# Working on Cities: an Experience from Kumasi, Ghana
# A Design Studio for Architects and Urban Management Students

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**Abstract:** This paper describes the process of a studio and research project called 'Working on Cities' (WOC) by students from the Academy of Architecture and of the Institute for Housing and Urban Development Studies in Rotterdam, the Netherlands. The studio brought together architects, designers and urban management professionals from developing countries and the Netherlands. The objective of the WOC studio was to arrive at a sustainable, integrated plan and design for a particular settlement in Africa. The location for this project was the Ayigya sub-centre in Kumasi, Ghana. This settlement is currently facing many challenges inherent to the urban growth of African cities and the limited technical and financial resources at hand. The focus is on the description of the process that supported the WOC studio by the interdisciplinary team of students. The challenges of the settlement and the applied action-research oriented methods are explained. Principles of action planning and integrated development planning were used as a basis for developing a 'common language' amongst students and it is argued that is vital for the development of designing sustainable areas such as Ayigya while recognizing the realities of the people and their future needs.

**Keywords:** Urban management; Kumasi, Ghana; upgrading; architecture design; compound housing; African city.

## INTRODUCTION

### Introduction of the initiative and of organisations involved

This paper describes the process and outcomes of a research project called Working on Cities (WOC) by students from the Institute for Housing and Urban Development Studies (IHS), the Academy of Architecture Rotterdam (AvBR) and the Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi, Ghana. The project was started by the AvBR and IHS as a pilot to collaborate on the thematic issue of Working on Cities. The Working on Cities research project objective was to combine design, planning and research to arrive at integral solutions for urban challenges in developing countries. The research project was developed as a design studio as part of the curriculum of Master students in Architecture and Urban Design (AvBR) and in Urban Management and Development (IHS). The research project commenced in January 2009 and will be finalised at the end of September 2009.[1]

### Objective of Working on Cities

The main objective of the WOC studio was to arrive at an integrated development plan and project designs at different urban scales for a suburban centre in Kumasi, Ghana. In consultation with the African partner, namely the Department of Architecture of the Kwame Nkrumah University of Science and Technology, the sub-centre Ayigya was selected as the location for this project. The next paragraph describes the Ayigya sub-centre in more detail.

Although a clear objective was set for the WOC studio, it must be noted that no design brief was set. The WOC studio was therefore not a typical design studio as it is commonly run in the curricula of architecture and urban design programmes, but also contained a very in-depth research component. A defined location, namely the settlement of Ayigya, was the only fixed reference point presented to the students. The broad objective of the

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1   This paper was submitted end of July 2009, which meant that the project had not been fully finalised. At the time of presentation at the African Perspectives Conference all research has been completed.

WOC studio was to arrive at sustainable solutions for improvement of this settlement and to arrive at design projects at the building level, but also regarding the urban fabric. These projects had to be developed as part of an integrated development plan for Ayigya, another required output. The perspective and sub-sectors they wanted to focus was left to the students to decide. These were not given at the beginning of the research project. Students themselves had to decide whether to focus on government, NGO, private sector or people's driven interventions (or all of these). The focus of the project was on the future of African cities, the main topic for the lectures that supported this WOC studio. Also, the teaching methods applied in the design studio were geared towards sustainable development of cities in Africa.

### Participants

The research project was an integral part of the students' curriculum at the IHS and AvBR, but participation in the design studio was on a voluntary basis. The initial selection of students was based on their motivation to participate in the studio, which included their motivation to work in interdisciplinary and international teams, as well as the compulsory participation in the field work in Ghana. The selected student participants represented a diverse group of students. Here, diversity is understood in terms of advancement in their curriculum (1st to 4th year students); field of specialisation (housing; environment; governance; planning; social development; land development; architecture; and urban design); and a myriad of professional work experiences (from local government, NGO to private sector). It is important to note that student participants from both IHS and AvBR had previously gained professional work experience in the urban management, design or architecture field in their country of origin and in the three layers of government (local, regional and national), NGOs and private sector.

Typically, students from the IHS are from developing and transition countries, whereas AvBR students are from the Netherlands. The participants in the WOC studio included young professionals from Ghana, Indonesia, the Netherlands, the Philippines, Rwanda and the USA. As participants already had an educational and professional background (developed in their home countries), this meant that the group came from very different planning experiences, ranging from traditional master planning, to action-oriented development planning, to participatory planning. Therefore, the WOC studio brought together a group of professionals that had a background in both traditional, orthodox planning (still dominating in developing countries) and more contemporary, action-oriented planning in developed countries. Furthermore, the WOC studio featured urban managers on the one hand and architects and urban designers on the other hand.

