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The Volta River Project: planning, housing and resettlement in Ghana, 1950–1965

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This paper investigates the housing schemes proposed in connection with the Volta River Project, Ghana, in the mid-1950s to early 1960s. The Volta River Project formed part of Kwame Nkrumah's vision for Ghana's modernisation and industrialisation in the wake of political independence. Three associated worker housing schemes demonstrated somewhat contradictory design and construction methods, from high specification, extensive amenities, and comprehensive servicing, through to self-build 'core' houses amounting to little more than single-room dwellings. The paper traces the complex and controversial history of these schemes, supplemented with findings of several field trips to the settlements in question, to unravel the value of the 'Core Houses' approach. The most successful project to incorporate indigenous agency and true collaboration was the semi-formal 'Combined Area' housing at Akosombo, a positive model for shared agency and collaboration in planning, housing, and facilities delivery. Sitting alongside the carefully manicured plan of Akosombo, with its regulated market, excellent health care and desire to set high standards of cleanliness, the Combined Area has not only provided homes for the lower-paid and labouring workers of the town, but has developed over time into a settlement where professionals and retired government workers are also now residing, not out of necessity but by choice. By actively developing their own homes, shared spaces and amenities there has developed a strong sense of ownership, community, and identity. The success and level of attachment to this settlement clearly extends beyond its material presence and through the shared experience of helping to cultivate a place of one's own.

Introduction

The problem of appropriate and affordable housing became a critical issue in post-war developing countries, particularly in the case of Ghana. This West African country presented an intriguing set of conditions during its period of transition from a colony to an independent nation in the 1950s and early 1960s. As elsewhere, the transitional impact from British colonial rule to inde-

pendence was turbulent. Ghana, as a new nation, was very much a crucible for radical ideas, innovative solutions and creative designs, mixed with a new prospect of international commerce and manufacturing, all fuelled by a political thirst for democratic 'modernisation'. Indeed, this radical, progressive edge had long been recognised in the days of the Gold Coast (later renamed Ghana) when it was treated as a 'pilot colony' for British West Africa, and where new ideas in planning and housing were first tested. As the first nation in Sub-Saharan Africa to attain self-rule in 1957, Ghana's long history of missionary education and successful cocoa production for export led to the early emergence of a group of active African elites. They initiated the creation of new political organisations such as the *Aborigines Protection Society* and had members sitting on the Legislative Council with influential views and ideas on decisions of planning and building regulation.¹

This blend of local resistance and progressive improvement coupled with a desire for trade, progress, and education, created a particularly fertile setting for town improvement and construction. As will be discussed later, there was a range of experimental practices, sometimes triggered by neglect and disease, or otherwise by intentions of 'self-help', educational provision and attempts to use cheaper, locally available materials and skills. 'The usual recipe', Sylvester notes, 'called for local use of resources rationally, in tandem with assistance from developed countries, and within a democratic environment'.² Ghana followed this model in part, but as a result of its relative geographical proximity to the UK (mailboats could make the West Africa trip in around two weeks), the nation benefited from relatively fast access to British products, design expertise, and building contractors. This meant the nation had instances of parallel or synchronised development processes with the UK. The Accra ring-road, for example, was built shortly after the UK's first ring-road (1928) and social provisions such as libraries and community centres also closely tracked (and sometimes surpassed) those efforts to deliver these facilities in the UK. Furthermore, in terms of construction technology and materials research, Ghana had a building research station which employed progressive, mainly expatriate, architects and planners. Innovative designs and constructions, such as Denys Lasdun's aluminium domed roof structure on its National Museum and the daring cantilevered structures of the KNUST stadium in Kumasi, were also realised in the 1950s and 1960s in the new nation. Whilst these 'up-to-the-minute' innovations might have grabbed headlines and demonstrated Ghana's receptivity to new, international ideas, this investment in radical design ideas and technological developments for the future was limited to only a few of these high-profile examples. The reality was that much of the newly independent nation was behind in development and needed more basic services and infrastructure.

The procurement of large, infrastructural and industrial schemes, such as the Volta River Project, sought to address this shortfall and hoped to achieve a rapid and wide-ranging modernising jolt, propelling the country into 'the now' within a compressed timeframe. This was certainly the ambition for Ghana which had previously been an exporter of raw materials such as agricultural produce, timber, and minerals often in their unrefined states. Through the extension of

railways, the creation of Takoradi port in 1928 and the Smelted Aluminium export port at Tema in the late 1950s, Ghana was hoping to economically leap-frog into the 'modern' age. These infrastructural developments went beyond the country's previous industrial base. A programme of 'Development and Welfare' grants was initiated by the British Colonial Office in the wake of the Second World War.³ The colonial government was mainly concerned with bringing about social and practical shifts in living conditions through education and healthcare provision (as well as hoping to quash civil unrest). It also had an implicit agenda to bring about economic benefits to both colonised recipients and the colonising nation as the donor. These grants funded building projects and associated infrastructure; the development was a catch-all term for a much broader sense of modernisation, industrialisation, enhancement of productivity, and mechanisation. Many of these were isolated projects delivered piecemeal with little strategic coherence or overview of regional planning. The Volta River Project would challenge this myopic view by planning and delivering a 'joined-up' development, which was truly unique for its time in Ghana and indeed sub-Saharan West Africa.

Comprising five main infrastructure components, each a major undertaking in its own right, the proposal included a new port, dam and hydro-electric system, aluminium plant, railway, and — almost as a by-product — a planned settlement for worker housing. It was an ambitious, far-sighted project that demonstrated a coherent approach to transportation, energy production, and industrial development, as well as moving away from the export of raw to highly processed material.⁴ The Project initially commenced in the late colonial period as a means of producing aluminium within the pound sterling zone and was then adopted as a nation-building spectacle up to and following independence. It quickly became a machismo nationalist display of power and an optimistic demonstration of what the country might become. For Kwame Nkrumah, the Prime Minister from 1946 and leader of the independence movement, the project was to fulfil his vision of a developed, progressive country unbridled from the choke of colonialism. Furthermore, it was not merely driven by economic concerns but would also bring about changes in social conditions, education provisions, health, and technological solutions, mirroring those of the West. The development of roads, docks, education systems, electricity networks, sanitation projects and so on, were all symbolic and physical manifestations of modernisation. These were gestures of what would become post-colonial expressions of the new state. Contrary to the colonial regime which used the lack of infrastructure and general 'development' as reasons to justify the continuation of occupation, and the necessity for these forms of development to be in place before the granting of self-rule, Ghana's first independent government saw the deployment of such infrastructure as triumphant symbols of freedom, progress, and new beginnings. This refuted the argument to deny independence that rested purely on the basis of not having a university, a schooling system or an industrial base. Thus, in the post-independence period, the acquisition of this kind of infrastructure meant the nation could show concrete symbols of modernisation and development. This was deemed a way of escaping what Chakrabarty termed the historical

'waiting room' in order to enter the 'now'.⁵ Such process of modernisation through large-scale infrastructural development was not a 'clean break' or a complete purge of the colonial approach, but instead, maintained a certain degree of continuity, and any criticism of it would be quashed as being unpatriotic.

Rather than focusing on the four large-scale infrastructural aspects of the Volta River Project, this paper investigates the housing provision and resettlement programmes connected to the scheme. As revealed through these solutions at the level of the everyday, we are able to track and examine both colonial and post-colonial notions of 'development' and 'aid', as well as the growing tension displayed between technological advances, economic realities, and social shifts. Over the course of just 10 years, a rapidly changing approach to state involvement in housing production can be observed. Some of the more experimental approaches tolerated communal self-build projects, but these sporadic do-it-yourself attempts were overshadowed by the regimented, costed, and policy-driven schemes. The colonial and early independence period was dominated by these two seemingly contradictory methods: one upskilling the end-user (and somewhat negating government responsibility) and the other a top-down autocratic tactic with tight governmental oversight. The latter would pursue high specifications in terms of materials, finishes, and sanitation appliances, as well as including provisions for social amenities such as playgrounds, community centres, and market grounds. Key decisions remained in the hands of funders; success was measured in quantitative figures and images, with little value placed on local experience. The first at Kpong was a 'top-down' masterplan proposed by the American planner Albert Mayer. There was significant ambition in this approach that could have resulted in a major new conurbation for Ghana and delivered a strong political message of intent for the newly independent nation. However, the funding model for producing the new town relied on foreign investment and the town's lavish social ambition and full provision of amenities were deemed too expensive for the sponsoring Canadian-UK Aluminium smelters. Despite the political desire to improve the quality of these housing estates, they represented a kind of neo-colonial approach, with African residents as passive recipients and the estates as symbolic manifestations of modernisation, rather than comprehensive attempts at rehousing the masses. The planners for two further schemes that followed at Ajena mooted the option of fully prefabricated housing before finally settling on a 'self-build' approach using prefabricated components. There was still a desire to provide a fixed, resolved and 'complete' site plan along with schools, markets, community centres, and hospitals, but these too were prohibitively expensive to realise and to sustain. The only housing proposal that was successfully implemented and sustained was at New Ajena, which was a compromise between prefabrication and self-build approaches. This was deeply influenced by the internationally recognised 'Site and Services' approach, with Charles Abrams and Otto Koenigsberger advocating housing that was regulated and loosely planned, whilst also exploiting local materials and skills. It was a method that John F. C. Turner would go on to widely promote following his pioneering work in South America, but it is important to stress that earlier

precedent existed at the Ghanaian planned neighbourhood of Asawasi in the 1940s, with a non-determinant approach to site planning.

A third method — a hybrid solution — provided a basic masterplan containing ‘core’ houses. At New Ajena, basic single-room structures with a verandah known as ‘Core Houses’ would be built by skilled and paid labour using local materials. These enabled the new residents to quickly occupy the structures without the need for temporary or remote housing in the interim. The Core Houses could then be gradually extended and improved according to a prescribed plan and quality to suit the residents’ needs and budget. These simple structures provided a rudimentary single-room house that residents could extend, according to prescribed standards, as needs and finance allowed. These houses utilised local materials and skills, which alleviated the need for imported materials and technologies, whilst also enabling large numbers of people to be housed without the need for temporary shelters during the construction period.

Background to the Volta River Project

Initial ideas for hydro-electricity in the Volta region in central Ghana were first proposed as early as 1924, but very little progress was made until reconnaissance flights and contour surveys were made in 1944.⁶ Engineer William Halcrow (1883–1958) was appointed in 1949 to investigate the proposal’s feasibility.⁷ British commitment to the project was cautious and floundering, and they sought to mitigate some of the risks to other commercial and government partners.⁸ The Gold Coast Government was to fund the port, rail, roads, and township at Tema. A separate quasi-public sector body called the Volta River Authority (VRA) was to build the dam and power-station and a consortium of Canadian and UK aluminium companies were to fund and build the smelter and associated new town at Kpong.

