TECHNOLOGICAL DEVELOMENT, "TECHNOLOGICAL MIND" AND SCHOOL. SOME ASPECTS IN COMPARISON WITH SPECIAL REGARD TO SOCIALIST COUNTRIES AND JAPAN.

Botho von Kopp

Deutsches Inst. für Internationale Pädagogische Forschung
B.R.D.

In the following I use the terms 'basic values of technological structures', respectively 'technological mind', in reference to a general paradigm following which the modes and means of production and the character of labour determinate to a certain degree the social organization and its reproduction in the educational system.

This paradigm is not at all new, several historical and contemporary studies recur to it. The problem with such a paradigm apparently is not its plausibility, but to follow exact lines of proofs for the stated correspondence, from the high level of generalization through the different levels of complexity down to the single social actions and basic social institutions. I am convinced that this problem is not a data problem, but a substantial one. Probably between systems of different complexity such a path of unequivocal correspondences cannot exist. At least this seems to be the message, the theory of complex systems tells us.

Anyway, adhering to some paradigm obliges us to continue the search for such paths, in accordance with our constant search for a better understanding of relationships between different levels and spheres of social organization.

Much research has been undertaken to prove the correspondence between the general features of societies, for example in their different stages of capitalist (industrial) development on the one hand, and the function of educational systems reproducing in principle the correspondent class structures (social stratification and labour specialization) on the other hand. Rather little attention has been devoted to more detailed levels of analysis, as for instance the attempts of Bowles and Gintis in their relevant and detailed work, they try to prove the existence of a chain of correspondent structures between working conditions, family and school/education. Although I find the attempts convincing in many respects, I miss both a more dialectical connection between the

factors of human labour and technology and a more basic discussion of both.

The present crisis of unemployment, as far as it is not attributed, to simple economic recession, is for most people clearly linked to the new technologies. However, not only for this topical issue, and not only for the deep involvement of school in forming attitudes towards technology and preselection for the labour market, but for the fundamental meaning of technology and labour for man, educational science must consider the problems in question.

At least since Max Weber, we have been accustomed to connecting the question how modern industrialism developed with the evaluation of certain preconditions and conditions of a specific value structure, which we summarily designate as the principles of (western) rationalism. We could designate such a structure as the 'technological mind'.(1) We are equally accustomed to seeing the impact of industrialization(modernization) as universal. As it is expressed in the words of Ignacy Szaniawski, the prominent Polish educationalist: "Now the matter is, that both, the first phase (of scientific-technical revolution -B.v.K.), mechanization and the second, automatization, being children of rationalization, by their thrust for conquest and their determinism, inexorably transform the structures of labour, compensation and education in general, job structure and the content of vocational education... and this independently from geographical situation, political forms of government and economical systems."(2)

The assessments of rationalism penetrating all spheres of society vary greatly: It was Horkheimer and Adorno, who gave their sceptical diagnosis on the "progress of industrial society" in which the dialectics of enlightenment and reason turn, as they say, objectively into insanity.(3) For them the possibilities of deformation are laid down in the basic definition of reason, which is being able to take distance from and against nature, includes this possibility, but there is a necessary interrelationship between science with its very methods on the one hand and a man-made universe of power and exploitation (of nature as well as of man) on the other hand.(4)

Again Habermas stresses the one-sidedness of modern rationalism as technically-instrumental (5) and calls for the completed definition of praxis by introducing the principle of communicative action. He summarises his uneasiness with the one-sided turn reason as instrumental and functional rationalism took in the process of modernization by describing this as a "colonialization"

of interactively-communicative reason (6). Of course there are many other voices, expressing that modern technics are no longer controlled by man, but control man. However, it is mainly the Frankfurt school which sets the problem at the very basis of modern technology, on science and reason as its preconditions.