### Selection of study area

It was decided very early in the development of the research project to focus on an African city within the theme of Working on Cities. The Department of Architecture at KNUST University in Kumasi expressed an interest for cooperation. In consultation with the Architecture department a location was selected in Kumasi. Kumasi is a city that represents many of the common challenges of African cities, such as rapid urbanisation and traditionalist planning as a basis for urban management. This provided an interesting and challenging location for the WOC studio. The location, Ayigya, is a suburban centre located along the main Kumasi-Accra road, bordering the campus of the KNUST University on the southern side.

### Limitations of the project location

The selection of this project area was, in the first place, based on academic considerations and as such was not a demand-driven, real-life case study. The intention of the project has not been to come up with ideas for actual implementation. However, the outcomes of the WOC studio had to be realistic, practical yet innovative. A bottom-up and participatory planning approach was therefore not tested in this project, as the community was not actively involved. One of the main reasons for this was to avoid raising any false expectations amongst the residents of Ayigya.

### Dissemination of results

The outcomes of this research project include both designs and draft integrated development plans for the settlement. The project designs are thus embedded in a long-term plan that also incorporates sustainable management of these projects. As it was explicitly an academic exercise, the outcomes were not presented to the community. However, the results have been shared with the relevant local government departments in Kumasi, the project will be presented at different conferences and exhibitions (Parallel sessions, Architecture Biennale Rotterdam; African Perspectives Conference, Pretoria) and the results have also been shared with NGOs and other organisations that are active in urban development in Ayigya community and beyond. Moreover, one of the student participants in the project is a civil servant at the local government office in Kumasi.

## BACKGROUND INFORMATION

### Urban development in African cities
In the preparatory phase of the WOC studio, many different issues were raised with regard to the theme of Working on Cities. The rapid urban development taking place across the globe, in particular in developing countries and the subsequent challenges for cities in developing countries, was a starting point for the discussion. Although urbanisation in Africa is lower than the rate of urbanisation in any of the other continents, African cities are very rapidly catching up. According to UN Habitat (2008), 39.1 % of the African population is living in cities, but projections estimate that 61.75% of Africans will live in cities by 2050, whereby in 2030 it is expected that a majority of Africans live in the city (>50%), thus forecasting very rapid urban growth between 2030 and 2050. North Africa is urbanising fastest, with East Africa lagging behind and Southern and Western Africa keeping a pace in the middle. This puts an enormous pressure on all challenges connected to urban growth, including adequate housing provision, infrastructure development, water provision, adequate health facilities, educational opportunities, environmental pressure, and economic growth opportunities including employment (UN Habitat 2008).

Urban development is in fact a joint public-private enterprise. In particular with regard to the choice of resources, it becomes clear that choices are made interactively by the market place and all three levels of government. Adequate and sustainable development of urban development, and thus of resources, is therefore key to the future of cities. The level and depth of management of cities differ quite substantially between low technical and financially capacitated (local) and well-resourced governments; but in the light of the current economic and also developing ecological crisis, it is a significant issue for cities across the globe.

### Challenges of urbanisation
The ongoing urbanisation is in particular manifested by the growth or informal settlements in African cities. Local governments in Africa seek to address the rapid urban growth, but are often hindered by their low technical and financial capacities. As a result, there is insufficient access to basic infrastructure and services to address the growth of cities, which is accelerated by the influx of people to cities. As a result of this, uncontrolled urban development is taking place without little or any guidance from local authorities. This has led to the growth of an informal sector that albeit providing a source of livelihood and shelter to hundred of people, it is a serious threat to the functionality of the city and, as such, impacts on the quality of people's lives as (for instance, as a lack of appropriate drainage and sewerage systems causes poor sanitary conditions).

