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**Some generalisations of socio-economic and socio-ecological
 concepts of time and space, energy and environment, and
 concentration processes - based on Marxian thinking**

1. *State of the art of social sciences based on Marxian thinking*
2. *Towards a general theory of value incorporating gender, space, and environment*
3. *Towards a systemic concept of oligopolization of markets and concentration of power*
4. *Towards a general social theory in time and space*
5. *The central importance of energy*

1. State of the art of social sciences based on Marxian thinking

**“There is nothing more practical
 than a good theory”**

Albert Einstein

Theories of Karl Marx have been important for clarifications of problems faced by working classes. Therefore they have been a solid basis for huge changes of our planet. After Lenin during many decades the social science based on Marxian thinking was restricted by schemes and mechanical use of citations. So often got lost the original scientific character of an organic combination of theory and practice, hypothesis and empirical findings, and the creative integration of results of not-Marxist social science. On the contrary: also because of the low performance of frozen Marxist theories in modern life full sets of neoliberal ideologies and neoclassical economics often replaced former Marxist thinking in Europe.

So: much work is to be done by using the original critical and scientific character of Marxian thinking to re-establish a global hegemony of social science in the interest of working classes. On the contrary to neoclassical and neoliberal contentions of a mechanical determination of distribution of wealth the critical character of POLITICAL economy can show that man can choose options. And so the “principle hope” (Ernst Bloch) is intact.

In this sense in the following I want to sketch 4 issues in which I want to contribute some innovative bricks:

2. Towards a general theory of value incorporating gender, space, and environment

One of the important cores of Marxian thinking is the labour value theory. This theory identifies the labour of the working classes as origin of wealth, and explains the distribution of wealth.

But to be a powerful instrument for the explanation of reality this core has to be enlarged by ecological (energy and resources, decreasing potential of resilience of ecological media), gender, and spatial issues.

There is a lot of fruitful literature formalizing Marxian value theory by mathematical methods especially by input-output-schemes (“matrix Marxism”) - including controversies about the definition of capital and the transformation problem (production prices). Apparently different methodological ways are not yet converging up till now. By operationalization and empirical work probably progress will take place.

At this conference Peter Fleissner¹ deals with information technologies in respect to the labour value theory.

I do work on a world model based on Marxian thinking and integrating ecological issues too. Hardy Hanappi (2003)² wrote a basic paper on an input-output-based framework integrating gender and world-system approaches to labour value theory. I want to extend this by an ecological dimension. – Political economy can be supplemented by political ecology. James O’Connor (1988) discussed “the second contradiction of capitalism”.

The distribution between classes, regions (space)³, and gender can be seen on the horizontal axis. The ecological dimension then is the time axis and relates to the distribution between generations.

Digression 1: What is the world-system approach? The historical “world system” theory of Immanuel Wallerstein, Giovanni Arrighi, Samir Amin, Andre Gunder Frank and others is an excellent framework for analyzing globalization today⁴: The historical “world system” theory is rather young and there is still much work in progress. Central threads are:

- Every social process on earth has to be seen as a part of a world system.
- For analyzing the main processes it is important to consider the historical tendencies of the last 500 or at least 200 years.
- It highlights the big and persisting gaps in development on our planet

¹ Fleissner P.: The Commodification of Knowledge in the Global Information Society

² Hanappi H., Hanappi-Egger E., Elements of an I-O-based Framework for Marxian, Feminist and World-System Approaches, in: Kohler G. and Chaves E. (eds), Globalization: Critical Perspectives, Nova Science Publishers, New York, 2003

³ Amin S., 1978, The Law of Value and Historical Capitalism, Monthly Review Press

⁴ Wallerstein I. (1974,1980, 1989): The modern world system”, 3 volumes. Amin S., Arrighi, G., Frank A. G.,/Wallerstein, Immanuel (1990). Arrighi, G. (1994)

More: Fernand Braudel Centre for the Study of Economies, Historical Systems, and Civilizations:
<http://www.binghamton.edu/fbc/>

- It enables the global vision (on the contrary to some works on the basis of Marxism which seem to be eurocentric)
- The theory is dynamic with open end (on the contrary to some works on the basis of Marxism which are mechanistic)

Digression 2: The historical “world system” theory also is an interesting instrument to analyze the present and future position and function of Asian societies in the world system. The actual increasing significance of the Chinese economy for the world economy for example is explained as a return to the former leading role of the Chinese civilisation till the 18th⁵ or at least the 14th century⁶.