Located just 100 km north from the capital Accra, the Volta River’s narrow gorge at Ajena offered the perfect site to install a hydro-electric dam (Figs. 1 and 2). Smelting aluminium served the dual purpose of using large amounts of this electricity (and thereby helping to reduce the unit cost of production), whilst also exploiting the country’s large Bauxite reserves. The aluminium would then be transported by rail to the coast for export, via new port facilities at Tema.⁹

The project formed an important manifestation of Nkrumah’s vision and thus became a centrepiece development objective highlighted in the Party’s 1951 manifesto during the drive for independence.¹⁰ It was a significant and ambitious project for the emerging nation; its size and complexity resulted in the creation of one of the first complex multinational ventures in Africa, and with this, the involvement of a number of actors with various vested interests. The Volta project was a nationalistic grand project, its realisation however was largely reliant on foreign capital and expertise, and long-term forecasts of international commodity markets. Housing was initially a secondary concern within this larger project but became increasingly integral to the wider scheme. Not least because the large population of construction and smelter workers needed somewhere to live, but more so, it was part of a broader progressive political agenda with a

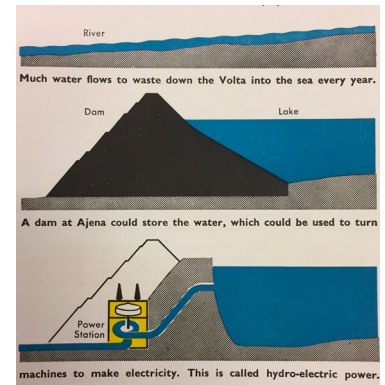
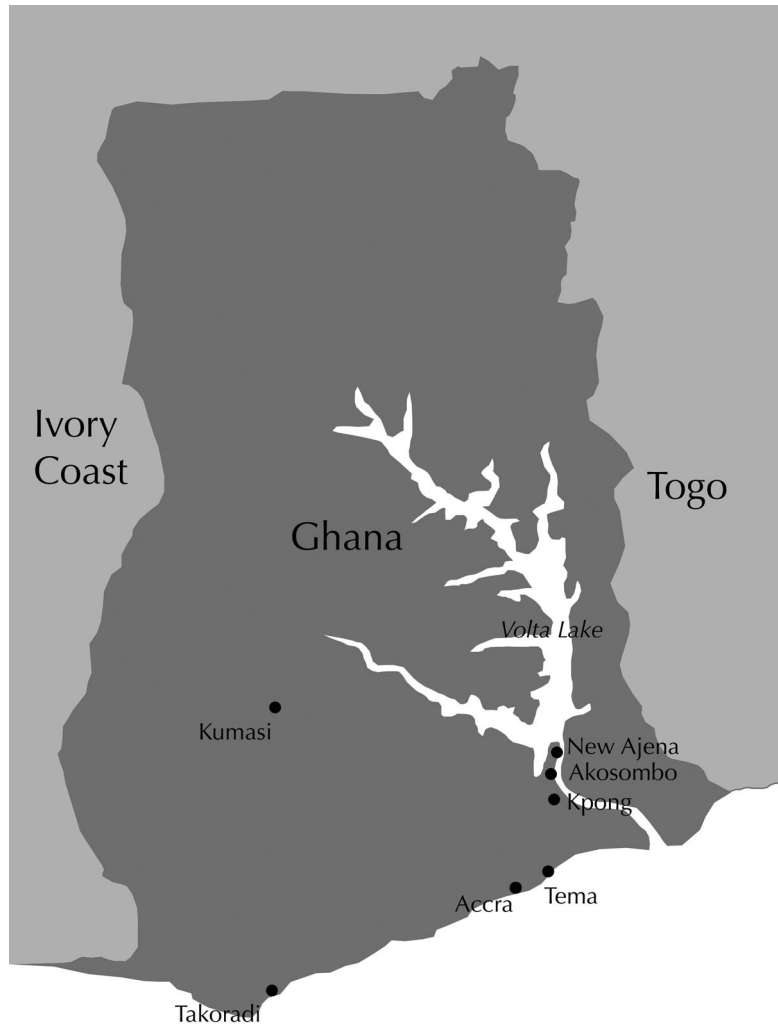


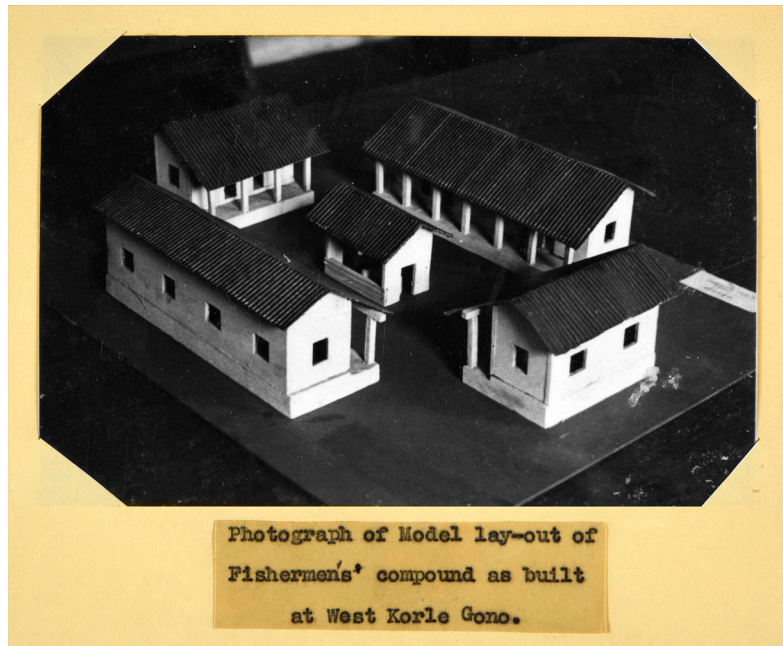
Figure 1. (left)
Plan of Ghana showing the location
of the projects (authors' drawing)

Figure 2. (above)
Diagrams from 'The Volta River
Project: What It Means to You?'
showing the proposed dam, historic
brochure, Department of
Information Services, Gold Coast,
1950s

desire to limit the creation of informal settlements. There was no simple or uniform solution to be applied: a variety of housing solutions were pursued in the course of the development.

Further debates in the UK parliament bemoaned the excessive surveying period and potential costs,¹¹ yet by 1951 the Gold Coast planner Alfred Alcock announced, 'The Volta River Scheme seems to be gathering speed'. He informed Colonial Liaison Officer G. Anthony Atkinson that he was to become a member of the working party and 'a town planner from my staff should be attached to the scheme for regional planning and for planning the new towns'.¹² More importantly, Alcock stipulated that parts of the new towns should be built in advance of the infrastructure to house construction labourers to 'avoid the camps and similar excrescences'.¹³ A broad scope of

Figure 3.
Model of Fisherman's housing at
Korle Gonno, 1937, The Accra
Housing Scheme: 'Kaneshie
Housing Estate (from Abossey
Okai)', The National Archives, CO
1069/46/29



works was outlined and published in a 1952 UK White Paper and a British-Gold Coast Preparatory Commission was appointed to deliver a full feasibility and costings report. 'Human Factors', as they were referred to in the three-volume document, included considerable detail on housing and neighbourhood planning, and two housing proposals were initially outlined.¹⁴ A further housing model eventually superseded these and this paper chronologically tracks these three main housing episodes:

- (1) Kpong planned permanent settlement: aluminium company town (1954),
- (2) Ajena temporary housing for the dam construction workers (1957),
- (3) Core Housing: self-build resettlement dwellings around newly formed Volta lake (early 1960s).

'This question of housing is troubling the whole of the Empire at the moment.'¹⁵

It is important to put housing into a broader context that informed some of the later decision-making at the Volta. A number of housing projects were delivered prior to the Second World War; they mainly responded to outbreaks of fire, earthquake, and disease, as well as intended to contain and control the African population.¹⁶ Other attempts focused on improving sanitation or maintaining clear residential boundaries, such as at Korle Gonno and Adabraka in Accra (Figs. 3 and 4).¹⁷ These projects were laid out on grid-iron plans with service gullies and little provision for shops, schools, or recreation. Later, 'model housing sol-



utions' were produced as part of the Development and Welfare agenda, with Asawasi in Kumasi being of particular note, along with South Sunstresu and the experimental Rural Training Centre at Kwaso.¹⁸ It was these projects, led by Alcock, that formed the precedent for a regulated 'self-build' that enabled future residents to provide the labour and to build their own homes according to established regulations.¹⁹ Asawasi was planned prior to the Second World War with Colonial Development and Welfare funding as a scheme to house government workers in Kumasi on Asanti tribal lands. Local government employees were encouraged initially to rent out properties at Government approved rates and become members of the planned township which had primary schools, churches, a mosque, and commercial facilities, all set out as part of the development along the contoured land ridges. On Ghana's independence, residents ceased to be colonial government tenants and properties were converted from tenancies to leaseholders with residents being able to acquire their properties outright via preferential low interest mortgages.

Figure 4.
Housing at South Sunstresu, near
Kumasi, 1951 (Central Office for
Information, London), The National
Archives, CO1069/46/22

Alcock organised a collaborative and empirical approach to testing materials and techniques ‘in the field’ and worked closely with builder-occupants to enable a self-taught system. Whilst building regulations stipulated that concrete blocks had to be used for all new construction in the towns, Alcock was attempting to deploy adobe-concrete (swishcrete) walls with a concrete ring-beam at wall-plate level to prevent cracking and extend the lifespan of the structure. There was a considerable exchange of ideas, techniques, and knowledge in this work with significant contributions from local craftspeople to shape the approach to construction. At Kibi further experiments were made to test how swishcrete blocks would perform on two houses.²⁰ It would be too far-fetched to suggest that these cases formed a ‘laboratory’ of house design. It would be more appropriate to describe it as an empirical fettling at a very small scale. However, in response to the ambition for a more careful study of house construction, Alcock set up a Building Research Station in Kumasi and began to assemble various samples, products and reports to assist with his work. This was not instigated by the Colonial Office or any other body in the UK. Indeed, when Alcock wrote to the Building Research Station in the UK, they were astonished to hear about the African station and did not know of its existence.²¹ The production of knowledge and creation of innovative solutions were not generated in the ‘metropole’ and distributed to the colonies. In fact, as we have seen here, the reverse is true. This haphazard nature in which technological solutions were being developed and the disjointed manner of sharing results revealed schisms in the integrated image of empire. This reverse mode of localised knowledge production led to the absorption of experimental data through a process of systematisation of testing, validation and publication of results as legitimate research. Alcock sent a sample of mud and clay to the Building Research Station in the UK where they tested different ratios of concrete to earth, along with varying moisture contents, to ascertain which proportions best resisted erosion.²²

Alcock’s project was not widespread and it was certainly not central to the government’s agenda. However, after the Second World War, there was a slow shift (or drift) in the colonial government attitude. In a House of Commons debate the Labour MP Ernest Kinghorn clearly outlined the situation and government priorities:

In territories like Africa and other parts of the Colonial Empire, the first prerequisite is a system of good harbours. After that, means of communication must be opened up in the shape of better roads or new roads, and railway communications must be improved and must be provided where none exist at the moment [...]. That is the basis for the great plans which we are united in pushing forward in this generation. When we come to view progress on these lines, we find that we can reach a certain stage and then progress is stopped because the great human factor comes in. People must have somewhere to live in order to carry on their jobs in all these great projects.²³

There was a drive to deliver ‘great projects’ rather than any sense of compassion. Whilst it may seem obvious that a workforce needs housing, in the large mining areas around Tarkwa migrant workers were left to fend for themselves in ram-

shackle and unsafe 'slums' with no services or sanitation. The Volta River Project created the opportunity for a different approach with a much greater emphasis on social housing provisions, even if most housing problems were a direct result of government policies. The focus on grandiose infrastructure projects would help to shape a new identity for the nation, and at the same time, to foster conditions for an orderly, census-ready and taxable workforce. Although the Volta River Project granted home ownership and access to education and health provisions, the plan led to the displacement of 80,000 people from their ancestral homes and farmlands and the nation's mounting debts to foreign governments and businesses.²⁴

The privatisation of profit and the nationalisation of loss: a failed top-down approach at Kpong aluminium smelter

The self-build collaborative model discussed above was not pursued for the smelter town at Kpong. These methods and the indigenous knowledge that contributed to the project were completely ignored. Instead, an authoritarian plan was proposed, disregarding all previous forms of living and social structures.²⁵ Scott notes that ambitious schemes 'to remake native societies' proposed in late colonial regimes were fuelled by the combination of 'welfare colonialism' and their inherent authoritarian power.²⁶ An emerging body of international experts, scientists and architect-planners eager to implement their latest theories, concepts, and agendas added to this cocktail of authoritarian tendency. The rush towards independence and desire to make everything new also resulted in the abandoning of older approaches tainted with stains of imperialism. In September 1954 the American firm Mayer and Whittlesey was appointed to design a new planned settlement for the smelter plant. The fan layout was composed of a series of self-contained 'sectors' each with a population of around 2,000 people. The model was derived from Albert Mayer's work in India (and his aborted Chandigarh plan specifically) just a couple of years earlier, which probably resulted in him receiving the Ghanaian commission. This was coupled with Ghana's post-war slide towards US intervention and foreign aid funded projects. Although he was proposing a far greater variety in the social makeup of each 'superblock',²⁷ Mayer claimed that the basic objective of the plan was to 'offer people of diverse background, education and skills a potentially homogenous community rather than one which is tightly compartmented into stratified neighbourhoods' (Fig. 5).²⁸

