GRASSROOTS LANDSCAPE ARCHITECTURE FOR THE INFORMAL ASIAN CITY

*J. Rekittke**

*National University of Singapore, School of Design and Environment, Department of Architecture.
4 Architecture Drive, Singapore 117566, Singapore. akiJR@nus.edu.sg

ABSTRACT: Poor living conditions are not the exception in the Megacities of the future, but a constant. The nonfinite mass of informal sector and informal urban settlement in developing countries constitutes a challenging field of action for landscape architects. A good deal of life in the informal parts of big cities is outdoor-bound. The approach of grassroots landscape architecture marks an academic attempt to conquer these unpopular and sparsely documented worlds by travelling, intensive fieldwork and development of pragmatic and low-end designs for essential improvement. The paper focusses on urban outdoor design work that the author developed together with students of landscape architecture, working on the city of Khulna in Bangladesh. Facing the fathomless deficiencies of the informal urban sector leads to a compelling motivation to profit from the skills of landscape designers.

KEYWORDS: urban landscape architecture, informal city, grassroots approach, outdoor design

1 REVERSAL

Urban landscape architecture predominantly proceeds as a deluxe discipline. It flourishs in times of peace and economical high, it shrivels in times of crisis and shortage of money. But are landscape architects doomed to work in the gilded cage of luxury design or will they turn out to be able to transform landscape architecture into a helpful and necessary mega-urban tool? Today one third of the global urban population lives in slums [1], these are more than one billion people – uptrend. The sheer number of slum dwellers makes clear that poor living conditions rather form a serious urban constant than a regrettable exception. Cities of developing countries are future touchstones for urban design, architecture and urban landscape architecture. Informal sector and informal settlements constitute self-made worlds with a good deal of outdoor life, tinkered by poor people who are creating their own home, business and environment. Informal city occurs where no planner or designer would propose any human settlement. Dwellers there are acting from bitter necessity but with rich creativity. Their informal worlds elude methods of systematic planning and design as well as common forms of administration and management. One has to go there to conceive them, they can't be studied from far. This is *dirty work*, as Beardsley & Werthmann [2] name it. In the informal field, sustainable change and improvement only can be generated by bottom-up or grassroots approaches. This requires a spirited new generation of bread-and-butter designers with the awareness that an important part of global urbanization processes will always happen beyond the radar of masterplanning and well-regulated development.

2 ASIAN PERSPECTIVE

„Of the 33 megalopolises predicted in 2015, 27 will be located in the least developed countries, including 19 in Asia" [3]. This is where landscape designers can find out best, if they can shake off the gilded cage and exploit landscape architecture as an essential tool. „We didn't give them an assignment, we gave them a city" stated Kelly Shannon from Catholic University of Leuven, who invited the author and his students of the Master of Landscape Architecture program at Wageningen University to work on the city of Khulna, Bangladesh. Shannon is teaching in the Master of Human Settlements program at Catholic University of Leuven. The program addresses rapid urbanization in the developing world and contemporary urban transformations within the scope of sustainable development. In 2008, together with students from

