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The Appropriation of Rice at Mt. Kilimanjaro:

A Japanese Development Project and its Consequences

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Introduction

For many years, rice at Mt. Kilimanjaro was as exotic as elephants at Mt. Fujiyama. The dietary staples of the Chagga farmers are bananas, which are cultivated in groves in the area surrounding the farms, and maize, which is grown in the lowlands. Although the people of Kilimanjaro had contact to rice as early as the nineteenth century through their dealings with Swahili merchants, at the time they did not appreciate it. That changed in the 1980s with the beginning of the Japanese assisted Lower Moshi Irrigation Project (LMIP), which introduced wet rice cultivation in the form of irrigated rice paddies. Anyone investing in agribusiness today puts their money into rice cultivation and no longer into coffee, which was Kilimanjaro's favored cash crop for decades.

The process of local appropriation of the global good, rice, has been underway for roughly two decades. Rice is not simply an object which is acquired; rather, it is a good which is now locally produced. Rice production requires special fields, irrigation systems, and cultivating techniques. Further, in order to make rice a cash crop, a marketing system is also necessary. Finally, there are varying forms of rice consumption. Therefore the re-contextualization of rice in Kilimanjaro region does not always follow the intentions of the Japanese developmental plans.

This essay is intended to show how rice has been adopted in the local culture of Kilimanjaro, in which pre-existing trade strategies it has been integrated, and in which parts of local culture rice is currently not accepted. The research project "Irrigation in Kilimanjaro"[1] from the Collaborative Research Center 560 "Local Action in Africa in the Context of Global Influences" examines how the people in the plains south of Mt. Kilimanjaro cope with a Japanese developmental project intended to promote irrigated paddy cultivation. Here the innovation of the Lower Moshi Irrigation Project[2] consists less in the irrigation techniques, which have been known in Kilimanjaro for centuries, and more in the introduction of a new agricultural product, namely rice. As is always the case with irrigation projects, there have been upstream-downstream conflicts over water resources. Therefore the project is attached to Section C of the

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[1] The research project is led by Prof. J.C. Winter who is using the history of irrigation systems at Mt. Kilimanjaro to examine early forms of globalisation. As a junior research fellow of this project, I deal with recent global influences, and spent 18 months in Tanzania doing field research. The research is funded by the German Research Foundation (DFG) and is conducted in collaboration with Prof. N. Luanda of the University of Dar es Salaam. A research permit was granted by the Tanzanian Commission for Science and Technology (COSTEC). I would like to thank all the people who have helped me, especially COSMAS.

[2] An overview on LMIP is given by Ikegami (1994).

Collaborative Research Centre, which examines "Local Action in Contrast to Global Reference Systems." It further shows, however, that the cultivation of rice is a lucrative business, which has swiftly expanded beyond the actual project area. The local actors are in the process of appropriating the new good, rice.[3]

As a basis for the analysis of the appropriation processes I have used Kurt Beck's "Towards an Appropriation of the Machine" (Beck, 2001), in which he examines the use of diesel pumps among the Nile valley farmers of the Sudan. In his research of the appropriation of the machine, he distinguishes between various forms of appropriation. Unused factories represent symbolic appropriation, airplanes in cargo cults are a magical one, and lastly there is the technical appropriation or, if you will, using something in the way intended by its inventor. As regards rice, in addition to technical appropriation, I will further introduce other forms of appropriation: culinary, social, juristic, economic and ritual appropriation. An examination of the point "continued invention as a part of appropriation" (Beck, 2001: 77) should then form the close of the essay. First, however, allow me to mention a few words about rice.

Rice as a Global Good

What Kurt Beck postulated about the diesel motor is equally true of rice: It "belongs to the truly global things in everyday material culture." (Beck, 2001: 66) One can find it in every supermarket on the planet. Rice, or *oryza*, as it is scientifically called, is a cultivated plant genus from the grass family. There are two types: *oryza sativa* from Asia and *oryza glaberrima* from Africa. Rice is considered the most important tropical grain, and is the chief source of nutrition for half of mankind. Its cultivation began in East Asia seven thousand years ago. To Europe rice was brought by the Arabs. When they introduced Islam to Andalusia, they introduced rice as well. Over the course of the colonization of America, rice spread into the New World. African rice was first cultivated in the area of the Niger River 3500 years ago. Its expansion, however, was predominantly limited to Western Africa. (See Hofinger, 1988: 398 f; Rehm, Espig, 1991: 10ff; Schoenfeld, 1997: 5ff; Koch, 2001 I: 9f; Koch, 2001 II: 2f.)