This was a different approach to the strict social stratification Mayer proposed at Chandigarh, with its very hierarchical housing structure that mirrored the civil service ranks. He was eager to stress that

this care in the composition and designing of the town is necessary to promote an environment of security and stability which is of mutual interest to the employer and to those employed. This might be called the social structure of the plan.²⁹

Despite the desire for mixed occupancy and its ambition to create a 'homogenous community' that sought to transcend tribal allegiance, language, social class, and so on, neighbourhoods were generally arranged according to

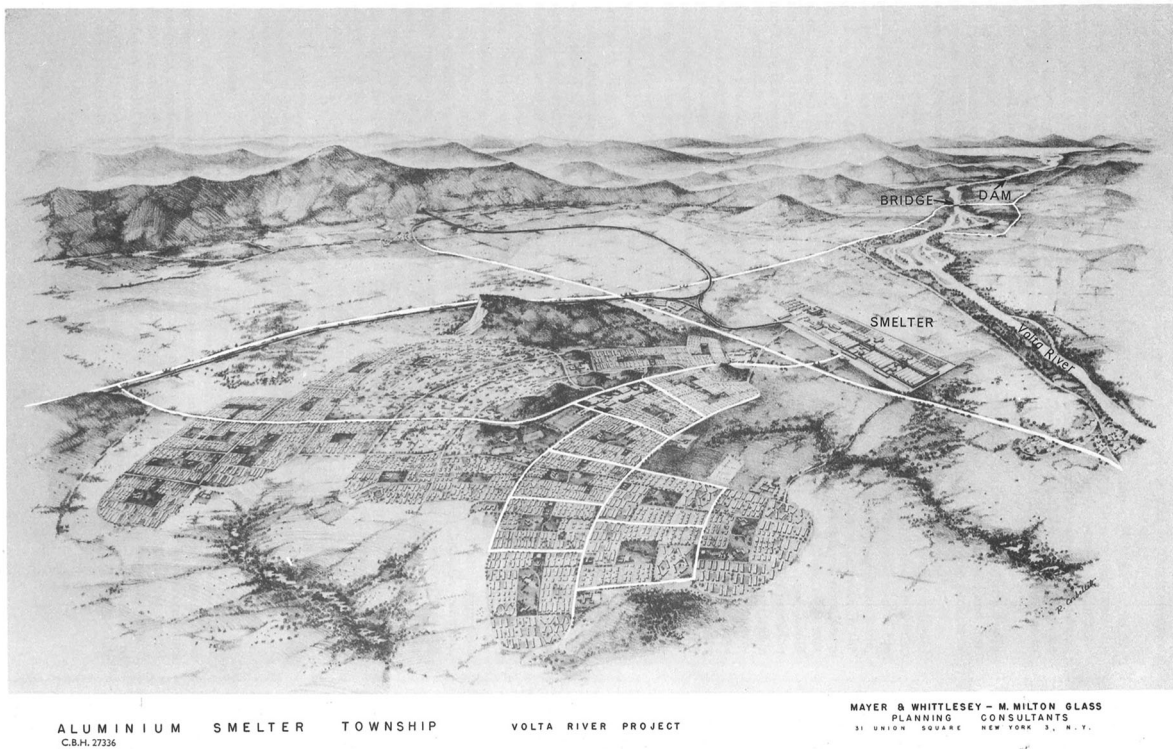


Figure 5.
Albert Mayer, perspective drawing
of the proposed Kpong Township,
Sir William Halcrow and Partners,
Volta River Project, Preparatory
Commission Report, 1956, p. 39

their building height and overall 'density', subsequently labelled as 'L' 'M' 'H' (i.e. low, medium, and high density) Neighbourhoods. A phased construction was proposed to match the labour requirements of the smelter with high-density dwellings flanking the north and southerly edges to the town. Nestled in between was Krobo Hill with lower density dwellings. 'H' has 13 families per acre, with the highest ratio of row houses to twin housing, and with 3 acres devoted to shopping and community spaces.

As in Mayer's Chandigarh plan, high-speed traffic was directed around the neighbourhood peripheries, whilst slow-moving local traffic was allowed within neighbourhoods. Primary schools were set within central parks and internal 'greenways' formed continuous pedestrian and cycle routes connecting various neighbourhoods.³⁰ The approach was very much a top-down method of generating a fully fledged town with all amenities provided, to a large extent controlled and imposed. The notion of planning according to density was stylistic rather than a response to land-value and demand. Higher buildings were presented as symbols of progress and reflected the desire to create a sense of urbanity in contrast to villages, sprawling worker camps, and cantonments.³¹ Provisions of education, health and leisure facilities by the consortium took on a paternalistic governmental welfare role, way beyond its core business ambi-

tions. Other components of the town were equally revealing. The provision of roads and cycle-paths implied ready access to vehicles and bikes, coupled with suggestions of how 'leisure time' might be spent in parklands and trails. The market gave way to shopping facilities and 'community spaces', generating what amounts to a wholesale lifestyle reconstruction for refinery workers.

Mayer would later write about his broader vision for town planning and his desire for a much greater degree of 'self-containment and less of commuting and intertravel',³² which was far-sighted in many ways. But equally, he expressed a certain idealistic, if not naïve, view in trying to disassociate housing types from social classes and his desire for a unified, cohesive body of workers.³³ Perhaps, again, this was a reaction against the very hierarchical Chandigarh model, but his client was not concerned with such scruples or social housing hypotheses, and simply wanted cheap dwellings for its workers without any of the responsibility for welfare and amenity. There was clearly a rift, if not an outright contradiction, between visions of government consultants for progressive, safe, and healthy homes, and the profit-lead motives of business. The report detailed that this proposal was co-funded by the UK and Gold Coast governments, and was at once a colonial and 'radical' text. Nkrumah was looking for a progressive shift and rapid acceleration of modernisation, whereas the UK government was content to give the illusion of a sympathetic and encouraging sponsor with the condition that they would not have to fund the venture, yet would benefit from its recommendations in terms of consultancy, manufacturing, and improved productivity.

Otto Koenigsberger (1908–1999) was a contributor to the Preparatory Commission. He was employed at the London School of Hygiene and Tropical Medicine (an institution that had itself a long history of providing healthcare and housing reform in former colonies) and he had previously worked with Mayer in India to develop a number of new towns there in the wake of independence.³⁴ In Ghana however, the housing was not government funded, and as Koenigsberger stated, 'an employer in a tropical country has a much greater responsibility for the housing of his labour than has his counterpart in Europe or in America'.³⁵ He went on to calculate the costs of housing at around £300–400 for each worker's family and a total investment of £200,000 for a medium sized plant, 'a sum which represents a considerable load for a factory of this size'.³⁶ The rental income generated would not even cover the interest or amortisation of the loan, although Koenigsberger acknowledged, 'there will be no doubt indirect benefits, but they are long term benefits and not immediate ones'.³⁷ These calculations were of great interest to the Aluminium Company. The Colonial Office acknowledged that, 'standards are set too high and housing efforts are expended on a few, too costly model schemes' in their report on African housing.³⁸ Coupled with limited global demand and falling aluminium prices, the project was looking increasingly unattractive as a business venture. Despite this putting the entire dam project in potential jeopardy, Nkrumah was determined to press ahead regardless as he was convinced of its transformative potential. The Aluminium Company began to further probe details of the housing scheme and raised concerns over utilities such as

sewage systems and issues of security and policing.³⁹ Building a new town for 50,000 people (and therefore one of the largest conurbations in Ghana) was proving economically unfeasible, and again the Colonial Office reluctantly conceded 'it is unlikely that the restricted financial return, which low-cost rental housing of a satisfactory standard provides, will attract extensive private investment in housing'.⁴⁰ Negotiating talks collapsed in 1956 and by 1958 the Canadian Aluminium Company had decided to withdraw from the project.⁴¹ They returned to the negotiating table at a later date with a proposal to relocate the smelter from Kpong to Tema, thereby cynically absolving them from the responsibility of building the housing, as workers would have houses to reside in Tema.

Was this type of high modernism better left as an ideal or a concept? Would its execution only result in bitter disappointment? It was set out on paper with ambition and drive. This was what mattered to the administration; its actualisation as a piece of real development was considered not altogether necessary. So long as the project was mooted, imagined, and shared, that was enough for it to exist as an aesthetically pleasing, well designed and fully functioning model town, as the perspective illustration shows. It was a 'paper development'; whilst not addressing the housing problem, it politically served its purpose in changing existing patterns of thinking about what might be possible.

The Aluminium Company finally withdrew their backing altogether with the collapse of aluminium prices on the international world commodity markets. By this stage Nkrumah was seeking new partners. A Ghanaian delegation visited Russia in 1960 which opened up the prospect of aids from both East and West. Although Nkrumah was 'fully alert to the danger of Communist penetration in Africa', he was open to all offers of international aid and maintained a policy of 'positive neutralism'.⁴² This flirtation with Communist governments caused much consternation in the UK and US, and eventually a deal was agreed with Henry J. Kaiser, an aluminium and steel magnate with dam building experience in the US. The smelter town at Kpong was aborted and the development was to relocate to Tema. This had further advantages for Kaiser who decided to not use Ghana's ample bauxite reserves, preferring to import US bauxite for the smelter well into the 1970s, thus destroying any aspirations of Ghanaian self-reliance in manufacturing through the use of local resources.⁴³

Ajena: temporary housing and prefabrication

The hydro-electric dam site and project was planned to become much more than a mere piece of industrial infrastructure; its approach, landscape, and appearance were all carefully designed and curated by architect-cum-garden-designer Geoffrey Jellicoe (1900–1996) who was already working in Accra on Marine Drive.⁴⁴ Beyond its functional capability, the dam was viewed as a cultural installation and a scale model was prepared to ensure that it complemented the beauty of the landscape as part of a strategy to entice tourists, therefore the project also included a hotel. The worker housing was not to dispel this tri-

umphant tranquillity and it was proposed that the large construction force was to reside in temporary housing since only 150 skilled workers were necessary to maintain and operate the dam and power plant post-construction. This required a different approach to housing, one that could be built cheaply and quickly, yet still retain some of the progressive social ideals and facilities found in more permanent settlements. Temporary housing located close to the site was considered the most appropriate solution. The former head of the Public Works Department in Nigeria, Thomas Scott (1898–1982), was appointed to produce some initial proposals.⁴⁵ Despite his vast experience of working in West Africa it was seen as not the right sort of work. His previous projects such as those in Kaduna and the Lugard Hall were of a different order, more akin to the older imperial approach and reminiscent of Herbert Baker, certainly not suggestive of the new and 'modern' state pursued by Nkrumah. Another 'reputable architect with West African experience' was sought out and Koenigsberger recommended Leo De Syllas (1917–1964) of the Architects' Co-Partnership (ACP).⁴⁶ De Syllas had previously worked on experimental housing and educational projects in the West Indies, with Robert Gardiner Medwin during the Second World War. He was a founding member of ACP and he led the practice which had become increasingly involved in a range of schemes across West Africa.⁴⁷ Rather than delivering the highly refined and 'complete' town as proposed by Mayer, ACP preferred solutions utilising regional materials and techniques. They utilised local workforce expertise and accepted a more 'rugged' low-rise tectonic. The Colonial Office, ever conscious of costs and conservative by default, envisaged that 'the types of houses would not be very greatly different from the standard types of the Public Works Department and the Housing Department, and should not be substantially more expensive'.⁴⁸

