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The art of truck modding on the Nile (Sudan): An attempt to trace creativity

Kurt Beck

Introduction

Everybody who has travelled in Asia, Africa or Latin America is familiar with the sight of ingeniously modified and highly decorated trucks. They shape the scenery of the city streets as well as the dirt tracks of even the most remote hinterland. Exceptionally impressive pieces may be found on the roads of Nigeria, the Philippines and Pakistan where they tower above the ordinary traffic like ceremonial elephants. One observer searching for a fitting metaphor has aptly described them as dinosaurs adorned in full courtship colours.[1]

These trucks deal with most of the freight haulage and passenger transport in these regions. Anthropologists, like me, use them quite naturally as a means of transport into and around their fields.[2] They have, however, not yet been

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[1] J. Elias, *On wings of diesel*, http://www.arttrucks.com/, (2001) [12 December 2004].

[2] Since 1975 I have been travelling on Sudanese trucks. I have been deeply impressed by the drivers' confidence in their trucks, by their skill both as navigators and as mechanics, and I have been intrigued by this wonder of reliability, namely the Sudanese Bedford truck. It was only in 2003, however, when I found the opportunity to take a closer look at these trucks that I discovered that this reliability had its reasons. This present contribution is based on field research undertaken in Sudan from October to December 2003 and from January to March 2006 which was made possible by a grant from the Deutsche Forschungsgemeinschaft (2006) and the Universitätsverein München (2003). I owe a special debt of gratitude to my students in Munich who accompanied me to Sudan and to colleagues in Bayreuth, Munich and Halle, all of whom provided valuable criticism and advice. I also acknowledge the discussions and advice I received at the AEGIS conference in London in 2005,

awarded the legitimacy of research in their own right[3] – with one notable exception, they have been treated as pieces of art and bearers of signs. The focus has been on inscriptions, symbols, meanings and decoration. To judge from the available literature, this is an interesting line of research.[4] However, one central thing is missing here – the truck itself. It is like looking at the outer shell of something and ignoring what is inside.

Below this skin of symbols and supposedly deep meanings there is another world to be explored, the interior world of technology, technological appropriation and human creativity. This contribution is not about adornment and decoration on the surface, instead I propose to concentrate on the materiality and the technology of the truck.

Then there is another equally fruitful perspective, mainly espoused by social historians, which offers the view of the motor vehicle as a means of power in the colonial context and preaching the gospel in Africa. Research like this can go a long way in explaining what the motor vehicle did to Africa or what has been done to Africa by using the motor vehicle in terms of fostering domination and development, spreading markets, religions and HIV.[5] I propose looking at

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as well as the thorough reading and comments by the anonymous reviewer and the editors. The contribution draws on earlier work, compare K. Beck, 'Bedfords Metamorphose, Eine Ethnographie der Aneignung des LKWs im Sudan'. In: K. Beck, T. Förster & H. Hahn, *Blick nach vorn* (Köln, 2004), 250-63 and K. Beck, *Brutstätten der Kreativität – Die Aneignung des LKWs im Sudan*, www.fak12.uni-muenchen.de/vka/Africars, 2005.

3 Daniel Miller, the editor of the first volume looking at the motor vehicle from an anthropological perspective, relates his experiences when searching for the automobile in the anthropological literature by bluntly stating: 'I could think of almost no relevant literature'. D. Miller, *Car cultures* (Oxford, 2001), ix. One of the contributions to his volume should be highlighted as coming close to my own ideas about automobility, namely J. Verrips & B. Meyer, "Kwaku's car: The struggles and stories of a Ghanaian long-distance taxi driver'. In: Miller, *Car cultures*, 153-84.

4 A.K. Awedoba, 'A note on lorry names in Ghana', *Journal of the Anthropological Society of Oxford*, 12 (1981), 63-64; E. Date-Bah, 'The inscriptions on the vehicles of Ghanaian commercial drivers: A sociological analysis', *Journal of Modern African Studies*, 18, 3 (1980), 523-31; Elias, On wings of desel; O. Lawuyi, 'The world of the Yoruba taxi driver. An interpretative approach to vehicle slogans', *Africa*, 58, 1 (1988), 1-13; J. Pritchett, 'Nigerian truck art', *African Arts*, 12, 1 (1978), 27-31; A. Schmid, *Pakistan express: Die fliegenden Pferde vom Indus* (Hamburg, 1995); A. Schmid, 'Fliegende pferde vom indus. Die welt der pakistanischen Trucker', *Geographische Rundschau*, 55, 11 (2003), 12-19; G.W. Rich & S. Khan, 'Bedford painting in Pakistan', *The Journal of American Folklore*, 93 (1980), 257-75.

5 E. Alber, 'Automobilismus und Kolonialherrschaft. Zur Bedeutung des Autoverkehrs für die Herrschaftsstrukturen in der Westafrikanischen Kolonie Dahomey', *Paideuma*, 46 (2000), 279-99; E. Alber, 'Motorization and colonial rule: Two

the motor vehicle from a reverse angle. By concentrating on a Sudanese tradition of modifying imported lorries, mainly Bedford lorries, I want to explore what Africa did to the motor vehicle – hence the title: truck modding on the Nile.

Modding, modifying, adjusting and customizing are probably not very good terms for what is actually happening, for these trucks are being totally deconstructed and then reconstructed. This is done in small workshops in the economy's informal sector. Informal in this context does not imply that they employ a rudimentary technology or that they do not pay taxes. They do pay a whole range of fees and taxes and their technology is certainly not industrial, but it is equally far from being rudimentary. It might be characterized as a highly sophisticated craft technology. Informal simply means that the workshops under consideration cater for the needs of the common people and that they are far removed from formal vocational training and state or development assistance. The final product of their craft is a completely new truck that barely resembles the original Bedford truck. Surprising technological innovations have found their way into its unorthodox construction. For this reason, the second part of this chapter examines the context of the creativity which is so obviously involved in the craft.

