomed; systems like the steam engine, or capitalism that transform energy into work ("upgraded" energy) are continually threatened with disaster, with accidents and the catastrophies of entropy invasion.

The Second Law shows a deep connection between time and accidents. Time is one-directional because work processes are not reversible, as there is always a positive amount of work necessary to return the system to its origin. However smoothly the fit is made between piston and cylinder, however carefully the emergency cooling systems are calibrated to switch on beyond a threshold temperature, there is always friction, and stuck valves. Accidents will happen that turn reversibly planned processes, (potentially having an eternal return) *into* irreversible vectors leading to higher entropic states. They create time as flow to death, for time, as capital knows it, is not *just* flow but the dissolution of what has been accumulated: the death of dead labor.

The "unruly mob" of molecular agents causing the wearing down of low entropy (highly ordered structures) into high entropy (disorganized fields) continually creeps in to create the conditions of the Grand Accident. Nuclear engineers may be right when they claim that the probability that a reactor core may become critical *by itself* is infinitesimal; but the probability of a stoned engineer, of a forgotten open valve, a sudden breeze shifting a candle's flame, are conditions that create the entropy for the Meltdown. That the molecules will win is the secret thought of capital. "Time is on their side . . . Time is them," whispers through the boardrooms . . . but something can be done, something that will allow them to hold on: INFORMATION. If enough information is gathered and communicated rapidly enough then time can be slowed down, perhaps indefinitely. Thus the cruciality of machines that can store and compute information at light speed.

Information about the location of low entropy systems is an essential part of the production process. As the parable of Maxwell's demon shows, a machine with "intelligence" or "information," can thwart for a time the operation of the Second Law. When Clark Maxwell suggested the parable he intimated the possibility of perpetual-work machines based not upon some complex and ultimately foolish contraption but on the application of thought and categorization. His demon works like a sorting machine in the midst of an eternal shuffle. (See graph #9).



Consider a perfect gas at an equilibrium temperature in compartment A. The particles of that gas are not all moving at the same velocity, though their *average* velocity remains constant. Some are moving faster than the average, some slower. Consider further an empty compartment B next to the volume of gas A connected by a small gate *and* a gate-keeper. This gate-keeper is smart: he opens the gate only to the faster than average molecules. Within a short time the empty compartment is filled with molecules whose average velocity is higher than before, while the original compartment is filled with molecules whose average velocity is lower than before.

Thus A is cooler than before while B is hotter, *and* if the two compartments were connected by a heat engine we could create work out of the temperature difference. At the end of the process the demon can create a new division between fast and slow molecules. Thus we have a recipe for a perpetual motion machine: just combine a steam engine with a sorting-intelligent machine! If you could only identify the irresponsible workers, if you could only identify the faulty parts, if you could just pick out the micro-acts of carelessness, *then* you would have a new cycle that could possibly go on for-ever, recycling, upgrading and reusing the used up energy for work.

This scheme has a hitch however: the demon must be able *to know* which of the molecules

impinging on the gate are faster than the average and which slower. "Time can be turned back, if we know enough," capital pleads with the grim reaper. . . but the reaper replies, "You must work to know and work is death." Information is not free. True it reduces entropy but the process of its accumulation, retrieval and communication is a work process as well that is filled with entropic menaces which eventually triumph. The question is, "How soon?" As Weiner put it:

In the long run, the Maxwell demon is itself subject to a random motion corresponding to the temperature of its environment, and, as Leibniz says of some of his monads, it receives a large number of small impressions, until it falls into a "certain vertigo" and is incapable of clear perceptions. In fact, it ceases to act as a Maxwell demon. Nevertheless, there may be a quite appreciable interval of time before the demon is deconditioned, and this time may be so prolonged that we may speak of the active phase of the demon as metastable. There is no reason to suppose that metastable demons do not exist . . . We may well regard living organisms, such as Man himself, in this light. Certainly the enzyme and the living organism are alike meta-stable: the stable state of an enzyme is to be deconditioned, and the stable state of a living organism is to be dead.²⁸

The work process can be saved from degradation by proper information decelerating the inexorable workings of the Second Law, if areas of low entropy can be found. But the search costs. Hence the explosion of the information industry, the emphasis on programming, the dissemination of the microcomputer, and the crucial importance of

another cost statistic: the costs of computation. For one of the most important developments in the crisis is the dramatic inversion of the energy price rises relative to the costs of computation.