How, then, did rice come to Kilimanjaro? The *sativa* type came to Africa by the same way as other Asian products like the mango, banana, and coconut: by sea. As an easily conservable food, rice could be found both on board the outrigger canoes which reached the shores of

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[3] The dramatic conflicts which result from the fact that hundreds of farmers have been cut off from water for their traditional irrigation furrows have to be analyzed in another paper.

Madagascar coming from the islands of Southeast Asia, over 2000 years ago; and on the Arabian and Indian dhows, which have sailed to the East African coast for over a millennium. It was, however, only the Southeast Asian immigrants of Madagascar who brought with them an intensive rice cultivation technique, namely terraced farming. On the East African mainland, rice cultivation was limited to the coastal regions, and was dependent upon the rains. The Arab traders introduced rice to the people, but not an appropriate cultivation technique: "Little use was made in Africa of small irrigation systems, levelled terraced fields, animal traction, organic manuring and other features of intensive Asian rice culture." (Carpenter 1978: 8)

Rice spread to the East African hinterland with the caravans in the 19th century. Muslim traders introduced paddy cultivation at their trading posts. In Usangu, in southwest Tanzania, the family of a Beluchi soldier who had settled down at the court of the king Merere started rice production. (Burra / Heuvel 1987: 26) Towards the end of the 19th century, the majority of the rice consumed in Zanzibar[4] was produced along the East African coast. As a result, the Rufiji Delta earned a reputation as the "Little Calcutta." (Iliffe 1979: 71, Sunseri 2002: 81ff) As for the Kilimanjaro region we know that, in the late 19th century, rice was cultivated in the Mkomazi Valley, which separates the Pare and Usambara Mountains, and which forms the border to the Tanga region. (Kitunga 1989: 10) None of the earlier travelers, however, reported there being any rice grown on the slopes of Mt. Kilimanjaro itself.[5] It was only with the arrival of Indian and Arab traders in the newly founded town of Moshi in the first half of the 20th century that paddy cultivation began on a small scale. However, after the Japanese development organization JICA created an integrated development plan for the Kilimanjaro region in the 1970s, the area became a significant center for rice cultivation which, in addition to a 1000-hectare irrigation project, boasts the most modern rice mill in the country as well as a research and training center.

Forms of Local Appropriation

I contend that rice was first eaten in East Africa before it was grown there. Therefore I will first address culinary appropriation, which is closely connected to linguistic appropriation.

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[4] Decken reports from Zanzibar: "By far the biggest part of the population of Zanzibar lives on rice. In the old days the production of this grain was so important that it was possible to conduct it on one's own – but the population was less: now the production has decreased so that out of the 70,000 hectoliters which are needed annually according to Guillain, the whole island only produces one-thirtieth and the rest has to be brought from Madagascar and India. Paddy farming does well in deep parts of the wet valleys in the northwest of the island which become ponds and pools during the rainy season and start getting cultivated as soon as they dry." (Decken 1868: 29)

[5] Only Johnston mentions some paddy production in the lowlands: "In a few areas, namely Taveta (…), grows rice." (Johnston 1886: 514) Taveta is an oasis in the steppe southeast of Mt. Kilimanjaro and used to be an important rest stop for caravans.

Culinary Appropriation

Kurt Beck defines local appropriation as the "acts of translation into the vocabulary and syntax of the appropriating milieu." (Beck 2001: 67) If one views the process from a purely linguistic perspective, it can be seen that in Tanzania, where the national language is Kiswahili, the appropriation of rice is far more advanced than in Germany. In German there is no distinction between rice as a crop, polished rice, cooked rice, soaked rice, spiced rice and rice buns: All are called rice, and can only be further differentiated through the use of attributes. The English language at least distinguishes between paddy and rice. In Kiswahili, in contrast, there are separate terms for *mpunga*, the unpolished rice as it grows in the field; and for *mchele*, the polished but still uncooked rice. The various forms of its preparation likewise have distinct appellations. Simple cooked rice is called *wali*. Sticky rice cooked in coconut milk has the name *ubwabwa*. Further, the different types of spiced rice, such as *pilau* and *biriyani*, are also differentiated. Finally there is the *kitumbua*, a sweet-tasting fried rice bun. And it is safe to assume that there are still more forms of preparing rice which have designations of their own. Interestingly, however, the Kahe, who have settled in a steppe oasis of the Kilimanjaro plain, have only one term for rice. For them all rice is *mchele*, be it the plant, the grain or the dish.