Leuven, Wageningen students started to search for design tasks of grassroots landscape architecture in the widely unknown city of Khulna, a secondary city in Bangladesh.
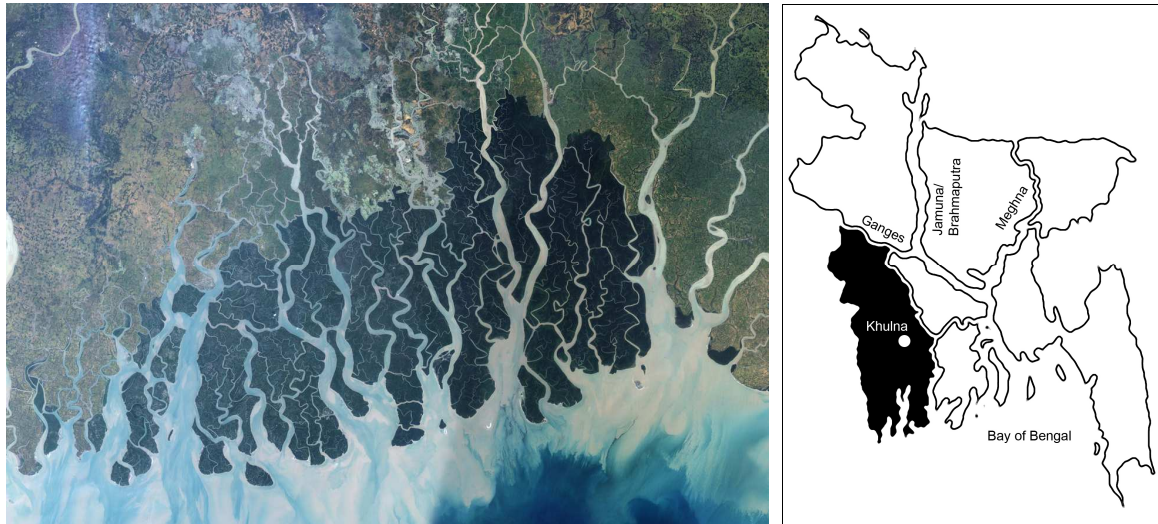

Figure 1 and 2 Left: Easterly India and southwest Bangladesh with Sundarbans (dark patch), largest mangrove forest in the world (NASA 1999/2000). Right: Bangladesh with Khulna Division (black) and Khulna City (graphic: J. Rekittke).

The colossal flows crossing Bangladesh – a country barely half as big as Germany – are carrying more water than all rivers in entire Europe together. Ganges, Meghna and Brahmaputra are embossing the country like enormous arteries, coming from the Himalayas and flowing into the Bay of Bengal (Fig. 1 & 2). The monsoon is regularly flooding roughly a fourth of the Bangladesh landmass. The core surface area of Khulna, a city of about 1.4 million inhabitants, is located on slightly higher elevations of the natural levee to the west of the Rupsa and Bhairab riverbeds, safeguarding the city from regular devastating flooding. During the British colonial era, Khulna became an important river trading port and administrative centre and featured an important railway link with Calcutta that has recently been restored. Khulna became an industrial hub for the handling and processing of jute, rice, tobacco, sugar cane, fish respectively seafood, as well as of wood, that was choped down in the nearby Sundarbans, the world's largest single block of tidal halophytic mangrove forest. Today shrimp breeding and processing plays an increasing role. It is cultivated by an amazing crop rotation of rice and shrimp – half a year rice, half a year shrimp. The profit of shrimp is multiple higher than the profit of rice. Jute industry was the most important factor of Khulna's formerly urban development. A significant number of large and prosperous jute mills had been established at the diverse riverfronts and serviced by an extensive and effective railway network. After the partition of British India in 1947 – into India and the abstruse construct of the territorially separated halves West Pakistan and East Pakistan, the industrial track record of East Pakistani Khulna continued, anymore based on jute industries. The jute mills flourished and important urban facilities for the increasing number of workers were constructed in the neighbourhood or at the plots of the jute mills. In 1971, after fierce acts of war, Bangladesh gained independence. The jute mills were converted into state enterprises, which indicated the beginning of an unfortunate swirl of economic neglect, pecuniary difficulties, shifting world market and industrial unrest. The end of the mills became inevitable and thus Khulna fell into economic halt. Seen from Dhaka, the capital of Bangladesh, Khulna seems to be a strongly neglected city. Nevertheless the government invests in new big scale infrastructure and established the new Khulna University – first academic programme started in August 1991. Khulna is the country's third largest city and its urbanised area is rapidly growing due to rural-urban immigration. Typical for a developing country, Khulna's population struggles with a disproportion between working population and children. A relatively small number of adults has to support a big number of children and non-working family members. The elongate city core developed along the West Bank of the rivers, but recent development of a bypass highway to the west of Khulna is shifting the ongoing urbanisation process