Again, there are others, who are much more optimistic about rationalism. Talcott Parsons regards capitalist economical rationalism as a factor of social modernization and freeing man from particularistic mechanisms (7). Milton Freedman argues that an entrepreneur adhering to economically irrationalistic prejudices (for instance racism, religions) in his hiring practice, would impose on himself - by restricting himself to a reduced labour market - higher costs of production and would worsen his competitive situation (8).

The afore-mentioned American Bolwles and Gintis, although basing themselves on a "correspondence principle" between labour and education, refuse strictly the argument that alienated labour is a necessary outcome of modern technology. If it would be, "then technology, and not capitalism would be the core of the problem" (9). To support their argument, they claim that even in the frame of the existing technology, labour could be organized in a way that it would be more satisfactory for the worker (10). Arguing that not technology is the main problem, the historical process of expansion of education is thus not due to the demands of the developing technology, but due to the power structure in industry and the interest of those in power to adopt changing conditions: 1) Expansion of education produces the power of the capital owner over labour and 2) with the same effect, the introduction of new technology means dequalification for the traditionally skilled (11).

Following the interpretation of Bowles and Gintis, one could argue that there are only two possible conditions for knowledge on the side of the direct producers - either to keep the existing level of technology (which they don't propagate)or to give an education procuring such prospective knowledge that new technology does not imply the threat of dequalification. But if the expansion of education did not guarantee this, we could think that the really crucial expansion of education did not expand. In fact, they see the "monopolization of control over technical information by the management" (12). However, they do not follow this central aspect by analysing the contents of the knowledge accessible through education on the one hand and the technical knowledge necessary to keep control (Herrschaftswissen) on the other hand (13).

Similarly as do Bolwles and Gintis, already Erich Fromm claimed that under the conditions of existing (and developing) technology labour can be made more satisfactory and productive and less alienating (14). Giving detailed references to manifold postwar models of the humanization of labour, he formulates his central demands: overall knowledge (of technical and economic conditions of production) and participation (in decision-making) of the worker.

Reading Fromm, one could gain the impression that Japanese industry carefully studied those models and, adapting them to the local conditions, imported them. As known, a central aspect in Japanese industry is the linkeage of the principal's satisfaction in and through labour and efficiency of production. Interestingly enough, efficiency of production does apparently not simply mean gaining faster or harder working labourers, but gaining their special knowledge of production, which is accessible only to them (15). Typically this organization of production conditions shows some general similarities: 1. creation of an emotional and practical entity, which to a certain degree smoothes the keen division between in-and out-of-plant activities, and is bound to foster a strong identification with the producing community; 2. the introduction of 'non-rationalistic, non-instrumental' aspects into production; 3. moderation of the 'hire and fire' principle, in the extreme case the famous life-long employment (which however is adopted only in some large enterprises with about 20% of the industrially employed); 4. institutionalized, free flux of information, down and upward in the hierarchy; 5. some measures which counteract extreme division of labour; 6. weak or no representation of unions other than branch- or factory-bound.

Interestingly too, this character of labour conditions - which are naturally more diversified and here only roughly outlined as a tendency - does not correspond to an educational system, which especially stresses knowledge of the technical side of production. In simple words, Japan did not gain a leading position in High-techs, because there had been a computer in every school since long and pupils trained in information science. This is not the case at all. Despite some polytechnical aspects and vocational tracks, the generaly educational ("non-qualificatory") component plays a decisive role in the Japanese educational system (16).

Correspondingly, profession and professionalism both in the educational and in the employment system are much less valued than in Europe.

Apparently this system is very different from that of the Euro-

pean, and especially from that of the socialist countries. In a way the latter, at least ideologically, is based overall on the tradition of European history, which is intertwined with the value of what I called, the 'technological mind'. The recent corresponding theoretical analysis has been elaborated (since the sixties) under the slogan "scientific -technical revolution". So it is not surprising that these countries exceptionally not only foster a scientific outlook on the world in the curricula, but also professional, and above all, technical education.

