

# *Learning from China?*

**Development and  
environment in Third World  
countries**

*Edited by*

**BERNHARD GLAESER**

*Wissenschaftszentrum Berlin für Sozialforschung (WZB), ]  
Policy Research Unit*

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# *AN ESSAY ON REPRODUCTION: THE EXAMPLE OF XINJIANG UIGHUR AUTONOMOUS REGION*

**THOMAS HOPPE**

Only minor amendments of the original text published in 1987 have been inserted. Amendments are indicated by {...}. See also the postscript at the end of the 2007 version. Recent empirical material about the Tarim floodplain can be found in: Thomas Hoppe, Birgit Kleinschmit, Bruce Roberts, Niels Thevs, Ümüt Halik (eds.): *Watershed and Floodplain Management along the Tarim River in China's Arid Northwest*, Aachen 2007, Shaker Verlag. Empirical material on soil salinization -alkalization processes in the Northern part of the Tarim Basin and Yanqi-Basin can be found in: Thomas Hoppe: *Chinesische Agrarpolitik und uigurische Agrarkultur im Widerstreit. Das sozio-kulturelle Umfeld von Bodenversalzungen und -alkalisierungen im nördlichen Tarim-Becken (Xinjiang)*, Hamburg 1992 (Mitteilungen des Inst. f. Asienkunde 214) (T.H. February 2009)

Scientific paradigms<sup>1</sup> are not easy to replace. They come to dominate our thinking, directing our discussions and research along specific tracks, and we become increasingly less aware of the axioms and preconceptions we employ. In the case of the "development" paradigm, I believe the negative consequences of its domination have reached an acute stage.

Although development schemes have in many cases produced results in terms of growth, all too often the destructive elements outweighed the constructive elements and the general balance proved to be negative. This is especially so when we consider the environmental impacts of development and phenomena such as the destruction of cultural identity. Indeed, by stretching the term "desertification" beyond its natural scientific sense, we could also speak of the desertification of society and of the human inner world resulting from many development schemes.

Looking closely, we can see that the necessity for criticizing the paradigm of development has already made itself felt in many fields, and it is my contention that this paradigm is in the process of being abandoned in favor of a new paradigm which I shall call "reproduction".<sup>2</sup> The formulation and

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<sup>1</sup> The term "scientific paradigm" originated with Thomas S. Kuhn (1976). Kuhn has since replaced this expression by the term "disciplinary matrix" (Kuhn 1977). The term "development" clearly designates more than a scientific paradigm.

<sup>2</sup> The term "reproduction" was by no means arbitrarily chosen to represent this concept. Marx uses it in a specific way in *Das Kapital*. A good point of reference is the

operation of this new paradigm has already begun. In fact, often that which is taken to be "development" is in fact "reproduction," although it may be diminished reproduction.

The necessity of controlling the effects of development has already been acknowledged and acted on. "Environmental protection" came into being in order to repair what development has destroyed in nature. The natural environment, however, is not the only area in which damage is being done; in other areas, there is no such mechanism for protection. In addition, we must bear in mind that "environmental protection" is a child of the development concept and as such is not in a position to attack the evils of development at their roots.

In some fields, the formulation and use of the reproduction paradigm has already begun. Ecology, environmental protection, and nature conservation — in fact, all conservation movements and traditional agricultural systems - are based on the paradigm of reproduction. Terms such as "material and energy cycle," "food chain," "conservation of genetic potential," and "conservation of soil fertility" all represent important instrumental concepts pointing less to linear growth than to cyclic processes.

Practical methods used to analyze reproductive cycles include, for instance:

- (a) carrying-capacity analyses for livestock breeding, to calculate how many head of cattle can be kept on a certain area of land without harming the reproduction process of the plant cover;
- (b) fishing quotas {as a part of harvesting theory} to work out how many tons of fish can be fished without endangering the independent regeneration (reproduction) of fish stocks in a particular area;
- (c) resource economy, a relatively new field of research, subdivided into two areas: renewable and non renewable resources (the first area is directly concerned with cyclic processes of self-regenerative

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famous chapter "*Formen, die der kapitalistischen Produktion vorhergehen*" in his *Grundrisse der Kritik der politischen Ökonomie* (Marx 1939-41, pp. 375-413). This term is widely used in the biological sciences. I assume that the perception we have of "development" has come about from the biological fact that living things grow. In the cycle of life, however, beings come about, they grow, flourish, and die, and new individuals replace those whose lives have come to an end. Thus can life be continuous. It is reproduced. The development paradigm concentrates only on a small segment of the overall cycle, constrained in time and space. The reproduction paradigm, on the other hand, takes the entire complex and its continuity into consideration. It is therefore not only a particular wood, for example, that must grow or be reproduced; rather, it is a whole complex of elements, such as water, sunlight, soil, humans, other fauna and flora, and their interplay that must continually be reproduced. Only when the continuity and reproduction of the entire complex - of which trees in a wood are only a tiny part - is preserved, will any given segment survive.

resources such as wind, soil, or water; the latter focuses on the analysis of the cyclical processes undergone in raw materials or waste recycling);

(d) Environmental Impact Analysis (EIA), a prognostic methodology for forecasting the consequences of development schemes in specifically defined areas, designed to hold negative consequences to a minimum - a central feature of this methodology is that EIA's are always appended to development projects: their purpose is to preserve existing natural conditions as far as possible under the impacts of given development schemes.

Even within development theory, starting points for the formulation of a reproduction paradigm can be found. This is especially so wherever attempts are made to do justice to the requirements of both ecology and development, for instance in agricultural-development planning based on the tenets of "ecofarming" and "ecodevelopment." Ecodevelopment is strongly influenced by the generally accepted aims of development. Nevertheless, it does represent a turning point:

„[Ecodevelopment] is designed to help people define their real goals for growth and to utilize their own available natural resources and human skills to achieve these goals with patterns of growth that are sustainable, that will not destroy either the natural resource base upon which continued development depends, or the traditions and value systems of the people concerned.”<sup>3</sup>

„In brief, ecodevelopment is a style of development that, in each ecoregion, calls for specific solutions to the particular problems of the region in the light of cultural as well as ecological data and long term as well as immediate needs. Accordingly, it operates with criteria of progress that are related to each particular case, and adaptation to the environment, as postulated by the anthropologists, plays an important part. Without denying the importance of exchanges it tries to react against the predominant fashion of allegedly universalist solutions and panacea-type formulas. Instead of placing too much emphasis on external aid, it relies on the capabilities of human societies to identify their problems and devise their own original solutions to them, though drawing on the experiences of others. It rejects passive transfers and the spirit of imitation, and gives pride of place to self-reliance. It avoids the pitfalls of extreme ecologism and suggests on the contrary that a creative effort to benefit from the margin of freedom offered by the environment is always possible, however great the climatic and natural restraints may be. This is amply borne out by the differences between cultures and human achievements in comparable natural environments. But success depends on a knowledge of the

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3 See Strong (1976), cited in Schork (1980), p.86

environment and on the will to create a lasting balance between man and nature. The setbacks and disasters in which certain societies have foundered offer equally eloquent evidence of the high price that has to be paid for inability to organize the relationship between man and nature.”<sup>4</sup>

The important elements of ecodevelopment theory which differ from "simple" growth theories are:

- it's orientation towards basic human needs (basic needs strategy);
- the priority given to local resources (self-reliance); environmental compatibility, conservation of existing resources, and preference for renewable resources;
- sociocultural suitability;
- special ecological techniques.

In addition to these, the requirements of ecofarming include principles such as:

- suiting land use to the special fragility of tropical, arid, or semi arid ecosystems;
- the avoidance of negative external effects such as soil erosion;
- the guarantee of sustained production;
- modelling on the existing natural ecosystem;<sup>5</sup>

Both ecodevelopment and ecofarming are understood to be strategies for the alleviation of poverty of the rural masses. Traditional, local methods of agriculture are not written off as backward, but indeed sought after as models and revived. (This is also an aspect of reproduction.)

„Ecofarming is related to the local or neighbouring autochthonous methods and therefore promises good adaptability. In areas where indigenous methods have been forgotten or were absent, ecofarming is better suited to the mental attitude of the population than the methods of industrial agriculture.”<sup>6</sup>

Carrying-capacity analyses, fishing quotas, ecodevelopment, and ecofarming schemes are primarily confined to limited, small spatial units; their starting point is rural. Is it possible to transfer these concepts, emerging as they have within the rural context, to the urban-industrial context, even to the level of national economy?