towards West (Fig. 3). The still very much water-oriented economic system of the city begins to change towards a road-based structure. The now peripherally situated university campus will become a core area in that development. Many objects and areas next to the rivers have been abandoned already and are quickly conquered by informal settlements and informal market activities. Even the formerly very important railroad and goods station is abandoned in many parts and occupied by numerous squatters and slum dwellers. Owner of this land is still the state respectively the railway company.
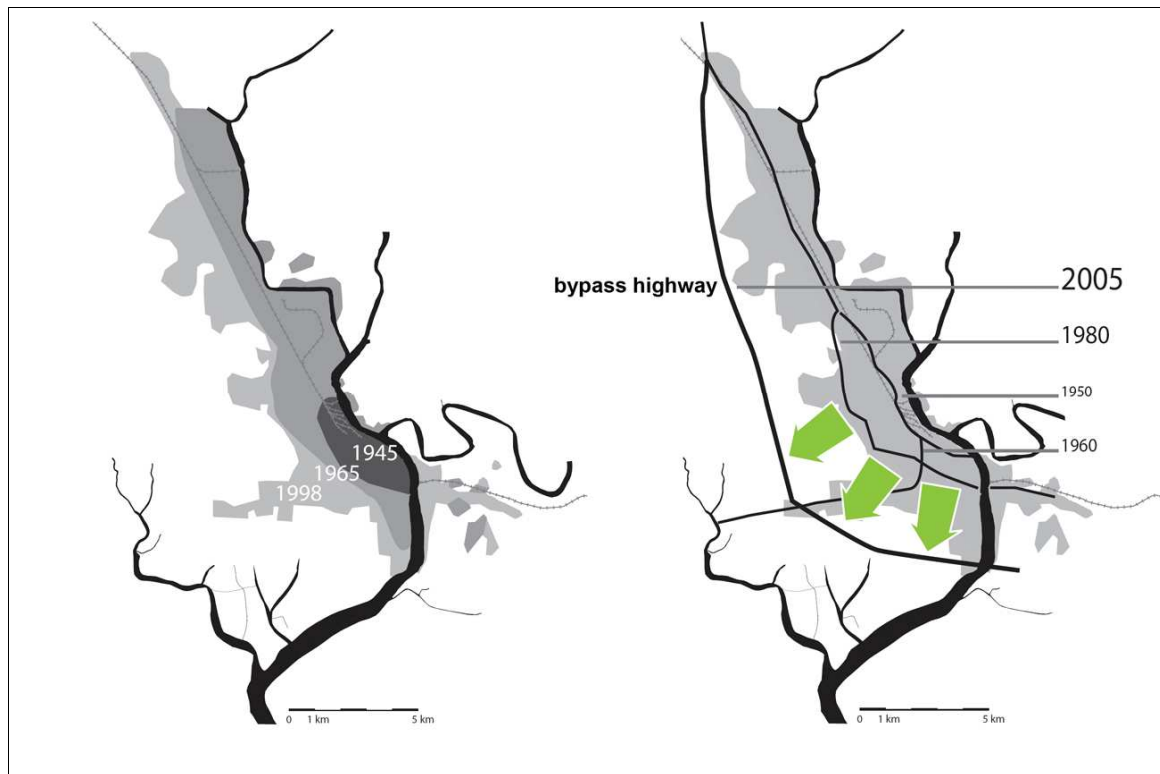

Figure 3 Development of Khulna city. Recent urbanisation describes a shifting development towards West, where a new passby highway has been built (mapping: Wijnakker & v.d.Salm).