As a rather extreme example, I would like to refer to Czechoslovakia, where the share of technical enrolment in higher education comes up to 54% of the total. In Japan, comparatively, this figure is just 20% (on the comparative university level; on college level it is only 10%). What is striking is the fact that compared with this "input"-relation in education, the "output" (that is, if we follow the socialist theory of economic spheres of national economy and the position of technical education in it) is nearly the exact opposite: in 1970 from all employed graduates in Czechoslovakia, only 20% were employed in industry (but most in the 'non-productive' sphere, and the great bulk - 34% - in education); in Japan, from all graduates leaving higher schools in the same year, nearly 40% entered industry (education 11%) (17).

How can this 'contradiction' be explained? It goes without saying that several factors have to be considered. But clearly an important one can be found in the fact that the educational system is 'relatively autonomous'. Apparently it deals with process planning as well as "spontaneous demands" in a specific way, and secondly this processing has to do with both the economic (social) and the cultural systems: this processing is not only "contradictory" with respect to proclaimed (or traditional) strategies, or, as for Japan, transforming "general education" easily into highly effective and dynamic technical and technological qualification. This processing and its effectivity is moreover embedded into a socio-cultural context, which in some important respects "contradicts" the usual scheme of how modernization conditions the intruding of the "technological mind" into society and culture.

'Technological mind' was here used very generally; however, it has to be, at least to a certain degree, specified more precisely. Under the general definition of 'scientific', 'rational' etc. it includes the assumption that the basic values underlying modern industrial production could be identified more systematically and in more formal language. This enables us to identify 'technological mind' in very different social relations, which are, as we said, the outcomes of different processings.

I would like to restrict myself to some aspects only: for example there is the aspect of (modern) time. Its formal quality, crucial for science and technics, as providing an exact and stable instrument of measuring, is the fragmentation of processes into equal sequences. It is in this sense that I speak about adopting a 'technological mind' (or, if we want to see it critical by: the 'colonialization of social spheres - Habermas' "Lebenswelt"), if those principles, logically and basically connected with the modes and means of production, intrude - as values - in areas, which by their nature are not necessarily structured by these values. A combination of the time aspect with that of limited resources and that of the exact measurement of material and functional parameters, gives rise to a technological rationality, which values above all the maximalization of these parameters and which can be measured unequivocally.

Apparently, the acquisition of knowledge and education can be done in an organizational form which corresponds to these technological principles. However this is not the only possible, and perhaps not even the most effective mode (seen from the logic of the system in question). Thus, for instance, knowledge is not a scarce resource (18), its acquisition is not necessarily to be divided into equal time intervals and its evaluation in a grading system which pretends that - as it is the case in hard technologies - an unequivocal correspondence between all factors of input and output can be established, is not the only possible one. It seems that there exists a deeply rooted correspondence between modern school and factory. One could find many examples that people concerned with education held and expressed this opinion (19), but this correspondence was also tried as a means to evaluate the degree of "modernization". An American study in 6 developing countries operated with a list of 10 attributes for defining certain attitudes and values giving rise to the behaviour of the "modern man". The compared samples consisted of groups with different schooling or factory experience. As an outcome it was found that: "The longer men are in a factory, the smaller becomes the gap in their modernity scores, because the men with little education come, through their factory experience, to catch up with those with higher education" (20). The authors of the study answer the question, which were the factors of stimulating modernization in schools and factory equally, with the distinctive nature of the social organization of school - and the coordination of fragmented time and fragmented work is a central aspect - not with the contents taught, the ..."Curriculum, considered by educators to be the core of education, has at best a minor role in generating modernity" (21).

However, apart from this rather general level, apparently the impact of "technological mind" in school and society, can vary greatly in different cultural and social systems. As for the Japanese school, an American scholar, Thomas P.Rohlen, made a very competent study of it summing up his field work, elaborating among other ones, the aspects of time and space organization, stressing the differences with American schools (22).

