architects from around the globe. In this respect it has a programmatic agenda that attempts to define an emerging field of architecture that transcends international boundaries.

The internationalist trend of the book reflects the experience of the authors in modern avant-garde circles. Scattered through the book with no geographic hierarchy are images of buildings in Gold Coast, Florida, USA, Mexico, Brazil, Nigeria, Ivory Coast, Brazzaville, French West Africa, India, Burma, Sierra Leone, Cameroons, Venezuela, Senegal, Cuba, the Philippines, Puerto Rico, Togoland, Barbados, Jamaica and Kenya. The work of Richard Neutra, Paul Rudolph, Oscar Niemeyer, Lucio Costa and Antonin Raymond is included alongside the lesser-known work of Henri Chomette in Abidjan, Mario Pani in Mexico and Rino Levi in Brazil.

Fry and Drew's attitude to other architects presents an interesting ambivalence. They appear not to be chosen as star designers, since the photo captions in the text name the sites, but not the architects, whose names appear in a list of figures. Their approach seems to privilege an appreciation of architects as members of the modernist circle, rather than as individual architectural heroes. At the same time they assume that their readers share a certain familiarity with the leaders of modernism. For instance, in the text, the authors use an "imaginary Mies Van der Rohe house" as a concept to help visualise a generic tropical building.

As the authors claim in the introduction, their intentions are to shape the development of architectural discourse beyond their own. The book is intended to engage with an imaginary that is either nascent but undefined in emergent global practices or trapped within local perspectives. This programmatic agenda constantly engages with the production of an as-yet-unbuilt architecture and is aimed at least in

part at a non-western architect.

> "We write not only for those who, like ourselves, live outside the tropics and for whom, therefore, designing is something of an intellectual process; but also for the growing number of those who inhabit these regions and who, by their overfamiliarity with the conditions, may be stimulated to re-examine them. On these architects and planners falls the major burden of creating an environment in which the tropical people may flourish" (Fry and Drew 1956: 19).

Fry and Drew's concern to imagine an architecture for the tropics on behalf of others is not unique. It recurs more systematically in the development of educational programmes and in the hegemonic relationship established between metropolitan centres of the discourse and its sites of application. The growing use of the term "Tropical Architecture" has a parallel in the institutional development of British trained and sanctioned "tropical architects".

2.3.3 From colonial architecture to Tropical Architecture

> "we must remember that our clients are more and more the people of the tropics, not Europeans; that we have to work there as equals, only privileged because of our special knowledge" (Atkinson 1953: 8-9).

Although several texts on planning and building used the term "the tropics" prior to 1953, the concept of "tropical architecture", which the Conference on Tropical Architecture authoritatively gave to the field seems to have come into being as the term "colonial" became politically inappropriate. SM de Syllas, who helped organise the 1953

conference on tropical architecture had earlier co-authored an article on "Recent Planning Developments in the Colonies" (RIBA Journal 1948). The technical guides from the Building Research Station in Garston that had been issued under the headings *Colonial Building Notes* became the *Tropical Building Notes* in 1958, slightly behind the independence of India in 1948 and Ghana in 1957.

These changes reflect two shifts in the relationship between the architectural profession and foreign contexts. The first is the increase in the number of architects from "tropical" countries being trained in Britain and in foreign schools. The second is the growth in opportunities for British architects abroad as the governments and private interests in newly independent countries embarked on programmes of modernisation. In 1953, there were as many as two hundred students from tropical countries studying in Britain and between twenty five and fifty British architects had gone to work in the tropics in the previous year (Atkinson 1953: 14).

As one of the speakers in the Conference on Tropical Architecture mentioned, the end of colonialism threatened the direct hold British practitioners had on colonial building (Foyle 1954). The architect who at the time was a colonial functionary might shortly be replaced by a local person. This should be someone trained in the metropolis, but according to a modified curriculum, or a graduate of proposed tropical schools of architecture. To this end new schools were proposed for Hong Kong, India, Ghana and Nigeria amongst others. Typically, the school in Ghana which was established at the University of Science and Technology in Kumasi in the 1950's was staffed initially by expatriate British architects. A graduate from the Architectural Association course, John Awuso-Addo, became the first Ghanain lecturer on his

return in the 1960's[3].