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4 Ibid.

5 Egger and Neumann (1978), pp. 33-4. This work is the basic paper for preparation of a German pilot project in the Sahel Region.

6 Ibid.

My discussion of this subject is divided into three main sections:

- (1) Some examples from the Xinjiang Uighur Autonomous Region in the People's Republic of China illustrating the destruction of reproduction through development;
- (2) an attempted formulation of the reproduction paradigm through comparison and contrast with the development paradigm, especially considering some of the apparent pitfalls of the latter;
- (3) conclusions; Xinjiang's future.

## **Reproduction destroyed through development: some examples from the People's Republic of China**

With the following examples from the Uighur Autonomous Region of Xinjiang, I wish to cite cases which show environmental destruction, exhaustion of resources, or desertification resulting from development. What is the point of development when, at the same time, or indeed as a result of it, resources are exhausted, environmental potentials are destroyed and the reproductive forces of a given local sphere are diminished?

### ***1.1 The disappearance of lakes in arid regions***

My first example describes a case in which a reproductive corpus falls into a state of gradual desolation during a development scheme (see Fig. 3.1).

Rivers in the arid zones of Inner Asia are commonly used to such a large extent for the irrigation of arable land that the lakes into which they flow gradually dry up and become salt marshes. The best known

example is Lake Aral in Usbekistan and Kazakhstan (USSR), which is now in the process of drying out. Lake Lop-Nor in Xinjiang has already undergone this process; Lake Detama, successor to Lop-Nor, and Lake Manass in Northern Xinjiang face the same fate.

Such consequences of development are not accidental; they do not occur unplanned. On the contrary, they are indeed rationally planned. The Russian geographer and Xinjiang expert Murzayev, writing about Lake Bagrax in his personal report on Xinjiang, *Journey without adventure and phantasy* (1962), says:

„The Khaydyk [Kaidu] River empties into Lake Bagrax [Bosten], the only big freshwater lake in the Chinese Tianshan. Every year, about 1.5 cubic kilometers of good water evaporates from its surface and the farmers need that water very badly. . . . It will be necessary to isolate Lake Bagrax from the River, to divert its flow, bypassing the lake. Then the latter will dry up and man will be able fully to use the reserves of the Khaydyk. But how is this to be done? Our expedition was supposed to find the answer to that question.”<sup>7</sup>

„A lake in the desert is a form of wastefulness: it consumes many cubic meters of water and shows how limited are the potentialities of human society in combating the malicious forces of nature. But in our day under a planned socialist economy, the fact of ever increasing areas of irrigated farming

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<sup>7</sup> Murzayev (1962), translation in *Joint Publications Research Service*, no.25110, p. 75. (June 1964, Washington DC).

and the regulation of the behavior of rivers will result in the death of the evaporator lakes. Perhaps our children will read "Lob Salt Marsh" or "Aral Salt Marsh" on the maps, in those places where today Aral Sea or Lake Lob-Nor are shown

as blue patches." <sup>8</sup>

Amazingly, Murzayev describes the considerable productivity of Lake Bagrax and, in the same breath, promotes activities which will bring about its death. He describes the wealth of fish, the rich growth of reeds, and the lives of the fishermen on this lake; all of which play an important role in provisioning the surrounding area. It is clear from his own words that Murzayev considers the survival of the lake and its natural productivity, harming nothing, supporting itself unaided, and reproducing itself without external agents, to be less important than the possibility for using inflow water to irrigate agricultural land and increase grain production.

**The present situation of Lake Bagrax is as follows. Between 1949 and 1980, the area of land under the plough in the surrounding vicinity had risen by 800 percent. The newly reclaimed areas are responsible for large amounts of salt flowing into the lake through drainage of irrigation water. The salt content of the newly reclaimed land is between 2 and 10 percent in a 30 cm soil layer. The present salinization of the soil is often secondary salinization; that is, it only comes about through agricultural land use.** Lake Bagrax has served and still serves as a collecting reservoir for these damaging salts. In addition, as Murzayev reports, a part of the inflow from the Kaidu River into the lake has been redirected around it, thus reducing the freshwater inflow level. The salt content of the lake water rose from  $0.4\text{g l}^{-1}$  in 1958 to  $1.8\text{g l}^{-1}$  in 1980. It can, therefore, no longer be counted among freshwater lakes, according to Chinese norms.

In contrast to the development plans as recorded by Murzayev, the inquiry material from *Acta Geographica Sinica*, cited here, calls for the restoration of original conditions: a reduction in the present level of mineralization, a return to earlier levels of freshwater inflow, a retention of the Lake Bagrax ecotope as a fish-breeding and reed-producing area, and closing off of the canal which diverts freshwater around the lake. Also called for is a stop to further land reclamation, for otherwise the lake salt levels would reach  $3.0\text{g l}^{-1}$ . The return of cultivated land to its original state has not been demanded.<sup>9</sup>

These objections to further "development" of the lake area, put forward by scientists, point to a

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<sup>8</sup> Ibid. p. 130.

<sup>9</sup> Ibid.

change in outlook, away from the rigorous desertification of a living environment for the purposes of production, towards its conservation. This is an initial step. It remains to be seen how far these recommendations, proposed in June 1982, will be put into practice.

## 1.2 Negative consequences of development in the Tarim Basin

Table 3.1 Negatively affected cropping and pasture areas in Xinjiang from 1949 to 1982 (from Bai Hui-ying 1983, Chen Hua 1983a, Hou Xue-yu 1984, and Yang Li-pu 1983a).

1.33-1.41	million ha cropland given up
1.00	million ha salinized cropland
4.70	million ha pasture (degraded, salinized, sanded up)
3.40	million ha pasture (opened up for agricultural use)

### SOIL SALINIZATION

The total area of salinized {and alkalinized} soils in Xinjiang, amounting to approximately 1 million hectares, is larger than the area of land reclaimed by state farms since 1949, given as approximately 866,000 hectares.<sup>10</sup> The total area under irrigation is given as 2.66 million hectares for 1981 (from a total of 3.2 million hectares of ploughed land).<sup>11</sup> More than one-third of the irrigated area is affected by salinization. These figures can only serve as a rough guide, however, for it remains unclear whether the salinized areas continue to be used productively. It is also unclear whether the soils in these areas were previously salinized in their natural state, implying that melioration and desalinization of the reclaimed land had not been carried out at a sufficient level. The figure for "crop land given up" may include additional salinized (or alkalinized) land.

On the Tarim River plain, 70,000 hectares were reclaimed by state farms between 1957 and 1977.<sup>12</sup> Here, about one-tenth of the irrigated area has had to be given up. On approximately half of the reclaimed land, the ground water level lies between 0 and 2m below surface level<sup>13</sup> and is therefore under constant threat of salinization.

The larger part of the soil we are concerned with here is soil damaged by secondary salinization through improper or inappropriate cultivation

10 Chen Hua (1983a) translated with comment by Hoppe (1984), p.140

11 Qian Zheng-ying (1982) p.292

12 Zhao Song-qiao and Han Qing (1981) p.115

13 Qu Yao-guang *et al.* (1982) p. 14. See also Qu Yao-guang (1982) p.43; Zhao Song-qiao and Han Qing (1981) pp. 115.

methods (irrigation without proper drainage, excessive irrigation with a consequent rise in the ground water level, etc).<sup>14</sup> On the other hand some salinized and alkalized areas have been made arable successfully by state farms.<sup>15</sup> The relationship between development and soil salinization is shown in the following quotation:

“ In fact, since liberation there have been many cases where units have been forced to move by salinization, amongst them farms of the Production and Construction Corps, People's Communes and in one case even a district town. As I write, the district town Lop [West of Hotan] is severely endangered by soil salinization. Houses are being soaked and are becoming almost uninhabitable; roads can only be used with difficulty. Will the town move or not? The population is only waiting for a decision from the leadership. The Yopurga district [southeast of Kaxgar] had a grain surplus from the fifties up to the sixties; it was able to transfer 5 to 6 million jin and often as much as 7 million jin of cereals [2,500-3,500 tonnes] to other places. The arable land of the whole district is now completely salinized. Since 1970, this grain surplus district has become a grain deficit district” (Chen Hua, 1983b, p. 3).