A slum – according to the *operational definition* of UN-HABITAT – is an area that combines to various extents the following five characteristics: 1) Inadequate access to safe water; 2) Inadequate access to sanitation and other infrastructure; 3) Poor structural quality of housing; 4) Overcrowding; and 5) Insecure residential status [4]. "Today, slums have come to include the vast informal settlements that are quickly becoming the most visible manifestation of urban poverty in developing world cities. Such settlements are known by many different names and are characterized by a variety of tenure arrangements. In all cases, however, the buildings found there vary from the simplest shack to permanent and sometimes surprisingly well-maintained structures" [5]. Khulna resembles an open schoolbook of informal and formal urban development – loud, malodorous, crowded. Everything that is individually produced or manufactured, becomes visible from the street. Every thinkable trade can be easily studied while walking by. All steps of development of big city functions and facilities can be seen like in a 1:1 city model – development forwards as well as backwards. And the full range of societal statuses and hierarchies can be read like in a public pattern book.

3 DATA CRISIS

In the pre-field trip phase of the design studio it became apparent how few standard informations about Khulna are available. The nowadays knee-jerk feed of the city name into Google Earth had already been disillusioning. Only one small tile of the digital globe showed a high detail view on a tiny part of the city, the

main area of Khulna remained a pixel soup without any significant informational value. An investigation concerning high-resolution aerial photographs brought out, that even the military of Bangladesh hasn't better digital aerial photographs than Google. Also other maps and analytical informations were few and far between. Yet the mentioned single high-resolution aerial photograph showed a special characteristic in the urban tissue of Khulna (Fig. 4). Thousands of man-made ponds are perforating the terrain and structuring the city layout of Khulna. Next to these water bodies a lush vegetation, consisting of palm trees, banana plants, bamboo et cetera creates an oasis-like quality, even in the toughest slum districts (Fig. 5). The pits of these ponds have been cut for the purpose of an elevated position of housing (cut and heap). The quality of these ponds is varying from well maintained reservoirs for drinking water and swimming to completely polluted dumps and sewers.

Figure 4 and 5 Left: Aerial photograph of Khulna, Bangladesh (Google Earth) with explanatory cross-section (Wijnakker & v.d.Salm). The enframed black spots are ponds. Right: *Oasis effect* of a slum pond in Khulna (photo: J. Rekittke).

Apart from these quality distinctions, all of these ponds hold an immense potential as urban building blocks, combining the characteristic of an inner city landscape element with a great variety of practical functions. Not to forget, in a low lying country that is regularly inundated and which will inescapably be affected by the predicted climate change effects like intensified rainfall and rising sea level, every single possibility of water retention should be exploited. The reality looks different. During the expansion and densification of the city, many of these ponds have been filled with soil and sand, a process, that is gaining momentum with increasing urbanisation. Turning that negative process over towards an urban landscape architectural surplus value – became one of the important issues of the studio. Ponds plus surrounding vegetation seem to have great potential concerning the future structure of the city, because they are green building stones beyond the expensive repertoire of gardens and parks, constituting thousands of small oases with important ecological and economical values – water retention, drinking water supply and food production [6].