There is plenty of literature about the observation that in Japanese society aspects usually thought to be crucial for "modernism" are implemented only to a certain degree and in coexistence with aspects usually defined as traditional. Thsi refers to what could be expressed in the slogans universalism versus particularism (see above), individualism vs group consciousness and consensus vs contract principle. Partly these single definitions overlap; however, basically 'non-modern' or 'non-rationalistic' patterns are to be found in all areas of society, also those which are usually regarded as affecting economic (or 'technological') effectivity.

In the correspondent literature one typical employee is described as being hired for the reputation of his alma mater rather than for his achievement in preparing for a certain profession, probably because the manager of the personnel affairs division and many of the other staff graduated from the same school. His in-plant training consists of passing through all relevant sections of the enterprise. Being integrated in the group of his graduating-year mates, his salary will increase conformly with this group in accordance with the seniority principle. If he proves to work rather efficiently, an appropriate working place or function in a working group will be found for him, following the principle that everyone is at least talented for something, be it for taking the role of the group leader with the important task to secure the harmony within the group. Having some conflict with his neighbour, his employer or the man who sold him his new car, he would think it over more than twice to hire a lawyer and thus rather rely on universalistic rules. He would try to settle the matter by mediation through a confidential person, who, by by general consent is authoritative for both parties. (The number of lawyers is, compared with other industrialized countries, extremely small). His social status depends above all on his loyalty to a group. If he is suspected of trying to find a solution individually, even if it is technologically convincing, he has a hard stand. On the whole, he makes many decisions and behaves following a value pattern, which in its central aspects is not technologically 'rational' or 'efficient' (23). The children of our fictitious salary man will enter school and there, as everywhere,

be subjected to a teaching in fixed time - and content -sections. However, the time devoted to single contents and activities will be different. After having been brought up in a traditionally developed educational style which still to a certain degree respects different phases (24) and on the whole counts with (as for the girls: supports) a slower maturing process than in Western culture, they spend relatively little time in spontaneously created peer groups, but much time in cramming knowledge they definitely will never need directly for the efficient fulfilling of technological tasks. Sure, at last they will be exposed to the intensification of meritocratic values in senior high school, but before they have also learnt to value particularistic group and consensus structures. By electing class mates for school offices like speakers of the class or group, they learn to deny "the moral validity of majoritanism" (25).

It goes without saying that our example is highly schematical and ideological, but in reality, it is clearly traceable in different degrees of realization. However, in spite of having apparently adopted the 'technological mind' only to a certain (and from a Western point of view: different) extent, Japan, without doubt, has adopted and developed the technologies of modern industrial society exceptionally successfully.

The interculturally comparative question then is, whether technology has to be regarded as a 'parcel' which can be accepted or adopted only as a whole and conditions the same consequences for value structures, division of labour etc. everywhere, or whether dealing with it leaves contingencies and can lead to new syntheses varying with the cultural and social system.

Apparently at the present there are three regions, where this question explicitely or implicitely plays a central role in social politics: in parts of the Islamic world, in parts of Asia and in the socialist countries. As for the latter, the situation is different from the others, as their politics do not strive for taking over technology selectively, but for developing the heritage of Western rationalism and science, in order to create the "new man" and, with him, a new culture. We could, of course, settle the matter quickly by stating that declared goals are ideologies only serving to mask or legitimate other goals. To what extent this will ever be the case, it is not more at the core of the problem in question, than if technology will leave any room at all for contingent choices.

Japan was, and is up to now, the only non-Western country, which has succeeded in technologically and economically catching

up with the leading industrial nations. From the very beginning of modernization the ambiguity of becoming Western was felt and stimulated politics and theoretical discussions. Extreme standpoints in 19th century's Japan even expressed the need to mix racially with Western people, to give up the own language and, on the other side, there were Westerners who proclaimed that without at least becoming Christian, there would be no real chance of becoming an industrially and socially modern country (26).

Sure, the time span from the beginning of its industrial modernization up to now is too short as to decide definitively if the outlined coexistence between 'traditional' and 'modern' patterns is really not only transitional. But, evaluating the development now, it seems also, that the question of contingency is among other things a question of power. At least for Japan this was - apart from mechanisms of a general interrelationship between industrialization and imperialism - a strong motive for its pre-World War II variant of nationalism, military build-up and expansion.