## DEFORESTATION

The forested areas along the banks of the Tarim River have been reduced to less than half of what they were in the mid-1950s, particularly as a result of land development for agriculture. Natural forests of *Populus diversifolia* along the Tarim River served to fix the sand surface and act as windbreaks; they reduced the aridity of the microclimate, and they have provided grazing areas for sheep. Above all, they prevented the spread of the Taklamakan Desert northwards. In 1982, the wooded area of *Populus diversifolia* {*Populus euphratica*} was given as 174,000 hectares for the whole Tarim River area. Figures for destroyed areas of former poplar woods indicate an area slightly larger.<sup>16</sup> In the Maralwexi District on the Yarkant River, there were originally 300,000 hectares of *Populus diversifolia* forest. By 1980, this had been reduced to 100,000 hectares.<sup>17</sup>

The main reasons for deforestation of this area were:

- a) land development for agricultural use by state farms;

<sup>14</sup> Qu Yao-guang *et al.* (1982) p. 21. See also Zhao Song-qiao and Han Qing (1981) pp. 116-17.

<sup>15</sup> Xu Rong-xin (1981), pp. 282-3

<sup>16</sup> Qu Yao-guang *et al.* (1982) p. 32. See also Yang Li-pu (1983b), p. 3. Chen Ru-guo (1983, p. 95) gives the decrease in forested areas along the Tarim River as *ca.* 285,000 hectares between 1958 and 1978.

<sup>17</sup> Chen Hua (1983a); in translation by Hoppe (1984), p. 124.

- b) the dying off of forested and pasture areas as a consequence of water engineering schemes, e.g. reservoir building on the Kaxgar, Aksu, Yarkant, and Tarim Rivers;
- c) reduction of runoff through irrigation;
- d) ill-defined district borders which resulted, for example, in competition for the forested areas between the districts of Merket and Maralwexi;
- e) increased demand for fuel wood as a result of population pressure, through migration into the region and population growth among the "minorities."

### **SAND ENCROACHMENT**

In the Hotan Region, south of Taklamakan, the area of land encroached by sand over the past 30 years as a result of plant cover destruction is estimated to be 30,000km<sup>2</sup>.<sup>18</sup> The land area encroached by sand in the Tarim River plain is increasing; Chen Ru-guo gives its recent increase from 1958 to 1978 as 1,800km<sup>2</sup>, making it greater than the area of land reclaimed in the Tarim region since the revolution. For the collection of firewood in the Lopnur (Yuli) district alone 100km<sup>2</sup> of *Tamarix ramosissima* are denuded each year. The desert in this district advances by as much as 2-3 km in some places during the course of a sandstorm.<sup>19</sup>

### **DESICCATION ON THE LOWER REACHES OF THE TARIM RIVER**

As a result of increased use of the Tarim waters for irrigation on the upper reaches and the upper parts of the lower reaches {instead: 'middle reaches'}, runoff levels on the lower reaches have been steadily falling, particularly between Tikanlik and Lake Detama, into which the Tarim has flowed since 1952. The danger exists that state farmland around Tikanlik will have to be abandoned because of lack of water.<sup>20</sup>

Since the building of the Daxihaizi Reservoir at Tikanlik in 1957, the Tarim has virtually dried up there.<sup>21</sup> Below Tikanlik, in the Argan area, the desert has grown from 12 percent in 1958 to 52 percent in 1978.<sup>22</sup> The corridor of vegetation that existed earlier, separating the Lop-Nor and the

18 Chen Hua (1983a); in translation by Hoppe (1984), p. 140. The Hotan Region embraces the districts Hotan, Karakax, Guma, Qira, Keriya, and Lop. The Region extends 920km from east to west, and 420km from north to south, according to a report on aerial mapping of *Popuhis diversifolia* woods in the Tarim Basin (*Xinjiang Linye*, no. 6, 1980).

19 Chen Ru-guo (1983, p. 95) describes sand encroachment as a direct result of deforestation.

20 Yang Li-pu (1983b), p. 5; Chen Ru-guo (1983), p. 92-3.

21 Qu Yao-guang et al. (1982), p. 19..

22 Wu Zheng (1982), p.200

Kum-tag (Kuruk-Kum) Desert from the Taklamakan, is threatened with complete sand encroachment. Uighur settlements in this region have been presumably heavily damaged by lack of water. This "green" belt is an important traffic route through which a railway line to Qinghai is also planned for the future. But, serious problems for present traffic along this route as a result of sand encroachment are already evident.<sup>23</sup>

### **LIQORICE CLEARING IN MARALWEXI (BACHU) DISTRICT**

As my last example, I shall consider the cutting of liquorice root in Maralwexi District. The area of the district is 22,000 km<sup>2</sup>. Large amounts of liquorice (*Glycyrrhiza inflata Beta*) grow there. The above-ground parts of the plant are used to provide grazing fodder mainly for cattle and sheep in winter and early spring. However, since Xinjiang became an important supplier of the liquorice root, and since the Export Trades Department increasingly encouraged its harvesting from 1970 onwards,<sup>24</sup> with relatively high purchasing prices (e.g. 0.33 Yuan per kg earlier and 0.28 Yuan per kg in 1982), 55,333 hectares of land have been denuded in Maralwexi District. Chen Hua reports that the district is dotted with holes and troughs as a result of liquorice harvesting. People and wagons can move only with difficulty through such areas. The number of cattle in the district has fallen from 200,000 to 30,000 head. Sheep, which previously constituted 80 percent of all livestock, have been replaced by goats, from which no more than 3kg of meat per animal can be obtained.<sup>25</sup>

Liquorice root cutting is carried on by individuals, by commune members and by state farm collectives who, by so doing, can earn several thousand yuan in cash per year; Liu Guo-jün reports that many state farms equipped with tractors and bulldozers use the winter rest period to denude whole areas. In order to harvest 1 kg of liquorice root 2-3m<sup>2</sup> of land must be denuded.<sup>26</sup> Chen Hua calculates that an even larger area is necessary for obtaining 1 kg of the root in

23 Chen Hua (1983a) in translation by Hoppe (1984), p.113

24 Chen Hua (1983a); in translation by Hoppe (1984), p.122-4, see also Liu Guo-jün (1982).

25 Chen Hua (1983a); in translation by Hoppe (1984), pp. 122—4. Jianabur (1984) gives more detailed figures for liquorice cutting in southern Xinjiang (Maralwexi, Bögür, and Awat districts). Of the previous root reserves, 57.5 percent has already been cut, 37.5 percent of the original reserves remains. Purchases over the years, i.e. since about 1949, have amounted to 138,000 tons. In Maralwexi District, the amount of forage grasses in 1979 amounted to less than ten percent of the 1974 quantity. In this district during winter and spring each year, an average of 26,000 head of cattle perish.

26 Liu Guo-jün (1982), p. 48

Maralwexi: approximately 6.5m<sup>2</sup>. He calculates that 100kg of liquorice root can be cut per *mu* (0.066 hectare) of denuded land in Maralwexi. This gives an average return of 30 Yuan for each *mu* of denuded land. Up to 8,000 tons of liquorice root have been purchased from Maralwexi district alone each year. In 1982, 3,000 tons were purchased. According to Chen's figures, 30,000 *mu* of land would have to be ravaged for this purpose.<sup>27</sup> Export from Xinjiang amounted to 40,000 tonnes per year during the period 1979-81. According to material from the Liquorice Investigation Commission, 1.53 to 1.93 million hectares were {covered} with liquorice in the 1950s. This area has decreased since by more than 60 percent. By 1983, the remaining area was only 600,000 to 666,000 hectares (Jianabur{/Janabil} 1984, p. 19).

Both Liu and Chen point out the "absurdity" of continued liquorice root cutting. If a long-term, continued use of the root were intended, more importance would have to be given to its regeneration, growth, protection, and even to an extended reproduction of these resources. Chen criticizes the present methods as "killing the hens to get at the eggs."<sup>28</sup> Liu proposes measures such as planned cutting, planting, supervision, and training of proper personnel. Both call for the conservation and carefully managed use of liquorice root resources. Liu also urges that these resources be further expanded. Both Chen and Liu stress the importance of sustaining the environment during the exploitation of such resources; excessive cutting of liquorice root can lead to sand encroachment and desertification. Cattle raising also meets with difficulties, because an important source of winter and spring fodder is being depleted. Liquorice is used for aromatizing tobacco, in beer brewing, and in the production of sweets (Rehm & Espig 1984, p. 292). Liquorice cutting is an example of ruinous exploitation under pressure from the Chinese and World markets. Liquorice is widely cultivated in the Southern Republics of the USSR.