Another analytic pre-field trip activity had been the generation of some digital *speculative* 3D model samples (Fig. 6 & 7) – making a virtue of necessity. Visual representation of and creative handling with vegetation and greenery form one of the few particularly unique features of the landscape architectural profession [7]. They are essential for landscape architecture and thus play a crucial role in the concept of grassroots landscape architecture. The model data about building structure and exact positions of main trees in selected parts of Khulna based on a fieldwork report of students from KU Leuven [8]. Other plants were distributed based on typological vegetation maps and relevés [9], derived from characteristic vegetation patterns that are visible on recent fieldtrip photographs. In spite of the cumbersome handwork for data preparation, designers' senses were sharpened towards a much better knowledge of the site. Even the production of such a vague 3D working model demands serious research activity and detective work, which improves the acquaintance with a still unvisited site. The model samples backed up the first impression of the importance of water and vegetation in Khulna. During trip and fieldwork these speculative impressions had
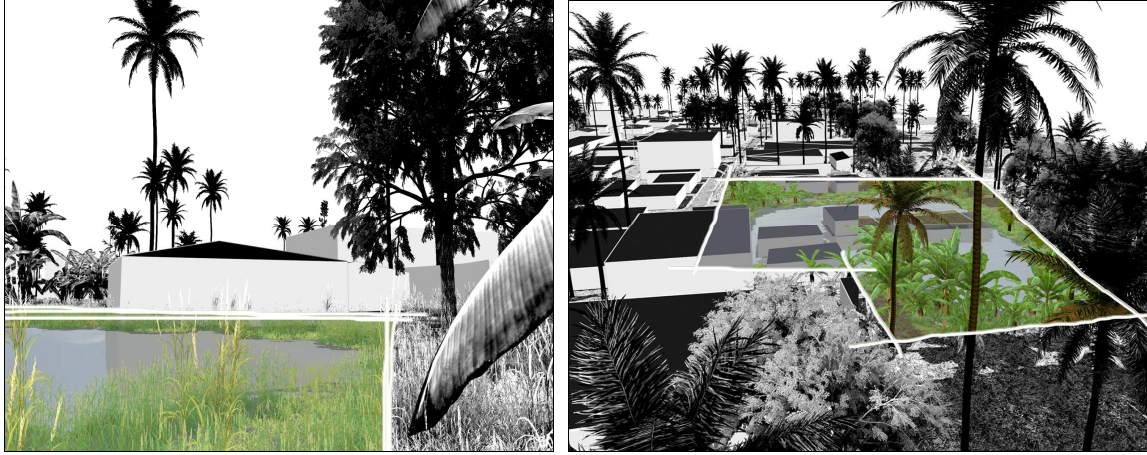
been attested to an amazing extent.

Figure 6 and 7 Digital *speculative* 3D model samples of Khulna, showing the specific quality of inner city ponds surrounded by lush vegetation (Lenné3D / v.d.Sande & Foré, Wageningen University 2008).

4 FIELDWORK

Fieldwork denotes the collection of raw data and is conducted in situ. It was the only way to collect reliable and helpful infomation about Khulna reality. For the students it meant laborious handwork with pencil, plan, pocketbook and camera. The fieldwork was devided into two chapters, fieldwork on water (river) and fieldwork on land. During four full days we hired boats for the students (Fig. 8) to bring them into their specific fieldwork sector of the city. In that way the fieldwork activity could cover the complete riverfront of Khulna and its periphery (Fig. 9). Because of many fences protecting private factory premises, fieldwork from the boat was the best possibility to experience and document the multifaceted utilisation structure of riverfront and connected hinterland.
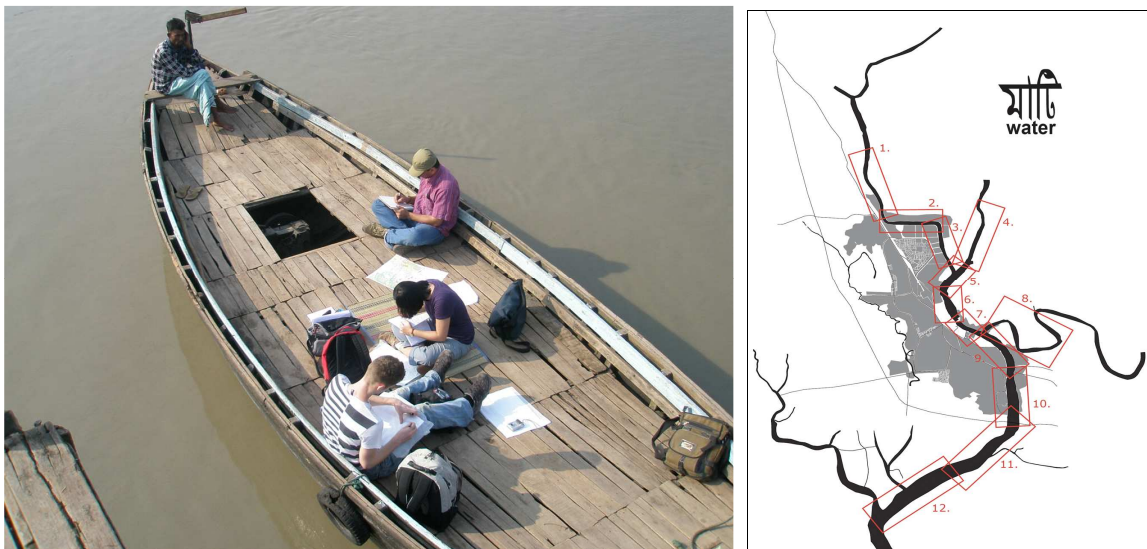