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scandals in Dahomey, 1916', *Journal of African Cultural Studies*, 15, 1 (2002), 79-92; J-B. Gewald, 'Missionaries, Hereros, and motorcars: Mobility and the impact of motor-vehicles in Namibia before 1940', *The International Journal of African Historical Studies*, 35 (2002), 257-85; T. Kirsch, 'Religious logistics. African christians, spirituality, and transportation'. In: J. Pina-Cabral & F. Pine, *On the margins of religion* (Oxford, 2006). Urban transport systems are analyzed in A. El Mamoun, 'The public transport in greater Khartoum', *Sudan Notes and Records* (1997), 105-12; X. Godard, *Les transports et la ville en Afrique au sud du Sahara* (Paris, 2002); X. Godard & I. Fatonzoun, *Urban Mobility for All* (Lisse, 2002); X. Godard & P. Teurnier, *Les transports urbains en Afrique à l'heure de l'ajustement. Redéfinir le service publique* (Paris, 1992), among others, from the perspective of urban planning. Historians like H. d'Almeida-Topor, C. Chanson-Jabeur & M. Lakroum, *Les transports en Afrique (XIX-XX siècle)* (Paris, 1992) and P. Drummond-Thompson, 'The development of motor transport in Nigeria: A study in indigenous enterprise'. In: d'Almeida-Topor, Chanson-Jabeur and Lakroum, *Les transports en Afrique*, 222-46 describe the introduction of the motor vehicle to Africa. Sociologists of development analyze the automobile's micro economics in the informal sector, see for instance S. Berry, 'From peasant to artisan. motor mechanics in a Nigerian town', Working Paper 76, (African Studies Center, Boston University, 1983) and P. Kensok, *Fitter – Entwicklung aus der Werkzeugkiste. Informelle Ausbildung von Kraftfahrzeughandwerkern in Ghana* (Saarbrücken, 1987). Michael Featherstone has recently edited a volume looking at cars and drivers from a new European perspective, see M. Featherstone, 'Automobilities: An introduction', *Theory, Culture and Society*, 21, 4-5 (2004), 1-24.

Readers familiar with Science and Technology Studies will realize that my views of the technological processes involved are much indebted to the Social Construction of Technology (SCOT) approach which emphasizes that technological development should be regarded less as a process of invention by a producer and its passive adoption by consumers – a conviction so dear to the conventional diffusionist approach – but rather as a broad social process comprising different relevant groups who develop their own visions of a technology and are thus involved in the definition and construction of the artefact or technology. Only when these differing views are converging and dominant views of the technology have evolved will closure occur, i.e. the stabilization of a technology.[6] In the early years, SCOT largely concentrated on the design process before a product or technology went to end-users, and less on the users' power to reopen the construction process by adding new meanings and modifications to seemingly stable technologies. It was only later that researchers in the fast-growing SCOT tradition had to acknowledge that technologies, even long after their stabilization, can continue to be modified by users.[7]

We all know that users can and do alter technologies but more often than not, being lay persons, they are helpless in the face of technical artefacts. They can sometimes modify technical artefacts if they are able to appropriate the

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[6] Compare Trevor Pinch & Wiebe Bijker's pioneer research on the social construction of the bicycle in W. Bijker, T. Pinch & T. Hughes, *The social construction of technological systems. New directions in the sociology and history of technology* (Cambridge, Mass., 1984).

[7] W. Bijker, 'Technology, social construction of'. In: N. Smelser & P. Baltes, *International Encyclopedia of the Social and Behavioral Sciences* (London, 2001), 15522-27. N. Oudshoorn & T. Pinch, *How users matter. The co-construction of users and technologies* (Cambridge, Mass., 2003), especially 1-7. R. Kline & T. Pinch, 'Users as agents of technological change: The social construction of the automobile in the rural united states', *Technology and Culture*, 37, 4 (1996), 763-95. In this study, the authors show how interpretative flexibility, the fact that technologies and artefacts lend themselves to differing interpretations and visions as to their use, can reappear at the use stage of a technology. Before, it was largely taken for granted that interpretative flexibility ended with closure in the design process. I am grateful to my colleague Richard Rottenburg who drew my attention to this piece of scholarship by two of the leading figures of the Social Construction of Technology approach. Had the proponents of SCOT had a closer look at their immediate environment at MIT, they would certainly have become aware of what end-users can do to a technological artefact long after its design process has ended in closure. In this case, their own students had already turned the computer – which was then still firmly believed to be a monster tool for serious research – to computer gaming, today one of its most important uses but in the 1960s totally unforeseen by its producers. The story is related in M. Graetz, 'The origin of spacewar', *Creative Computing*, 7, 8 (1981), 56-67.

technologies involved,[8] and they can put them to uses unintended in the original closure process with small adjustments and slight modification and, as consumers, can also put pressure on producers to make adjustments. But the fact remains that reopening a stable technology at the user level – modding – rests on a foundation of conditions, mainly skills and creativity, which are still largely unaccounted for. What seems still to be missing is a richer ethnography of the breeding grounds for the creativity involved and an account of the social organization of the skills implied.

A thoroughly appropriated piece of industrial technology – converting the Bedford TJ into the Sudanese *sifinja*

Nobody is likely to compare the Bedford TJ (Photo 7.1) to a ceremonial elephant or a dinosaur. Its overburdened and modest appearance would rather lead one to call it the donkey that carries the burden of Sudanese society. It can be found all over Sudan and in all shapes and forms, as a tanker carrying fuel and water, as a bus carrying passengers, and as a lorry carrying whatever a society largely based on agriculture needs to transport, like live animals and petrol drums, bags and boxes, but mostly sacks, which are the typical freight of an agrarian society. And on top of it go the passengers with their own possessions. It can be encountered on all sorts of roads from highways to dirt tracks, but its natural habitat is off-road.