2.3.4 Opportunities in the tropics

The emergence of the idea of Tropical Architecture parallels the growth of a proto-globalist economy for architectural production. The shift in the post-war period is from a pattern where an architect with ties to the colonial government was commissioned, to one where architects who might best support or represent modernity got the work. In the emblematic commission of the 1950's, Nehru's appointment of le Corbusier, a Frenchman, Mayer, a German and Fry and Drew, an English couple, to design the new capital city at Chandigarh disregarded the architects' national identities.

Many of the architects practising in West Africa in the 1950's were British subjects following colonial commissions. The economic situation in post-war Britain was largely responsible for the movement of architects to colonial sites. There was a drought of work for architects in Britain and a growing investment in the colonies (Atkinson 1950). At the same time, shifts in social conditions in the post-war era produced changes in the way public buildings were commissioned, allowing opportunities for architects to establish practices outside of government employment.

Maxwell Fry had served in West Africa during the war and returned to the Gold Coast with his wife, Jane Drew, in 1946 to plan villages for the Colonial administration (Emanuel 1994). It was unusual for such architects, who had ties to the elite of modernism and independent reputations, to practice in colonial sites. Previous public buildings had

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Interview with Prof Awuso-Addo, Kumasi, January 31 2001

been commissioned and often designed within Public Works ministries or departments, and often without architects. As Fry described it,

> "The building industry in the Gold Coast consisted in 1945 of three or four firms of Europeans contractors working on established lines of unadventurous building and including architectural services with contracting as a matter of course. Such few works of magnitude as occurred from time to time were designed by European if they were beyond the magnitude of the single Public Works Department architect, and buildings seldom exceeded the simple capacities of cement-block walling and pitched timber roofs. The announcement of large building programmes by Government and trade brought newcomers into the field with a flow of new capital into the industry" (AR 1953: 299).

Shortly after their arrival, Fry and Drew received a commission to design schools and teachers' training colleges at a number of mission stations. These buildings, funded by Britain, were conceived and sited in dialogue with African leaders. Prior to the end of the war, British parliament had established a Overseas Development Fund which was used to pay for a programme of secondary schools and teachers training colleges in the Gold Coast. (AR 1953: 299)

The building of schools was in part a response to the social unrest, fuelled by the resentment of Africans from the Gold Coast who had served in the British army, that culminated in an uprising against colonial oppression in 1948 (Metcalf 1964). Chiefs and political leaders wanted an improved educational system so that their subjects could enter the colonial administration and help establish and develop the nation without relying on expatriates.

The existing secondary schooling which was mainly located in the coastal belt consisted of a few ecumenical institutions for the children of important or westernised families such as Achimota College. It was inadequate to the task of broad access to modern education. The programme to expand facilities was largely based at mission stations and involved building classrooms and dormitories. Over seventy schools were built between 1950 and 1963. Amongst the schools that were built or expanded by Fry and Drew were the Girls School at Aburi, Opuku Ware and Prempeh College at Kumasi, Wesley Girls' and Mfantsipim at Gold Coast, St Mary's at Somanya and St Francis in Ho-Hoe (AR 1953) (Fig 2.11). In Nigeria, a similar programme to expand mission schools was initiated in the mid 1950's (Prucnal-Ogunsote 1993).



2.11 Map of Ghana showing location of schools designed by Fry and Drew, 1945-1955 (AR 1955: 137)

Post second world war town planning and housing schemes were implemented at a cost of £5 000 000 in Lagos, and at Cape Coast, Takoradi, Accra (Fig 2.12) and Kumasi in the Gold Coast. These estates provided housing for lower income groups. In addition, industrial and mining interests built housing for their workers (Fry 1947, Stockdale 1948).



2.12 Fry, Drew and Partners, **Draft plan for Accra** c1946 (Fry 1947: 70)

The university colleges at Ibadan in Nigeria (fig 2.13), built from 1949 and at Kumasi in the Gold Coast, designed and built from 1951 were prestigious sites funded by the British Overseas Development Fund and local revenue to meet the aspirations of their countries' elite (Metcalf 1964:675). The planning of these major commissions were given to Fry and Drew and James Cubitt respectively. Cubitt, whose experience of the tropics at the time was his military service in Borneo, worked in partnership with Kenneth Scott and Fello Atkinson from the Building Research Establishment.