Figure 8 and 9 Fieldwork on the river (photo: J. Rekittke, mapping: collective student work).

Additional three days were spent for land fieldwork. For that purpose the students used all available means of locomotion: feet, rikshaws, tuk-tuks (three-wheel motor taxis) and buses. Not the whole city area could be examined, but the sectors on land covered vast parts of Khulna from North to South, including deep

samples in East-Western direction. During fieldwork the students tried to identify their personal *strategic project* of grassroots landscape architecture. In big cities of developing countries, work for landscape architects is literally lying on the streets. It has to be identified, reflected and elaborated.

5   DESIGN EXAMPLES

In the future, landscape architects will have to take „more upon their shoulders: more interdisciplinary discussion, more social engagement, more discussion of ethical questions and above all more courage for utopia" wrote Udo Weilacher in an essay accompanying the jury record of the International Federation of Landscape Architects (IFLA) Student Competition 2008 [10]. Not the beauty of a design or its exerted originality, but the social impact and the collective profit concerning quality of life will count in the future. „Design must become an innovative, highly creative, cross-disciplinary tool responsive to the true needs of men" [11]. The jury of the IFLA Student Competition 2008 awarded the second price to Tomas Degenaar, one of the students of the Khulna studio in Wageningen. Degenaar postulates to expand landscape architectural work into the world of slums and informal housing – in the course of an essential and down-to-earth approach. His area of interest and strategic project is situated at the territory of the centrally located but heavily neglected railway and goods station (Fig. 10). He clearly sees the general value and potential of the existing railway installation and counts on its erstwhile strong and useful spatial concept. Currently it is an indistinct piece of land. Tolerated and expanding informal settlement alternates with uncontrolled demolishing of these slums – initiated by the land-owning railway company, that encashes illicit earnings for indulgence, but sticks at nothing when it comes to large-scale evictions. The families living there mainly don't earn more than one Euro a day. Severe river flooding and heavy monsoons are threatening the people, living a precarious life at this low lying ground. The serious environmental problems only can be solved, when also the landowning institution gets involved. They might be venally, but they have the power and the means to change the basic conditions. Degenaar instrumentalises landscape architecture to protect a number of roughly eight hundred families from getting sweeped away by the abstruse planning of a so-called leisure park, constituted by a five-star hotel, a planetarium and some other missable oddities in a city like Khulna [12].

Figure 10 The railway and goods station Khulna looks like a green lung in the city, but is also precarious home for about 4000 human beings living in slums (photo: T. Degenaar).

However the design of Degenaar doesn't confine itself to caring about some deplorable people's lifes, but also considers the enourmous strategic potential of the site. Recently Khulna suffers from an economic decline, but Bangladesh generally is a country in constant economic growth and Khulna's fate is not sealed yet. The day might come, when the city will blossom into a new boom. Then a vast and central area like the railway station can provide precious space for investment and development. To undersell and dissipate the land for a useless leisure park would be a shortsighted act, which the persons in charge might regret acridly in the future. By proposing some basic landscape architectural interventions like shoreline stabilisations, footway connections, accesses to the water as well as to the hinterland and planting of trees for shadow and food, Degenaar is preparing the ground for a medium-term transformation of slums into livable neighbourhoods – even when a potential date of expiry is implied. By the instruments of control, management and detailing, landscape architecture is used to prevent disuse and misuse of valuable ground;

to allow temporary slum expansion and densification while preventing uncontrolled squatting or the genesis of a mega-slum; to implement plantations in order to freeze valuable ground for future use; to provide *instant parks* as an interim function; to prevent erosion and other damage during flooding by simple concrete open drainage channels and a new concrete quay wall; to create a functioning infrastructural hierarchy and improved accessibility by adding new routes; to fine-tune the simple lay-out by planting accompanying rows of the three most prominent indigenous tree species, and to initiate a sense of place, that can be experienced and appreciated by the dwellers (Fig. 11).