This opens up the hope that the increase of entropy can be indefinitely held off, and a perfect circularity in the work/energy "interface" approached. Thus while the feminine service worker is to provide the emotional surplus labor necessary for accumulation in the high tech sectors, the computer programmer is to be the eternally vigilant Charon, identifying the stable worker, the stable situation, the stable machine: separating the quick from the dead.

Hence the concern of programming industry ideologists with the uncodable, the deliberately unidentifiable and uncategorizable: *the Zen and criminal aspects of the struggle*. For it is exactly at this point that very success of the strategy of the energy crisis makes quite crucial the ability to select with a high level of certainty the different gradations of entropy in the labor-power of the working class. Deception, conning, cheating and lying (i.e., all the self-reflexive moves of the slave) become problematic. Consider the polygraph tests given to more and more workers. They attempt to find out who is the low entropic worker via interrogation coupled with the detection of sweat production and blood pressure. But increasingly workers with training in meditational processes are beating the machines and sailing to positions of responsibility in, of all things, programming. Again, and always, the problem capital faces with the new Maxwell's demons of the crisis is: "Who will select the selectors?"

H. THE MANIFOLD OF WORK: ANTI-ENTROPY QUA SHIT

Entropy can be reduced by information, i.e., by locating pockets of low entropy and incorporating them into the work process; the inevitable reduction in the availability for work can be held at bay. The more the information *and* the less the cost of creating it and communicating it, the more the stalling of Time. But this process can be *reversed*, i.e., the increasing entropy within a work process can be localized *and* expelled. Every production process shits, the question is, "Where is it going to be put?" If this shit, i.e., the material, social, physiological, radioactive, psychological waste that cannot be re-swallowed and re-cycled, is allowed to remain in the vicinity of the production process, each new cycle of production will intensify the entropic rise exponentially. The reproduction of the machine cycle will be clogged by the left over shit, and the costs of returning to the initial state will be so overwhelming that it will outpace the work produced by the thrust stage of the cycle. The net work will fall into negativity, and needless to

say, profit will be in jeopardy.

This aspect of capital's struggle against entropy involves the possibility of ejecting areas of high entropy into the surrounding environment without effecting the net work production. For not only must waste be controlled and accidents prevented (the job of the computer controllers); if waste must be created, if little murders must be condoned, then it is crucial that the shit be localized and expelled. The corpses must be buried or burned. We have the final aspects of work: the passive work of absorbing capital's wastes. For in addition to the work of producing, reproducing, informing and controlling, there is the immense work of absorbing, imbibing capital's shit. Not only is capital concerned with transferring as much of the value of the means of production to the commodity product without waste and accident. The work process must also intensify the entropy of its local and global workers. Marx comments on this aspect work:

Capitalist production, when considered in isolation from the process of circulation and the excesses of competition, is very economical with the materialized labor incorporated in commodities. Yet, more than any other mode of production, it squanders human lives, or living labor, and not only blood and flesh, but also nerve and brain Since all of the economizing here discussed arises from the social nature of labor, it is indeed just this directly social nature of labor which causes the waste of life and health.²⁹

Capital is more finicky than a cat when it comes to shitting. The whole debate on the location of nuclear plants is an example of this sensitivity. For there are complex considerations arising from the class composition to be found in any particular location. Will they riot if there is an accident, will they get nervous about the transport and spillage of used uranium, will they get "hysterical" when cancer rumors and chromosome damage reports begin seeping in, are they desperate enough to take the tax write-offs but not so desperate that they won't care and will explode anyway? Certainly, it was *no* accident that TMI was located in the center of the heartland of patriarchy in the U.S.A. surrounded by phallic silos, bearded Amish Jobs and state employees.

At the same time, when capital discovers high entropic sinks in the production process, the expulsion is swift and violent. Need we refer to the execution of workers throughout capitalist development? Why is capital murdering its own labor-power? Why the Aushwitz' and Chiles? Quite simply because certain types of labor power becomes too entropic for production, they become living shit for capital that must be eliminated. Of course, the direct slaughter of workers is just the most dramatic event in the never ending struggle of capital to beat the odds. The endless string of methods to identify high entropic workers, "weed" them out, "blacklist" them, jail them, starve them and kill them, gag us now, it is too much past midnight! But if there is an institution for localizing, expelling and exterminating entropy, the "criminal justice system" is the one. Its function: to rid the production process of the "elements" that are completely unavailable for work.