2.13 Fry, Drew and Partners, **Ibadan University, 1947-19** (Fry and Drew 1956: 217)

The leadership of post-colonial Ghana and Nigeria seem to have been in support of some aspects of the colonial building programmes. In

common with Nehru in India and South American leaders, they supported innovation in the buildings that their governments were funding[4]. In a speech on the eve of independence, Ghana's first president, Kwame Nkrumah acknowledged the possibilities for climatic research to emancipate his citizens from dependence on electricity to keep food and the workplace cool[5]:

> "Excessive heat is one of the factors which hinders our development...Already in Accra and in other towns architectural designs have been evolved which make use of the sun to produce draughts of air, which, by flowing over the surface of the roof and walls of the building, keep it cool. We propose to continue experiments of this sort, combining the work of the Building Institute, with that of the University" (Nkrumah 1961: 102)



2.14 Kenneth Scott, **Regional library**, Tamale Ghana c1957 (Evans 196-: 111)

As British West Africa moved towards local rule and finally independence, in 1957 for Ghana and 1960 for Nigeria, the establishment of local institutions became an issue of national concern. In Ghana, a library building programme (Fig 2.14), established during the colonial period, was sustained through Nkrumah's support (Evans 196-). Fry, Drew, Drake and Lasdun were commissioned to build a National Museum in Accra. The hospital at

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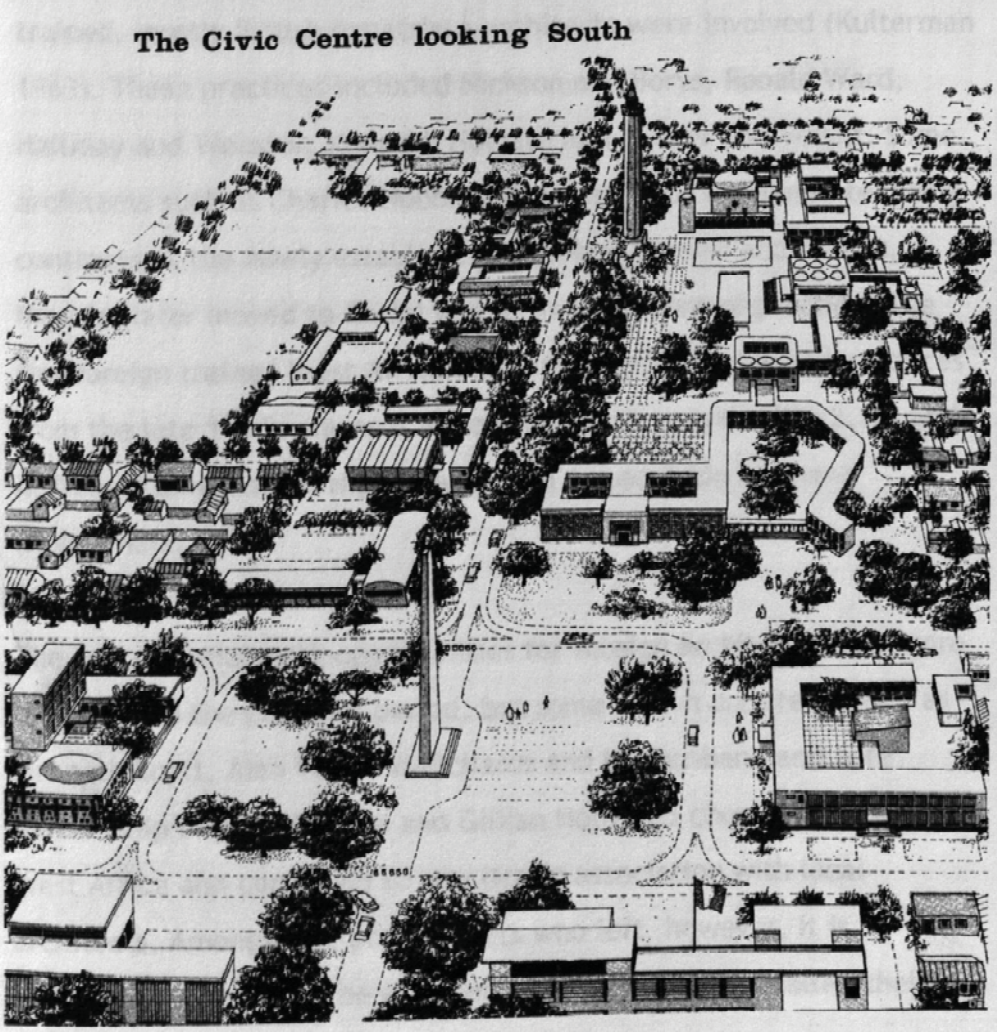
4 After Nkrumah became leader of Government Business in 1951, his party scrapped the existing colonial development plan, with a budget of 11 million pounds in favour of a five year plan in which they proposed to spend 120 million pounds. This expenditure, apart from funding the campus of the Kwame Nkrumah University of Science and Technology, would go to developing roads, bridges, rail, harbours and free compulsory primary education (Fedler 1979:19). In Nigeria, the University of Ibadan was planned in 1945 and funded by local revenue and the Overseas Development fund (Metcalf 1964: 685)