Figure 11 Grassroots landscape design in a slum (T. Degenaar): shoreline stabilisation, robust route connections, concrete sewage system, new tree rows for shade, better readability of the site.

A second design example illustrates the down-to-earth logic that forms the background of grassroots landscape architecture. Roughly 1.4 million people are living in Khulna. The city is located on the banks of the Bhairab/Rupsha river, Atai river and Atharabanki river, large rivers that devide and structure the city and have to be crossed by thousands of commuters every day. The challenging anomaly of Khulna is the nonexistence of any bridge in the urban area of this million-strong city. As recently as in 2005, a peripheral highway bridge, situated beyond the southern edge of Khulna had been inaugurated. But this bridge is useless for daily inner-city commuters. In addition to the commuters many other people of all ages, animals and goods – goats, bikes, rickshaws, coconuts etc. – have to cross the river in order to get from one part of the city to the other. The informal but efficient transport solution for this enormous logistic challenge is an armada of small wooden boats or barques, on which people, animals and goods ferry across the rivers (Fig. 12 and 13). The landing and gathering places of this ferry system are called *ghats*. Deriving from Hindi language, ghat originally denotes a series of steps leading down to a body of water, for both mundane purposes as cleaning and religious rites as ritual bathing or ablutions.

Figure 12 and 13 Wooden boats ferry people, animals and goods from one riverbank to the other. Sometimes people drown (photos: C. v.d.Zwet).

The ghats of Khulna constitute a network of strategic points dispersed along the entire riverfronts of the

city. They are invaluable components of an informal public transport system on water, but not a single example of serious investment into ghat enhancement and security on the part of the city administration could be found. This combination of importance and negligence distinguished the ghat and ferry system – genuine outdoor elements – to be focussed by a landscape architectural design approach. There are official plans for seven new bridges in Khulna until the year 2020 [13], but considering the reality in Bangladesh, this notice of intend appears well-intentioned but completely unreliable. The ghats will remain the lynchpin of across-the-river passenger traffic for the coming decades. Seen from above, the ghats of Khulna are little, punctual and spatially limited elements in the vast urban settlement area, but functionally they have a significant impact on nearly the whole city system. Redesigning the ghats means influencing an important gear wheel of public transport and daily business. That's why the thematic choice of Chris van der Zwet and Miranda Schut, who decided to pay attention to the neglected ghats, is excellent. No recording of the existing ghats had been available before their fieldwork, no design effort had ever been made to improve the deficient situation. The low-key before-after plan of one of the ghat sites (Fig. 14) reflects the deliberately unspectacular character of their design interventions.

Figure 14 The as-is-state (left) can be significantly improved by basic interventions like structuration of gathering space, establishment of a bus terminal and amply tree planting (design: v.d.Zwet & Schut).

The rush-hour congestion on the landside of the ghat, caused by coincidence of shops, stands, buses, rickshaws, tuk-tuks and pedestrians, can be unblocked by creation of a temporary bus terminal and differentiation of the main traffic flows. Thus space for public use is attained. Congestion is not only a problem on land but also on the river. A differentiated system for in and out going boats could reduce ferry time. Trees can provide comfortable shadow for the many people at the ghats, who as yet stand and work in full sun. Basic public toilets and restrooms can dramatically improve sanitary conditions in these intensively used places. The significant tidal range of the rivers causes severe problems while boarding and unboarding. Robust stairs and swimming platforms allow the necessary flexibility concerning water and street level. The absence of illumination is unsafe. Electric lighting or simple oil lamps can provide safety and lucidity – enormously helpful, because boarding and unboarding in the dark are delicate and sometimes deadly balancing acts. By combination of these low-cost interventions, the ghats can be significantly improved. They become safer, more effective and convenient. A crucial surplus value is generated by gain of well functioning multipurpose public space that contributes to the amendment of Khulna's most important public transport system.