### Kumasi: Garden City of West-Africa
The City of Kumasi was founded in 1680 by Ashanti King Osei Tutu I as the capital of the Ashanti Kingdom. It has grown and developed over the centuries and is now the second largest city of Ghana. Kumasi is located in a transitional forest zone, located about 270 kilometres north of Accra, the capital and largest city in Ghana. The location of Kumasi is very central and the city is thus traversed by a number of major road networks linking cities within Ghana and within the wider region. Because of its strategic trade position, large-scale migration into the city has materialised over many years and is still on-going. The city population is growing at 5% per annum (UNDP). Presently, the population of Kumasi metropolitan area is estimated at more than 1.5 million and that of Ayigya at around 30,000 (Farvacque-Vitkovic, Raghunath, Eghoff & Boakye 2008:94). The nearby KNUST University has a student population of nearly 23,000 of which some live on campus and a large number living in other areas of Kumasi, including Ayigya.

### Historic development of Ayigya
Ayigya is a suburban settlement 5.7 kilometres to the East of the Kumasi city centre and immediately adjacent to the KNUST University campus. It is one of the older settlements in the greater Kumasi area and is now an integral part of current day Kumasi metropolitan area. In the case of Ayigya, the establishment of the KNUST campus adjacent to Ayigya in the 1950´s brought growth and development to the former Ayigya settlement. The development of the main road between Kumasi and Accra, as well as the establishment of the university campus led to the absorption of Ayigya into Kumasi metropolitan area. Previously an independent settlement (village), it became a vital sub-centre for the city of Kumasi. Current day Ayigya is made up of different types of housing, with compound and urban villa housing still dominating the urban fabric – the original master plan lay-out is still visible in its original plot structures of 30 by 30 metres. Land ownership is still traditional, whereby the Chief holds the traditional title to the land; common for most of Kumasi and Ashanti region where the King and Chiefs still have traditional land owner rights.

FIGURE 1:[2]  Urban growth patterns in Kumasi.

## Housing in Ayigya

Very recently, an affordable housing project for government officials has been developed to the North of Ayigya. After the February 2009 elections, building activities have slowed down as the waiting and allocation lists were not transparent. This housing project, which includes some 150 housing units, is still under construction. These new units will be 4 storey walk-ups which is quite high for Ayigya. There are only a few multiple storey buildings in Ayigya, which are predominantly designated for mixed-use, and many single storey buildings that are mostly in use for residential purpose. The predominant building type is the compound house.

## The grid structure

The original settlement was designed according to a grid structure with plots of 30 by 30 metres. Although owned by the local chief, individual families built their compound houses on each of these plots. The lay-out and structures were semi-formal (as formality was interlinked with traditional land ownership rather than customary title). As a result of urbanisation, the original lay-out of the settlement changed as informal buildings and extensions to the courtyard houses were erected.

## The compound house – the structure

The compound house is characterized by:
- it is laid out in an urban grid arrangement, adopted by the British colonial government (Andersen, Andreasen & Tipple 2006);
- it is a building covering a plot area of 30 by 30 meters, with an open courtyard in the centre of the building;
- the building is comprised of many rooms (approximately between 8-12 rooms) that all are inward-looking, with an entrance and window facing the courtyard only and the whole typically with one access corridor leading to the street;
- the central courtyard is used for common functions such as cooking, pounding maize meal, clothes washing, small handiwork activities, etc.;
- in the past one family used to occupy the whole building; these days many rooms are (commercially) rented out (Tipple & Willis 1992);
- traditional courtyard housing units are nearly always single storey only.

## The compound house – its 'role'

Compound housing is a type where many different rooms are located around a central courtyard that is the 'heart' of the house and is used for most family activities such as cooking, and washing. The rooms surrounding the courtyard were historically used as bedrooms for the large extended families and also included an open kitchen, bathroom and toilets. The traditional layout of the settlement is still visible today and courtyard houses have been preserved in Ayigya for over 100 years. One of the major changes is the letting of rooms to people other than family members, commencing the growth of commercial rental housing. [This section is based on the author's observations in the area and anecdotal evidence].

## PROBLEM DESCRIPTION

### Why focus on Ayigya in this project

Current day Ayigya has become a semi-formal settlement as it was based on formal structures and urban plans but has developed rather informally over time. In order to ensure sustainable growth of this settlement, the rapidly occurring informal development needs to be addressed. Rather than trying to avoid/going against informal development from occurring, the quest has been to arrive at solutions for upgrading the current settlement, in order to best address the challenges. An analysis of its current (contemporary) identity has thus

2    All figures used in this paper are taken from the student's work in the 'Working on Cities' studio.

been the starting point for the research project. The aspirations of the city and of the people of Ayigya are vital to understand and to arrive at sustainable visions for the future of the city of Kumasi and in particular for Ayigya, but the challenges are enormous. However, building upon the (implicit/inherent) resources of this vibrant sub-centre, the settlement provides an interesting quest for architects, urban designers and urban designers to arrive at practical and innovative solutions.