Travelling off-road means crossing the swamps, savannahs and uninhabited deserts of Sudan. Given the vast extent of Sudan and because long-distance transport goes far beyond Sudan's borders to Ethiopia or Eritrea, to Chad, to the Central African Republic and Nigeria, and in many cases through the Great Desert to Egypt or Libya, one journey may take anything from a few hours to

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[8] One example of Nile peasants reopening the construction process of the diesel pump in a new environment is detailed in K. Beck, 'Die Aneignung der Maschine'. In: K. Kohl & N. Schafhausen, *New Heimat* (New York, 2002), 66-77. The reopening of the construction process applies to mechanical artefacts like the diesel pump as well as to social technologies such as a bank. Cf. K. Beck, 'Die Verbäuerlichung der Bank'. In: M. Schulz, *Entwicklung: Theorie – Empirie – Strategie* (Hamburg, 1997), 81-98. One ethnography of users reworking highly complex technological artefacts was given in A. Knorr, 'The Online Nomads of Cyberia', in a presentation given at the workshop 'Understanding Media Practices' at the 9th EASA Biennial Conference in Bristol in September 2006l. The author described a community of 'game modders', computer-game enthusiasts who devote themselves with considerable talent and skill to reworking standard computer games. He mentioned one site on which there were up to 500 fully functional 'gamemods' alone of the popular computer games Max Payne and Max Payne 2 available for free download. Variation indeed!

several weeks. Thus, the Bedford TJ has acquired a role far beyond that of being a simple means of transport. Like a ship navigating the ocean, it is regarded as a home for the crew and its passengers, if not as an island of security and comfort in a space full of danger and desolation. On long journeys, the crew and random passengers become companions and develop a deep emotional attachment to their truck.

Sudanese people lovingly call the Bedford TJ the *sifinja*, after the cheap but comfortable plastic sandals available throughout the whole country that are the footwear of the common people. Obviously the *sifinja* does not appear as stiff as the 1980s model of the Land Cruiser, which is called *thatshir* after a former British prime minister, nor does it appear as shiny as the *laila alwi*, the new model of the Land Cruiser, which is apparently perceived as being beyond the reach of the common man as much as the popular Egyptian actress who gave the name.

The original Bedford TJ was designed by Vauxhall's engineers at Luton (just North of London) in the 1950s, drawing on World War II experiences in truck manufacturing. Vauxhall Motors Ltd, itself owned by General Motors Corporation in Detroit from 1925 onwards, entered the commercial vehicle market in 1931 under the name of Bedford. Their trucks soon became very popular and were stiff competition for Ford. After the post-war years of financial restrictions and raw-material bottlenecks were over, Bedford's engineers successfully developed their first diesel engine and joined the commercial vehicle market with a whole range of new models. The so-called J or TJ range was introduced at the 1968 Commercial Motor Show and came with a small range of six-cylinder petrol and diesel engines with 100 to 115 hp,[9] a standard four-speed gearbox with the option of a five-speed gearbox and hypoid rear axles on the larger models, plus the option of a two-speed axle in later models. Payload capacities were from 25 cwt to 7 tons and wheelbases from 3 m to roughly 4.5 m. The simple design, including the fact that it was a normal-control truck where the driver sits behind the front wheel and there is ample space for the engine under the large bonnet, makes the TJ especially repair- and maintenance-friendly, although the trade-off obviously is that there is less space for the load than in the later forward-control cab-over-engine TK models in which the driver sits in front of the front axle. After the end of the Bedford Motor Company in 1987 following an unexpected GM decision in Detroit to close it, the TJ was subsequently produced by the AWD Company that took over part of Vauxhall's medium- and heavy-weight truck production, and later by Marshall SPV for export. And after the plant at Luton shut down, production was taken over by

[9] Only the three-ton short wheelbase TJ, locally called *buᶜaiwa* (dwarf, pygmy), comes with a four-cylinder engine.

Hindustani Motors in India. Clearly a rather old-fashioned sight in England by the late 1980s, the vehicle remained a great success overseas.[10] Its simplicity compared to modern high-tech trucks, its versatility, its comparatively cheap price and its robustness made it, like the donkey, an ideal vehicle for a rural habitat far from the centres of automobility.[11]

In the long run, however, no motor vehicle, not even the robust Bedford TJ, could cope with the challenges posed by Sudanese roads. In fairness to Bedford's engineers however, it should be noted that the TJ was originally designed for on-road, not off-road, cargo transport. On the other hand, the Sudanese environment offered opportunities for realizing the full potential of the Bedford TJ, especially if the truck kept clear of inner-city traffic control, which the design engineers at Luton could probably not even have dreamt of.

In short, the Bedford TJ has been thoroughly appropriated, adjusted and redesigned in its new Sudanese habitat. In a time span of roughly fifty years since the TJ reached Sudan with the first big wave of automobile modernity, local craftsmen have created their own version of it and produced a completely new truck only superficially resembling the Luton version. This history of appropriation is the history of a chain of small technical conversions, modifications and reconstructions, some abandoned and others developed further but as a whole adding up to a revolutionary innovation in truck construction. And it is also the history of the emergence of a highly skilful and sophisticated community of practice.

Photo 6.2 shows the unequal twins: in the foreground is a tipper lorry used for local construction work that is close to the Luton version and in the background is the thoroughly modified long-distance Sudanese version. Note the twin tyres at the rear of the tipper lorry, the construction of the driver's cabin, the sagging chassis that is a result of overloading and heavy use on construction sites, and the magic protection on the wing.

By Sudanese aesthetic standards the redesigned vehicle is a real beauty. She resembles her Luton sister only superficially, exhibiting the original motor bonnet and wings, the original mirrors and the original windscreen. But (beyond decoration and protection) it differs in the locally designed bodywork including the ladder, the single rear tyres, the larger tank, the open and enlarged driver's

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[10] Cf. L. Geary, *Bedford. The commercial vehicle for all purposes* (Romford, 1991) for Bedford's fleet history, especially 2-3, 29.