However, the scale of the production to house 4,575 construction workers, with a projected total population of around 15,000 over 6.5 years, would involve considerable expense.⁴⁹ This medium-term timescale warranted made-up roads, sanitation, and other infrastructure that tallied with the more progressive post-war UK social policies, revolving around community centres and education.⁵⁰ The township was to be arranged into four self-contained neighbourhoods, each housing 3,500 people⁵¹ which rather quickly became a substantial settlement. Furthermore, the undulating topography forced bespoke solutions with little opportunity for repetition and standard details across various neighbourhoods. Community ambitions at Kpong were duplicated at Ajena, extending to a 100-bed hospital, three middle-schools, recreation grounds, and cinema.⁵² It was eventually accepted that the standard PWD approach would need some 'modification and improvement'.⁵³ There was no discussion on what would happen to this workforce upon the completion of the project; they were expected to simply disburse having completed their mission. Initial estimates for the township were almost £5 million (approaching £7 million including interest) representing about '12.5% of the total estimated cost of the power project and was comparable with the estimated cost of building the first stage of the permanent smelter township'.⁵⁴ The general specification was aiming to exceed all previous works found in Ghana, offering each

house 'internal plumbing, electric points and wiring and sanitary fittings. [...] water-flushed closets of the types appropriate to the user, draining to grouped septic tanks and soakaways'.⁵⁵ The Preparatory Report professed that, 'workers on the scheme should be helped to derive pleasure and benefit from their leisure hours by being given full opportunities to follow athletic, cultural, and educational pursuits and to enjoy varied amusements'.⁵⁶ It was clear that the town was 'not merely the provision of shelter' for what had previously been viewed as an expendable workforce, but was now viewed as an attempt at 'the creation of homes within happy and healthy environments'.⁵⁷ Standards of design of the housing would 'certainly lead to housing of better standard than any individual housing in the Gold Coast to-day'.⁵⁸

Any substandard or less than desirable facilities were identified and dismissed, and even dormitory housing for unmarried workers was highlighted as inappropriate, at least until costings were calculated.⁵⁹ The Preparatory Report had good intentions, but it was set out as more as a form of fantastical propaganda that sought to quash claims of exploitation, or accusations of neo-Imperialist ambition, under the guise of welfare. It was a highly polished document, presenting a refined image of development, that promised far more than it could ever deliver. The report was proof-read and assessed by Atkinson who was appointed by the Preparatory Committee to examine how it might be received, and to make suggestions to ensure a positive review.⁶⁰ Furthermore, these were imposed standards; at no point were the workers consulted on how they might like to live. The development was not really aimed at the 'end users', nor to seek out their ambitions, expectations, and needs. Instead, it was a defence statement for an entirely different audience to resist accusations of exploitation. It was unlikely that the committee ever believed it could be executed as they had proposed, but that really was not the point.

As at Kpong the costs were considered far too exorbitant and requests were made for cuts with the overly optimistic proviso that it be done 'without departing from the policies for obtaining a stable and efficient labour force'.⁶¹ De Syllas worked on modifications that could reduce the costs by around £1m and ensure 'the speed of erection using a minimum amount of labour',⁶² as the chief consideration. Difficulties of providing housing for the first 3,000 workers, minimising on-site works and handling the steep topography,⁶³ were addressed in the strategy to develop as many prefabricated components as possible with the simplest build solution. They developed a 'standard planning module for all buildings in the programme', utilising a prefabricated wall panel sealed with bitumen and painted white to reflect the sun's heat (Fig. 6). The roof was to be of long span troughed aluminium, with an internal suspended ceiling of matting. To encourage airflow and shade, a standard plan of one room deep with narrow south facing façade, wide verandahs, and large openings was proposed. Each house also had a walled compound and it was envisaged that townships would conform to:

traditions of open-air living both in the design of houses and in the provision of open spaces. Each family needs a verandah space and open ground where house-



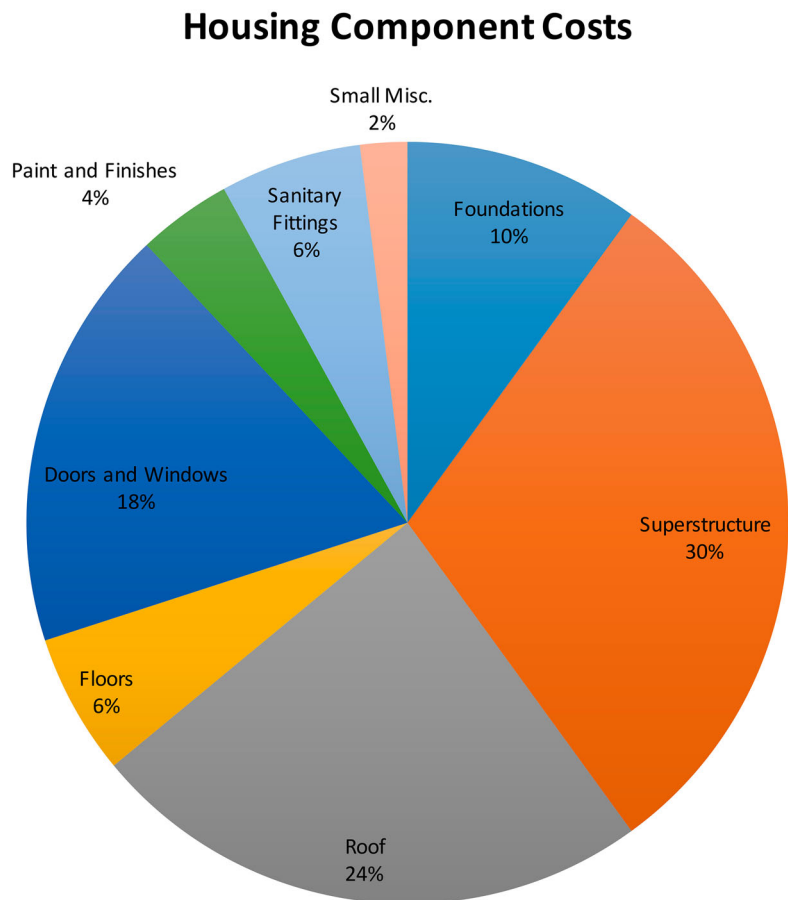
Figure 6.
Architects Co-Partnership,
'Prefabricated' prototype house
design, c. late 1950s (Miles Danby,
Grammar of Architectural Design,
1963)

hold activities can be conducted, where children can play safely, and where families and friends can gather undisturbed.⁶⁴

However, in further efforts to reduce the significant costs, the initial high specification design was effectively reduced to a 'shelter for sleep and safe storage of possessions' and 'the verandah or "out of doors" is the main living area'.⁶⁵ It is staggering that the space and material standards could be dismissed so quickly on the grounds of cost expectations. It was not the size of the budget that was problematic, rather they simply did not want to spend that amount on housing. Had they really believed in the report's principles and the value of social amenities, the budget would have been accepted to meet the specification, just as it was for other portions of the project, such as the dam and hydro-electric plant.

De Syllas was proposing to use standardised manufactured components for the project and this was investigated further with a view to full prefabrication of the superstructure. Various modes of technology and manufacturing were considered in support of prefabricated options, inspired by the prefabricated housing studies in the US at MIT.⁶⁶ Prefabrication would however result in the complete removal of the 'development' process from the 'developing country', where everything from expertise, raw materials and the 'final built product' could all be imported completely without any local involvement. This approach would create a complete dependency on the 'developed' nations and prevent local solutions and skills from ever being pursued.⁶⁷ Ever practical, Koenigsberger systematically reviewed the prefabrication agenda and produced two graphs to illustrate the relative costs of construction (Figs. 7 and 8). These charts are very important in illustrating that the housing fabrication costs are but 46% of the total build cost with the remainder devoted to land cost, roads, services, and community structures. Koenigsberger thought savings between 25%

Figure 7.
Graph showing the costs of house
components based on figures
published by Otto Koenigsberger
(Otto Koenigsberger, 'Problems of
Housing Labourers in the Tropics',
1955, see note 70)



and 50% might be possible in the housing fabrication costs through 'better design and greater attention to details',⁶⁸ but there was a limit to what could be achieved when the overall site costs were included. Standardising doors and windows and mass manufacturing ('whilst no panacea') may reduce 'local difficulties' and some of the costs.⁶⁹ Koenigsberger used a similar method at his own house in Delhi, but he noted that the pre-fab solution tended to only deliver walls and the roof, which amounted to just 54% of the house cost (24.8% of the overall costs, including land and services), so even substantial savings in this area would fail to deliver the necessary impact, especially as the savings tended to be lost in shipping and overland transportation, and substantial ground works and slabs would still be required.⁷⁰ Prefabrication would also be a major drain in foreign currency and largely benefit the European and American businesses rather than local residents and trades. Schokbeton prefabricated houses, for example, were imported from Holland at great expense, and following their inappropriate

Overall Costs of Urban Housing

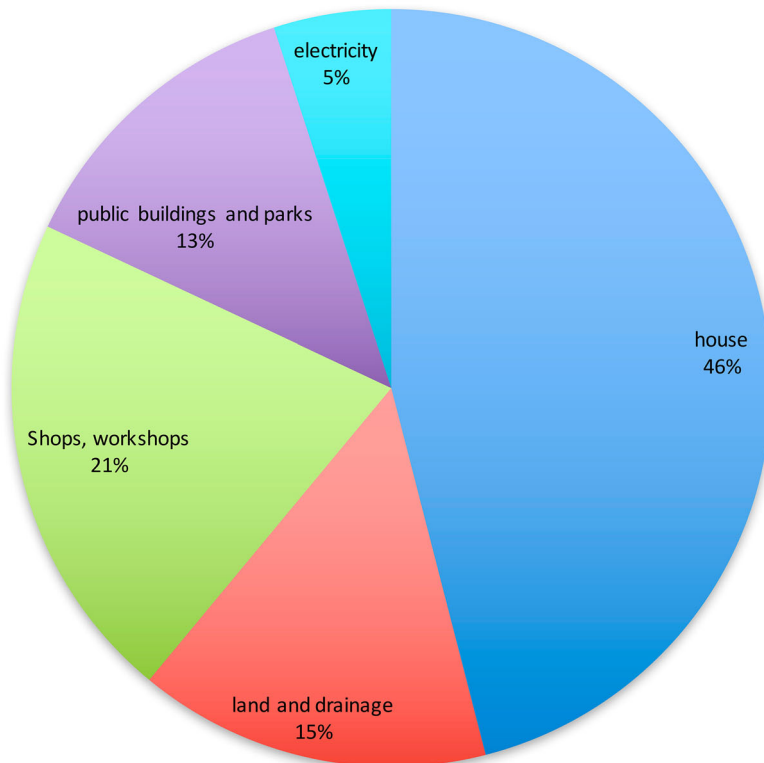
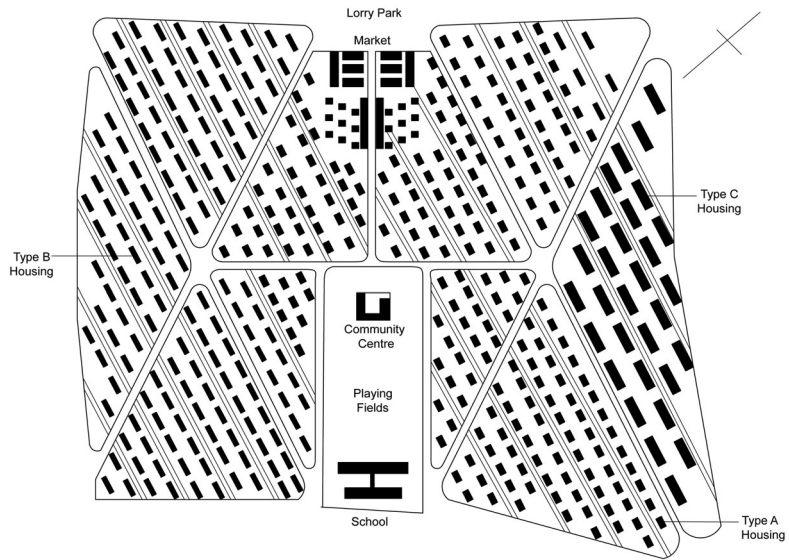


Figure 8.
Graph showing the overall
construction costs including
infrastructure and site based on
figures published by Otto
Koenigsberger in 'Problems of
Housing Labourers'

design and heavy criticisms from the UN housing report, the experiment was abandoned.⁷¹

De Syllas continued to propose prefabricated components such as windows and doors, and eventually produced a masterplan composed of four neighbourhoods, each arranged around a central vista and park containing a market, community centre and school with housing on each flank (Fig. 9). Three housing types were designed including a two-bed villa (type A), semi-detached one-bed (type B) and the single-room dorm with shared bath and cooking (type C) (Fig. 10). These houses were of a high specification including separate bath, WC, laundry and kitchen facilities for the larger types. A centralised hospital was also proposed and designed by De Syllas. His drawings were somewhat schematic and, as initial proposals they do not fully reveal how partial prefabrication might be deployed. The fixed masterplanning, almost Beaux Arts symmetrical approach with segregated housing types, attempted to retain a controlled and 'resolved' approach to housing and masterplanning. It was a reflection of the 'advanced' technology being installed

Figure 9.
Site plan redrawn based on design
by Architects Co-Partnership,
showing one of the four
neighbourhoods at Ajena (redrawn
by authors)



at the dam and the need to project the same sense of discipline and systematic organisation.