### Insufficient and sub-standard infrastructure
The infrastructure facilities in Ayigya are generally inadequate. As the compound houses were built some 75-100 years ago, they originally did not have running water and electricity. Over the years water taps have been installed in Ayigya and extensions have been made to a large number of houses. Although some taps can be observed within a courtyard or even within a structure, many households still make use of the taps located on the streets. This system is maintained by the municipality and a (small) fee has to be paid for water consumption. Electricity lines have also been extended to current day Ayigya and unfortunately a considerable number of informal dwellings have been erected under the main power lines. The majority of formal structures, but also many informal structures, have an (il)legal connection to the main power grid. The supply of electricity is a combination of the old municipal grid (available in more formal structures) and pre-paid metered access to additional privately exploited power networks. In 2009 some of the main roads have been upgraded and sewerage networks are put in place next to the roads. However, these sewerage systems are limited only to the main roads.
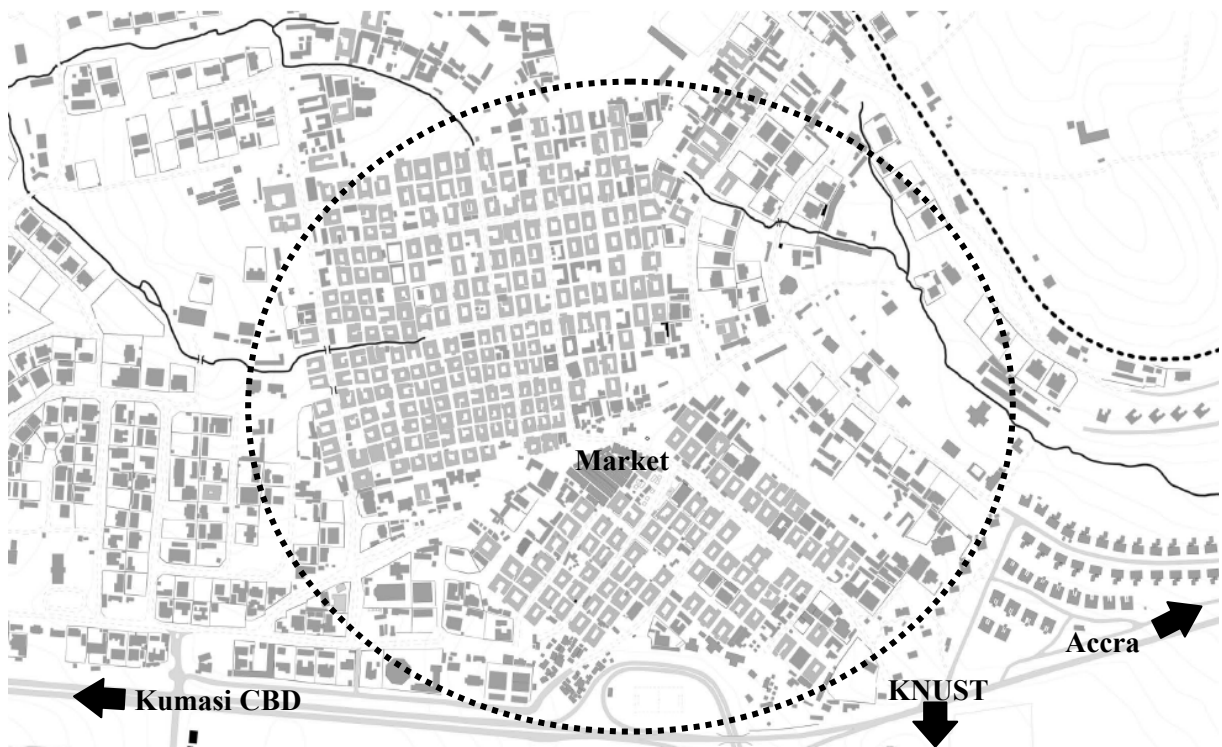