6 CONCLUSION

We call it the *urban age* [14] and we know that yet more than fifty percent of mankind is living in cities. We like the idea of highly designed city environments, comfortable, luxurious and convenient. And we should count ourselves lucky that we can live and raise our children under these privileged circumstances. But there is also the other side of the coin. Where it comes to intensive urbanization, bitter poverty and inconceivable living conditions become normality. This dark side of the city requires urban design efforts, in the same way as the postcard plots of global metropolises. Landscape architects can show that urbanity

means much more than a stylish promenade in Hamburg or Singapore. Necessity is the mother of invention, not affluence. The fascinating and sometimes crazy speed and chaos of the Asian informal city, combined with the creative force of professional designers, can generate some significant improvement of urban space and function.

Landscape designers don't have to act the role of helpers, but they definitely can provide helpful design work for improvement of neglected public space, change of basic conditions of the built and non-built enviroment, origination of green infrastructure et cetera. Landscape architecture might also be the most appropriate design discipline to emphasise some vital beauty of even the worst place, in order to generate initial momenta for transformation processes from slums to worth living neighbourhoods. Confronting our students with inconvenient reality can be seen as a necessary rite of passage as well as a crucial didactic act. The young generations will experience that pitifulness or donation doesn't change the world – but own design action can. Admittedly, so far we just produced paper works in a distant design studio but the next step will be design work for implementation. Grassroots landscape architecture needs some time to prosper.

REFERENCES

[1] Davis, M., "Planet of slums," London, Verso, 2007.
[2] Beardsley, J. and Werthmann, C., "Dirty Work," Topos, Issue 64 (2008), pp.36-42.
[3] Fort, F. and Jaques, M., "Mutations," Bordeaux, ACTAR, 2001.
[4] UN HABITAT Report, "The Challenge of Slums. Global Report on Human Settlements 2003," United Nations Human Settlements Programme, 2003.
[5] UN HABITAT Feature, "What are slums and why do they exist? Twenty First Session of the Governing Council," United Nations Human Settlements Programme, 2007.
[6] Rekittke, J., Paar, P., Van der Sande, B., Foré, P., "3rd dimension for worldwide landscape architecture," in "Digital design in landscape architecture," edited by Erich Buhmann et al, Heidelberg, Wichmann, 2008.
[7] Rekittke, J. and Paar, P., "Digital Botany," Journal of Landscape Architecture, No. 2 (2006) 2, pp.28-35.
[8] Dudek, P. and Van Houtte, E., "Fieldtrip report, Khulna, Bangladesh," Catholic University of Leuven, unpublished report, 2007.
[9] Röhricht, W., "oik – nulla vita sine dispensatio. Vegetation Modelling for Landscape Planning," in "Trends in Real-time Visualization and Participation," edited by Erich Buhmann et al, Heidelberg, Wichmann, 2005.
[10] Weilacher, U., "More courage for utopia in present landscape architecture," International Federation of Landscape Architects, Jury record of IFLA Student Competition 2008, 2008.
[11] Papanek, V., "Design for the real world. Human ecology and social change," Chicago, Academy Chicago Publishers, 1985/2000.
[12] Khulna Development Authority, "KDA master plan," Khulna, Self-published, 2002.
[13] Khulna Development Authority, "KDA master plan," Khulna, Self-published, 2002.
[14] Burdett, R. and Sudjic, D. (eds.), "The endless city: the Urban Age Project by the London School of Economics and Deutsche Bank's Alfred Herrhausen Society," New York, Phaidon Press, 2007.