## CONSEQUENCES

In the case of Lake Bagrax, the lack of concern expressed by Murzayev for the self-renewing environment on whose fruits a human population thrives is being replaced by growing concern for the conservation and preservation of the lake ecosystem. The destruction of a resource, as called for by Murzayev, i.e. to use the water otherwise "wasted" by evaporation for irrigation to raise agricultural production, is no longer seen as an absolute necessity. Rather, it may be necessary to reduce agricultural production in the vicinity of the lake in order to guarantee its preservation.

A similar change in attitude, at least within the

27 Chen Hua (1983a); in translation by Hoppe (1984), p.137.

28 Ibid.

scientific community, has occurred towards the disappearance of poplar woods and desiccation of the Tarim River flood plain. {For details see the monograph *Watershed and floodplain management along the Tarim River...2007*} Drying out and desertification of areas of natural vegetation through expanded irrigation in cultivated areas, {...}, and the gradual desiccation of the Tarim Basin from east to west are the subjects of much criticism. The well-being of one area cannot be allowed to cause damage in another. Here we see a swing away from the fixation on production figures to a concern for reproduction of the whole. *Loci standi*<sup>29</sup> are regarded as self-generating; it is relatively unimportant what they offer in terms of production for external use. Nevertheless, measures to preserve or regenerate areas such as the lower reaches of the Tarim River are still lacking, although scientific research has been promoted in this area and a Tarim River Committee under the Autonomous Region's government has since been established.

The "succession" of development in the Tarim Basin may be roughly described as follows. In stage 1, the natural plant cover is partly destroyed to create new fields. The water regime, established over long historical periods, both naturally and artificially, is altered. In stage 2, the cleared land is productive for a certain period of time. In stage 3, however, as a result of water and soil salinization, sand encroachment, reduction of runoff, and shrinkage of the plant cover, desertification of grazing land and of new arable land sets in. Chen Hua expresses it succinctly: "In the final analysis, deserts have not been transformed into fertile fields, but fertile fields into deserts."<sup>30</sup> He claims that the oases Niya (Minfeng), Qira (Cele), and Guma (Pishan) on the southern edge of Taklamakan, are being threatened with sand encroachment. He argues that if this trend continues as it has up to now, by the year 2000 the only oasis to survive in the southeastern part of the Tarim Basin will be Qarqan (Qiemo).<sup>31</sup>

The Chinese are just becoming aware of the real, long-term costs of land reclamation and increased agricultural production, i.e. the destructive side. The price is apparently too high. While the development paradigm remains dominant, the reproduction paradigm has begun to appear as its companion and critic. Initially, this was in order:

- a) to conserve present resources and stop further desertification, and
- b) to seek ways of re-establishing nature and to find a rational balance between protection of the whole area from desertification and Provision of suitable levels of utilization.

Nature's potential and the demands placed on her

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29 "Standorte", i.e. places, or stations

30 Chen Hua (1983a); in translation by Hoppe (1984), p. 137.

31 Ibid. p.126.

must be brought into accord. This new perception is more or less clearly mirrored in the articles cited here. Directives from the Central Government in Beijing, however, continue to demonstrate unbroken faith in the development concept, as illustrated in a lecture by the Prime Minister, Zhao Zi-yang, on the future development of Xinjiang.<sup>32</sup> The slogan "Tap the Great Northwest" represents a new, additional demand upon Xinjiang and other provinces of the Northwest which, like its forerunners, may continue to violate fundamental laws of cultural and environmental adaptation. A 4.5-fold increase in the value of industrial and agricultural output from 1980 to 2000 is the present aim. Within the scientific community as well, critical ecological thinking oriented towards the reproduction paradigm is far from being uncontested. A group of scientists adhering to the development concept have this to offer the ecologists:

„Our research has shown that the plant cover in the desert plains of Xinjiang is indeed thin and the soil's biological activity extremely weak, but the environment has not been destroyed since liberation as a result of land reclamation. In fact, more than a little melioration has come about as a result of intensive grass and tree planting. Naturally, further improvements must be set in motion; for that we will need a scientific evaluation. Since liberation the water reserve levels in Xinjiang have risen by a factor of 200. Per year, several hundreds of thousands of tons of chemical fertilizer are sent in by the state. The cereal production per mou has risen from 130jin, shortly before liberation, to a present level of 250jin. The total cereal production has risen from 1,700 million to 8.000 million jin [850,000 tonnes to 4,000,000 tonnes). The soil productivity has been considerably increased. The unexploited capacities in Xinjiang's agricultural production are still very large. They should be tackled energetically and exhaustively; they must be actively explored and put to use.<sup>33</sup>

The ecologists do not disregard these "successes", but they emphasize that incorrect or inappropriate land use, centered on high cereal and cash crop production connected with tremendous changes in the established water regime (precisely the development success claimed here) is responsible for the enormous losses of land and vegetation, for sand encroachment, and for salinization. The group of scientists quoted here ignores the negative

32 Zhao Zi-yang (1983). Similar expectations are fostered by Ismail Amat, former chairman of the region's government, who emphasizes the exploitation of non-renewable resources: "The region is literally sitting on a goldmine. Gold has been discovered in 56 counties so far" (*China Daily*, 16 June 1983). See also Wang En-Mao (1984).

33 Liu Xun-hao *et al.* (1983), pp. 5-8. See also Chen Hua (1983a); in translation by Hoppe (1984), pp. 136-7.

balance drawn by the ecologists and tries to argue its way around the damage already done. What is possibly taking place here is a political/ideological battle concerning whether further "wasteland" should be cleared for agriculture or not. That all these discussions are taking place without participation of the native Turk and Mongol peoples of Xinjiang is also worth noting.

## ***2. Attempted formulation of the reproduction paradigm***

### **THE DEVELOPMENT PARADIGM VERSUS THE REPRODUCTION PARADIGM**

Whenever development is spoken about, the stress is usually laid on commodity production, trade, and industrialization. Self-sustaining rural economies are seldom considered; rural self-sufficiency is regarded as backward. It is even considered progressive to tear down such traditional, non-developing forms of economy.<sup>34</sup> Men and women are seen as commodity producers, dependent or independent, or as consumers of commodities. Much consideration is therefore given to the creation of jobs.<sup>35</sup>

In the development paradigm, the countryside (in contrast to the town) is seen as a raw material and commodity supplier, rather than as an independent, self-sufficient unit. The products of the countryside are needed to supply industry and towns, for these cannot provide for themselves. Conversely, on this model, the whole rural sector is required to act as a consumer market for urban industrial production. In order that rural inhabitants fulfil this function, they must have disposable incomes.

Industry stands at the center of every development scheme. It is, from the outset, a commodity producing sector (in contradistinction to agriculture). The direction of development is thus fixed in advance. The subordination of villages and the agricultural sector to the requirements of the urban-industrial sector results in a general disregard of local spheres. The aims of development processes are supraregional or national goals which are, above all, abstract and statistically defined such as "raising the standard of living," "raising industrial and agricultural output levels," "increasing productivity," "national in-come," etc. The many

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34 Li Fu-chun (1980), pp. 18-22, 47. To cite just one of Li's headings, "Commodity production is a sharp weapon for destroying the fortresses of self-sustained economies" (ibid. p. 18).

35 Seers (1974). Compare this with the attention focused on development of the inner market ("autocentricity") in "underdeveloped" countries (Senghaas 1977, Ch. 5).

concrete, individual situations are reduced to one nationally or provincially averaged level. Statistical averages extinguish local peculiarities. Individual places, the *loci standi* of reproduction, "disappear" in favour of an abstract place, the nation or the state and its statistically expressed well-being. Through the statistics on which development plans are based, losses suffered during the course of development can best be hidden. A large proportion of development successes only come about to the detriment of, or at the cost of, other spheres, e.g. nature, society, or the individual.