Digression 3: From this basic finding there can be derived: In respect to the inherent tendencies of unregulated world markets to concentration and oligopolization the Chinese economy can be an important corrective against monopoly prices and against oligopoly conduct when the instruments of regulations and not-capitalist property are used. More generally China therefore can be an important corrective against political dominance and for a new fair world order.

Now back to the integration of ecology to value theory. Marx mentioned labour as “father” und nature as “mother” of wealth:

Three main ideas in my model for integrating ecology into value theory are

- To use some stocks of “nature capital” and “social capital”,
- To establish energy is an important link between economy and ecology, and
- To take into account impairments on these stocks from the past (e. g. by colonialism and accumulated damages on the environment) AND TO DISCOUNT impairments on these stocks from the future (e. g. expected subsequent costs by climate change caused by actual and past economical activities).

So the central ecological dimension is the time dimension. Practically this means to find a solution for appropriate (time) discount rates.

It should be noted that the use of discount rates in usual economic investment calculation and/or cost-benefit-calculation is very sensible: the benchmarking with opportunity costs combined with the mechanics of compound interest calculation (by $1/(1+r)^t$, with r = discount rate, and t = time) depreciates future values very strongly. The calculation of net present values considers future damages or values only for a very restricted degree if these values or damages are relevant in 30 or 50 years and the discount rates are high (for example higher than 10 %, but also already at 5 %). For example: the negative "external effect" of radioactive waste in 100 or 1000 years from now does not count practically in the usual economic investment calculations because damages in 100 or 1000 years (discounted also by a small discount rate) give net present values near zero and are therefore neglected.

If profit rates/opportunity costs/discount rates become higher – as we have seen in the last years – then we see also dramatically shrinking time horizons; and so the possibilities for sustainable development also shrink.

⁵ Frank, Andre Gunder (1998): Re-Orient. Global Economy in the Asian Age. Berkeley – Los Angeles – London: University of California Press.

⁶ Arrighi, Giovanni (1996). "The Rise of East Asia. World-Systemic and Regional Aspects." International Journal of Sociology and Social Policy 16, 7/8, 6-44.

The definition of discount rates – that is an political decision⁷ – is central for sustainable development. If high discount rates are used then decision for short-term profits are preferred.

Practical solutions to overcome this problem would be:

- Negative discount rates
- Decreasing rates of discount (instead of constant rates of discount)
- The invoicing of depreciation of a “nature capital”
- Institutional changes so that profit rates no longer are central incentives - transition to other criteria of success

In the *attached diagram* (“**SOURCES OF ‘WESTERN’ WEALTH IN TIME AND SPACE**”) there is a basic scheme of integrating ecological issues in a simplified dichotomic spatial model of “western” and “non western” countries. The gender aspect is not considered in this diagram.

I want to clarify the question: What are the sources of the actual wealth of western nations? And the stylized answer is:

- Actual labour of western nations
- Labour of former generations of western nations having created capital, infrastructure, and social capital
- National and regional ecological resources (externalization of costs)

- Actual labour of not-western nations (by low wages)
- Labour of former generations of non-western nations (having created capital, infrastructure, and social capital) via asymmetric power relations (in markets) (“unequal exchange”)
- Actual global ecological resources

- Production and reproduction possibilities in future labour of western nations (by actual overexploitation of regional ecological resources)
- Production and reproduction possibilities in future labour of non-western nations (by actual overexploitation of global ecological resources)

The actual wealth is diminished by the “burden of the past” (Ponting⁸) the serious abuse of “nature capital in last 200 years.

The “ecological debt” (Martinez-Alier, 2002) is huge and still getting higher and higher.

The model for example illustrates the issues of the African movement for reparations in compensation for the long-run destructive effects of man robbery and slave trade by European colonialists.

What can be the future concrete use of all this schemes?