5 Nkrumah's interest in the relationship between climatic discourse and energy sources was well in advance of Western concerns. The use of design to prevent unsustainable energy consumption, a necessity in Ghana in 1957, was to become a major theme in western architectural discourse after the energy crisis of 1971.

Kurle Bu was substantially enlarged, and a large police headquarters was built in Accra.

Following independence, Ghana embarked on a developmental programme that stressed national goals. The prestigious projects of the last colonial years were phased out in favour of massive engineering projects such as the Volta dam, mass housing and infrastructure. In Nigeria, the federal system offered greater opportunities for speculative and foreign investment, and in contrast to Ghana, many commercial buildings were put up in the 1960's.

In Nigeria, a school building programme resulted in a number of commissions for Design Group Nigeria, Godwin and Hopwood and the



2.15 Civic Centre of Kaduna, Nigeria c1967 (Lock 1967: 217)

Architects' Co-partnership (Fig 2.16), a practice formed by graduates of the Architectural Association, who established an office in Lagos in 1954 and designed over 15 schools (Emanuel 1994). The extension of the federal government resulted in a proliferation of administrative buildings, and urban design proposals were commissioned for new towns at Port Harcourt, Abuja, Abaji and Kaduna (Fig 2.15).



2.16 Architects Co-Partnership, Ansar-ur-deen School, Nigeria (AD 1959:130)

The profits made from the exploitation of local resources fed the growth of the commercial areas of Nigeria's towns (Fig 2.17). Typical commissions were department stores, banks, offices for development agencies and shipping companies, and housing for expatriate and local employees. Fry and Drew designed two community centres funded by international companies (AD 1955). While the four practices mentioned above gathered a substantial amount of this work, other foreign trained, mostly British expatriate architects were involved (Kulterman 1963). These practices included Nickson and Borys, Ronald Ward, Halliday and Webster, Kenneth Holgate and Becker and Voight. Some architects such as Charles Hobbis and Miles Danby combined teaching contracts at the newly established schools in Kumasi and Ibadan, Nigeria (later moved to Zaria) with a small amount of practice. The few foreign trained West African architects who established practices from the late 1950's onwards were Oluwole Olumuyiwa (Fig 2.18) and A. Ifeanyi Ekwueme in Nigeria and John Awuso-Addo in Ghana (Kultermann 1969).



2.17 Racecourse area, Lagos Island in 1960 (photo John Godwin)



2.18 Oluwole Olumuyiwa in his Crusaders' House, Lagos, Nigeria in 1968 (Kultermann 1969: 111)

The post-colonial work opportunities for foreign architects were more limited than the post-war period, but some British architects such as Kenneth Scott, Alan Vaughan-Richards and the husband and wife partnership of John Godwin and Gillian Hopwood chose to remain in West Africa and continued to practice in association with local architects. Amongst the practitioners who left, however, it is interesting to see how the experience of West Africa initiated their

international careers. Fry and Drew went on from Ghana to practice in India, Kuwait, Nigeria, Iran and Ceylon while maintaining a London office (Fig 2.19) (Emanuel 1994). James Cubitt founded offices in Nigeria, Libya, Australia and the United Arab Emirates as well as England (Cubitt 2000).



2.19 Fry, Drew and Partners at work in London office (*Architect and Builder* 1955: 46)

These biographical histories indicate that some architects managed to conceptualise a way of practising that could be applied to other geographical sites. For Fry and Drew, the concept of Tropical Architecture was a matter for explicit definition that could be used to guide their work in new contexts. While they speak of wanting to develop an intellectual approach (Fry 1972), it is one that had practical benefits for their own careers. Their West African work was executed in conditions that were physically isolated from similar work, so their interest in recording parallel endeavours has obvious elements of self interest. Their concern with training future architects was in part responsive to the absence of suitable staff on site and the resultant challenges of working between a London production office and West Africa. In Fry and Drew's vision, tropical architecture represented a supportive common approach between architects working between locations in the expanding world of architectural opportunities.