We can extend this line of thinking one step further: the norms of development are commonly international, and their points of reference are the most highly developed countries.<sup>36</sup> Characterizing a society as "backward" or "underdeveloped" is to measure that society by alien standards, that is, by the standards of capital accumulation as they operate in the most developed countries of the world. The Chinese use the level of development of the highly developed metropolises as the yardstick for classifying themselves as "underdeveloped." Since 1949, then, with the help of Chinese and foreign value systems, the oasis economy of Xinjiang has been labelled "backward".

What does the proclamation of a development success, for example, the increase in cereal production since 1949, say about the sustainability of these yields? Is there any mention of pastures and forests destroyed in the process of opening up new land? Is there any mention of soil deterioration? Of the quality of wheat? Who has counted the mulberry and apricot trees that have had to be removed for the creation of large field strips? Before a development success can be spoken of, a balance sheet should be drawn up in which the positive and the negative consequences of this development are put together. Chen Hua writes:

„Some of these comrades tell me that here [in the state farms on the Northern fringe of the Tarim Basin] also they have the problem of the 'Four Modernizations'. Those are salinization, desertification, soil deterioration, and gullying. Soil deterioration means that the land is planted for three years in succession, but after that, the fertility and, correspondingly, the productivity also decline.”<sup>37</sup>

What, then, is the value of such production figures and production success? One is forced to conclude, very little. What are required are comprehensive reports, covering a long period of time and giving

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<sup>36</sup> Karl Marx (1962), p. 12: "Das industriell entwickelte Land zeigt dem minder entwickelten nur das Bild der eigenen Zukunft." See also Ulrich (1980). The rejection of this generally accepted axiom would represent a real turning point.

<sup>37</sup> Chen Hua (1983a); in translation by Hoppe (1984), p. 140.

information about the state of reproduction, embracing the whole natural, social, anthropological, and spiritual setting.

Little or no consideration of historical constants or of the continuum in the historical process is given by development theory. It is devoted solely to increasing existing production levels. But, growth and increase can only be additive: growth cannot replace the continuum on which it is based.

## **CONSIDERATION OF THE WHOLE**

The reproduction paradigm avoids the narrowness of the development paradigm as discussed above. It takes the "whole" into account. But, what is the "whole"? I shall call it the "anthropological complex"<sup>38</sup> of a limited local sphere. It embraces the geobiocoenosis, the human population, cultural identity, historical constants, spiritual life, economy, technology, and society, as well as factors intervening from outside. All these elements play a role in the reproduction of this complex. The anthropological complex of the Uighur oasis, for example, its context within the surrounding desert, specific ethnic traits or local particularities, soil development processes, and the water regime, are relatively continuous. Individuals, humans and other biota, come into being and die; segmentary events occur and vanish, leaving their traces on the whole complex (e.g. the building of a new irrigation channel system, the introduction of a new technology, or the destruction of the traditional structure), while the structure of the whole complex remains durable and resistant.

Whenever a development process is going on, changes are introduced into this complex. What makes the development concept so particularly subject to criticism is that it fails to consider that its interventions and alterations {might} interrupt the reproduction cycle and often deplete the anthropological complex of essential elements. Changes introduced in one area of the complex can have detrimental impacts on another or on the whole itself.

The reproduction paradigm places the conservation {of continuous elements of the anthropological complex} in the foreground. So,

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<sup>38</sup> I intend the term "anthropological complex" (German: "anthropologisches Gefüge") to mean that within the whole of nature, society, and the economy, various elements fit together, are compatible to, or comply with one another {in German the term 'Gefüge' is most appropriate to render this meaning, it is without equivalent in English} ; and that humans as understanding, speaking, and acting beings are still in the center of that complex {- without making the complex necessarily an anthropocentric complex}. See also Note 2 above. A similar term "ecological complex" ("ökologisches Gefüge") is used by E. Schramm in his article "Ökosystem and ökologisches Gefüge" in Böhme and Schramm (1985), pp. 63-90.

on this model, we are forced to make hard choices: elements which increase the viability and vivacity of the anthropological complex should be promoted; those which endanger it should be weeded out.

### **THE RETURN TO TRADITIONAL AND AUTOCHTHONOUS LAND-USE SYSTEMS**

So-called autochthonous land-use systems embody continuity. They came about in long, historical processes of learning and adaptation. At whatever point in time development is introduced, these processes are still continuing. The traditional settlement pattern in Xinjiang, the creation of oases in the desert ecosystem,<sup>39</sup> the agricultural methods used, traditional irrigation schemes and the spatial structure of the oases, and the {mobile} forms of cattle raising were classed as "backward" after 1949, and a transformation in all social, technical, and economic areas began. Large-scale state farms with huge strip field, modelled after Soviet state and North American corporate farms, were created. Traditional small-scale garden agriculture was to be abandoned in favor of large-scale mechanized enterprises.

The autochthonous, traditional use of land has one strength: its continuity. Any newly introduced system must also demonstrate similar continuity or at least compatibility to the traditional system.

### **AWARENESS OF THE FUTURE: SUSTAINABILITY**

Continuity must also be thought of as extending into the future. Every generation should take care not to destroy the basic means of existence, natural or agricultural resources; each generation is bound, at the very least, to preserve these for coming generations.

Chen Hua stresses the fact that humans in material distress tend to take the first solution which comes to hand. Thinking only of satisfying their immediate wants, they are unable to take the interests of future generations into consideration, and their behavior is destructive to their immediate environment.<sup>40</sup> In the same way, political or economic demands coming from outside the local sphere can have disastrous effects, if the sustainability of these efforts is not taken into consideration. Chinese state farms were built up in an environment fairly alien to the Chinese. These units were created primarily to serve military, political, and economic {...} purposes. They were intended to produce market surpluses. The tie between the institution and the individual was wage labor. Such an {institution} was often not in a position to adapt itself to the

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<sup>39</sup> Chen Hua (1983a); in translation by Hoppe (1984), pp. 133-4.

<sup>40</sup> Ibid. pp.116-17.

environment, so that its impact could easily become destructive. Sustainability is intimately connected to tradition and the cultural identity handed down over centuries. Sustainability is also more likely to exist where local cycles of reproduction thrive than in an artificial unit where commodity production, {political and military purposes} play the most important role.

### **HOW CAN REPRODUCTION BE EXTENDED?**

The reproduction paradigm redefines "development" and "increase": first, existing resources and potentials must be conserved and protected. Only after that can "improvements" or an "increase" be reasonably considered or achieved. Chen Hua states:

If the relationship between the desert ecosystem and the oasis ecosystem is handled correctly, man *can survive* in the extremely arid physical environment [of Xinjiang] AND achieve development.<sup>41</sup>

Thus, we arrive at a three-stage model:

- (a) conservation,
- (b) "increases" or "improvements" during the conservation process, and
- (c) further conservation of that which has been increased, integrating it into the continuum.

As an alternative, in order to maintain existing resources, should the reproductive process as a whole be endangered, stage (b) {or, earlier "increases"}, should be rolled back to eliminate the threatening elements {in order to achieve reproduction}. Two other factors should be considered in this context:

- (1) An improvement in the quality of reproduction may not appear as an extension of reproduction, because it cannot be recorded statistically.
- (2) If we reinstate historical elements lost or "forgotten" in the historical process, they may appear as an extension of reproduction in an actual situation. Would it not, however, be more correct to call this a "restoration" of historical elements rather than an extension of reproduction? For example, if the forests of *Populus diversifolia* and *Populus pruinosa* in the Tarim River plain, lost during the 1950s, 1960s and 1970s, were to be reforested in coming decades, this could neither be called a "development" nor an "extension of

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41 Ibid. p.134.

reproduction"; it would be no more than the restoration of a lost element.

In the process of tillage, for example, natural vegetation or the natural ecosystem is replaced by an artificial ecosystem (e.g., steppe by fields of grain). It is often doubtful, however, whether such substitution constitutes any real "increase" or an "expansion of the reproduction process." With the occurrence of negative side effects (such as diminishing runoff or salinization of soils and fluvial waters), the artificial ecosystem may prove to be unsustainable or it may become completely unproductive. In such a case, more extensive use of the natural ecosystem is more advisable than substitution. This issue is raised in many articles on Xinjiang. The conjecture is made that, in many places in which arable farming was expanded after 1949, other forms of land use such as afforestation, grazing, or fruit cultivation might have been more appropriate.<sup>42</sup> This would have meant raising the level of existing geobiocoenotic potential, increasing its ability to reproduce.<sup>43</sup>

### LOCALIZED, AUTOCENTRIC REPRODUCTION

Neighborhoods or small localities are receiving renewed attention and focus. The reproduction paradigm does not take commodity production, monetary returns or wage-income as the irrevocable and permanent substance of economy, i.e., production for consumption elsewhere. On this model, the substance of economy is the yield which results from a reciprocally beneficial relationship between nature and humans, bound to a limited, local sphere.