[11] Marianne de Laet & Annemarie Mol have called the attributes of an artefact that allow for a crossing of techno-societal borders – adaptability, flexibility and responsiveness to modding – 'fluidity'. They argue that an appropriate technology 'travelling to intractable places' should easily lend itself to be appropriated in intractable places, M. de Laet & A. Mol, 'The Zimbabwe Bush Pump: Mechanics of a fluid technology', *Social Studies of Science*, 30, 2 (2000) 225-63.

cabin with enough space for five instead of two, the wooden roof of the cab and on top of it the luggage rack with boxes for provisions and spare parts, which also acts as a seat for the driver's assistants (compare Photo 6.1). From this position they learn to navigate from the vantage point of the driver. The vehicle's upper-body construction, which is partly covered with metal sheeting on the exposed surfaces, uses timber support beams to offer the body the needed elasticity to cope with rough terrain. There are other versions of the body as well, one using bent iron bars instead of wood. In this case, iron is also used for the casing of the body which runs like a fence around the lorry. It should also be noted that the rear tyres are bigger than those at the front.

What all versions have in common is that they only use part of the original driver's cabin. The reason is that, in addition to gaining extra space for passengers and allowing the air stream to cool the driver's space, the thin metal of the cabin would not stand the extreme twisting caused by driving over rough terrain: cabin doors would jam and the metal would simply crack. With the locally designed seats and roof attached to the upper body structure, the driver's seat becomes a comfortably cool but still protected place.

Photo 6.3 shows the truck in a half-finished state, still without wings and bodywork and with only part of the original driver's cabin. The larger rear tyres can also be noted here – 12.00 x 20 on the rear axle and 9.00 x 20 front tyres as opposed to the original 8.25 x 20 on both axles on the Luton model. This is supposed to give the truck enhanced traction over soft ground and to prevent the vehicle from getting stuck in deep sand. The main chassis beam is extended at the rear, allowing more freight space, as does the modification of the driver's cabin. After all, the basic justification for most of the modifications is to convert the truck into an even more robust vehicle and to enlarge its freight-carrying capacity.

There is, however, much more to these modifications than pure instrumental considerations. After the parts of the original cabin that are no longer required have been cut off and the remaining parts remounted to protect the passengers and cover the engine, the interior of the new cabin is converted into a driver's nest, provided with a sound system and comfortably lined with silk and velvet. This is done in a style which obviously finds the approval of everybody committed to prevalent Sudanese ideas in interior design, even if it seems slightly overdone at times to produce a condensed version of that style. The craftsmen call it the 'bedroom'. There can be no doubt that the Sudanese version of the

Bedford TJ is meant to be much more than a mere work place. It is constructed, materially in this case as a home.[12]

To ensure the Bedford TJ matches the visions of Sudanese drivers and artisans, it has to be totally deconstructed. Usually, a Bedford TJ has served for some years as an original Luton model and when it becomes run down and needs a complete overhaul the opportunity is taken to convert it into a Sudanese truck. Additional modifications may be added at any time, usually if there are plans to operate the truck on particularly exacting routes such as for long-distance desert transport to Egypt or Libya, but some features are deemed essential on any TJ which wants to pass as a *sifinja*.

The TJ is totally dismantled – engine, gear box, brakes, suspension – until only the bare bones remains. From Photo 6.4 it should be clear why the simplicity of the post-World War II design makes the Bedford TJ so very convenient for modification. It is user- and maintenance-friendly, a quality lost on or even consciously omitted from high-tech trucks. The nuts and bolts are within easy reach, all the parts can be easily removed and reassembled and no special tools are needed. In fact to totally dismantle the TJ, a pair of competent craftsmen committed to their task would need no more than three to four hours.

When rebuilding the truck, the first and most important task is to increase stability and longevity. The frame is strengthened by reinforcements along the main chassis beams. This is achieved by riveting sheets of iron to the beams on the outside and welding reinforcements to the inside. This is considered the backbone of the enhanced carrying capacity and longevity. The cross beams also have to be adjusted as they are known to crack under stress. They are strengthened by welding enforcements to their juncture with the main chassis beam. Finally, springs are added to the rear and front suspension. Adding springs increases the distance between the chassis frame and the axle, so the shock absorbers have also to be lengthened.

This is done by simply welding the mounting of an old shock absorber to the new one.

The art of modding, and this is a general principle, largely consists of being able to re-use any available parts economically. By the same token, the steering link at the front wheel has to be lengthened (compare Photo 6.6). Photo 6.5 shows Mr Adila an-Nur, one of the master-craftsmen in the industrial area at Shendi, exhibiting a newly welded steering arm. The lengthening of the steering link also tightens the turning circle and allows the driver to put additional force

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[12] Similar observations may be made on any European highway as well as in places as far away as Pakistan. See H. Khan, 'Mobile shelter in Pakistan'. In: P. Oliver, *Shelter, sign, and symbol* (London, 1975), 183-96.

on the wheel, thus improving the vehicle's handling. A six-ton Luton model is thus converted into a nine-ton Sudanese model.

The metal sheeting of the driver's cabin is particularly unsuited to Sudanese conditions and was obviously not designed for maximum overload combined with Sudanese off-road strain, which simply tears the thin metal. The strain in the driver's cabin, or what remains of it, is eliminated by placing the rear edge on rubber pads that were originally taken from the engine mount of the 1970s model Land Cruiser (see Photo 6.6). This points to another principle of truck modding which is to search the vast archive of potentially usable spare parts in a manner reminiscent of Lévi Strauss's *bricoleur*, even if these parts seem at first glance far removed from the task at hand and appear to belong to other mechanical realms, for instance irrigation agriculture or even domestic appliances.

At the front, the cabin is mounted on a locally designed suspension known as a 'swimmer' (*ʿawwâma*). The swimmer is basically made of two freely moving U-shaped iron parts, as shown in Photo 6.7, moving round an axle originally taken from the rear suspension of a 1970s Land Cruiser. The swimmer is inserted between the main frame and the cowling, and very effectively absorbs the worst shocks. Note part of the archive of potentially usable spare parts in Photo 6.7.