Again, it was a position that was not only unaffordable (or within what the company/government was prepared to spend) but also failed to understand the reality of how local residents might want to live, and the relationships, complexities and uncertainties that were inevitably masked by a masterplan. On the one hand, it was to be temporary, basic and reversible, and on the other, an exemplar scheme with social provision and representative of a 'modern' technology-driven venture. How these settlements might have developed remain unknown because this scheme was also aborted when Kaiser moved the dam site from Ajena to Akosombo, but ideas persisted and were tested in the resettlement villages that followed.

The 'resettlement' villages

Koenigsberger later joined the UN team, along with Charles Abrams (1901–1970) and Vladimir Bodiansky (1894–1966) responsible for a report on housing in Ghana. The extensive publication demonstrated that thorough and earnest investigations were undertaken, as well as offering Koenigsberger a platform to express his long-held views on housing. Concerned that 'development' plans often benefited Western businesses more than local residents, they concluded that the Ghanaian government should preserve and encourage the traditional self-help methods still practised throughout the Territory. Koenigsberger and his team's report pointed out that '80 per cent of the houses in the country are built by their occupants'.⁷² This may seem something of a rejection of everything they set out to do in their quest for better conditions,



Figure 10.
ACP 'Type A' and 'Type B' houses
proposed for temporary workers at
Ajena by Architects Co-Partnership
(redrawn by authors)

but they were not suggesting that the Government renege its obligations. They developed an alternative approach that was cheap, utilised local skills, and retained finance in the local economy. Houses could be built to suit specific requirements and budgets and could be adjusted over time to suit changing needs. Abrams later claimed, 'by shifting the onus from technology [i.e. prefabrication] back to the individual, there would be hope for a cheap solution'.⁷³ He continued, 'A country must choose between building for the few and demonstrating little, building for the many and exhausting its resources, or providing for the many with a minimum outlay. Core housing provides for the many'.⁷⁴

The Akosombo dam was created by flooding the Volta River into a designated low-lying valley area near its banks. This created one of the largest artificial lakes in the world. Eighty thousand people were displaced and lost their ancestral and farming lands due to the flooding. Over £10,000 worth of gin was also ceremonially poured into the ground as a form of libation to appease local deities and persuade residents of the valley to leave their ancestral homes and relinquish their land rights.⁷⁵ Resettlement grants were given to displaced residents. Despite this, the high-quality government-sponsored housing, of the types previously proposed, resulted in rental charges becoming beyond the reach of most

of the displaced. The UN report recognised that quality housing could only be delivered through self-build schemes, with some assistance towards roofs, doors and windows.⁷⁶ A UK trade mission that followed noted four self-build methods that might benefit from limited government assistance including:⁷⁷

- (1) Roof Loan Scheme,
- (2) Self Help housing schemes,
- (3) Building societies,
- (4) Site and services.

Indeed, the idea of 'self-help' was seen as very much part of the 'development' strategy discussed in the 1948 African Administration conference and the 1954 Ashridge Conference on Social Development which proposed that the improvement of conditions should be brought about 'through the initiative of the people themselves'.⁷⁸ The UN proposed that a combination of all these approaches was required for a successful settlement to form.

The 'site and services' approach left the new occupier without anywhere to live during the construction period, forcing them to either travel long distances or to waste time, energy, materials, and finance on a temporary shelter for the construction phase of the new home. Abrams' approach was to propose what he called a 'core house': a basic liveable unit that was built by skilled labour using locally produced materials.⁷⁹ The remainder of the house could then be finished and extended by the homeowner whilst they lived in the compact, but fully functioning property. In a similar fashion to squatter settlements, local techniques and skills were utilised, incorporating the so-called 'indigenous knowledge' and a hybrid of know-hows, techniques, and materials were deployed to achieve a safe housing standard.⁸⁰ These core houses generally included a roof supported on columns positioned on a raised concrete floor (a stoop) and one large sub-dividable room. It was felt necessary for occupants to have a vested interest in the house, and to purchase it through individual or community loans. In pursuing this idea Abrams had taken aspects of the process of industrialised prefabrication of components and combined them with the self-build approach. Debates in the UK followed a similar theme; at a lecture given by Atkinson to the RIBA on 'Building in the Tropics' in 1950, a member of the audience exclaimed:

I am struck by a surprising contradiction that has emerged from the discussion. On the one hand people are saying that we need high standards, better standards, scientific standards, standards suited to the actual conditions in any given place, to satisfy problems of temperature, wind, heat, and warmth and so on. On the other hand, we are told that these standards must not be followed, that we must not build to them because it will be uneconomic to do so.⁸¹

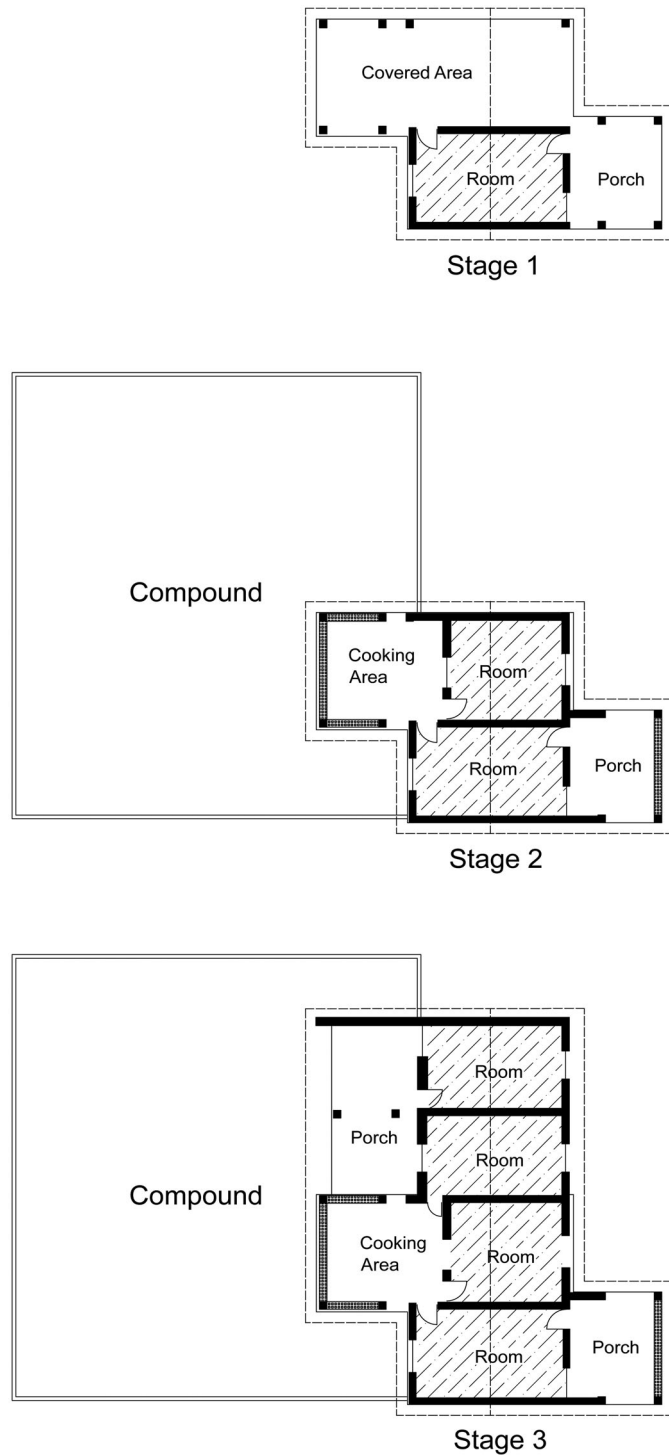
This was the difficulty designers and agencies such as the UN were facing. However, the decision to pursue the aided self-build was a progressive leap in the procurement of mass government housing, but not without wider logistical and social problems. There was a substantial delay between the migration of workers and the establishment of new homes, jobs and a sustainable existence.

The World Food Programme was forced to intervene. It didn't simply hand out its supplies, but instead distributed food in exchange for labour. Almost like a modern-day workhouse, the local Ghanaians were forced to 'clear' 450,000 acres (182,109 hectares) to make way for the first 18 resettlement sites.⁸² Seven hundred and thirty-nine villages were eventually consolidated into 52 townships to benefit from economies of scale in the supply of services, school provision, road maintenance, market stalls, and so on. In what Christophe Bonneuil termed as the capturing of the peasantry into discrete, legible, and controllable settlements, villages were turned into 'functional units of control and command: not organic historical and cultural units but units of supervision and experimentation'.⁸³ Equally, the core house sought to retain and redevelop certain 'traditional' elements that were amended as enhanced modifications to the housing and settlements. Three housing types were initially proposed for the resettlement villages: types 'P' and 'R' were designed by Ferokh Hormusji Marker of the Ministry of Communication and Works, and type 'D' was designed by Miles Danby (1925–2011), Professor of Architecture at University of Science and Technology in Kumasi (now KNUST).⁸⁴ All three types sought to reimagine the 'compound house' (a single storey courtyard house), but simplified its layout, geometricised its collective arrangement and utilised local materials and skills.

'Eastern Bloc' expertise was also being recruited at this time following Nkrumah's co-founding of the Non-Aligned Movement in 1956, which brought different experiences of 'modernisation' into Ghana. Hungarian architects Károly (Charles) Polónyi and László Huszár were recruited through the Ghana National Construction Corporation and practiced as architects whilst also contributing to teaching at KNUST's Architecture School. They also worked on the resettlement village layouts, preferring a dialogue with 'the locals' and 'often succeeded by just not following the usual pre-disqualification of the peasant or African'.⁸⁵ At KNUST they were responsible for the revision of the architecture curriculum to include the hypothetical task of designing resettlement villages, shifting the syllabus away from formal solutions and utilitarian layouts towards cultural investigations and social interaction, which continues to the present day.⁸⁶ These proposals therefore tended to be tentative and exploratory, seeking a response from future residents and attempting less formal plans that resemble casual village clusters. Clearly this required great sensitivity and an approach that could deal with on-going resolution and additive development.