Whereas electric rice cookers have now become quite common in East Asia, in East Africa rice is cooked over wood or charcoal fire, even if kerosene, gas or electric stoves are available. This is explained by the fact that, shortly before the end of the cooking process, glowing coals are placed on top of the cooking pot's flat lid, so that the uppermost portion of the rice is also thoroughly cooked by the heat from above. This cannot be done with conventional stoves.

Although there are many different rice dishes in Kilimanjaro, rice is not a staple. This is an important contrast to East Asia, where rice secures the daily meal. In Kilimanjaro, rice is predominantly a cash crop. Generally speaking, the farmer only keeps the left-over rice which is not enough to fill a sack (as rice is sold by the sack) for himself. The source of daily nutrition is *ugali*, a maize porridge, or *makande*, a maize and beans dish. Cooked bananas in countless variations are also quite well-loved, though they are more expensive than maize. The farmers swear by *ugali*, claiming that only it gives them the strength they need to swing their hoes. If there is hard work to be done, they say, *"kazi hii inahitaji ugali"* which translates to "This job calls for *ugali*." According to this logic if they were only to eat rice, they would not be able to change a tractor tire. Profits from rice cultivation are used to finance maize cultivation, or to purchase

maize directly. As all irrigation land within the area of the Lower Moshi Irrigation Project is reserved for rice cultivation, vegetables for daily consumption must be bought using the resulting profits.

Rice (and particularly *pilau*) is, in contrast to *ugali*, only eaten on festive occasions. No *Idd*, Christmas or wedding is celebrated without *pilau*. Because of its higher price, rice is considered something special, and is above all prized for its excellent aroma. Local rice variants have enchanting names like *shingo la mwari* , "maiden's neck." The name for the Japanese rice, in contrast, is quite dry. It is called IR54, and does not have the same pleasing aroma. The people have also invented other names for it. They call it either *mchele wa kijapani*, "Japanese rice;" or *mchele wa Konoike*, "Konoike rice". Konoike was the Japanese construction firm contracted to build the irrigated fields. IR54 is a variety which was specially selected for the Tanzanian market after its predecessor, due to its lack of aroma, sold very poorly at market. Nevertheless, local rice variants with good aromas sell for more than twice the price of IR54. In Tanzania demand still exceeds local production. Rice is enjoying a growing popularity, especially in the urban areas. As a result, rice producers have a local market which makes cultivation lucrative.

When one compares rice consumption in Kilimanjaro and in East Asia, it becomes clear that a distinctive form of consumption is missing in Kilimanjaro, namely rice beer, whereas this beer (*sake*) is indispensable to the Japanese. Beer, however, falls under the category of ritual appropriation.

Ritual Appropriation

The ritual appropriation of rice cannot as of yet be observed in Kilimanjaro. Rice is not suitable for sacrifices. The ancestors insist, as they always have, on bananas, maize or beans; meat in the form of goats, sheep or cattle; or of course beer. Rice is still considered foreign, and is not appreciated by the ancestors. Possibly this will have changed in a few generations, and the ancestors will expect a feast of *pilau*.

Beer brewing is closely connected to ritual appropriation. The ancestors love to receive beer as a sacrifice. Those making the sacrifice, too, enjoy not only the meat, but above all the beer, as most of it is consumed during the ceremony itself. Mzee Daudi Kulaya, one of my informants, considers it a religious duty to drink beer, as God made nearly every plant fermentable into beer: Maize, bananas, eleusine, millet, sorghum, sugar cane, palms, even wild figs can be made into beer. In light of this basic belief, it is surprising that as of yet there is no

rice beer in Kilimanjaro, in contrast to Japan, where sake is part of everyday life; in Kilimanjaro *mbege*, banana-eleusine beer, is the drink of choice. The process of cultural appropriation of rice, then, will only be able to be considered completed when the local populace of Kilimanjaro has found a way to process rice into alcohol, and when the ancestors have accepted rice as a sacrifice.[6] Then a set tradition could be said to have been created from habit, as per Beck. (Beck 2001: 67)