In Maralwexi, for example, the following (simplified) sequence can be observed:

A) reproduction of liquorice and other grasses without human input;

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42 Qu Yao-guang *et al.* (1982), p. 15; Yang Li-pu (1983), p. 6; Chen Hua (1983a) (in translation by Hoppe 1984, p. 131): ". . . it is this kind of agriculture which destroys soils and plant covers, and which leads in a direct way to sand encroachment." In a personal interview with Chen Hua, director of the Academy of Social Sciences in Ürümqi, in April 1984, he told me that he considers fruit growing to be an appropriate form of land use in Xinjiang. Another of his tenets is the preservation of the natural desert ecosystem as a grazing ground, and as a shield for the artificial oases ecosystems. Today, as Chen objects, water resources are used up almost completely for agriculture. Water requirements for the reproduction of natural vegetation have not been considered up to now. For further discussion of the destruction of natural plant cover in arid and semi-arid regions through agriculture see Sun Jin-zhi (1984) on the subject of Inner Mongolia.

43 Heiner Dürr found this principle in practice in a development project in the Philippines. I am grateful for his suggestion. See also Chen Hua (1983a); in translation by Hoppe (1984), pp. 121-2.

B) reproduction of sheep which feed on liquorice and other self-reproducing vegetation;

C) reproduction of the human population partly sustained by the sheep.

The ruthless cutting of liquorice with the {short-sighted} aim of obtaining a money income and, on the government's side, with the aim of increasing export figures, without regard for environmental impacts, threatens to destroy the reciprocally beneficial relationship described above.

### WHAT IS "NECESSARY"?

The relationships between necessary and surplus work and between necessary and surplus products<sup>44</sup> are not the same in the reproduction paradigm as they are in the development model. Development theories are essentially theories of surplus. Creation of surplus value, marketing of products, realization of the surplus value on the market, profit and capital accumulation as driving forces for the development process,<sup>45</sup> representing an ever-expanding spiral, have only secondary importance for the reproduction paradigm. This paradigm is based on the idea of necessary work for the reproduction of a given society, including its "means of production" such as soil, grass and grain, water, fields, air, trees, or mechanical Instruments. {A certain kind of} labor was never deemed necessary before, that is work necessary for the reproduction of nature as the basis on which the society as a whole reproduces (Böhme & Schramm 1985, pp. 80, 98; {cf. the concepts and practice of 'ecological restoration' as they have developed during recent decades.}) Economic necessities hitherto deemed unalterable, such as the continuous creation of ever-higher agricultural yields and new marketable products such as chemicals (often, in fact, redundant or even pernicious), become secondary and can even face abolition in order to secure reproduction (Bach 1986). On the other hand,

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44 An extended debate would probably be necessary to precisely define what constitutes a "necessity" or "necessary work" (see Note 47 below). Population studies and carrying capacity analyses attempt to define "necessity" in a narrow, materialist way. Compare Mühlmann (1966). Interest in the necessary reproduction of rural contexts can be traced back to the fundamentals of the physiocratic school. In agriculture, only that which is produced over and above agricultural reproduction (including the rural population, means of production, etc.) represents a "*produit net*", "*une richesse independante et disponible*" with which urban life, state bureaucracy and industry can be supported. See Steppacher (1976), pp. 19ff.

45 For accumulation strategies, compare Xu Di-xin *et al.*, translated by Watson (1982). See also Ishikawa (1960, 1965), Amir (1974), Steppacher (1976).

"necessity" should not be understood as mere materialist survival.<sup>46</sup>

## TOWN AND COUNTRY

The reproduction paradigm appears to be a rural concept or at least applicable only in rural contexts. In fact, it may even be applicable only in the rural context of "undeveloped" countries with a large share of autocentric self-sustaining agriculture. How, then, could it be applied to urban concepts or to urban industry which rely *ab ovo* on the rural context for the supply of their means of reproduction because they lack

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46 The application of the reproduction paradigm in a narrowly defined sense is suggested by scientifically calculated subsistence levels and carrying capacity analyses. Ecological approaches, too, often represent an instrumentalized view of the relationship between humans and nature, and seek only to perfect human control over nature. In China, for example, "ecofarming" is understood in this sense. A paper entitled "Develop the Green Revolution - let's build up ecofarming" claims that:

- ecofarming adheres to ecological principles;
- ecofarming is comprehensively planned, corporate agriculture whose various parts are harmonized with one another;
- ecofarming is a highly effective artificial ecosystem;
- ecofarming is the concrete realization of comprehensive agriculture and of expectations of high cereal outputs;
- ecofarming is a synthesis of biological-organic agriculture and chemical agriculture.

The advantages of ecofarming are said to be: "the most rational utilization of photosynthetic products," "maximal plant production," and "maximal economic benefit," among other things (Yang Ting-xiu 1983, pp. 46-8). Another paper proposes the following appetizing scheme or "menu" for an artificial ecosystem according to the food chain concept:

"Mink dung contains many unresorbed nutrients, which is why some people use it to feed chickens. Chicken dung can be used as pig fodder, and pig dung can be used to feed fish . . . On each of these steps, a rather high economic value can be produced, and mud from the lake can be dug up for use as field fertilizer.

See Li Bin-sheng (1984), p. 55. The question as to how one can "free nature from the yoke of a purely useful means of production so that she can transform herself into a habitat" (Trepl 1983, p. 26) is still not on the agenda. The development paradigm represents the continuous expectation of change. Because this is not the case with the reproduction paradigm, the first objection to it will be that it leads to stagnation. Reproduction does not preclude change; but it looks for a careful, nondestructive change. Indeed, it is perhaps more likely that a stagnating misery could be shaken off through reproduction than through development. No condition of "rest," of "balance," or of non-development, should be condemned *a priori*. Our restless advancing - being tied to the wheel of progress - is itself a state of want.

the elements of self-sustainability and aut centrality?

On the reproduction model the world's villages would withdraw from a national, state, or regional schema and give priority to their own reproduction; there would only be room for cities on this model, in the total interplay of things, where cities would be of service to the rural areas. The world's cities, heretofore dominating the rural contexts, would hence be drained by the world's villages.

All reproduction of anthropological complexes seems to be rural. It comes about only in cooperation with and consideration of nature's reproduction; it is a natural-rural context. In urban and industrial development processes this context is {easily} forgotten. Misuse of nature and its self-reproduction are obviously inherent in an urban/industrial context.

### *3. Final conclusions*

#### **XINJIANG' S FUTURE**

In 1983, a new campaign was inaugurated in China: "Tap the Great Northwest." China's northwest is to become the focal point of development during the coming decades. Xinjiang is expected to supply other provinces with production surpluses in livestock, crops, coal, oil, and various mined ores. Industry in Xinjiang will be boosted, and more people from the central provinces will be relocated to the northwest.<sup>47</sup> But, are these arid and semi arid regions able to bear such "increases"? Will more symptoms of desertification appear? If so, can they be tolerated? Will the autochthonous cultures of "minorities" be marginalized and squeezed out? Must all this be accepted in order to fulfil tasks for the national economy of the People's Republic?

If we consider Xinjiang as a whole, there are many factors which intervene in the reproduction process and which are responsible for the development process, inhibiting a more cautious reproduction process in the Autonomous Region:

- (1) As a frontier region under strong Soviet influence both before and after 1949, military security plays an important role in Xinjiang. This is reflected in its industrial and agricultural development which includes, for example, the construction of para-military state farms.
- (2) The central authorities in Beijing and local authorities in Xinjiang consider it essential to

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<sup>47</sup> Zhao Zi-yang (1983), "The population in Xinjiang will grow in the future." Officially, a relocation of people from the central provinces is not stated, but it can be expected.

control or neutralize the autochthonous population's aspirations for more autonomy and greater independence.