Marker's Type 'P' house was initially formed with one room and a larger covered area supported on pre-cast concrete columns. Timber joists were pre-machined and delivered to site ready for installation; standard door and window frames were also factory-made ready for installation. The house could be efficiently and simply extended into a four-room dwelling with verandah and enclosed compound (Fig. 11). It also had a duo-pitched roof, which was seen as more aspirational and less temporary than the monopitch type associated with squatter settlements in the past. Danby's proposal was conceived not as an individual unit, but as an integrated set of dwellings that would

Figure 11.
'Type P' core house designed by
Ferokeh Hormusji Marker of the
Ministry of Communication and
Works (redrawn by authors)

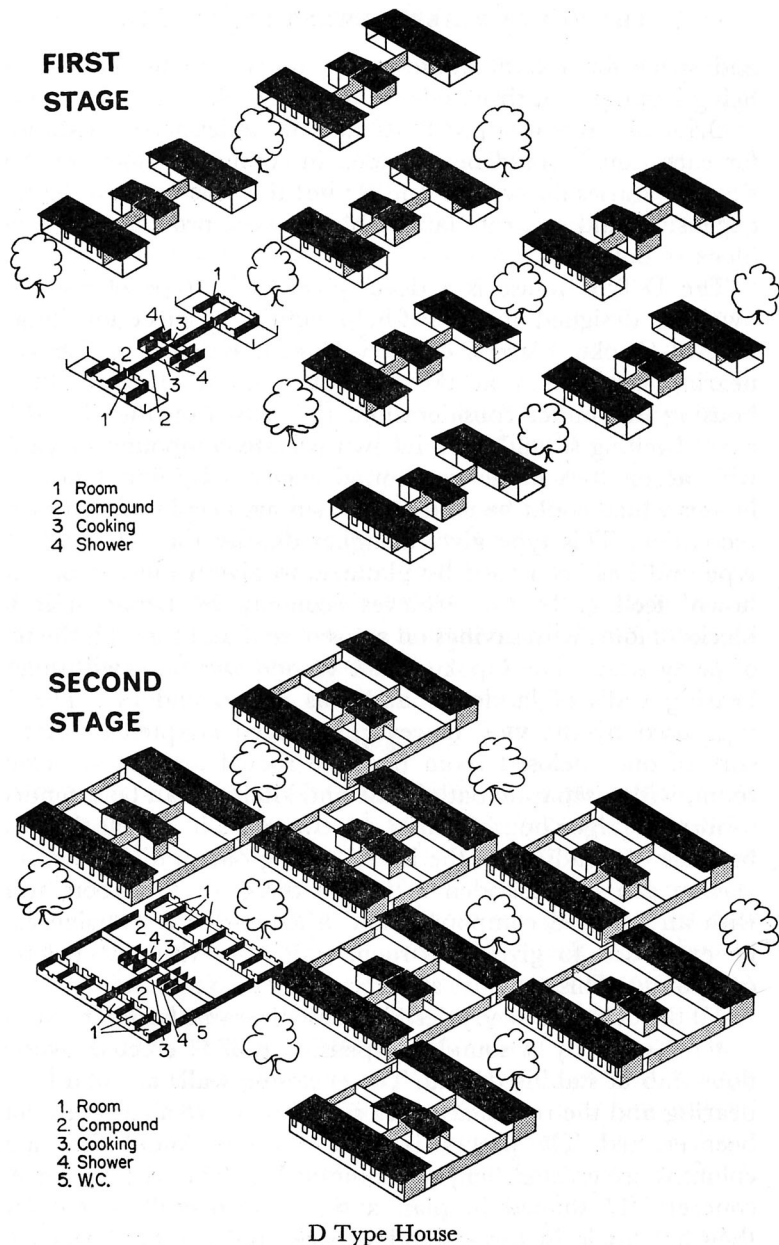


over time form a coherent village plan. It too utilised outside spaces and a large roof supported on columns in the initial phase, followed by the production of shared and communal compounds in the second phase (Fig. 12). In many ways, it echoed the recent interest in re-evaluating and reimagining the widespread 'compound' house.⁸⁷ The use of standard components and basic construction resulted in a rapid production rate with over 11,000 units completed by 1964, at a rate averaging 200 units per week.⁸⁸

Unlike previous schemes based on a preconceived or resolved approach to masterplanning, Maker and Danby's proposals demonstrated a desire to embrace the open-ended, incomplete and indeterminate, which also characterised Huszár's ambiguous and diagrammatic 'plans' (Fig. 13).⁸⁹ Although the financial implication of providing a fully built house and social facilities was a major driver in this shift, this approach also signalled a departure in the way that villages and their occupants were being viewed. Rather than the paternalistic and overly focused interference of government (with its associated agenda of monitoring, recording, and controlling), residents were 'liberated' to make their own decisions on the layouts, materials, and extensions of their homes that started with only a provision of basic sanitation and structural standard. Huszár acknowledged the lack of data and resulting difficulties in trying to determine village layouts based on older, now flooded settlements. He was also adamant that if the planners' assumptions about the settlements were to be proved wrong, it is 'the plan [that] will need revision, not enforcement'.⁹⁰ It was an approach that sought to work with residents, rather than trying to impose particular modes of living.

New Ajena was one of the first resettlement villages to replace the former Ajena now submerged by the lake. Sites were selected based on being easily accessible, close to good farming areas, and ideally at high altitude with a good water supply. This did not leave many options and most of the new settlements, like New Ajena, were simply placed close to the edge of the lake.⁹¹ The housing stock, made up of Type P dwellings, is one of the ribbon development loosely tracking the road and arranged in informal clusters (Fig. 14). Some of the current residents have lived in the settlement since its construction in the early 1960s and can remember various changes and developments that have taken place up until now.⁹² They can recall some larger families being forced to move from substantial multi-room structures to one simple room which clearly resulted in over-crowded and unsanitary conditions. Despite this, extensions and modifications to the original houses are extremely limited, although most have added an extra room as shown in Stage 2 of Fig. 11, and extended the front porch as shown in Figs. 15 and 16. Despite the claim that 'no one would be made worse off', water is still obtained via a stand-pipe which serves as the local gathering place. There are shared latrines (which are generally unpopular) although many residents have constructed their own bathhouse. The promise of material modernisation has still not been delivered. A small primary school was built along with the core houses and more recently a secondary school has been constructed (Fig. 17). A shop provides basic supplies; most residents keep goats and chickens and grow fruit and vegetables. The

Figure 12.
'Type D' house showing staged
development, designed by Myles
Danby (Miles Danby, 'House
Design', in *The Volta River
Resettlement Experience*, ed. by
Robert Chambers (1970))



settlement was criticised for its unauthorised structures and land use, but without this cultivation, such a remote town could not have survived.⁹³ Whilst the 'development' has not quite adhered to the plan and early proposals inflicted hardship on many, it is now very much a thriving settlement. Basic social amenities are slowly being added as the village sees fit. Significant

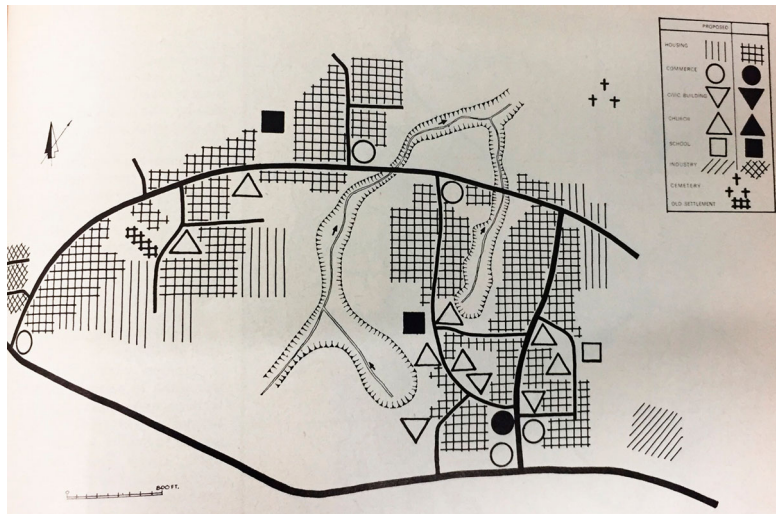


Figure 13.
Laszlo Huszár's ambiguous and
diagrammatic 'plan' for
Dedewireko, 'The Volta
Resettlement Scheme', *Journal of
the Town Planning Institute*, 1965,
51.7 (1965), 279–82 (p. 281)

additions to living spaces take on the form of occupying outdoor areas or upon the stoop, rather than extending or modifying the core house. Formal planning and the precise placing of buildings, overly prescriptive building regulations and rule-making have yielded to a schematic set of principles that devolve far greater control to residents.

Concluding remarks and epilogue: Akosombo, a return to the masterplan

The paper has considered the very difficult and problematic issue of providing affordable housing for migrant workers and resettled populations and examined the variety of planning and construction attempts made during the late colonial and early post-colonial period in Ghana.

The drive for industrialisation, 'progress', and 'development' were met with vast 'top-down' planning proposals that failed not because of technological or design ability, but instead, what can be summarised as, weak political oversight that was complicit with the profit motives of large business and their reluctance to invest in quality housing. Furthermore, the failure was also due to the complete lack of engagement with residents, denying them any opportunities to partake in the decision-making process and to voice their desires, hopes and ambitions. It was the workforce that was left without basic facilities and infrastructure, and at the same time, expected to construct increasingly rudimentary homes. All these resulted in growing tension between the technological and self-build approaches, and also between largely unaffordable state provision and the promotion of self-reliance.

Early attempts at Asawasi, which had a strong collaborative approach between planning department and builder-resident, were somewhat lost and ignored when the larger, often nationalist, infrastructure projects were proposed, trampling the old order in the rapid scramble for progress. Instead, the



Figure 14.
Indeterminate planning
arrangements at New Ajena,
January 2017 (authors'
photograph)

worker housing, such as at Kpong, was conceived as a complete and resolved town plan with an extraordinary array of facilities and advanced building specifications. Rural huts built from mud and thatch were to be replaced with apartments of burnt brick and concrete floors, based on plans that were seen as being universally applicable and of the highest quality. The ambition for a 'new country', with a fresh aspirational mindset freed from colonial bondage, was admirable. It presented a vision for the nation to unite behind and considered anything less than this to be short-sighted and defeatist. Kpong's high aims are to be commended, not least for changing perceptions and raising expectations, but alas, this approach also had the potential to lead to bitter disappointment as a result of failed delivery and broken promises. It also eroded confidence amongst professional expertise with local knowledge and engagement by the appointment of overseas consultants. Technological solutions were also questioned and the idea of factory-produced housing dismissed when early deliveries proved not only costly but also thermally deficient.

The cleft between visionaries and pragmatists became quickly apparent, not least when the proposed town was priced, and profit motives of the associated industries emerged. However, the Kpong project clearly set out the desired standard, and if it was not to be achieved at that moment, it would at least set out a



Figure 15.
Photograph taken in the early
1960s of a recently completed Type
P core house, designed by Myles
Danby, 'House Design', in *The Volta
River Resettlement Experience*

future goal and criteria by which other projects would be judged. Projects such as Kpong were not only economically difficult to deliver, but also revealed, despite the initial visionary fervour, a political reluctance or hesitation to provide housing for all. It summons questions about the role of government in providing housing, setting construction standards, and providing financial assistance or loans. There were many who felt it best left to the individual, but this approach was not possible when it was the government who intentionally created displacement and homelessness through planned flooding.

The masterplan gave way to 'fuzzy' and indeterminate planning gestures. Standardised components were coupled with locally available materials and trades to produce small 'core' houses that generally worked well, albeit with limited services and sanitation. The original ambition to provide playing fields, markets and community centres did not materialise, and much of which became self-organised activities that take place in the open, without a physical building or landscaped terrain, all without the need for on-going maintenance and life-cycle costing. The UN Core House model was a success for such displaced communities through the determination and hard work of new residents. This laudable approach, as shown at New Ajena, continues to grow in terms of its community spirit and education provision and owes significant credit to the work and agency of the residents; officials and governmental institutions in turn have played a less glorious role.