There is, however, the work not only of locating high-entropy, and the work of expelling it, there is finally the job of absorbing it. Consider the "jumper". The disintegrating, entropic aspect of the reactor core of a nuclear plant is the radiation that does not go into the production of heat but "escapes". One of the main jobs of the nuclear worker is to absorb this entropy.

There are nuclear workers whose job is just that: to suffer the shit of the reactor. This is the part-time jumper hired to be sent into areas dense with radioactivity and absorb the full "quota" for radioactivity (absorbed by a regular worker in a year) within a few minutes. He picks up his \$100 after twisting a valve and disappears, perhaps to return in a few months, perhaps to discover a suspicious lump ten years later. The "jumper" is an

extreme figure, an ideal type; but certainly *the proliferation of chemical and radioactive dump sites across the country has made "fallers" of us all*. For it is apparent that the "squandering of human lives" does not occur only *within* the gates of the nuclear plant or chemical factory but is as "social" as the labor that produces the radioactive electricity and poisons.

As we are dealing with the asshole of capital we inevitably must deal with all that is most foul, decaying and frightening: corpses, cancer, executions, slavery, the Gilmorean joke. It is at the lowest level of the institutional hierarchy, at the bottom of our fear as to what they are doing to us, that the basic profit level is guaranteed. It is not because of any melancholic humors we have wandered here. Since it is exactly in these dumps of matter, body and nerve that you find the famous "bottom line". Its all in the physics: the efficiency of a heat engine is not only proportional to the work it produces, but is *inversely proportional to the entropy it creates*. The less the entropy the greater the "efficiency" hence the greater the work/energy ratio: the profit.

Prisons are as integral to the production process as the gas that makes the engines go, as the caress that sends one off to the plant, as the print-out that tells you of your fuck up. For if there were no dumps of labor-power and constant capital, no way of eliminating entropic contamination, the system would stop. Of course, the capitalist idea is not to end the shit but to control it, dumping it in isolated, unobjectionable places, on unobjecting or invisible populations. *Thus with the energy crisis comes the death penalty.*

This is the last element of the profits crisis and the last reason for the energy crisis response. As the working class through the 60's and 70's has increasingly refused to be the dump of capitalist shit, the collective sewer of its entropic wastes, some antagonistic compulsion was in order. Energy price rises immediately put this refusal to absorb the shit on the defensive, for the high cost of energy seems to justify the need for entropy control and for expelling highly concentrated entropy deposits from the production process. Thus the explicit and implicit anti-nuclear movement meets its response: nuclear plants can only pass once energy prices go up. But once Teller's system of nukes and coal electrification is introduced, then the intensification of the mechanisms of control and information in the production process are inevitably realized. Finally, only with such increased prices (imposed by the very investment in this High sector), can the "need" for accepting the disintegrating excretions of the plants be forced down the throats of the surrounding populations. The rate payers of TMI are financing the repair of the plant with increased electricity bills, and the state's increasing pressure to open up the radioactivity dump sites throughout the country is felt by all.

I. THE END OF THE APOCALYPSE

We began with the end of the world, the Apocalypse. All the noise of capitalist prophets has taken as the cause of the impending catastrophe the problem of energy: either too little (the anti-limitationists) or too much (the interactionists). Even the "revival" of "nuclear holocaust" thinking of the unthinkable takes energy as the trigger of the Bomb, for invariably it is seen as the most pressing Natural scarcity. The scenarios of nuclear war obsessively turn to the Gulf of Hormoz, for there appears here an inevitable source of international antagonism. When faced with a fundamental scarcity the only way to move, according to the anti-limitationists, is to face the possibility of a military confrontation and prepare for it. On the other side, the interactionists warn that *if* we want to escape the threat of nuclear war we must retreat to a "clean", "stable state" economy autarchic enough to remove the need for such a confrontation. Both sides accept the "problem" as a collection of, at base, "natural, brute facts".