- (3) It follows from points (1) and (2) that, since 1949, a more or less organized transfer has occurred of the Han-Chinese population into Xinjiang. Land has been reclaimed by civilian and para-military settlers, thus exerting a strong developmental impact on the whole region.
- (4) Chinese interest in the exploitation of the rich mineral resources, coal and oil, leads to a "classic" understanding of agriculture in Xinjiang as the necessary basis, the servant, of the future industrial development of the region.<sup>48</sup> So long as this understanding persists, agriculture will not be in a position to follow its own pattern of reproduction in the context of natural conditions in the region and specific local ethnic traditions.
- (5) Up to now, economic campaigns, collectivization, grain production and land reclamation campaigns, irrigation schemes, and efforts to settle the nomadic population have often not considered the necessity of adapting measures to the natural environment, to the autochthonous population, and to its cultural traditions.
- (6) Integration of the region into the Chinese market and making it a contributor to the Chinese economy have always been at the forefront of Chinese development policy and projects. Surpluses which the autonomous region could actually furnish by following the laws of reproduction are not being traded; instead, so-called "production bases" are being planned and put into operation. These are specialized economic-geographical zones which are expected to furnish an increasing share of commodity products for the Chinese and the international market.
- (7) Plans and projections by the autochthonous population for further development of their particular local spheres and of Xinjiang as a whole would perhaps look very different from those plans put into action by the Chinese authorities.
- (8) Ideologically speaking, the cultures of the minority populations in Xinjiang are still not

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<sup>48</sup> During an International Symposium on the Exploration and Utilization of Natural Resources in Arid Areas (ISEUNRAA) held in Ürümqi in August 1985, in which I participated, this was stated clearly by Chinese officials. Natural resources were discussed in a very abstract manner without giving much attention to their ties to the cultures and societies dependent on them. Proceedings of this symposium will be issued sometime in 1986 or 1987.

regarded as equal by the majority. The pejorative, "backward", is still applied to these minorities {and their cultures, if not in writing in political and economic action – in disregard of international policies for the maintenance of cultural diversity}. Thus "development", encouraged and guided by the Chinese, who have a very strong belief in the superiority of their own culture, is the "necessary" way forward in Chinese eyes. Apparently, a comprehensive evaluation of the productive/reproductive capacities of local minority cultures in Xinjiang, of their anthropological complexes, has not been made.<sup>49</sup>

Xinjiang is being drawn into the tides of the development paradigm which dominates the world market, by first being integrated into the Chinese domestic market (and thus into the world market), through development schemes promoted by the Chinese central government, through {population transfers, but, also through} continued population growth of the local minorities, and through autocentric capital accumulation within the region itself (see Zhao Zi-yang 1983; cf. Huang Wan-lun 1984).

„When soberly analyzed, the function of socialism within the capitalist world economy from 1917 onwards was to make catching up with development possible under conditions which capitalist premises would not have allowed. Socialism had the function of protecting society from further peripheralization and to relieve it of this peripheral status. Is it shocking to reduce socialism to this function?“<sup>50</sup>

No, it is not shocking; but, is it correct to call something "socialism" if it is nothing more than a harder form of capitalism?<sup>51</sup>

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49 In China there is always a large share of "internal" (*neibu*) literature which is not sold in bookshops and is not available to foreigners. In public journals, there are very few articles which describe the present conditions of minority cultures. To my knowledge, there is no actual description of the Uighur oases in the Tarim Basin. A very detailed description of the Turfan District does exist, on the other hand, but this is "*neibu*." However, the situation could improve in the future. Guo Yun-hua and Li Ze (1985) announce a lot of new books which describe, for example the autonomous districts of the Kazakhs and the Kirghiz.

50 Senghaas (1979), p. 433.

51 It is my contention that we cannot speak of socialism as a fundamentally new form of societal development in a state which employs the most fundamental forms of the capitalist production mode such as commodity production, wage labor, capital accumulation, industrial division of labor, and centralized state power with its inherent

Is it going too far to suggest that the development paradigm, whether it operates under "socialist" or "capitalist" conditions, only gives expression to fundamental laws which are inherent in the capitalist mode of production everywhere on the world market? Reproduction exists everywhere. In a pure form, it may still exist in "underdeveloped" regions where the specific impetus of development has not yet touched upon traditional modes of reproduction. In "developing" societies we may refer to it as the "overlayered" basis of these societies. Here, under the impact of development and capital accumulation, it is used, drained, and finally dried up. It can only regain its place, if the specific impetus of "development" and capital accumulation is rejected.<sup>52</sup> The reproduction paradigm may lead to a better understanding of what growth for a society and its environment means, and how difficult it is to obtain, if our guardianship of the globe is taken seriously. For this guardianship, a rational cultural identity is necessary, which can only come about when the reproduction of society and the reproduction of nature are brought into balance.

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Postscript 2007: New concepts have emerged since this article was published 20 years ago. The variegated concepts centered around "sustainable development" are somehow related to the ideas formulated in this article. We cannot go into details here. In fact, "sustainable development" rather constitutes a "smart" form of growth concept. The necessity to start from the interconnectedness between the ecological sphere, the social and economic sphere is propagated by the European Union in its research agenda. Nonetheless, 'growth'

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division of labor, and in a state where the main projections of the future are still expansion of commodity production, increased capital accumulation, and expansion of industry. This would be better termed "state capitalism." See Hoppe (1978).

<sup>52</sup> That is, the continuum which I have tried to describe above, and not something absolute or unchangeable. Nor is it to be understood as a "basis" in the dichotomy between basis and superstructure.

or 'development' (as a growth concept) still maintain the dominating position.

The concept of ecological restoration, and restoration ecology as a specific field of research within ecology must be mentioned.

Four fundamental, and, interconnected aspects are formulated here:

The term "anthropological complex" (1) put forward in this article (which comprises "natural conditions", geobiocoenosis, local, regional or national cultures, the realm of productive activities and the identity of the subjects concerned as an interrelated whole) is already in itself - no wonder - highly complex. In everyday language and the realm of research we always separate these spheres from each other, especially the natural sciences and social sciences remain alien to each other: we have no term which would (re-)unite them. - This anthropological complex should be thought of in terms of reproduction (2). It can be perceived, as far as feasible, in terms of cautiously extended reproduction (3) (instead of outdated development or growth concepts). It might be necessary to cut back levels of reproduction attained at present (4). The necessity to secure reproduction – of the global ecosystem – is coming into consciousness through the present discussion about global warming. Conservation (or reproduction) of the global, of regional and local ecosystems and, for example, of the endangered diversity of (still) existing cultures represent the basic pillar of "necessity" (5) as it is discussed in this article. The growth of capital, and, the unlimited growth of knowledge and technological abilities do not constitute a necessity. What we are producing and consuming, even research carried out, is in many cases nothing else than non-sense, result of the spectacle of capital accumulation.

The article contains a critique of language: if we do not reconsider our language and the traditional concepts of growth and development which are incorporated in our languages, a new understanding cannot appear on the scene. This is especially true for our wrong but very common misunderstanding of *nature* (*natura naturata*) or *environment* a sphere separated from *society*, *culture* and *economy*. This misunderstanding is related to urban forms of life and the industrial form of appropriation of 'natural resources'. This misunderstanding is being reproduced wherever we separate social sciences and humanities on one hand, and, natural sciences on the other. The concept of "anthropological texture" tries to reunite these separated spheres.

## References

- Amir, S. 1974. Zur Theorie von Akkumulation und Entwicklung in der gegenwärtigen Weltgesellschaft. In *Peripherer Kapitalismus. Analysen über Abhängigkeit und Unterentwicklung*, D. Senghaas (ed.), 71-97. Frankfurt am

Main: Suhrkamp.

Bach, W. 1986. Klimabeeinflussung durch Spurengase. *Geographische Rundschau* 2, 58-70.

Bai Hui-ying 1983. Short discussion of problems in economic efficiency and financial work in Xinjiang's rural areas (in Chinese). *Xinjiang Shehuikexue* 1, 32-45.

Böhme, G. and S. Schramm (eds) 1985. *SozialeNaturwissenschaft. Wege zu einer Erweiterung der Ökologie*. Frankfurt am Main: Fischer alternativ.