By these schemes we can calculate 4 exploitation ratios: exploitation ratios of the whole labour force, of women, of “third world”/“south”/developing countries, and of the “nature”.

⁷ „The discount rate to be used in economic analysis should be provided by the planning agency or donor.” European Commission (1997): Manual – Financial and economic analysis of development projects p.252. - So there are possibilities and options for decisions making

⁸ Ponting Clive (2002): The Burden of the Past, Global Dialogue, IV, 1, Winter, p.1-10

There are trade offs between these exploitation rates. For example the exploitation rate of the workers can be decreased by increasing the exploitation rate of the nature (=diminishing the chances of future generations).

Evidently there exist tremendous wage gaps between workers of different countries (in contradiction to capital and profit rates which are much more similar). This can be used by the old capital strategy of “divide and rule”. With instruments of this model we can identify parameter constellations which can foster solidarity between working classes of different countries, male and female, ecological concerned movements, and other coalition possibilities.

The model yet exists in a rough form. It would be useful to develop it in a broader research program.

3. Towards a systemic concept of oligopolization of markets and concentration of power

„It is better to light one candle than curse the darkness”

Motto of the Christopher Society⁹

In 1. I mentioned the usefulness of “creative integration of results of not-Marxist social science”. Here is an example to underpin this challenge:

Most relevant markets are not “free” as often maintained. On the contrary most relevant (global) markets are dominated by oligopolies able to set prices and other parameters to a certain degree. The dialectics of laws of market competition and the contradictory results of these laws by concentration and oligopolies is fundamental Marxist thinking.

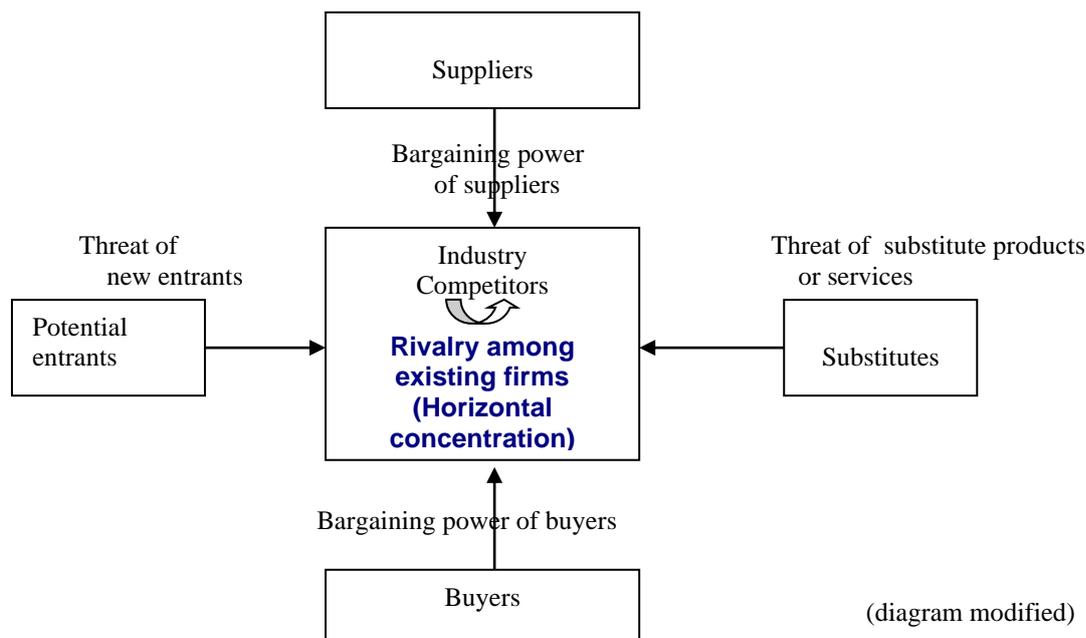
Generations of Marxists used the notion “monopoly capitalism”. Now the big corporate are much bigger and have much power than 100 years ago. Decisions of global significance concentrate in few circles. This is the background of tendencies to global dedemocratization and imperialism. This is an important feature of present globalisation. Actually in Europe we have a period of significantly increasing mergers and acquisitions which is connected with soaring stock market prices. The result is still more power to big business. - The “monopolies” analyzed by Lenin were dwarfs in comparison with the globally acting big companies nowadays.