Additional features are routinely added when the original parts wear out or are thought to be in need of replacement by more appropriate technology, for instance, if a truck comes from Eastern Sudan's gravel desert and is to continue its life in the sandy desert in Western Sudan or if long-distance desert travel is anticipated. Trips to Kufra or Egypt obviously require vehicles that are better equipped than vehicles just transporting onions to town, especially if the drivers need to avoid the well-beaten track for whatever reason. For particularly challenging routes, drivers try to get newer parts manufactured in India or China replaced by old original parts;[13] for desert trips water drums have to be mounted at the rear to complement the ubiquitous water skin called *qirba* or *suqqa* hanging at the side of the *sifinja*, as shown in Photo 6.1. A second fuel tank might also be added and the rear axle differential should be overhauled.

One important conversion relates to the strengthening of the rear axle traction unit. Photo 6.8 shows a detail of the wheel connected by bolts to the rear axle. With heavy use and especially in deep mud or sand, the threads of the bolts tend to wear out in no time at all, as the manufacturer's steel was obviously not designed for off-road strain in Sudan. The artisans replace the front ring of the rear axle that has to bear the full impact of the traction at the bolts by cutting off the worn part and fitting a new steel ring, and also by cutting new

[13] See below for the local assessment of parts.

and enlarged threads for stronger bolts to replace the original ones. As indicated in Photo 6.8 by the different colours of material, the replacement ring is manufactured using heavy-duty railroad steel from railroad repair yards in the nearby town of Atbara. This is another example of not only confining one's search to the automobile sector when looking for potentially useable parts. The inner and outer rims are different colours, reddish and yellow respectively, because they originally come from different rims that were cut and welded together to produce a longer-lasting wheel, the inner part of which has to bear the full impact of traction on the bolts originating from a much heavier truck. Aiming for longevity routinely involves the principle of strengthening original parts, as in the above example of reinforcing the truck's frame with iron sheets or, if reinforcing is prohibited by a lack of materials, by selectively replacing and adjusting low-quality parts with long-lasting heavy-duty parts, as in the example of strengthening the wheel.

Photo 6.1 shows the final product of the craft, the thoroughly appropriated vehicle once called a Bedford TJ and now known under its Sudanese name of *sifinja*; which was originally designed by Bedford's engineers at Luton and has since been redesigned collectively by a chain of Sudanese craftsmen. These craftsmen claim that they have designed a much finer truck than the Luton engineers and everybody familiar with Sudanese conditions would probably agree.

The social organization of creativity

So what is meant by appropriation? Appropriation is certainly not a wholesale diffusion of innovations, as the still influential Diffusion of Innovations School led by the sociologist Everett Rogers wanted it to be.[14] The creativity displayed by truck modding in these under-equipped workshops and by craftsmen with no formal training except on-the-job experience points to processes that differ radically from the usual understanding of passive acceptance. The whole terminology of invention, diffusion and acceptance from the modernization approach of the Diffusion of Innovations tradition does not fit the Sudanese case of truck modding. Even more so since, instead of sharing the user's view, they focus on the perspective of a change agent that aims to spread new and supposedly beneficial ideas, artefacts and practices like farm implements, school curricula or

[14] E. Rogers, *Diffusion of innovations* (New York, 1962); E. Rogers & F. Shoemaker, *Communication of innovations: A cross-cultural approach* (New York, 1971). It should be acknowledged, however, that Everett Rogers, after thirty years of upholding his narrow perspective, recognized the role played by user modification and reinvention in the last edition of his otherwise path-breaking book; cf. E. Rogers, *Diffusion of innovations* (New York, 1995), 17.

new brands of detergents to the passive masses in need of enlightenment. Instead, this chapter is looking at the appropriation of the TJ from the perspective of the user's environment. The reconstructed Bedford TJ is seen as having undergone a radical technological transformation – a transformation far beyond the confines of orthodox truck manufacturing – and it is still (and better) working whereas modifications in Roger's original perception of diffusion tended to be interpreted as deficits in the wholesale adoption of the artefact designer's pre-established instructions for use. Instead of seeing deficits, the appropriation of the TJ, as well as the appropriation of a host of other artefacts handled by users in a manner not intended by the manufacturer, should be regarded as more akin to reinvention.

The *sifinja* is, however, still confined within the ideational realm of a motor vehicle. It has not been deconstructed and used as an artefact serving purposes totally unintended by the manufacturers, like Henry Ford's famous Model T, which served, for example, as a snowmobile, for ploughing fields and, with a blocked-up hind axle and a connecting conveyor belt running over a rear wheel, as a stationary source for powering various farm machinery such as cream separators, wood saws, washing machines, corn grinders and whatever else could be powered by running wheels.[15] The story of the TJ resembles the story of the Model T inasmuch as it has also been appropriated by a new milieu, the TJ by Sudanese truckers and mechanics and the Model T by farm folk in the United States. It differs, however, as it is used as a technical artefact for its specifically intended function – cargo transport – although in a new habitat. Still, interpretative flexibility, the term used in the Social Construction of Technology approach for imagining new functions and radically different contexts for artefacts, is apparent, albeit at a different level. It is certainly used as a vehicle although uses as a coop for chickens or pen for goats and as a source for recycling materials for amulets, hoes or donkey carts can be disregarded for the moment. However, components such as the driver's cabin have been flexibly interpreted. The *sifinja* is still situated within the confines of truck technology but is manipulated beyond the confines of orthodox truck manufacturing.

Non-orthodoxy is probably part of the explanation for the creativity displayed. The craftsmen form an uncaptured community of practice: they have largely maintained their cultural autonomy against the prevailing North Atlantic orthodoxy in truck manufacturing and have maintained control over their craft. The point might even be made that the lack of development interventions and state assistance in vocational training has encouraged imaginative initiatives whereas training entails orthodoxy in the definition of tools and artefacts. But the point of a totally uninvaded and uncolonized imagination can also be over-

[15] Kline & Pinch, 'Agents of technological change'.

stretched, as the biographies of many practitioners feature varying experiences of work in or near the country's formal repair workshops like the shiny Mercedes, Toyota, or Rover agents in Khartoum, or they look back on a history of labour migration to other Middle Eastern countries where they have come into contact with North Atlantic-informed traditions of vehicle maintenance and repair.