Chen Hua 1983a. Sand encroachment and oases (in Chinese). *Xinjiang Shehuikexue* 1, 46-57, 66. {see the translation in Hoppe 1984}

Chen Hua 1983b. Let's transform the two damaging factors in order to achieve modernization (in Chinese). *Xinjiang Huanjing Baohu* 3, 2-6.

Chen Ru-guo 1983. The annihilation of the ancient city of Loulan and the historical experiences which must be drawn from it for managing national territory in the arid zones of our country (in Chinese). *Jingji Dili* 2, 91-5.

*China Daily* June 16, 1983. Xinjiang looks to "golden future" with development.

Egger, K. and I. Neumann 1978. *Humanökosystem Sahel* (mimeo). Heidelberg: Forschungsstelle für internationale Agrarentwicklung.

Guo Yun-hua and Li Ze 1985. Retrospect and prospect of ethnographic research (in Chinese). *Xinjiang Shehuikexue* 2, 20-6.

Hoppe, Th. 1978. *China Papier. Warenproduktion, Teilung der Arbeit und Kapitalakkumulation in der Volksrepublik China* (Master's thesis). Bremen: Impuls Verlag.

Hoppe, Th. 1984. Wiistenausdehnung im nördlichen China - Innere Mongolei und Xinjiang. *Landschaftsentwicklung und Umweltforschung*, 21, special issue: Umweltpolitik und Landnutzungsprobleme in der Volksrepublik China and Ländern der Dritten Welt. Technische Universität Berlin, pp. 91-148.

Hou Xue-yu 1984. Develop Xinjiang's Great Agriculture from an ecological point of view and stress economic efficiency (in Chinese). *Xinjiang Nongyekexue* 1, 3-5.

Huang Wan-lun 1984. An essay on tapping the Great Northwest (in Chinese). *Zhongyang Minzu Xueyuan Xuebao* 1, 3-8.

Ishikawa, S. 1960. *Capital accumulation machinery in*

*China* (in Japanese). Hitotshubashi University Research Series, no. 11. Tokyo.

Ishikawa, S. 1965. *National income and capital formation in Mainland China. An examination of official statistics*. Tokyo: Institute of Asian Economic Affairs.

Jianabur (Janabil) 1984. Speeding up the development of cattle breeding is an important strategic measure for economic construction in southern Xinjiang (in Chinese). *Xinjiang Shehuikexue* 2, 17-22.

Kuhn, T. S. 1976. *Die Struktur wissenschaftlicher Revolutionen*. Frankfurt am Main: Suhrkamp.

Kuhn, T. S. 1977. *Die Entstehung des Neuen. Studien zur Struktur der Wissenschaftsgeschichte*. Frankfurt am Main: Suhrkamp.

Liu Bin-sheng 1984. A discussion on soil desertification and sand control for getting rich (in Chinese). *Minzu Tuanjie* 6, 54—5.

Li Fu-chun 1980. The development of commodity production is an important means for the diversification of the economy in minority areas. *Minzu Yanjiu* 2, 18-22, 47.

Liu Guo-jun 1982. *Xinjiang's liquorice* (in Chinese). Ürümqi: Xinjiang Renmin Chubanshe.

Liu Xun-hao, Han Xiang-liang, Kong Yang-zhuang, Zhao Feng and Xia Ai-lin, 1983. On problems of ecological balance and the agricultural development in Xinjiang (in Chinese). *Xinjiang Nongye Kexue* 5, 5-8.

Marx, K. 1962. *Das Kapital*, vol. 1. In *Marx-Engels Werke*, vol. 23. Berlin: Verlag.

Marx, K. 1939-41. *Grundrisse der Kritik der Politischen Ökonomie*. , Vienna: Europäische Verlagsanstalt Frankfurt and Europa Verlag .

Miihlmann, W. E. 1966. Umriss und Probleme einer Kulturanthropologie. In *Kulturanthropologie*, . E. Miihlmann and E. W. Müller (eds), 15-49. Köln, Berlin: Kiepenheuer & Witsch.

Murzayev, E. M. 1962. *Journey without adventure and phantasy* (English translation). In Joint Publications Research Service no. 25110 (June 1964). Washington, D.C.: Joint Publications Research Service.

Qian Zheng-ying 1983. An investigation on water construction in Xinjiang (in Chinese). *Zhongguo Nongye Nianjian 1982*, 292-5. Beijing: Nongye Chubanshe.

Qu Yao-guang 1982. Water resources of the Tarim and their rational utilization (in Chinese). *Zhongguo Kexueyuan Lanzhou Shamo Yanjiusuo jikan* 237-48. ^

Qu Yao-guang, Chen Bi-shou, Han Qing and Li Fu-xing 1982. Change of natural conditions in the Tarim Drainage area after large-scale land reclamation and the rational utilization of water, soil, and poplar wood resources (in Chinese). *Zhongguo Kexueyuan Lanzhou Shamo Yanjiusuo jikan* 2, 15-35.

Rehm, S. and G. Espig 1984. *Die Kulturpflanzen der Tropen*

und Subtropen. Stuttgart: Verlag Ulmer.

Schork, W. 1980. *Die Entwicklung marginaler Gebiete in Kenia, das Fallheispiel Machakos*. Beiträge zum Ecodevelopment (mimeo). Heidelberg: Institut für Internationale Agrarentwicklung.

Seers, D. 1974. Was ist "Entwicklung". In *Peripherer Kapitalismus. Analysen über Abhängigkeit und Unterentwicklung*. D. Senghaas (ed.), 37-67. Frankfurt am Main: Suhrkamp.

Senghaas, D. 1977. *Weltwirtschaftsordnung und Entwicklungspolitik. Plädoyer für Dissoziation*. am Main: Suhrkamp.

Senghaas, D. 1979. China 1979. In *Stichworte zur "Geistigen Situation der Zeit"*,. 1 *Nation und Republik*, . Habermas (ed.). Frankfurt am Main: Suhrkamp.

Stappacher, R. 1976. *Surplus, Kapitalbildung und wirtschaftliche Entwicklung. Zur Relevanz der Physiokratie und der institutionellen Ökonomie für die Probleme der Kapitalbildung in unterentwickelten Ländern*. Dissertation, University of Basel.

Strong, M. F. 1976. To win the battle for a quality environment. *Catalyst* (3).

Sun Jin-zhu 1980. Steppe desertification in northern China (in Chinese). *DiliZhishi* 3, 5-6, 14. (see German translation in Hoppe 1984)

Trepl, L. 1983. *Ökologie- eine grüne Leitwissenschaft?* Kursbuch 74.

Ulrich, O. 1980. *Weltniveau. In der Sackgasse des Industriesystems*. Berlin: Rotbuch Verlag

Wang En-mao 1984. Die Beziehungen zwischen den Nationalitäten in Xinjiang (interview). *Beijing Rundschau* 51, 19-22.

Wu Zheng 1982. *The deserts of China* (in Chinese). Beijing: Shangwu Yinshuguan.

Xinjiang Comprehensive Expedition Team of Wasteland Resources 1982. The cause of salinization in Bosten Lake and methods for its control (in Chinese). *Acta Geographica Sinica* 37(2), 144-54.

Xu Di-xin *et al.* 1982. *China's search for economic growth* (translated by A. Watson). Beijing: New World Press.

Xu Rong-xin 1982. Statefarm no. 29 in Xinjiang (in Chinese). In *Zhongguo Nongye Nianjian 1981*. Beijing: Nongye Chubanshe.

Yang Li-pu 1983a. Evaluation and rational utilization of natural resources, the example of Xinjiang (in Chinese). *Ziran Ziyuan* 1, 1-6.

Yang Li-pu 1983b. Water resources of the Tarim Basin and environmental protection (in Chinese). *Ziran Ziyuan* 3, 1-7, 22.

Yang Ting-xiu 1983. Develop the Green Revolution -

Let's build up ecofarming (in Chinese). *Shuitu Baochi Tongbao* 4, 43-8.

Zhao Song-qiao and Han Qing 1981. Landwirtschaft am Nordrand des Tarimbeckens. *Geographische Rundschau* 33(3), 113-18.

Zhao Zi-yang 1983. To tap Xinjiang and to tap the Great Northwest is an important strategic projection of the Central Committee (extracts of a speech). *Renmin Ribao* (The People's Daily), September 2, 1983, pp. 1-2.