But the methodology of Marxist research on these issues has not developed in an adequate way.

On the other hand there is a great variety of empirical results within mainstream “industrial economics” analyzing real competition processes and market structure. Within (former) mainstream “industrial economics” there are concepts of determining the performance of industries (empirically defined by some proxies for profit rates) by market power. The market power is measured usually by an index of (horizontal) concentration of the industry. In an Marxian framework this would be only one story and there are some critical points on this procedure - but it is a relevant story. So it does make sense to generalize these market structure–performances analyses to get relevant measures on the development of oligopoly power.

⁹ Martin S. (1984): The Misuse of Accounting Rates of Return: Comment, American Economic Review 1984 p.501

In the theoretical-empirical literature – rarely – we find elements of vertical market power – referred to as “buyer power”, “buyer/seller/supplier concentration”, and “vertical organization”. Porter¹⁰ outlined a rough concept of variables of market concentration: the commonly used horizontal concentration is added by vertical concentration (bargaining power of suppliers on the one side and buyers on the other side), the potential of entrants, and the possibilities of substitutions:



I modified this systemic concept of market power, I operationalized it and did some econometric analyses using Austrian data¹¹: not only the measure of horizontal concentration of the industry is controlling for the performance of industries but also proxies for the potential of entrants and the possibilities of substitutions, and the concentration in up-stream and down-stream industries, and also the performance (profitability) in these industries. So the horizontal concentration is only one element of market power relations of industries. Combining such elements a scheme for systemic market power including vertical market power is developed classifying horizontal concentration as an important special case of concentration.

This also is not the whole story of oligopoly power, but the market power is an important step in analysis.

Finally there could be another level in the value matrices by adding a level with values (prices) distorted by oligopolies.

¹⁰ Porter, M. E. (1998, 1st ed. 1980): Competitive Strategy - Techniques for Analyzing Industries and Competitors, The Free Press, New York

¹¹ Baum Josef (2004): Vertical Market Power - The relevance of up-stream and down-stream concentration to the performance of industries with special regard to Austrian data. Vienna (In German)

Generally economies of scale and economies of scope have two different implications: they can be the basis for more rationalization in economy and society. But when properties are not controlled democratically this also can be the basis of power, domination and locks for innovation. – In this way the Marxian general basic contradiction of capitalism: complex social production on the one side and private appropriation of surplus on the other side can be reformulated.
fruitful

4. Towards a general social theory in time and space

Social and economic developments are based on physical fundamentals:

It is well-known that in the physical world we can observe at least 2 levels: mass and energy. Newer views stress a third level: information.

When mass and energy interact heat/entropy emerges. When mass and information interact structure emerges. When energy and information interact structured energy emerges (important for electric and electronic application)¹²

These 3 physical levels can be reinterpreted in a socio-economic context when we add 3 additional purely socio-economic levels. Global social development then can be explained by 6 levels of interaction and exchange processes:

- information
- energy
- mass

- work - work time – goods: labour value
- (real) capital – value added
- financial capital.

The most general and everlasting basis of social communication seems to be the creation, flow and exchange of information. The power over information and common property on information are important future issues.

The other actual extreme is the sphere of financial capital and financial markets without material basis. The actual position of financial capital in the globalization process is one of domination of all other spheres.¹³ An important economic basis of global political struggle is the commodification (and “decommodification”) of these spheres and the regulation of these processes.

By using this scheme we also can solve the impasses of exclusive consideration of production of goods in the field of value theory that has caused a neglecting of services and informational work for decades.

The different levels of interaction and exchange processes are connected together in many flows or changes of stocks. There are at least 2 different types of exchange processes

- on basis of reciprocity,

¹² Kotauczek Peter (1996): Um welche Maße geht es? In: Riedl Rupert/Delpos Daniela (eds): Die Ursachen des Wachstums. Wien (Kotauczek Peter (1996): What are the measures? In: Riedl Rupert/Delpos Daniela (eds): the origins of growth. Vienna)

¹³ So the regulation and the embedding in a global democratization process could be important strategies.