Now the facts might be brute enough, but they are not "natural". Whenever capital announces a new apocalypse, we must see that the culprit is not Nature, the Bomb or some autonomous bureaucratic drive to "exterminism". Capital's Apocalypse is the inverse image of the struggle against it, as it reaches critical proportions. For you don't fight shadows with shadows, you don't walk about "delicately and non-provocatively" for fear of setting off the irrational Beast. At the root of all the missiles, bombs, atomic power plants, all the "idols of the theatre" that capital displays so provocatively, is the struggle against capitalist accumulation, against a life dominated by work and exploitation. This struggle is the source of the current Apocalyptic Rumors and this struggle can end them. What ended the Bomb Apocalypses in the early 60s? It was by no means the rhetorical battle between pro- and anti-bomb movements. Capital had to demote the Bomb because the class movements in the early 60s made it clear that they would not be intimidated by all this nuclear rattling. The riots in Watts, the revival of wildcats in coal, the refusal to accept Civil Defense regimentation even after the exercise of the Cuban crisis, made it clear to the Kennedy and Johnson administrations that the Bomb had begun to lose its hold. The grip of terror could not constrict the new class movements, their desires and disgusts.

The same holds for the present. The Four Horsemen of the Apocalypse, "given a fourth of the earth, to kill with the sword and with famine and with pestilence and by wild beasts", can only be stopped by the development of the very struggles that unleashed them. Any "solutions" to the Energy crisis that attempt to by-pass the struggle, whether Teller's electronuclear path ringed with missile silos

or the Odum's "alternativist" path of agricultural homeostasis and defensivism, merely repropose the crisis. As we have shown, capital can not do with either Teller or the Odums alone. The seemingly opposing utopias of High and Low organic composition necessarily complement each other, indeed, they potentiate each other.

Capital has turned the world upside down to deal with the struggle against work, against the muscle, heart, nerve and asshole of capital.

Against the four levels of work:

- the relative exploitation of the factory;
- the absolute exploitation of the housework;
- the reduction of entropy via smoothing of the work process with the detection of low entropic pools

— the reduction of entropy via the expulsion of high entropic wastes

we have seen the corresponding levels of struggle:

- refusal of "productivity deals" on the assembly lines

— disintegration of the family and the reproductive apparatus that keys workers into the production process

— refusal to accept the entropy sorters of capital e.g., in the education system and through the intensification of "crime"

— refusal to passively absorb the expulsion of capital's shit into the bio-social process of reproduction, e.g., the struggle against prisons and radioactive dumps

All these forms of refusal *directly* caused the profits crisis and the subsequent "Energy Crisis" Restoration of profitability. These struggles, however, remain intractable whatever the total "apocalyptic" attack that capital has confronted them with. As Polish workers have shown, the only way to confront the missiles is to demand more and juicier sausages: "Only those who strike eat meat."

Nov., 1980

FOOTNOTES

0. The following quotations from R.H. Romer, *ENERGY: AN INTRODUCTION TO PHYSICS*, (San Francisco, W. H. Freeman and CO., 1976) might be of help:

"The principle of inertia: an object that is at rest remains at rest unless acted upon by a force; an object that is in motion remains in motion, moving the same direction with constant speed unless acted upon by a force." (p. 84)

"The First Law of Thermodynamics states. . . the total energy of a system is conserved. Any increase in, say, thermal energy, must be attributed to a decrease of equal size in the sum of all other forms of energy. Any or all of the various forms of energy may be changing, but in a closed system-always in such a way that the sum of all forms has a constant value." (p. 128)

"The Second Law of Thermodynamics states that in every process there is a universal tendency toward increasing disorder, increasing entropy, a degradation of energy." (p. 255)

"Entropy has often been called 'time's arrow' because with its aid we can distinguish past and future. If we are given descriptions of two states of a closed system, we can tell which state preceded the other in time; the state with the smaller entropy, the state with the smaller amount of disorder, is the earlier one." (p. 243)



1. C. Gillespie, *THE EDGE OF OBJECTIVITY*, (Princeton: Princeton University Press, 1960), p. 376.

2. *ibid.*

3. Quoted in J.C. Leventon, *THE MIND & ART OF HENRY ADAMS*, (Boston, Houghton Mifflin Co., 1957), p. 377.

4. Edward Teller, "Energy — A Plan for Action" in E. Teller, H. Mark, J.S. Foster, Jr. (eds.) *POWER & SECURITY*, (Lexington, Mass.: Lexington Books, 1976), pp. 1-82.