Still, there are arguments in favour of the proposition of uncaptured practitioners. The art of truck modding displays a self-confident and bold creativity that points to the unity of hand and mind which is characteristic of traditional craftsmen who are independent of a central management and development departments.[16] During research in the Sudanese habitat of the TJ, it became abundantly clear that the pride and status of the craftsmen derive from the experience of mastery of the truck and its materials. (Note the apprentice's attitude of unreserved admiration in Photo 6.9). The fact that the workshops under consideration are small shops, that they are owner operated and that they use an intermediate craft technology as opposed to industrial manufacturing means that craftsmen own their skills in a specific way. They are in full control of their work and their vision is not bound within the confines dictated by management and design departments.

Another, related, part of the explanation certainly involves the evolution and social organization of technical knowledge and skills. After the automobile revolution reached Sudan, traditional blacksmiths in remote parts of the country that were not serviced by central maintenance departments have been confronted with the fragility of automotive modernity. Eventually, small workshops in different parts of the country specialized in repair and maintenance, first of the Commer truck, then of the Bedford TJ. Other makes, like the different Ford models, though preceding the Commer and the TJ, tended to be operated in the proximity of central maintenance departments or even to come with their own maintenance and repair departments, like army vehicles, and tended to be used

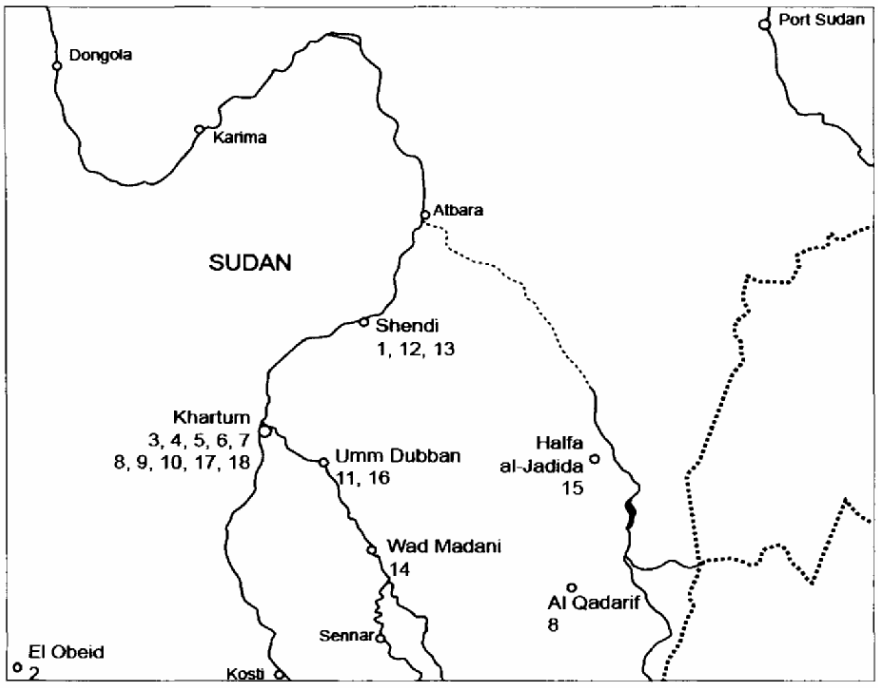
[16] The point about the unity of hand and mind in independent craft production is emphasized in H. Braverman, *Labor and monopoly capital. The degradation of work in the Twentieth Century* (New York, 1974) and later in Douglas Harper's excellent account of work in a small rural workshop, see D. Harper, *Working knowledge. Skill and community in a small shop* (Chicago, 1987). I am aware that the accompanying deskilling argument so forcefully advanced thirty years ago for North Atlantic industrial workplaces can be overdone. Fordist manufacturing environments, which were thought by Harry Braverman to totally estrange the labourers from their original craft skills, thereby reducing the labourer's bargaining power against the management too, also tend to rely on a certain foundation of skills, albeit not as visible or specific as the traditional craft skills but nevertheless essential to a smooth working of the whole machinery. Still, the original point about the unity of hand and mind in independent craft organizations is amply illustrated.

exclusively by high-ranking British administrative personnel and the nabobs of Sudanese society. The Commer, the Austin and the Bedford TJ first crossed these techno-social boundaries, though the Austin was discontinued by its manufacturers a long time ago. The folklore of the drivers and mechanics includes stories of traditional blacksmiths finishing screw threads with only a file at hand, while other stories are told of the promethean heroes who first devised the *ʿawwâma*, and still others about the manufacturers in the early 1980s adopting some of the reinforcements on the body frame from the Sudanese craftsmen. Though research into the history of the truck modding community is far from complete, it is clear that through borrowing from the artisans of Sudan Railways, learning from mechanized river transport and army maintenance departments and by a good deal of trial and error, several local traditions of repair and modifying have emerged, first in Shendi, El Obeid and Khartoum North, and later in places like al-Qadarif and Wad Madani in the Gezira. And these local traditions have developed into a widespread community of practice by branching off and weaving new innovations into the practice of truck modding and maintenance.

Map 6.1 offers a partial view of the spatial location of Bedford's community of practice in Sudan. Port Sudan, Sudan's main commercial harbour, is the TJ's main port of entry into the country. The network of workshops stretches from Shendi to El Obeid in Kordofan, to al-Qadarif and Halfa al-Jadida and to the industrial area of Hillat Kuku in Khartoum North where there is a large concentration of workshops today. The network of workshops is reinforced by ties of kinship, marriage and apprenticeship, with successful apprentices branching off from the main tradition but tied by lasting personal attachment to their masters through partnership, friendship or marital and kinship ties. Many of the owners of the workshops today are descendants of the founding ancestors of the craft and, in common with Northern Sudanese practice; they tend to marry within the wider family and into their master's family.