Technical Appropriation

After having discussed culinary and ritual appropriation, let us now turn from consumption to production. Technical appropriation is at the heart of production. If one considers the technical aspects of rice cultivation it becomes clear that, for the irrigation, appropriate fields and field implements are needed. The standardized 30 meter by 90 meter fields within the Lower Moshi Irrigation Project, which were laid out by the Japanese, are called *maboda* because of their clearly delineated "borders," which are formed by the dams. The fields are leveled using caterpillars so as to guarantee an even distribution of water, which is supplied to the fields by way of perfectly straight canals with concrete walls, designed to minimize water loss from leakage. The water distribution boxes on the fields are made of concrete as well, and are so constructed that wooden gates can be used to control the flow of water. The locals, however, do not use the wooden gates as the Japanese engineers had planned; rather, they block the inlets to the fields with grass and soil, as is customarily done with traditional, non-concrete irrigation furrows. The engineers' view of how to use the equipment was not that of the farmers just as, according to Beck, in Sudan the people tend to repair their diesel motors using hoes instead of screwdrivers. (Beck 2001: 75)

As rice cultivation has proved lucrative, new paddy fields are now being created outside the project area. They are set up without construction machines, using only hoes, shovels and spades. These paddy fields are clearly distinguished from their Japanese counterparts, and are not called *boda*. There is, however, no generally accepted name for them. In Mandaka, to the north, a paddy field is simply called a *shamba* (field.) In Mawala, south of the project area, rice is grown on a *hekta*, derived from the unit of land area. A *hekta* is slightly larger than a *boda*. As a *hekta*, however, is difficult to level out so as to ensure an equal distribution of water, it is divided

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[6] The people of the Kilombero Valley in the south of Tanzania have appropriated rice more intensively. The local Bena population have grown rice for their own consumption since the 19th century, and brew a rice beer called

into smaller sections called *vijaruba* (sg. *kijaruba*). These smaller fields can, then, without the help of *katapila* construction machines, be leveled out by hand, to enable an even irrigation. Consequently the standardized Japanese field has been changed so that it can be constructed and farmed using their own local technology according to the old traditions.

In the project area, the rice farmers' cooperative, whose tractors must be rented for the task, have monopolized the tilling of the fields. Outside of the project area, the fields are worked by hand or with power tillers, smaller machines, as only the tractors of the cooperative have the appropriate harrows for wet rice cultivation. In some parts of the project area even the tractors themselves do not appear very well-suited to the task, as they can become bogged down in the mud in poorly-drained irrigation fields. The tractor also represents a form of linguistic reinterpretation. Those used in the project area are from the Japanese company KUBOTA, named after its founder.[7] The Tanzanian tractor drivers, however, have their own definition for the name. There was a competition in Tanzania called KIBOTA, short for *Kilimo Bora Tanzania*, or the "best farming in Tanzania," which was used to propagate the use of "modern" agricultural methods. The tractor drivers then developed their own version of KUBOTA, namely *Kuma Bora Tanzania*, or the "best vagina in Tanzania." The tractor drivers are by the way all men.

The remaining fieldwork is purely manual: sowing, transplanting, weeding, fertilizing, spraying pesticide, cutting and threshing. Although the use of simple mowers and threshing machines is propagated in the courses at the rice training centers, the farmers do not use them. This can be explained by the fact that cutting and threshing by hand represent an established tradition which was adopted as part of the appropriation of the new tradition of rice cultivation. The use of the newly developed, so-called appropriated technologies, however, would not make any economic sense for the farmers, either. They pay their day laborers according to how much they harvest. Therefore they do not care what kind of equipment the day laborers use, as long as their work remains cheap. Using a simple machine to harvest a large area might be interesting for the day laborers themselves, but they lack the necessary capital to purchase simple mowers or threshing machines.

Social Appropriation

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ugimbi. Moreover, rice is of ritual significance to the Bena (Monson 1995: 274f).