**FIGURE 2:** Urban plan/layout of Ayigya.

### Environmental impact
Within the settlement itself one can observe many individually and informally installed sewerage systems. Given the fact that Ayigya is in a sloping environment, most of these informally connected systems are only to discharge sewerage from the house to a nearby downward slope, most often at the back of houses. Most downward slopes thus turn into small rivers during (heavy) rains. The most common toilet system in place is the VIP toilet (ventilated improved pit latrine) which is maintained and cleaned by a private service provider. Other than illegal street urinating spots (a real concern to the people as exemplified by the many notices: 'please do not urinate here'), there is no municipal infrastructure in place for this. Solid waste collection is done by a service provider employed by the municipality, but is only done along the main routes and from designated skip sites. Road connections (unpaved) are only available on some main routes – within the settlement very few roads exist that are accessible for trucks or even cars. The main bus (*trotro*) station for Ayigya is located along the main (paved) Kumasi-Accra road. There is relatively little vegetation in Ayigya, but the foot paths within the settlement

are between 2 and 10 metres wide; considering the sloping environment, a lot of erosion has occurred and passages between houses (sometimes including the house itself) are slowly being washed away.


**IMPLEMENTATION**

The outcomes of the WOC studio were four different but interlocking ideas for the future of Ayigya. The process underling this WOC studio is explained after the outcomes are presented. The guiding principles of each of the groups showed a number of communalities in the analysis of current Ayigya. Some of the common guiding principles for design include:

- expected urban growth and an increase in population;
- environmental threats to Ayigya, in particular as a result of erosion;
- an existing economic and local business sector not well-known at the city level;
- acknowledgment of the urban-rural linkages, many new arrivals at Ayigya come from rural areas;
- financially constrained capacity of local government, but also of local entrepreneurs;
- traditional land tenure system still controlled by the local chief;
- compound housing as the dominant structure with important historical and architectural value, yet at the same time providing challenges for future growth and development;
- lack of adequate infrastructure in the settlement.

The four different projects each focussed on a different urban scale in their research and design project.

### Kumasi: the garden city of West-Africa

One group focussed on the regional scale for Ayigya with a project called 'The Royal Trees: Ayigya the true garden city of West Africa'. The project's objective was to create a vibrant and sustainable physical environment in Ayigya that supports and provides quality spaces for living, working and recreation. To accommodate the current and future inhabitants, a strategy was defined that uses new green structures to generate appropriate housing typologies and a redefined urban layout. The vision that was envisaged by this group was for Ayigya to develop as 'The true garden city: an ecologically sound city for the present and future generations'. This group looked very much at the role of Ayigya and also of Kumasi in the region. Their ideas for Ayigya were strongly related to the urban-rural linkages that are very prevalent in Ayigya as the majority of its residents come from rural areas. Also, as Ayigya is currently located at the urban edge of the city, in its place-making it strongly feeds on the rural background of its people.



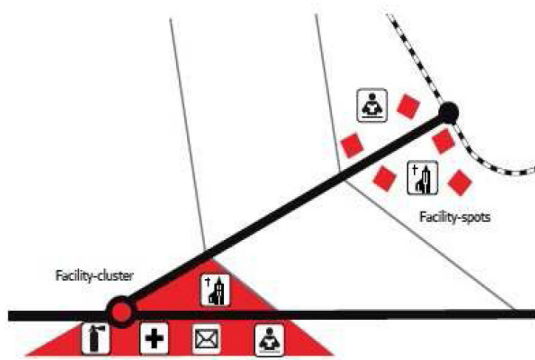**FIGURE 3:**   Design proposal for Agiya – the Royal Trees.

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FIGURE 4: Corridor development.



FIGURE 5: Stem and leaf development in Ayigya.



FIGURE 6: Design for new market stalls and street vendors.

## Future growth: the central corridor

The second group focussed on the development of the main corridor in Ayigya. The main corridor is considered a key element to provide for the transformation of Ayigya into a vibrant economical sub/centre of Kumasi, whereby the corridor is the catalyst for commercial activities. The project is named 'Sub-C: Centre, Corridor, Commerce' and builds on the projected population growth in Kumasi. The vision for Ayigya by this group was to develop 'a neighbourhood based on a formal urban plan that supports the potential for all people to develop adequate housing and business opportunities, regardless of their income levels'. The main strategy was to transform the main street into a corridor that will stimulate community development by providing a new framework of infrastructure, public services, open spaces and that is supportive of new housing and business development. The corridor runs from the main Accra-Kumasi road to the rail line, where the group planned to develop a train stop. By improving this economic corridor, the group aimed to attract new entrepreneurs and business into Ayigya, thus also attracting more customers visiting Ayigya. In addition, the group planned a new middle-income housing development project near the future train stop. The future of Ayigya as the main economic sub-centre of Kumasi is well-acknowledged in this design. It is expected that the corridor functions as a leaf structure, whereby the main stems will feed the nerves of the leaf; a trickle-down effect of improved infrastructure.