The shift in approach here became more about producing a cheaply available individual house rather than a strictly enforced village plan, and one that could use local expertise and materials and be built rapidly. The Core House was a convincing compromise that fulfilled these aims and coupled with designs emerging from the newly formed Architecture School at the University of Science and Technology, generated a more investigative sociological approach, rather



Figure 16.
Modified 'Type D' house with
extended porch, January 2017
(authors' photograph)

than tectonic concerns of layout, materials, and technology. Where masterplans were produced, they were schematic gestures, rather than scaled proposals, which positioned the planner-architect as co-creators of the project working closely with local labour and residents. The idea of producing a home that could be modified and extended as the means and needs demanded was also a progressive approach that viewed the solution as a series of incremental stages rather than a single preformed answer.

More broadly speaking, the success of such resettlement schemes and the self-build approach signalled an end to state-sponsored solutions for villages and low-income housing. Instead the agenda of self-sufficient, 'return to innocence' forms of small communities started to gain a certain appeal in the post-independence era. This has emerged in parallel to the highly controlled environments of places like Akosombo (and Tema) with progressive images of a newly industrialised nation transformed by orderly new towns, landscaped gardens and international hotels. It is in Akosombo that we can see the outcome of this array of planning approaches being tested and perhaps offering a method for future housing projects to consider.

Constantinos Doxiadis was appointed to plan the new town of Akosombo in March 1960; rather than viewing the settlement as an isolated town, he posi-



tioned it within a broader regional strategy that incorporated Accra and Tema.⁹⁴ Although resettlement villages continued to be constructed, they were largely ignored by Doxiadis, who again returned to the 'top down' micro-managed and curated approach to development. The dam and turbine were formally inaugurated in 1966 by Nkrumah, who also constructed a weekend hillside retreat above the dam. Akosombo was awarded the special status of a self-governing entity, with its own town manager.⁹⁵ The sophisticated housing stock with carefully controlled appearance was built initially for the predominantly expatriate community who operated the dam. These houses belied the broader attempt at providing affordable village housing with generous social ambition and facilities. Whilst Akosombo excludes these self-organised core house communities from its official 'image', it has become dependent on the surrounding resettlement villages trading food, livestock, transport, and labour. The fixed and resolved 'plans' have been tempered or gnarled by this interaction. In the case of Akosombo, it has resulted in a new unofficial town developing alongside the legalised and authorised portions. This new district, known as the 'Combined Area', could be thought of as a reimagined resettlement town, born out of the self-build ethos, yet with a sufficient population and in close proximity to a prosperous town to

Figure 17.
The primary school at New Ajena,
January 2017 (authors'
photograph)

benefit from shared amenities (such as community centre/cinema/markets/hospitals), which was part of the original ambition for the resettlements.

The initially informal 'Combined Area', built by those who were unofficially recognised residents of the Akosombo new town area, was in many ways the most successful in demonstrating a truly collaborative approach to planning. After a period of conflict and discussion, the Combined Area residents are actively engaged with the Akosombo town planners. They have been able to secure the infrastructure and facilities needed to ensure their community complied with the Akosombo town planning standards, and it is now recognised as a neighbourhood area in its own right. These residents had been involved in all aspects of the development of their neighbourhood from the selection of appropriate materials to the delivery of housing. With time, however, the planning authorities at the formal Akosombo town were able to advise and ensure the Combined community dwellings conformed to the sanitary and construction standards expected within the township ordinances. Furthermore, facilities such as schools were finally provided by the authorities.

Akosombo and its newly emerging Combined Area offers an approach for future planners to consider, and whilst far from perfect, reconciles many of the struggles and approaches presented in this paper. It has a carefully controlled town plan and highly accountable local mayor to ensure that the main town is properly managed and planned, complete with properly maintained markets, roads and facilities. Adjacent to this, the Combined Area offers a place for resettlement, whilst also providing facilities, infrastructure, and employment opportunities that a smaller village in the wider region could not. Instead of presenting a finalised and imposed solution, the Combined Area demonstrates that a series of incremental moves towards 'formality' could be more appropriate. A gradual and collaborative exchange between government and the resident/community can be facilitated and encouraged, rather than a 'comply or destroy' building code mentality. Whilst high specifications and ambitions are to be applauded (and hopefully achieved in time), the deployment of an interstitial territory that can facilitate and encourage resettlement alongside more formal predetermined planning zones must surely be encouraged and woven into a strategy of constructive dialogue and negotiation.

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Notes and references

1. See, for example, Philip D. Curtin, 'Medical Knowledge and Urban Planning in Tropical Africa', *The American Historical Review*, 90.3 (June 1985), 594–613.
2. Christine Sylvester, 'Development Studies and Postcolonial Studies: Disparate Tales of the "Third World"', *Third World Quarterly*, 20.4 (1999), 703–21.
3. Colonial Office, *Statement of Policy on Colonial Development and Welfare* (London: HMSO, 1940).
4. There have been a number of insightful writing and research on this project and period: Godfrey Amarteifio, David Butcher, and David Whitham, *Tema Manhean, a Study of Resettlement* (Accra: Ghana Universities Press, 1966); Viviana d'Auria, 'In the Laboratory and in the Field: Hybrid Housing Design for the African City in Late-Colonial and Decolonising Ghana (1945–57)', *The Journal of Architecture*, 19 (2014), 329–56; Iain Jackson and Rexford Assasie Oppong, 'The Planning of Late Colonial Village Housing in the Tropics: Tema Manhean, Ghana', *Planning Perspectives*, 29.4 (2014), 475–99; Viviana d'Auria and Bruno De Meulder, 'Unsettling Landscapes: The Volta River Project', *OASE 82 L'Afrique C'est Chic*, 82 (2010), 115–38; Kofi Diaw, *Effects of Volta Lake Resettlement in Ghana: A Reappraisal After 25 Years* (Hamburg: Institut für Afrika-Kunde im Verbund der Stiftung Deutsches Übersee-Institut, 1990). Historical accounts include the very lucid and enlightening articles by Stephan F. Miescher: 'Building the City of the Future: Visions and Experiences of Modernity in Ghana's Akosombo Township', *Journal of African History*, 53 (2012), 367–90, "'Nkrumah's Baby": The Akosombo Dam and the Dream of Development in Ghana, 1952–1966', *Water History*, 6 (December 2014), 341–66; 'No-one Should Be Worse Off: The Akosombo Dam, Modernization, and the Experience of Resettlement in Ghana', in *Modernization as Spectacle in Africa*, ed. Peter J. Bloom, Stephan F. Miescher and Takyiwa Manuh (Bloomington: Indiana University Press, 2014), pp. 184–204.
5. Dipesh Chakrabarty, *Provincializing Europe: Postcolonial thought and Historical Difference* (Princeton, NJ: Princeton University Press, 2000), p. 9.
6. Correspondence relating to topographical surveys, 'Volta River, 1949–53', The National Archives, CO 927/115/5.
7. Halcrow was also engaged on the Kariba and Kafue Hydro-Electric Projects in Northern Rhodesia in the early 1950s, and had previously been employed to develop similar schemes in Scotland. The justification behind the Kariba dam was the shortage of coal and the problem of transport across long distance to fuel a power station. It seemed logical to use rivers, but the environmental impact was not considered. Halcrow even considered damming the Victoria Falls, see William Halcrow, 'Engineering Developments in Central Africa', *Journal of the Royal Society of Arts*, 102 (1954), 905–19.
8. Behind the scenes, for example, discussions were taking place with the American government and business as early as 1950: see 'Volta River Survey Part 1', notes initialled A.H.P. and dated 18 January 1950, The National Archives, CO 96/828/5: 'I had lunch today with Mr. Ervin Anderson of E.C.A [Economic Cooperation Administration? ...] Mr Anderson told me that American thought in Washington, including that of the Defence Departments, was that we should be making a great mistake if we plumped for North Borneo for the manufacture of aluminum. He himself thought that the Gold Coast offered very good opportunities and hinted that the United States would be very glad to help in any project which might emerge from the Halcrow Survey'.
9. See Viviana d'Auria and Bruno De Meulder, 'Unsettling Landscapes: The Volta River Project', *OASE 82 L'Afrique C'est Chic*, 82 (2010), 115–38.
10. See Inauguration of Volta Power, commemorative booklet (Accra: State Publishing Corporation, 1966), available at <<http://www.vra.com/kmportal/>> [accessed 11 October 2017].

11. Alcock quoted in a letter from G.A. Atkinson to William Holford, 19 May 1951, 'Resettlement', The National Archives, CO96/829/2.
12. Ibid.
13. Ibid.
14. The Commission was chaired by Robert Jackson. An extended discussion of his role and the broader political context can be found in James Gibson, *Jacko Where Are You Now? A Life of Robert Jackson* (Richmond: Parsons Publishing, 2006).
15. House of Commons, *House of Commons Debate* (14 April 1949, vol. 463, cols. 3123–36), available at <<http://api.parliament.uk/historic-hansard/commons/1949/apr/14/colonies-housing>> [accessed 8 January 2019]
16. For example, see Gold Coast despatch number 335, 15 November 1894, 'Accra Fire. Plan Shewing Proposed Arrangements of Streets and Plots Upon Ground Proposed to Be Acquired by the Government for Sufferers to Build Upon', The National Archives, 1894, MR 1/825; The Accra Housing Scheme: 'Two-Roomed Structure Built for Earthquake Relief Housing', The National Archives, 1937, CO 1069/46/43. In terms of European cordon sanitaires, see, for example, Report from Government House, Accra to Malcolm MacDonald, 29 March 1939, 'Nsawam: Building of Free Zone Around Residential Area', The National Archives, CO 96/761/10.
17. See 'Annual Colonial Report for Gold Coast', No.688 (London, HMSO, 1910). There are also photographs of these settlements in the National Archives CO1069/40/25–26.
18. See A.E.S. Alcock, 'Housing Scheme in Kumasi', The National Archives, CO 96/781/1; and CO 1069/46/20, CO 1069/46/22 for photographs of South Sunstresu and Kwaso, 1951/1952.
19. Similar self-build projects had been explored in Nigeria with the 'encouragement' that up to 10% of the estimated value of improvements made by Africans would be given back as, 'some small amenity, such as a new market, a playing field or a village hall' from 'Extract from note of discussion with Treasury on C.D & W Schemes, 5th July 1945, Village Housing in Nigeria', Extract from Minutes of meeting of central Development Board (copy), undated c. 1945, no other details of circulation, The National Archives, CO583/274/1.
20. Letter from District Commissioner to 'All members of the welfare committee', 18 April 1945, 'Housing Experiment Kibi 1945–46', Public Records And Archives Department (PRAAD), Ghana, CSC14/3/494.
21. See correspondence between A.E.S. Alcock and the Building Research Station, UK, 'Establishment of a Building Research Station on the Gold Coast 1944–45', The National Archives, DSIR 4/2524; and 'Building Research Station', PRAAD, 1944 gh/praad/rg.5/5/1/3. It seems that Alcock established the station on the recommendations of Maxwell Fry. Although Fry clearly did not have the authority to give this instruction, the station was evidence of an attempt to find a systematic approach to knowledge production.
22. Jiat-Hwee Chang discusses the notion of the colony as laboratory at length and we are indebted to his incisive discussion on this topic. He also discusses prefabrication in Jiat-Hwee Chang, *A Genealogy of Tropical Architecture: Colonial Networks, Nature and Technology* (London: Routledge, 2016), p. 86.
23. House of Commons, *House of Commons Debate* (14 April 1949, vol. 463, cols. 3123–36).
24. See chapter two in David Hart, *The Volta River Project: A Case Study in Politics and Technology* (Edinburgh: Edinburgh University Press, 1980).
25. For further discussion and critique of high modernist planning see James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 2005), p. 93. For 'Indigenous Knowledges' see John Briggs