5. Howard T. Odum, Elisabeth C. Odum, *ENERGY BASIS FOR MAN AND NATURE*, (New York: McGraw-Hill, 1976).

6. W. Nordhaus, "The Falling Share of Profits" in *BROOKINGS INSTITUTE PAPERS*, (Brookings Institute, 1975).

7. What of race? We agree with the wages-for-housework analysis: the essence of the racial (as well as sexual) division is to be found in the hierarchy of wages and it was indeed that hierarchy that the black movement attacked most directly in the welfare women's movement, in the formation of black factory unions & caucus, in the youth gangs and "parties" of the ghetto streets. The explosion of black women, men and youth attacked the Keynesian model of accumulation at its heart since the thrust was from the largely unwaged sector. Cf. Maria Rosa Dalla Costa and Selma James, *POWER OF WOMEN AND THE SUBVERSION OF THE COMMUNITY* (Bristol, Eng., Falling Wall Press, 1972) for the seminal work on this matter.

8. Quoted in B.J. Widick "Work in Auto Plants: Then and Now", in *AUTO WORK AND ITS DISCONTENTS*, (Baltimore: John Hopkins U. Press, 1976), p. 10.

9. Bukharin, *THE ECONOMIC THEORY OF THE LEISURE CLASS*, (N.Y., AMS Press, 1970), p. 31.

10. K. Marx, *GRUNDRISSE*, (N.Y., Vintage Books, 1973), p. 700.

11. Bohm-Bawerk, "Control or Economic Law" in *SHORTER CLASSICS OF E. VON BOHM-BAWERK*, (South Holland, Ill.: Libertarian Press, 1962) p. 192-193.

12. P. Sraffa, *PRODUCTION OF COMMODITIES BY MEANS OF COMMODITIES*, (Cambridge, Eng.: Cambridge University Press, 1960), p. 9.

13. D. Ricardo, *PRINCIPLES OF POLITICAL ECONOMY & TAXATION*, (N.Y. MacMillan Co., 1914), p. 80.

14. K. Marx, *GRUNDRISSE*, p. 705.

15. *ibid.*, p. 706.

16. R. Sraffa, *PRODUCTION OF COMMODITIES*, p. 7-8.

17. K. Marx, *CAPITAL*, Vol. 1 (New York: International Pub., 1967), p. 645.

18. *ibid.*, pp. 170-171.

19. S. Federici, "Wages Against Housework," in E. & B. Shapiro (eds.) *THE WOMEN SAY/THE MEN SAY*, (N.Y. Delta, 1979), p. 57.

20. K. Marx, *CAPITAL*, Vol. 1, p. 539.

21. A free copy of *MIDNITE NOTES* for the Marxologist who can spot this quote.

22. *REPORT OF THE PRESIDENT'S COMMISSION ON THE ACCIDENT AT THREE MILE ISLAND*, (John G. Kemeny, Chairman), (Washington, D.C., Oct. 1979), pp. 11-12.

23. *Ibid.*, p. 10.

24. K. Marx, *CAPITAL*, Vol. 1, p. 200.

25. *Ibid.*, pp. 210-211.

26. K. Marx, *CAPITAL*, Vol. 3, p. 88. (Moscow: PROGRESS Pub., 1966).

27. Schrodinger, one of the founders of quantum mechanics in 1944, drew the connection between genetics and information.

28. N. Wiener, *CYBERNETICS*, (Cambridge, MIT Press, 1965), pp. 58-59.

29. K. Marx, *CAPITAL*, Vol. 3, p. 88.

The apocalypse. . . is capital's threat, if we go too far, to take us all down with it. If we annoy God too much, if we agitate too much, if we become too unavailable for work, then the "mutual destruction of classes" is used as a club to bring us back into line. But must the molecule fear if the engine dies?

The true cause of capital's crisis in the last decade is work, or more precisely, the struggle against it. . . The proper name for the crisis then is the "work crisis" or, better, the "work/energy" crisis.



The essence of the transformation of values into prices is that though capital extracts surplus value locally, it does not let those who do the extracting command and expend this surplus value.

"I am I" booms capital out of the whirlwind and the petty bosses slink away with their boils.

The revolutions of desires that lay behind the tides of capital's technological "creative destruction" are rooted in the refusal of the working class to just be.

Big Mother Nature is now used to squeeze little mother dry. If Big Mamma is stingy and has turned cold, capital turns to little mamma: "Help me out or we'll all go down together."

As women refuse this deal. . . the energy crisis collapses. As this final veil falls, capital is faced with a working class untorn by the poles of sexual powers. An apocalypse indeed.

The latest joke of the Polish workers: "Only those who strike eat meat."