## Economic opportunity in Ayigya

The third group focussed on the encouragement of trading and services by using the power of subtle design. The title of their project was 'Ayigya works!'. Whereas the previous group focussed on the development of a corridor to enhance economic growth and to improve infrastructure, this third group focussed on the existing forms of business in the market area and that of the street vendors. The vision of this group for Ayigya was to establish a vibrant and flourishing working environment for the people of Ayigya.

The strategy included an identification of the capacities of current small business activities and collaboration with the local Department of Architecture at the university to design different typologies for shops in the market and its corridors.

One of the main considerations for this group was to build upon the concept of local economic development. This resulted in designs for business structures at the market as well as a tailor-made structure for the many street vendors in Ayigya. The project took into account the current level of economic activity in the sub-centre in particular.

## The future for compound housing

The fourth group focussed in particular on the building level. Their project was titled 'Stretching Social Structures: ADAPTing the urban compound house to modern living'. Their quest was to conduct research into the redevelopment of a traditional type, namely the compound house. Their vision was to develop Ayigya into a healthy living and working environment for its people and which supported and strengthened the socio-cultural values and economic activities of the community. Their strategies were threefold and included the focus on

developing a healthy living environment, improving working space, and maintaining socio-cultural identity. To achieve this, the transformation of the compound house was considered key. They developed several models for transformation and extension of the compound house. As the settlement is already fairly dense, room for expansion of the house was sought vertically. As the current compound structures were not originally erected to hold more than one level, innovative and creative solutions were sought to extend the house. Making use of bamboo technology for vertical extension is such an example.



**FIGURES 7, 8 and 9:** Future models for compound housing.


## HOW DID WE GET THERE?

### Process

The WOC Studio was organised over a period of 9 months, thereby linking up with the curriculum of the AvBR and IHS students. The whole research project was set up as a group assignment; with each group comprising of 3 urban management students, 2 architecture students and 1 urban design student. The students were expected to work independently, with a few organised workshops and events. These included a series of 3 weekend workshops, a field trip to Kumasi, and presentations. It was during the fieldwork period that collaboration took place between the students from the Netherlands-based institutes and the students from Ghana.

In chronological order, the following activities were organised as part of the overall research project:
- Workshop 1: Action Planning;
- Field work AvBR students;
- Workshop 2: Integrated Development Planning;

- Workshop 3: Concept Project Design;
- Final design presentations;
- Field work IHS students; and
- Final presentations of research work.

**Organisation of the process**
Throughout the workshops, different tools and methods were applied in order to enhance the communication and cooperation between urban managers, architects and urban designers. In the professional world, both urban management professionals and designers, including architects and urban designers, play an important role in urban development processes. Just as in the WOC studio, in the professional world it can also be seen that communication between these professions is often difficult. Architects and designers come up with design solutions that adhere to context and building regulations but are not necessarily the most suitable, optimal and most sustainable expression of current policies and intervention strategies as stipulated by local government. At the same time, urban managers arrive at strategies and implementation guidelines that cannot realistically be translated into concrete products or designs that can be physically realised. The management of a city is complex and involves a myriad of interventions that are all interdependent. Physical manifestations are integral of the management but are only a component of these far more complex set of strategies and interventions such as medium-term spatial frameworks or integrated development plans.

**Action Planning**
In the first workshop, the four student groups were asked to develop an action plan for Ayigya (AP methodology was based on Baross (1991)). Actual information was provided to the students on Ayigya and each group was asked to perform a rapid assessment of the current situation and to arrive at concrete action plans to address some of the current challenges in Ayigya. The exercise was simulated in such way that the students had to present their action plans to a panel of local Ayigya representatives, including the local chief. The exercise was broken down into a number of steps that were supported by different tools. Problem tree and objective tree analysis was used to assist students in identifying the core problem of the Ayigya settlement. Within the context of action planning, this analysis is based on a quick scan and, in contrast with traditional planning, does not entail detailed research and studies. In order to move from formulating the core problem (and thus the overall objective) students were introduced to force-field analysis, priority setting, brainstorming and selection tools. With the aid of these tools, students had to formulate concrete plans, actions and tasks in order to reach their formulated objectives. In the last stage of the exercise, students had to come up with an overview of tasks and link these tasks to a responsible actor, a time frame and a budget.