- and Joanne Sharp, 'Indigenous Knowledges and Development: A Postcolonial Caution', *Third World Quarterly*, 25.4 (2004), 661–76.
26. Scott, p. 97.
 27. See Ravi Kalia, *Chandigarh: The Making of an Indian City* (New Delhi: Oxford University Press, 1987); Nihal Perera, 'Contesting Visions: Hybridity, Liminality and the Authorship of the Chandigarh Plan', *Planning Perspectives*, 19 (2004), 175–99; Iain Jackson and Jessica Holland, *The Architecture of Edwin Maxwell Fry and Jane Drew: Twentieth Century Architecture, Pioneer Modernism and the Tropics* (Farnham: Ashgate, 2014); and also Albert Mayer, *The Story of Rural Development at Etawah, Uttar Pradesh* (Los Angeles: University of California Press, 1958).
 28. Volta River Project Preparatory Commission, *The Volta River Project*, 3 vols (London: HMSO, 1956), II, p. 301.
 29. Ibid.
 30. Ibid., p. 305.
 31. It was an approach adopted by Ernst May in Kampala too, but there May was responding to different 'classes' of African and Indian residents. See Andrew Byerley, 'Drawing white Elephants in Africa? Re-contextualizing Ernst May's Kampala Plans in Relation to the Fraught Political Realities of Late-Colonial Rule', *Planning Perspectives* (2018), available at <<https://doi.org/10.1080/02665433.2018.1425635>>.
 32. Albert Mayer, 'Regional Development: The Architect's Role', *American Institute of Architects Journal*, 60.10 (1971), 17–19.
 33. Volta River Project Preparatory Commission, *The Volta River Project*, I, p. 37.
 34. See Otto Koenigsberger, 'New Towns in India', *Town Planning Review*, 23 (1952), 95–132 and Rhodi Windsor Liscome, 'In-Dependence: Otto Koenigsberger and Modernist Urban Resettlement in India', *Planning Perspectives*, 21 (2006), 157–78. See also Rachel Lee, *OK – Otto Koenigsberger. Architecture and Urban Visions in India* (Liverpool: TAG Press, 2015) and Vandana Baweja, 'A Pre-history of Green Architecture: Otto Koenigsberger and Tropical Architecture, from Princely Mysore to Post-colonial London' (unpublished doctoral dissertation, University of Michigan, 2008).
 35. Otto H. Koenigsberger and Georges Pilliet, 'Problems of Housing Labourers in the Tropics', *Tropical Housing & Planning Bulletin*, 1.3 (May 1955), 19–23.
 36. Ibid., p. 20.
 37. Ibid.
 38. Colonial Office, *Housing in British African Territories* (London: HMSO, 1954), p. 19.
 39. J. Ilett letter to Mr Oates at the Board of Trade, 22 March 1956, 'Housing and Town Planning', The National Archives, CO 1029/136.
 40. Colonial Office, *Housing in British African Territories*, p. 13.
 41. See *The Volta Resettlement Experience*, ed. Robert Chambers (London: Pall Mall Press, 1970) and letter from I.M.R. MacLennan to H.A.F. Rumbled, 31 January 1959, 'Volta River Aluminium Project', The National Archives, DO 35/6205.
 42. Secret Inward Telegram to Commonwealth Relations Office from 'Accra', Ghana Relations with Soviet Bloc, 10 June 1960, The National Archives, DO35/9346. For further discussion on 'Eastern Bloc' architects in Ghana, see also Łukasz Stanek, 'Architects from Socialist Countries in Ghana (1957–67): Modern Architecture and Mondialisation', *Journal of the Society of Architectural Historians*, 74 (2015), 416–42 and Zoltán Ginelli, 'Hungarian Experts in Nkrumah's Ghana. Decolonization and Semiperipheral Postcoloniality in Socialist Hungary', *Mezosfera* 5, in Eszter Szakács, ed., *Refractions of Socialist Solidarity* (Budapest: Tranzit.hu, 2018), available at <<http://mezosfera.org/hungarian-experts-in-nkrumahs-ghana/>> [accessed 7 January 2019].
 43. Gibson, p. 184.

44. Volta River Project Preparatory Commission, *The Volta River Project*, III, p. 16.
45. Scott moved to Lagos in 1925 working for the Public Works Department, see <http://www.scottisharchitects.org.uk/architect_full.php?id=203516> [accessed 7 January 2019]. See also 'New Government Model Villages for Nigerian Miners; Architect: Thomas Scott, P. W. D.', *Architect and Building News* (28 May 1943), p. 132; Ibiyemi Omotayo Salami: 'Public Works Department Architecture in Nigeria, 1900–1960', (unpublished doctoral thesis, University of Liverpool, 2014) contains detailed information on Scott's work.
46. J. Fish to J.A.R. Pimlott, 10 December 1954, The National Archives, 'Housing and Town Planning', CO 1029/136.
47. See Iain Jackson, 'Tropical Architecture and the West Indies: From Military Advances and Tropical Medicine, to Robert Gardner-Medwin and the Networks of Tropical Modernism', *The Journal of Architecture*, 18.2 (2013), 167–95.
48. J. Fish to J.A.R. Pimlott, 10 December 1954, The National Archives, 'Housing and Town Planning', CO 1029/136.
49. Volta River Project Preparatory Commission, *The Volta River Project*, III, p. 71.
50. Colonial Office, *Social Development in the British Colonial Territories: Report of the Ashridge Conference on Social Development 3rd to 12th August 1954* (London: HMSO, 1954), pp. 45–46.
51. William Halcrow, 'Preliminary Report by Sir William Halcrow and Partners on the Temporary Township at Ajena', 1955, The National Archives, BT 64/5048, p. 10.
52. Volta River Project Preparatory Commission, *The Volta River Project*, III. See also William Halcrow, 'Preliminary Report'.
53. Fish letter to Pimlott.
54. Halcrow, 'Preliminary Report', p. 2.
55. *Ibid.*, p. 8.
56. Volta River Project Preparatory Commission, *The Volta River Project*, II, p. 293.
57. *Ibid.*, p. 296.
58. *Ibid.*, p. 297.
59. G.A. Atkinson, 'Housing and Town Planning' letter to Mr Peckham, 9 January 1956, The National Archives, CO 1029/136.
60. *Ibid.*
61. Halcrow, 'Preliminary Report', p. 2.
62. Report by W.M. Woodhouse on Temporary Accommodation at Ajena, 'Housing and Town Planning', The National Archives, CO 1029/136.
63. Leo De Syllas, 'Town at Ajena, Ghana; Architects' Co-Partnership', *Architects' Journal* (21 February 1957), pp. 285–92.
64. Volta River Project Preparatory Commission, *The Volta River Project*, II, p. 298.
65. De Syllas, p. 289.
66. See Avigail Sachs, 'The Pedagogy of Prefabrication: Building Research at MIT in the Postwar', in Arindam Dutta, ed. *A Second Modernism: MIT, Architecture, and the 'Techno-Social' Moment* (Cambridge, MA: The MIT Press, 2013).
67. It was not a new mode of operating of course since prefabricated cast iron churches had long been imported, as had army barracks. Prefabricated Nissan huts were also extensively used along with 'Boulton Bungalows' that were imported as disassembled kits: see 'Accommodation for Elder Dempster at Takoradi', The National Archives, CO 96/674/4. Jiat-Hwee Chang also discusses prefabrication and its implications in *A Genealogy of Tropical Architecture*.
68. Charles Abrams, Vladimir Bodiansky, and Otto Koenigsberger, *Report on Housing in the Gold Coast: United Nations Technical Assistance Programme* (New York: United Nations, 1956), pp. 131–42.
69. Koenigsberger and Pilliet, 'Problems of Housing Labourers'.

70. Halcrow, 'Preliminary Report'.
71. Abrams, Bodiansky, and Koenigsberger, p. 31. Prefabrication factories are also discussed in, 'Gold Coast: Housing Development', The National Archives, CO 554/694. Graham Tipple also notes that some of these houses were built in Kumasi – see Graham Tipple, *Extending Themselves: User-Initiated Transformations of Government-Built Housing in Developing Countries* (Liverpool, Liverpool University Press, 2000).
72. Abrams, Bodiansky, and Koenigsberger, p. 62.
73. Charles Abrams, *Man's Struggle for Shelter in an Urbanizing World* (Cambridge, MA: MIT Press, 1964), p. 168.
74. *Ibid.*, p. 180.
75. See reports and correspondence in 'Volta River Dam Project', The National Archives, DO 221/108; Jordan E. Shapiro, 'Settling Refugees, Unsettling the Nation: Ghana's Volta River Project Resettlement Scheme and the Ambiguities of Development Planning, 1952–1970' (unpublished doctoral thesis, University of Michigan, 2003).
76. Abrams, Bodiansky, and Koenigsberger.
77. United Kingdom Trade and Industrial Mission to Ghana, *Report of the United Kingdom Trade and Industrial Mission to Ghana* (London: HMSO, 1959), p. 23.
78. Colonial Office, *Colonial Office Summer Conference on African Administration* (London: HMSO, 1948); *Social Development in the British Colonial Territories: Report of the Ashridge Conference on Social Development 3rd to 12th August 1954* (London: HMSO, 1954), p. 7.
79. For a detailed history of the core house, see chapter 2 of Mark Napier, 'Core Housing, Enablement and Urban Poverty' (unpublished doctoral thesis, Newcastle University, 2002).
80. Christophe Bonneuil, 'Development as Experiment: Science and State Building in Late Colonial and Postcolonial Africa, 1930–1970', *Osiris*, 15 (2000), 258–81.
81. G. Anthony Atkinson, 'Building in the Tropics', *RIBA Journal*, 57 (1950), 313–20.
82. See 'Volta Lake Resettlement Scheme', 13 November 1967, The National Archives, 'Volta River Project', FCO 38/81.
83. Bonneuil, p. 269.
84. See Miles Danby, 'House Design', in *The Volta Resettlement Experience*, ed. Robert Chambers (London: Pall Mall Press, 1970), pp. 164–78. No other information has been found on F.H. Marker, other than he came from Bombay and lived in London prior to working in Ghana from c. 1961–1964.
85. Ákos Moravánszky, 'Peripheral Modernism: Charles Polányi and the Lessons of the Village', *The Journal of Architecture*, 17.3 (2012), 333–59.
86. *Ibid.*, 345. See also D. Magaziner, 'The Foundation: Design, Time, and Possibility in 1960s Nairobi', *Comparative Studies in Society and History*, 60.3 (2018), 599–628, available at <<https://doi.org/10.1017/S0010417518000208>> for discussions on experimental teaching of architecture in Africa during the 1960s.
87. See Iain Jackson and Rexford Assasie Oppong, 'The Planning of Late Colonial Village Housing in the Tropics: Tema Manhean, Ghana', *Planning Perspectives*, 29.4 (2014), 475–99; Edwin Maxwell Fry and Jane Drew, *Tropical Architecture in the Humid Zone* (London: Batsford, 1956).
88. Danby, p. 171.
89. See Ijlal Muzaffar, 'Fuzzy Images: The Problem of Third World Development and the New Ethics of Open-Ended Planning at the MIT-Harvard Joint Center for Urban Studies', in *A Second Modernism*, ed. Arindam Dutta.
90. Laszlo Huszar, 'The Volta Resettlement Scheme', *Journal of the Town Planning Institute*, 51.7 (1965), 279–82.
91. *Ibid.*

92. The authors visited the village in January 2017 to investigate how the housing stock was extended/renovated from the original designs.
93. S.N.P. Lyimo and J.D. Msele, 'Report on the Construction of Unauthorized Structures in New Ajena', Volta River Authority Library, *Tema*, 15 August 1964, p. 5.
94. Doxiadis Associates, 'Accra-Tema-Akosombo Regional Programme and Plan Interim Report', *Ekistics*, 11.65 (1961), 235–76.
95. The final cost was £58 m, with 50% from Ghana and the remaining from a World Bank brokered loan with funds from the US and the UK. Italian contractors were Impregilo. The National Archives, 'Volta River Dam Project', DO221/108.