At present, the whole question gains a new quality with the recent development of technology. Again I want to limit myself to some aspects.
With the most dynamic of the new technologies, a quantitatively new level seems to have been reached. The material and non-material means of production, its inherent logical structures, but also the locations for contingencies will probably change. For instance, the basic principle of "classic" production technology consists in the mechanical usage, transmission and multiplication of energy. The chain of non-material and material links connecting the knowledge of physical laws, construction plans and production is highly diversified, but generally, to set up this type of production means total control over every single aspect in a chain of causal processes. In a way the classical alienation of wage labour under those conditions of production can be ascribed to the fact that the employer has at his disposal the command and exploitation of the physical side of the labourer.

Most of the very new and expansive technologies, such as information processing and biological production, the latter both under the aspect of genetical engineering and production by means of organic cultures, shows fundamental differences. The aspect of physical energy - leaving apart the question of a "clean" energy supply - plays a tiny role. Even the development of industrial robots which work "manually", is chiefly concerned not with magnifying the physical strength of their actions but, on the

contrary, with splitting their energy into highly differentiated functional actions in a low-power range. Biological production adopts the black-box principle to a certain extent, which is unthinkable for any mechanical power engine. This makes the total control of cause-effect links unnecessary, if the overall control is secured. The same is true of extremely high- complex information processing, which cannot function by a mere massing of stochastic (deterministic) algorithms, but must include "free-choice" positions.

However, it seems, that the stage of technological development securing free man from mechanically hard work, does not automatically do away with alienation, it rather transforms it. Thus E. Fromm pointed out that whereas the wage labourer of industrialization was stripped of the free disposition of his bodily actions and energies, but his character, ideas and wishes were not subjected to direct control (because this was not necessary to secure production), the new type of (blue- and white-collar) labourer places his moral and social skills at someone's disposal. Recently there was a notice in the newspaper that in the USA some clinics offer cosmetical operations, which will bring the applicant for a job in conformity with certain facial features which signalize certain character features. Under such conditions the labourer - paraphrasing the famous sentence of Marx (27) - seems to be outside himself and not at home, even if being at home.

As for information technologies, the chain of non-material and material links, as I called it earlier, has been shortened substantially. In another way than with the classical machine technology, where pre-production basical research, construction modelling, production and product, were subjected to several totally different kinds of materialization (formal languages, possession of heterogeneous natural materials), in information processing the in- and output systems have the same material and structural quality. In addition, by the combined use of formal and natural languages, man is tied to the logic of production in a new totality. It seems that parallel with modernization, and the more production augmented the number and structural diversities between man and its product, the function of a language as - indirect and mediated - action grew. Again, in information technology this process gained a new quality - an identity of "word" and action. Symbolically I find this expressed in the following argument, by which the New York Times expressed its criticism on Reagan's visit to Bitburg and the diplomacy of appearances: "This diplomacy of appearances insists that every presidential act has strategic significance: since peace depends on nuclear weapons that can never be used, a president's

willingness to use them rests entirely on threats and promises - on words; therefore, a president's words carry cosmic weight..."(28).

If we compare today's primary books for the mother tongue in the Federal Republic with those of some 30 years ago, we find a radical change. In short, the instrumental character of language became absolutely dominant. Surprisingly, both in the socialist countries and in Japan, at least up to now, this is the case to a much lesser extent (if at all). Of course this is astonishing especially as to Japan, which is at the top with this kind of technology. It makes a less scrupulous use of it and sees in it (respectively in a variant of usage of this technology, the "service society") great perspectives for the future. We could conclude that in Western culture the acceptance of new technologies is so strong linked with the correspondent changes in the ideological sphere, that the need for legitimization is predominant, in Japan cultural legitimization and the use of technology belong to more separate systems.