At the end of the action planning workshop, the student groups performed as teams. During the brainstorm sessions of the workshop, the staff facilitated some of the discussions. The participant who resides in Kumasi was available as a resource person to the 4 different working groups. In particular, the problem tree analysis evoked strong debates amongst the students, as they were immediately challenged to turn the problem into concrete action for the settlement. In general, a high level of innovative thinking and creativity could be seen in this workshop. As none of the participants, except for one, had visited the location, the outcomes were not necessarily applicable in reality, but it did level the playing field for discussions. In the initial discussions, one of the main barriers to overcome was the understanding of 'concepts'. Very different interpretations of concepts, such as capacity-building, poverty, but also of density and quality, were understood. Not surprisingly, as half the students came from developing countries and thus from similar settlements as the location in Ghana; but also since half the students were designers and the others were mainly policy makers from local governments and NGOs.

**Other workshops**
In between the first action planning workshop and the other two workshops, a field trip to Ghana was undertaken by the AvBR students. So, when the students met in the second workshop, this was started off by a presentation of the field trip experiences of the AvBR students. During their stay in Kumasi, the architect and urban design students had collected a lot of information on the settlement, including improved urban plans and maps of the settlement, sketches of the buildings, materials used and street view and some anecdotal information from random and unstructured interviews.

The second workshop started off with an introduction to integrated development planning. The objective of the WOC studio goes beyond design solutions, as it in fact tries to come up with strategies that integrate design and management in the development of cities. Each group of students were thus expected to formulate an integrated development plan for the Ayigya settlement for a period of 5 to 10 years. The design projects are in fact part of the integrated development plan. As time and resources were more limited in the WOC studio than they are in

reality where cities take up to a year to develop a 5-year integrated development plan, each group made a focus on a specific theme that they had chosen to address for the future of Ayigya. These themes had been arrived from the first action planning workshop and were further supported by a literature review performed by the participants in between these workshops.

The principle of integrated development planning was used to ensure that project designs were an integral part for sustainable development of Ayigya and the management of these developments was integrated into their proposed interventions. During these two workshops students had to come up with a vision, an objective and long-term (5-10 years) strategy for Ayigya as well as design plans at the urban and building level. The outcomes of these workshops are presented in the next paragraph. The discussions and the process was guided in such way that each group had a different focus for the development of Ayigya and worked at a different scale of the urban fabric. This way the four group outcomes combined provide an integrated development plan for Ayigya.

A common misunderstanding is to consider dwellings in isolation; in particular when working with poor people. However, in most settlements of low-income dwellers land tenure (more specifically tenure security) and local employment opportunities are more important to dwellers than housing. John Turner was one of the first to acknowledge when he published his groundbreaking 'Housing as a Verb' (Turner 1972) which took many years before this became mainstream for architects and urban designers in their understanding of their work.

At the end of workshop 3, each group had to present their objective and strategies for Ayigya and the draft project designs that support the implementation of these strategies. Although the presentations clearly reflected the group's effort it was also clear that the different professions in the group were not yet capable of presenting each other's works. In other words, the architects failed to fully understand the contextual and supporting mechanisms, proposed to manage the design implications, and the urban management students could not fully comprehend how the proposed designs would interact in their settings. The final phase of the group work therefore asked for a greater commitment and investment in time for students to work together.

**Field work**
It was essential for the group of students to conduct field work in order to get a real understanding of the realities and actual challenges of the Ayigya settlement. In addition, the field work also provided an opportunity to interact with the students from the Department of Architecture at KNUST. For logistical reasons, the field work period took place at different times for the different institutions. Also the objective of the field work was different for each set of students. The AvBR students spent two weeks in Ghana. In the first week they visited several upgrading projects of informal settlements and gained an insight into architecture, housing and urban planning in Ghana. It must be noted that this group of students, of course with the odd exception, had not previously travelled to Ghana, Africa or any other developing countries, in particular not with the purpose to look at urban development and informal settlements. After having been exposed to the realities of the urban poor in Ghana, the group of students spent a week at KNUST and in Ayigya to participate in a joint workshop between the AvBR and the KNUST. The KNUST students' curriculum slightly hindered their full participation in the workshop. Nevertheless, within a period of one week, substantial information was collected of the households on Ayigya, urban plans were updated and the housing and physical planning profile of Ayigya was documented in quite detail. The most recent municipal plans that were available were over 30 years old and therefore largely outdated. Mapping the current day situation on these outdated maps gave an interesting insight in the (largely informal) development of Ayigya in these last 3 decades.