2.3.5 Technical support

During the 1953 Conference on Tropical Architecture, one of the architect speakers, Atkinson, attempted to contextualise the subject by referring to the scientists who were active in the domain of tropical studies.

> "You are probably asking, and quite rightly, how does this all tie up with the immediate issue of tropical architecture, and I will try to explain. To each of the

> speakers the term tropics means something different according to his vocation. To the physiologist it means building in areas where there is thermal strain on the body. To the economist it may mean a backward area where the building industry is undeveloped. To the engineer it may mean much the same thing, a lack of suitable or durable building materials, skills or even means of transport, while to a climatologist probably all these aspects are closely connected." (Foyle 1954 72).

In drawing attention to the specific theme of climate, tropical architecture was tied to the growing body of scientific research on tropical issues. The relationship between design and research was not unambiguous, as the designers struggled to incorporate science into their wider aesthetic agendas. As Fry and Drew put it,

> "modern architecture is distinguished by nothing so much as its determination not to turn away from science and the effects of science, but to enter into them and wring from them a solution of value to humanity" (Fry and Drew 1956:)

This concern with the role of science recurs in discussion over the content of the training of architects for tropical sites (Foyle 1953; Atkinson 1953), in which it was generally agreed that technical topics were necessary, but these should be mediated with knowledge in the fields of sociology and economics.

Colonial governments had provided institutional support for architects largely through the work of the Building Research Stations. In the British colonial system these were located in England, Australia, Ghana, India and South Africa (Fry and Drew: 1956). Literature such as the Building Research Establishment's Colonial Building Notes (King 1990)

and officials like G. Anthony Atkinson, the BRE's colonial liason officer, communicated research on climate and materials to professionals. From 1948 onwards, Atkinson had coordinated research from the West Indies, the Sudan, Nigeria, South Africa, Australia, Singapore and Ghana, and mooted t he establishment of an East African organisation (Atkinson: 1950).

As the independence of the countries where the stations were located drew near, Fry and Drew expressed concern that these resources should be developed. They wrote to

> "urge upon all tropical governments the need for research on the widest scale into the needs and means of building: detailed research in each country and correlated research between them. This research...including specialist-scientists...but directed in its course by a much wider vision, looking always at the related values of building and society" (1956: 28)

The shifts in political alignment that followed independence presented new opportunities for technical support. The United Nations sponsored a body, the Cooperative Centre for Technical Assistance (CCTA), to hold conferences and disseminate information to allow countries outside the United States to share knowledge about building (CCTA 1960). By the end of the 1960's, the body of knowledge on climatic conditions and responses, as evidenced by the bibliography on the subject and the growth in the number of research locations, had expanded considerably (Lippsmeier 1969).

Other built environment professionals, in particular engineers, played an important role in disseminating technical knowledge between practitioners. Ove Arup, the engineer who consulted on most of Fry and Drew's work and who also worked for other architects in West Africa

and Europe opened a branch office in Lagos in 1954. As a pioneer in reinforced concrete design, Arup certainly helped to refine the design of the *brise-soleil* elements that are common in tropical buildings (Emanuel 1994).

The relationships between architects and engineers were not always as creative as this. Many public works departments still used engineers as designers (Foyle 1954: 121). The role of the architect, if there was one, was to decorate projects. The technical challenges of climatic responsiveness presented an opportunity for architects to become involved with empirical design problems that were seen as the preserve of engineers. Learning from the synthetic approach of practices such as Arup's, architects began to become involved in the aesthetics of structural elements.

Yet another source of support came from the companies involved in the manufacture of goods used in the production of buildings. Henry Hope and Sons, for example, who manufactured windows in Birmingham, had offices in London and New York and agents "around the world" (Foyle 1954). Their advertisment in the proceedings of the Conference on Tropical Architecture shows the complex steel louvres used by James Cubitt in Kumasi, and offers advice on "all window problems" (Fig 2.20). Crittall Windows, an associated company, had branches and agencies in dozens of tropical countries, including Nigeria, Ghana, Sierra Leone and the Gambia. Their catalogue included details that informed architects how to use their products, including an "export range" of adjustable windows and sunbreakers (Fig 5.12) (Critall 1953).



2.20 Advertisement for Hope's windows (Foyle 1954)

Manufacturers such as these served as conduits for the spread of technical information and norms between architects. The design of the sunbreakers for Godwin and Hopwood's offices for Allen and Hanbury (Fig 3.8) was worked out with technical advice at Crittall-Hope's

Birmingham premises, where it became a part of the standard range[6].