Notes

1. With this term I am referring to Rolf E.Vente: "The 'technological mind' and other issues of current exchange research" In: DIPF: Mitteilungen und Nachrichten.,(1982) 106/107, p.18-29 and the same (ed.): Erfahrung und Erfahrungswissenschaft. Stuttgart 1974.
   Vente argues, based on his research in developing countries, that the intake of industrial modernization is linked with the acceptance of the 'technological mind' - in German "erfahrungswissenschaftliches Prinzip".
2. Ignace Szaniawski: "Determinanten der Humanisierung der Arbeit im Zeitalter der Automation." In: DIPF: Mitteilungen und Nachrichten (1981) 102/103, p.1-15.
3. Max Horkheimer/Theodor W.Adorno: Dialektik der Aufklärung, Frankfurt, 1971; see also: Helmut Peukert: "Kritische Theorie und Pädagogiek." in: Zeitschrift für Pädagogiek, 30 (1983)2, p.195-217, p.195.
4. Herbert Marcuse: Der eindimensionale Mensch, Frankfurt 1967, p.180; see also: Rolf Huschke - Rhein: "Die halbierte Humanität" In: Zeitschrift für Pädagogiek, p.241-242.
5. See also: H.Peukert: Kritische ... op.cit. p.207.
6. Jürgen Habermas: Technik und Wissenschaft als Ideologie, Frankfurt 1968,p.93.

7. Talcott Parsons: The social system. New york: The Free Press 1951.Particularistic mechanisms are decisive factors of social, racial, religious etc. criteria structures (namely in traditional society) prevailing over "universalistic" criteria determined by principles of rationality, for instance "meritocracy".
8. Milton Friedman: Capitalism and Freedom. University of Chicago Press, Chicago 1962, p.21. His example: someone buying a loaf of bread does not know if a white or black man, a Christian or a Jew worked in the field, and followingly, the producer was able to use his resources as efficiently as possible, independently from prejudices of the community (consumers). He ignores that these prejudices are generally expressed in the wage structure and the accessibility to jobs. By the way, the very same example is used by Marx to illustrate the difference between exchangeable value (Tauschwert) and utility value (Gebrauchswert). Zur Kritik der politischen Oekonomie, MEW, Bd.13, S.16
9. Samuel Bowles, Herbert Gintis: Pädagogik und die Widersprüche der Oekonomie. Das Beispiel USA. Frankfurt: Suhrkamp, 1978. Schooling in Capitalist America. Educational Reform and the Contradictions of Economic Life. New York: Basic Books 1976: here quotations from the German issue.
10 Ibid.p.95
11 This is in principle, what Marx analysed for a certain historical situation: "Nearly all new inventions (after the crisis in England 1825 - B.v.K.) were the result of collision between worker and entrepreneur, who at any price tried to devaluate the vocational quality of the worker. After each new strike, a new machine was developed." (Das Elend der Philosophie, MEW, 4, p.155)
However, for Marx this is not an invariability, but true in a concrete historical situation and imbedded into a dialectical process. He somewhat later reasons that by the division of labour in the mechanical factory, it(labour) loses any special character: "but from the moment on, when every special development ends, the need for universalism, the striving for a well-grounded development of the individual begins to be felt. The automatic factory does away with specialists and with one-track-professionalism."(Ibid.,p.157)
12 Bowles/Gintis: Pädagogik ... op.cit.,p.95.
13 By the way, it is perhaps not technical knowledge which is monopolized and gives control, but social knowledge under the conditions of modern pluralistic-society. After all, the students of social sciences proved to be the most rebellious and active in the movements of the late 60s and early 70s.
14 After having initially criticized the labour conditions substantially and in reference to the demand of Marx to "abolish

labour" (as it is called in his early writings), this turn can be interpreted as a "revisionist" strategy to cure capitalism, but not to abolish it: Erich Fromm: Wege aus einer kranken Gesellschaft. Stuttgart: Deutsche Verlags Anstalt, 1980; and: the same: Das Menschenbild bei Marx. Frankfurt: Ullstein, 1982

15 See K.Dobse, U.Jürgens, T.Malsch: "Vom 'Fordismus' zum 'Toyotismus'? Die Organisation der industriellen Arbeit in der japanischen Automobilindustrie." In : Leviathan. Zeitschrift für Sozialwissenschaft (1984)4, p.448-477.