The legendary founder of the main tradition is at-Tayyib al-Aqib (1). He came from a family of blacksmiths working for the nomads of Abu Dilaik in the savannah Southeast of Shendi and started the tradition of repairing and modifying trucks, first the Commer truck and later the TJ in his workshop at Shendi in the 1950s. He is credited with developing the first version of the *ʿawwâma* (see above). Later he worked in al-Qadarif for some years and then in Khartoum where he died. When he left his workshop at Shendi, it fell into decay as none of his sons felt any affinity for their father's trade. But he had two collaborators, one by the name of Wad Abu Sitta (2) who went to El Obeid in the early 1960s to start his own workshop there and which is still flourishing, the second at-Tayyib Faddul (3) was a maternal cousin as well as an apprentice to at-Tayyib al-Aqib and he opened a workshop in 1965 at Khartoum, where he is still living.

At-Tayyib Faddul in turn had three main apprentices. The first was his nephew Ali Faddul (4) who opened his workshop at Khartoum-Bahri in 1969 and is still working, though on a much reduced scale after his workshop had to close. The second is his son Nur ad-Da'im (5) who opened a workshop in Hillat Kuku, Khartoum North in 2000. His third and most influential apprentice was Tayyib Hajju (6), the ancestor of the famous Hajju tradition who opened a workshop in Hillat Kuku in 1970. Tayyib Hajju started a whole group of sons and cousins in the trade, first Omar Hajju (7) who opened a workshop in Hillat Kuku in 1984, Salah Hajju (8) who with Hassan Hajju started a workshop at al-Qadarif in 1992, Himaid Hajju (9) who opened his own workshop in Hillat Kuku in 2002, and Osman Hajju (10) who works in his workshop opened for him by his brother Omar (7), also in Hillat Kuku since 2001.



Map 6.1 Spatial location of Bedford's community of practice in Sudan
Source: K. Beck

From Omar Hajjus's workshop (7) in Hillat Kuku came his apprentice and relative Ammar Osman (13) who is also a descendant of at-Tayyib al-Faddul (4). He opened a workshop in Shendi with his younger brother Yusif at at-Tayyib al-Aqib's (1) deserted place in Shendi in 2002. At Shendi there is also the independent workshop of Adil Yusif an-Nur (12) who was apprentice to his

father Yusif an-Nur but not related to the other traditions by kinship or apprenticeship. Ahmad Akkasha (14), a maternal cousin of Ammar (13), started a workshop in Wad Madani in 1988. Another maternal cousin by the name of Muhammad al-Jaili (16) owns his own workshop at Umm Dubban and a paternal cousin and former partner of Ammar, Ahmad Khalid (18) has owned a workshop in Hillat Kuku since 2001. Mahmud wad Na'i (11), another descendant of at-Tayyib Faddul (3) has recently started his own workshop at Umm Dubban after working in Saudi Arabia, Ahmad as-Siddiq Ahmad al-Faddul (15), a descendant of at-Tayyib Faddul's (3) family and brother of Ali al-Faddul (4), has opened a workshop in Halfa al-Jadida, and another distant relative, related through the grandmother to Ammar (13), by name of as-Sirr Ali, is also working in his own workshop.[17] As in the case of the workshop owners, the craftsmen and apprentices are often relatives, even if only distantly related. On the other hand, working relationships in this community tend to grow into partnerships and equally often into relationships by marriage, thus creating multi-stranded relations. In addition, relations of kinship, marriage and lasting friendship also extend to the families of truck owners and drivers, weaving the whole truck community (*ahl al-lawârî* – the truck people) together by multiple strands. Boys from this milieu who grow up in the shadow of these trucks with their brothers and cousins are drawn deeply into the practices and cultural orientation of the workshops.

The evolution of a relatively broad community bound together by common practice and involving different local traditions is probably one of the key explanations for creativity. Its very foundation on independent though connected local workshop traditions of getting things done has served as a seedbed for an evenly broad process of differentiation and consolidation of innovations.[18] Besides apprenticeships and the movement of individual craftsmen learning from distant traditions, the trucks themselves have served as the most efficient media for the dissemination of innovations by circulating through Sudan's network of workshops in search of maintenance and repair, thus freely offering the materialized knowledge incorporated into their metal bodies to everybody able to make sense of it.

In addition to the repairmen, another highly specialized community of practice has evolved, namely the brotherhood of drivers. Drivers and their assistants usually attend during the dismantling and rebuilding process. The

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[17] Information presented here is mainly derived from conversations and interviews with Mr Adil Yusif an-Nur in 2003 and 2006, Mr Ammar Osman in 2006, and Mr Ali al-Faddul in 2007.

[18] 'Variation and selection' in the evolutionary jargon of the social construction of technology approach, cf. T. Pinch & W. Bijker, 'The social construction of facts and artefacts'. In: Bijker, Pinch & Hughes, *Social construction of technological systems.*

crew thus acquires unparalleled practical knowledge of their truck, which has certainly saved quite a number of crew and passengers in desperate situations. On the other hand, this offers the opportunity for drivers and repairmen to develop a common language and practice around the truck. It creates the interactive space for the drivers' experience and the repairmen's knowledge to flow together and map out visions of a better truck. This creates the space for socially constructing technology. The art of the skilled craftsmen consists of realizing these visions in the material, as any other artist also does.

Another part of the explanation regarding creativity probably derives from the relative poverty of the Sudanese economy and the trade ban in recent years. Spare parts deemed 'original' are expensive and in low supply, and cheaper parts of Nigerian, Indian or Chinese origin, even if produced under licence, are considered low-quality fakes. Craftsmen are always on the look-out for original parts which, even if they are worn out and in need of laborious repair or adjustment, fetch much higher prices than brand new parts from India and China. Many come to Sudan via a network of mostly Pakistani scrap dealers operating from the Gulf who acquire the parts from scrapyards around the world and keep a close eye on the sale of old stocks in the Bedford's original habitat. Craftsmen are thus forced to manufacture, adjust, repair or otherwise make fit parts which in a wealthier environment would be considered beyond use. Artisans summing up a widespread informal-sector ethos regarding the potential use of worn-out spare parts and the prudent treatment of possibly recyclable materials claim that nothing is considered totally unusable (*hâja hîna bibûz nihâ'î mâfî*). Everyday repair and maintenance thus demand a considerable amount of ingenuity, creativity and skill, which in a Western environment can at best be acquired in development departments but certainly not in the standard practice of spare-part exchange, which is becoming more dominant in workshops. Moreover, labour in Sudanese workshops is cheap beyond competition. This means that any TJ, even if it is considered to be scrap in its Sudanese habitat, 'can be made shiny and beautiful to look like a bride' again. And this, together with the mastery of the material, provides the basis for the proud conviction that "the *sifinja* will never ever die (*as-sifinja mâ timût abadan, nihâ'î*"), even if there is no trace of the manufacturer's plant in Europe left!"[19]