The WOC studio was differently embedded in the IHS students' curriculum. All the participating students were required to focus their master's thesis topic on Ayigya and were therefore expected to collect data for their individual thesis (research) project during their field work. The thesis had to be an individual outcome of students, but the data collection and study focus could of course be enhanced by group efforts. The individual thesis topics were in fact deducted largely from the group work as it took place in interaction with the AvBR students.

Although the participating IHS students were not from Ghana, with the exception of one student, they all come from developing countries where cities just like Kumasi and where settlements like Ayigya are plentiful. Their first confrontation with Ayigya was therefore very much one of recognition. This had already transpired in the design studio's process, whereby the IHS students had a far more realistic understanding of the location than the AvBR students, who only really developed a realistic image after their visit to Ghana. However, to gain a real understanding of the local challenges in Ayigya, students from the architecture department at KNUST assisted the IHS students in their field work; largely to assist with some language barriers but also to grasp cultural differences. The IHS students' field work took place over a period of one month. In the first week of their stay in

Kumasi the design outcomes and draft integrated development plans were presented to representatives of the Kumasi local government and were shared with students and staff from the architecture department. After this, a team of IHS and KNUST students conducted a household's survey of 200 respondents in Ayigya before they continued with questionnaires, in-depth and focus group interviews as well as observations, in order to collect the necessary data for their individual research topics.[3]

### Results of process

The group project outcomes were presented at the end of June to a panel of experts of both Dutch Institutes. The next paragraph describes the project outcomes in more detail. In terms of the process, two important aspects should be highlighted here. From the presentations it became very clear that, over the period of 8 months during which the students had worked together as a group, they had in fact taken on each other's 'working language' and had really managed to develop a common understanding of the research project. An important indicator that confirmed this was that, in the final group presentations, the urban management students could in fact present the architectural designs and vice versa. The communication between groups was also very apparent as the project outcomes clearly reflected different urban scales, from the individual building, to a commercial area, to the settlement level and the regional urban scale. These presentations were in fact the final product of the WOC studio, although a sub-component continued after this, whereby the IHS students conducted field work in Ayigya and conducted in-depth research in the settlement that culminated in 11 Master theses. These research reports are an integral element of the integrated development plans and also vary from very detailed focus of building materials to research in urban-rural linkages of the Ayigya settlement.

## CONCLUSIONS

### Lessons learnt from the project experience

The WOC studio has been a successful example of an international, interdisciplinary project. From what I described here it becomes clear that the rather unique process has been successful and that the design outputs have been of a very good standard.

The international and interdisciplinary communication and group work have stimulated innovative and creative designs that are well-developed in terms of feasibility and sustainability. It is however quite essential to make use of tools and instruments to enable and stimulate communication and to develop a level playing field for all professionals. Action planning was a new tool for the urban management students who are used to traditional analytical planning and to the architects and urban designers who had never used these techniques either. It was a great stimulus to get everybody thinking about the realities of people in settlements such as Ayigya, as they very rapidly had to analyse their problems and challenges. As the participants in each group came from very different backgrounds, they managed to identify a very wide range of target groups.

### Final results of the project

The design outcomes of the WOC studio represent four different scales of design from the regional to the building level. They all very strongly acknowledge the current urban patterns and the traditional architecture and have taken this as a starting point for their designs. One of the main challenges that is addressed throughout all four designs is the expected future growth for Ayigya. What has also been addressed strongly in the integrated development plans and the designs are the ecological and economical crises that are already impacting on Ayigya (e.g. erosion) and are expected to worsen over time. The interaction between the urban managers, architects and urban designers is clearly present in the design as the analysis and solutions are multi-facetted. All of the groups have opted rather strongly for upgrading of the settlement through specific and tailored interventions whereby very little demolition and resettlement is needed. As the stakeholders are a wide array of persons and institutions, the sources for the future should be sought in the public and private sector. One example for this is the focus on private landlords as one of the main investor groups to improve housing, to be supported at the infrastructure level only by the municipality.

## ACKNOWLEDGEMENTS

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3    At the time of submission of this paper, IHS students were still returning from their field work. Hence their outcomes could not be incorporated into the paper yet.

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