- on asymmetric fundamentals by using asymmetric power relations

Examples for the second type would be unequal change in a neocolonialist context, exploitation of labour, and exploitation of labour.

Anyway: The property and power not only over goods/work time/capital but also over information, energy and financial capital is essential.

5. The central importance of energy

Not only actual global developments but also the history of industrial revolution and the climate change indicate: Energy is a (maybe the) the central (economic¹⁴) question of sustainable development of mankind.

The general access and use of new energy (coal in steam engines) to substitute labour (from the 19th century until now)

- initiated the industrial revolution in Europe
- multiplied the productivity of labour
- was (and is) the basis of (actual) capitalism and imperialism
- at the same time multiplied the harmful emissions to environment
- and at the same time reduced causally the diversity of species on our planet

And remember the (physical) definition of energy: “capacity to do work”. Energy in economy is intrinsically connected with labour and has to be integrated to labour theory. So energy is an important link between economy and ecology.

The energy question is a most important, perhaps the central question of the future of mankind. In it actually central problems flow together:

- the environmental and climate question, and thus
- the protection of the largest wealth of mankind, the diversity of species,
- the (regional) employment question by use of regional sources of energy,
- the reinforcement of regional participation by promotion of initiatives and empowerment
- the faster development by higher productivity (better energy use)
- the distribution question between “north” and “south” and thus
- the question of war, terror, and peace (see Iraq)

The energy question can be positively solved by more energy efficiency on the basis of renewable energies (wood, wind, solar energy, biogas, tidal power plants...). Technically and economically the complete world energy supply is possible on basis of renewable energy in medium-term. But this transformation will not be easy because of 2 reasons:

1. a big amount of the properties on worldwide fossil energy sources is appropriated by tiny oligarchies for making incredible profits
2. on the largest global transnational companies nearly all are active and locked in fossil energy and automobile industry (combined with energy), and they simply want to use

¹⁴ Altvater Elmar (2005): Das Ende des Kapitalismus, wie wir ihn kennen, Münster (Altvater Elmar (2005): The end of capitalism as we know it. Muenster. Germany)

their accumulated capital for high profits as long as possible (problems of “sunk costs” or “hold up”) based on their oligopoly power and last but not least protected by big military machines.

To cope with the planetary challenges of climate change in the next decades paths of sustainability has to be gone. Some regions will be “first movers”. Western regions actually would have the potential and technology for a radical change of the economic-technological pattern of development towards sustainability but yet the real definitive incentives are weak because “traditional” solutions are still possible for a longer time:

- Big capitalist companies are tempted to solve these problems by implementation of market power
- Big capitalist companies do not strive for long run social optima but for short and medium term high profits
- Imperialist countries are tempted to solve these problems by violence and other means of domination
- There are too less national and supranational possibilities of regulations for this aim

And maybe we can define socialism in analogy to a well-known definition of Lenin: socialism is renewable energy and democratisation for the whole economy.

Digression 4: In China on the contrary the possibilities of “traditional” solutions probably will come to an end sooner especially because of ecological characteristics, the density of population in relation to permanent settlement area, the relative scarcity of some important raw materials and energy resources, and the development of the world market energy prices on the other hand.

Though the actual status of environment generally, the energy productivity, the use of insulating materials to save energy and so on in China now is far from optimum but there is the potential to go a world pioneer socio-ecological sustainable path because

- China has still the means of regulations and the organizational possibility for this aim
- China still can choose an option of a socio-ecological sustainable system of transport
- China still can choose an option of a socio-ecological sustainable system of mechanisation and modernization of agriculture
- China actually seems to be the only country which pursues long run strategic aims and also realizes systematic measures in such frameworks
- And probably the strongest argument: China does not have really viable other options in the long run.

If I compare the actual official goals till 2015(2020) in energy policy between European Union and China this evaluation is underpinned: although China actually has a much lower GDP, and although China is in phase of extension of material production (EU is in the phase of dematerialisation and shifting to services) China has more ambitious aims in productivity of energy use and using renewable energy.

Anyway Marxian based research should give more attention to the energy questions.

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