Finally, to come back to symbols: not every TJ lives up to the high standard reserved for a bride in Sudanese society but drivers like to think of their TJs in terms of feminine attraction and companionship. Its function as an island of consolation and shelter has already been alluded to. In Photo 6.10 it does not

[19] Mr Ammar Osman from the famous Hajju family of Bedford craftsmen, the owner of a workshop in the Sudanese town of Shendi where some of the pictures were taken, in an interview, 27 March 2006.

appear gendered, it appears sexed up at least as far as this is possible without risking offence in the Sudanese public. After all, its habitat is in a man's world, and certainly a lonely world in terms of domestic comforts. This can be inferred from Photo 6.10 which depicts the back of one of the bridal beauties, with calligraphy claiming *wahashtûn* (your charms drove me crazy) and with prospects for a further meeting – *illâ liqâ'*. The rear door lock of nearly every Sudanese *sifinja* is made as a plate designed in the shape of a Russian MIG jet fighter. And on this plate the name of the workshop owner is engraved. This symbol points to the origins of the practice at the time when the MIG 21 was becoming known to a Sudanese public as a miracle of mobility, power and modernity in the 1960s.[20] Symbols in this case appear to be tied to the practice in the community of drivers and mechanics. In fact, the meaning here evolves in the process of doing.

Even if a worn-out TJ is not restored to the 'bridal beauty' referred to by its admirers, there is every reason for the respect accorded to the craftsmen by people sharing their social environment. For these craftsmen have seized a piece of foreign technology, made it their own and have thus empowered their society with the undoubted potentials of motor mobility and the easy control of vast spaces. If ever the term 'appropriate technologies' can be well applied, this is certainly the case. The artisans work for longevity and to keep rural Sudan mobile.

Appropriating automobility in the milieu of the Sudanese truck modders should be understood as something quite different from appropriating automobility in the original homeland of the Bedford TJ. Appropriation in one context may be understood as consumption, and the work of appropriation in that case is making a choice between equally glittering automobiles (which admittedly can become burdensome work given the symbols involved), paying its price, taking it into one's possession and loading it with personal meaning.[21] This is why it may legitimately be studied by consumption studies and the perspective can be reduced to trace symbols and the practice of shopping.[22] Appropriation

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[20] Rumour has it, that at-Tayyib Hajju, one of the early Bedford master artisans who learned his trade from the legendary At-Tayyib Faddul and opened a shop in Hillat Kuku in 1969 or 1970, at a time when the Free Officer's Movement took power in Sudan, introduced the MIG 21 symbol as a workshop plate on the back door of Bedfords coming from his workshop.

[21] That consumption of automobiles may involve considerably more than paying the price and using it, especially its loading with personal meaning. This is amply documented in the case of customizing, modding and pimping cars. See H.F. Moorehouse, *Driving ambitions: An analysis of the American hot rod enthusiasm* (Manchester, 1991).

[22] See for instance, D. Miller, *Material cultures. Why some things matter* (Chicago, 1998).

in the context of the *sifinja* is about mastery in a technical sense, in terms of the mastery of materials and technology, about maintenance, about extending the life of automobiles and creating values, and in this perspective it is not about consumption, let alone shopping, but production, skills and labour. This is why, in this case, some things matter, namely in their materiality.

This story of the Bedford TJ and its technological appropriation can certainly be considered another instance of African agency and African creativity in dealing with global goods.[23] Since the beginning of the globalization debate, the notion has been upheld in anthropology – most forcefully probably by Marshall Sahlins[24] –that technical modernity in Africa (and other places in the Third World) is harnessed to local cultural aims and values. But the main issue has been consumption and cultural appropriation, the study of how imported goods are invested with new local meanings, in short, the study of categorizing and symbolizing. My hope with this contribution was to make a case for the notion that there is an interior world of materiality and practice to be discovered beyond the surface. As Bryan Pfaffenberger once put it: symbols do not create meaning, activities do.[25]

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[23] P. Probst & G. Spittler, *Between resistance and expansion. explorations of local vitality in Africa* (Münster, 2004) and W. van Binsbergen & R. van Dijk, *Situating globality. African agency in the appropriation of global* culture (Leiden, 2004).

[24] For instance in M. Sahlins, 'What is anthropological enlightenment?', *Annual Review of Anthropology*, 28 (1999), 1-23.

[25] B. Pfaffenberger, 'Symbols do not create meanings – sctivities fo: or, Why dymbolic anthropology needs the anthropology of technology'. In: M.B. Schiffer, *Anthropological Perspectives on Technology* (Albuquerque, 2001), 77-86.

Photo 6.1 Bedford TJ with passengers
Source: K. Beck

Photo 6.2 Bedford TJ Tipper Lorry and its modified twin
Source: K. Beck

Photo 6.3 The process of modifying a truck
Source: K. Beck

Photo 6.4 Bedford TJ dismantled
Source: K. Beck

Photo 6.5 Mr. Adila An-Nur, master craftsman
Source: K. Beck

Photo 6.6 Swimmer of Land Cruiser
Source: K. Beck

Photo 6.7 Reinforcing the cabin
Source: K. Beck

Photo 6.8 Wheel connected with bolts
Source: K. Beck

The Speed of Change

Motor Vehicles and People in Africa, 1890-2000

Edited by

Jan-Bart Gewald
Sabine Luning
Klaas van Walraven

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