[7] KUOBOTA, too, has a connection to rice farming. The last syllable "ta" means "paddy field." It is similar with the Japanese car companies TOYOTA (rich paddy field) and HONDA (main paddy field) (Lampe 1997: 11).

In addition to the technical appropriation, a social appropriation of rice cultivation is necessary. It can be seen in the organization and distribution of work. Within the project area the preparation of the schedules and the upkeep of the facilities are the responsibility of a cooperative created specifically for these tasks. The farmers within the project pay fees for the cooperative's services. Outside of the project area the upkeep of the canals is also provided by farmers' cooperatives, in the form of "canal committees." These committees, however, do not demand fees for their services, but rather work, called *msaragambo*.[8] *Msaragambo* is community work, be it in the form of street-building, school-building or canal maintenance. An barker runs through the village with a horn, a tin can or, most recently, a megaphone, and announces when the people should arrive for community work and which equipment they need to bring. This form of community work has also been adopted within the project area, but only for the upkeep of the tertiary canals. Heavy construction vehicles are needed for the large canals, and the farmers have to pay for their services.

Rice cultivation leads to the capitalization of agriculture. Capital is needed to pay the fees of the cooperative, the wages of the day laborers, and the costs of dung and pesticide. Most fieldwork is performed by the day laborers. Only the sowing, fertilizing and spraying are usually done by the farmers themselves. As a result the farmers become investors, who hire others to do the work. The transplanting and weeding is mostly done by women, whereas both men and women take part in the harvesting and threshing. Scaring off birds, filling the rice in sacks, and transporting the sacks remain the province of men. The work is distributed between the sexes in keeping with the old tradition.

Scaring off birds (or guarding the fields, as the locals call it) represents the introduction of an established local tradition into a new one. In Tanzania, the fields must be protected from animals. The proposal for the Japanese rice project did not call for any measures against birds. The farmers responded quickly, however, when the birds threatened to devour the harvest, and hired on many young men as guards. With a *kombeo*, a self-made sling of sisal hemp and mud clod projectiles, they guard a new product in accordance with an old tradition. Another problem not considered in the planning which causes difficulties is the lack of toilets. The many people who work in the paddy fields must also relieve themselves and do so, in keeping with the established tradition, on the fields. As the fields are covered with water, this leads to the spread of schistosomiasis. Further, in addition to the guards there is yet another group of participants in rice cultivation which cannot be found in any project plan: the *wasalalaji* (the gatherers.) They search among the threshed spikes and in the piles of husks by the rice mills for grains of rice.

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[8] Kitunga reports from the Pare Mountains that there *mtharagambo* is a form of communal work to maintain

When, after several days' work, they have succeeded in filling a sack, they can sell it to a rice merchant. This follows an old tradition of poverty.

Juridical Appropriation

The adoption of modern state water rights law may be seen as an example of juridical appropriation. In conflicts over water the Lower Moshi Irrigation Project referred to its water rights, procured from the state, when it cut off water from the traditional irrigation furrows downstream and sought to forbid any water use by the farmers upstream.[9] The argument was that only those with official water rights are entitled to use the water of the river. The farmers quickly realized that their traditional understandings of water rights were of no value in disputes with state development projects. As a result, the farmers living upstream appropriated the new concept of law and, through their connections, also acquired water rights that guaranteed their access to irrigation water, which the administration of the rice project had attempted to legally prevent. As this was a case of "a consciously expressed opinion of the own accord towards the law" (Sippel 1999: 260), it was also juridical appropriation. While there still was not enough water for all parties, the farmers living upstream came away victorious from a juridical dispute by appropriating the new concepts of law for their own purposes.

The farmers living downstream, in contrast, contested the government's authority to distribute water rights. They were harmed by the water rights the state had granted to the LMIP, as the project channeled all the river water directly to the fields. Instead of the planned 1.49 liters per second per hectare, the project required more than 3 liters per second per hectare (Davidsen 1997: 90), which meant that no water reached the downstream irrigation canals. This led in turn to the collapse of agriculture there. Those former water users who are now deprived of water doubt the sense of state water rights when these rights dry up a river, and ask themselves how a frog, which is also a water user, is to go about applying for water rights. They intentionally refuse to appropriate the concept of state water rights and see themselves as the victims of a genocide. The farmers compare the situation to the genocide of the native inhabitants of North America. They claim that the Europeans cut off the Native Americans' access to the buffalo, so that they

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irrigation furrows (Kitunga 1989: 9).