16 On the other hand Japanese highschool seniors seem incomparably better informed about political economies, worldtrade conditions and so on, than their American counterparts. For example, among the latter, as a 1974 survey showed, only 41% could locate Egypt on a map: Thomas P. Rohlen, Japan's Highschools. Berkeley: University of California Press, 1983, p.100/254.

17 The figures are not completely comparable, not only for the - minor - differences in defining industry, but because the figures available for Japan represent the graduates of the given year; but the tendency for a general trend for the Japanese figures (growing share of graduates employed in the industry) can be found in the corresponding comparison with the year 1950: in this year only 22% had entered industry, but 37% education. Sources for figures: Statisticka rocenka CSSR, Prague: SNIL, ALFA, 1980, p.203 and U. Teichler: Geschichte und Struktur des japanischen Hochschulwesens. Stuttgart: Klett 1975, p.207.

18 This aspect is treated in N. Luhmann, K.E. Schorr: Reflexionsprobleme im Erziehungssystem. Stuttgart, Klett-Cotta 1979.

19 There are some examples quoted in Bowles, Gintis op.cit., p. 187-220. See also: E.P.Thompson: "Time, Work-Discipline and Industrial Capitalism". In: Past and Present, 36, p.56-97 and Thomas P.Rohlen: Japan's High Schools. Berkeley: University of California Press 1983, p.145-169.

20 Alex Inkeles and David H. Smith, Becoming Modern, Individual change in six developing countries, Cambridge, Mass., 1974, p. 272-273. Quotation here from: Noel F. McGinn and others, Education and Development in Korea, Cambridge, Mass., Harvard University Press, 1980, p. 191

21 N.F. McGinn, Education and Development in Korea, Cambridge, Mass., Harvard University Press, 1980

22 Thomas P. Rohlen, Japan's... op cit., especially chapter 5

23 R. Vente, Erfahrungswissenschaftliches Prinzip und Verhalten., in: R. Vente (ed.), Erfahrungs... op cit., gives examples from very different areas of social action in developing countries for the invasion of the technological mind,

for example sports - where the measuring of fractions of seconds or centimeters displaces consensous acknowledge of the winner, traffic where the 'contract principle', that is a set of abstract rules, removes situational agreements, etc.

24 Formal expression to this are in the 3rd, 5th and 7th birthdays, which are celebrated by special ceremonies, usually in a shrine. The meaning of this scheme - which is traditionnally inversed to 7-5-3, destignating generally the set of these birthdays and of the lucky numbers - is so well known, that Japanse, criticising the drawbacks of the educational system, especially the uniform teaching and achievement system, refer to it as the 7-5-3-system. In an ironical turn, this contrasts the usual designation of the Japanse school system as a 6-3-3-system, which means the years of elementary, junior and senior high school; using a Japanse word which can designate percentiles, the new meaning is then, that in elementary school 7 percentiles = 70% of all children pass succesfully and with appropriate understanding for the taught contents the grades, in junior high 50%, and finally in senior high (which is not compulsory but enroles over 90% of the age group) only 30%.

25 Robert A. Scalpino, Junnosuke Masumi, Parties and Politics in Contemporary Japan, Berkley and Los Angeles, University of California Press, 1962, p. 152 and Joseph A. Massey, Youth and Politics in Japan, Lexington, Toronto, London, 1976, p. 58-69

26 See for example: Marius B. Jansen (ed.), Changing Japanese attitudes towards Modernization, Princeton, 1965

27 Okonomisch-Philosophische Manuskripte, MEGA, Bd.1, here from: E. Fromm, Das Menschenbild... op cit., p. 89

28 International Herald Tribune, May 7, 1985, p. 4