[9] The project administration accuses the upstream farmers of "unauthorized withdrawal of water". They claim that "these schemes have no proper water rights" (Maregesi 1995: 6). Furthermore they criticize the local government for not prosecuting these farmers (Maregesi 1995: 8), ignoring the fact that the local government is selected by the local population and the local population is comprised mainly of farmers. Davidsen also mentions this conflict (Davidsen 1997: 92f).

would starve; they see their situation as being similar. As a result of the lack of water, they claim, adequate food production is no longer possible, and they are threatened with starvation. These farmers, who have no alternative water source, can only resignedly practice a form of agriculture dependent on rainfall, which is extremely risky in such a semi-arid region. Through the enforcement of state water rights, their competence in the formation and administration of irrigation systems was taken away from them.

Economic Appropriation

I would like to illustrate economic appropriation by means of two examples in which rice cultivation has been integrated into the local economy, and rice is traded in accordance with local tradition. Rice cultivation has been integrated into the *shamba-kihamba* system of the Chagga, who live on Kilimanjaro. On the *kihamba*, a garden which is located on mountain slopes, a sophisticated ecosystem of various useful plants is nurtured. Using a multi-story farming system, tubers and other vegetables, the cash crop coffee, bananas, fruit trees and lumber trees are cultivated. The system is supported by artificial irrigation and cow dung for fertilizer. The homes and outbuildings of the farmers are also located on the *kihamba*. The production on the *kihamba* is supplemented by the cultivation of maize, sunflowers and beans in a lower field, called a *shamba*. The owners continue to live on the mountain, and only drive down to the lowlands to work in the fields. If family members do not take over the fieldwork day laborers are hired, who live close to the fields. (Ikegami 1994: 194, Tagseth 2000: 21f.)

The rice production in the LMIP can be integrated into the *kihamba-shamba* complex. Similarly to the production on the *shamba*, in rice cultivation there is no need to work on the fields every day, as most of the work is done by day laborers and rented tractors. Unlike maize, however, rice is not a subsistence crop; rather, it is a product sold to traders. Therefore rice is a new lowlands product which supplements maize cultivation and also a new cash crop, which is supplanting more than supplementing coffee. The appropriation took place within the framework of the local farming tradition. The fact that, as mentioned above, farmers outside of the project, of their own accord, construct irrigated paddy fields demonstrates that rice is increasingly grown as a cash crop. Astoundingly the farmers manage to do so without the million-dollar loans needed for the LMIP. Furthermore, they are expanding so rapidly that they are in competition with the project for water resources. As they are situated upstream they are able to use as much water as they want, thus threatening the project's water supply.

A second example of economic appropriation concerns the rice trade. The trade of farm produce in the Kilimanjaro region is predominantly the province of women. The weekly market held every Monday in the village of Chekereni within the LMIP area is also dominated by women. While men sell clothing, household utensils and fish there, fruits and vegetables are sold exclusively by women. They do not sell their own excess produce, however, as Gutmann has observed at traditional Chagga markets[10] (Gutmann 1913: 502ff.); rather, they obtain the majority of their wares from the wholesale market in the city of Moshi.

In light of women's dominance in the trade of fruits and vegetables, it is not surprising that they are also responsible for the intermediary trade of rice. This consists of buying up the paddy harvest at the farmers' fields, transporting it to the rice mills, drying and milling it (whereby the husks are removed.) The finished product is then resold to wholesalers. In a recent empirical study on rice marketing in Tanzania, all of the middlepersons surveyed in the Moshi region were women. In the regions of Morogoro and Shinyanga, however, they are exclusively men. (Senda 1999: 49 ff.) The dominance of women as middlepersons in the rice trade may be interpreted as the logical continuation of local trade history. In this case, women have appropriated a new product.

Further Invention as an Aspect of Appropriation

Many examples of "further invention" (Beck 2001: 77) can be found. An unplanned way of using the irrigation canals, I feel, is a remarkable example. Even before the start of the LMIP the local population knew that, in addition to irrigation, the canals could be used for bathing, washing, or to raise fish, even if it was forbidden. What is new, however, is their use for transport. In Chekereni the women, after having filled their drinking water canisters from the public tap, allow the canisters to simply float along the canal to their doorsteps -- assuming, of course, their houses are so conveniently located alongside the canal. They benefit from the fact that the canal is broad enough to accommodate the canisters, but not so broad that they would not be able to fish them back out. The current is also fairly weak, so that they can leisurely walk alongside the canal without risk of the canisters floating away. The use of the rice husks left over by the mills is similarly innovative. They are used to "repair" muddy streets, to burn bricks, even to mark the lines on the soccer pitch. They are also used to cover the ground during festivals and

[10] Even before Gutmann, Count von der Decken described a Chagga woman market and called the chapter "Forbidden visit to a women's market – a hard test of patience" (von der Decken 1868: XVIII).

at marriages. Rice straw is used as animal fodder and to thatch the roofs of simple huts, even if it is not considered particularly durable. These are examples of how the byproducts of rice production are used by the local populace in ways never foreseen by the development experts.

Conclusion

The sub-title of this essay, "A Japanese Development Project and its Consequences," is a reference to the pioneering works of Bierschenk and Elwert on "Development Programs and their Consequences." (1991, 1993) Yet whereas Bierschenk and Elwert above all see "blockades of self-organized innovative efforts" (Bierschenk / Elwert 1991: 25) as the consequences of developmental programs, here we have examined processes of appropriation, which emphasize the creative element and active control on the part of the local populace within the framework of appropriation. This contribution therefore refutes Hahn, who denies the spontaneous element of processes of appropriation and, as Carrier (1995) instead understands them as work. (Hahn 2002: 7) The types of appropriation described here represent the modification and re-contextualization of innovations, as Beck describes them. This is not limited to the planned diffusion of innovations; rather the spontaneous, voluntary processes of diffusion are emphasized. (Beck 2000: 2)

In Kilimanjaro local vitality can be observed in the different forms of appropriation of the good "rice" which, in addition to technology, also touches on many other aspects of life. There are not only the diverse forms and degrees of appropriation, but also various groups who have appropriated rice in a variety of ways. As a result distinctive individual processes of appropriation may be observed among men and women, or among investors and day laborers. In the practice of appropriation there are both "winners" and "losers." Those who are able to modify their old traditions in accordance with the new circumstances have an advantage.

Furthermore local vitality can be postulated both in those areas where rice is appropriated and in areas where it is not. This shows the active control of the appropriation process on the part of the inhabitants of the Kilimanjaro plain. As a cash crop, rice has been quickly and readily appropriated, both technologically and economically. As a food, it has been appropriated as a dish for festive occasions. However, if one wants to eat something substantial (that is, wants to get full), maize remains the old standby. Rice has no place in the ritual sphere in Kilimanjaro. Here the processes of appropriation and of non-acceptance or, as Rothermund has termed it, "self-affirmation" (Rothermund 1999: 5f), are both expressions of vitality, as they are both

expressions of the ability to survive. In the technological and social spheres, rice cultivation is integrated into the existent systems. This ability to integrate is an example of vitality, as the scope of action is expanded through the incorporation of new knowledge. In light of the Tanzanian economic crisis, this factor should not be underestimated. The rejection of rice in the ritual and culinary spheres is also an expression of vitality. In these spheres there is no crisis, as there is in the economic sphere. They are so stable that rice has only a minimal influence.

The farmers living downstream from the project, whose irrigation water was taken from them, could in contrast provide an example of non-vitality in agriculture. Their competence in the formation and administration of irrigation systems was taken away, and they are not capable of organizing themselves in order to stand up for their rights or lobby for their cause. The possibility of tapping alternate water sources was abandoned due to a lack of faith in self-organized teamwork, and ended with a resigned retreat to their own, now dry homeland. Instead of using their own resources to attempt to dig new canals together, the farmers choose to wait for the blessings of foreign technologies and capital. As a result, they have taken up "seizing the booty" (Beck 1990) without ever having actually "raided" themselves. The creativity with which their forefathers established the traditional irrigation furrow systems appears to have faded in the face of an inflexible state administration and sporadically generous development organizations. Here one may recognize the blockades of self-organized innovative efforts described by Bierschenk and Elwert.

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