2.3.6 Colonial networks

The development of tropical architecture cannot be seen apart from the way in which the approach itself was located and moved as it spread between the sites of practice, in West Africa and other colonial or post-colonial contexts, and a metropolitan centre. This spatiality is tied to the flows that accompanied Britain's role in development. Tropical architecture happened through the patronage of the British government which spent millions of pounds building in its overseas colonies. It was disseminated as a body of knowledge through British researchers and publishing houses. The architects, students, books and exotic building materials of tropical architecture moved between Britain and colonial locations on trade routes established by colonial interests.

The scientific establishment that shaped climatic thinking was tied to the strategic interests of metropolitan governments and companies in the colonies. As the chapter on Comfortable Bodies details, military, commercial and administrative interests alike ascribed low productivity and bad health in the colonies to climatic conditions. The colonial government gave support to research establishments that investigated these conditions. A significant example was the collaboration of the Colonial Office and the Building Research Station in setting up the Colonial Liason Unit in 1948 to disseminate information on housing and planning matters to practitioners in the tropics (King 1980: 215).

Almost all the media representations of tropical architecture emerged from metropolitan centres. The Conference and course on Tropical Architecture, the journals and textbooks on the subject, and the Building Research Establishment's notes came from Britain. Collaborative work between the metropolitan centre and the periphery was usually

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[6] Interview with John Godwin and Gillian Hopwood, Johannesburg, 2 October 2001

authored and published in the metropolis. The building research centres in India, Australia and South Africa produced material, but practitioners in other locations only gained access to this through the Building Research Establishment's agency. A 1960 publication by the Commission for Technical Co-operation in Africa South of the Sahara, an agency set up to facilitate ties between research institutions, lists stations in 14 African and 3 European countries (CCTA 1960). The organisation's secretariat is shared between Lagos and Bukava in the Congo, but the publications bureau is in London.

The manual on tropical housing and building (Koenigsberger 1974) which grew from lecture notes on climatic theory given in the course on Tropical Architecture, was illustrated through the uncredited examples submitted by Koenigsberger's colleagues and former students in the tropics[7]. Koenigsberger travelled in the tropics but was centred at the Development Planning Unit in London, at a key nodal point within an international network.

In contrast to the amount published in Britain, the literature from West Africa is thin: the journal, *The West African Architect and Builder*; and the Information Books of the Nigerian Public Works Department seem to be the only local material (Atkinson 1950). This situation has a parallel in the scarcity of information in the metropolitan media on architects who return or choose to remain in the tropics after a British education, and the complete absence of information on architects trained in West Africa.

King (1980) has noted that the culture of the post-colonial is built on the economic and political networks of the colonial system. Certain nodes within these networks, the so-called world cities or metropolitan centres such as London are dominant locations in the development of culture. The reflexive role of such post-colonial culture is to reinforce the authority of the centre. Tropical architecture was embedded in the political networks, centred in London, reinforcing the capacity of metropolitan research stations, media and education to absorb and reproduce knowledge from the periphery. These institutional arrangements served to reinforce the metropolitan control over the discourse, even after

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[7] For instance, Koenigsberger's detail of an insulated roof construction was developed by Godwin and Hopwood in Nigeria. Interview with John Godwin, Johannesburg, 2 October 2001

independence.

2.4 From Tropical Architecture to Regionalism

In the period that succeeded decolonisation the concept of Tropical Architecture as a defined field unravelled. In its place the concept of Regionalism became established as an avant-garde design discourse, applied in particular to low rise buildings such as museums, individual houses and hotels. In urban projects, architects developed a generic international aesthetic, grounded in international technology. In West Africa and elsewhere in the tropics, the use of air conditioning became cheaper and easier to run as power grids were laid out, and many architects replaced climatic responsive features with other elements. In some cases, the result was the proliferation of international style blocks that resembled western buildings in their use of sheer facades (Prucnal-Ogunsote 1993) .

Within the architecture profession, the concept of a Commonwealth identity for architectural practices and education was promoted. It was institutionalised with the foundation in 1965 of the Commonwealth Association of Architects (CAA) as an umbrella body representing schools and professional institutes in countries in, or formerly in the British Commonwealth (CAA 2001).

The emphasis in academic courses was increasingly on social dimension of design, forced, at least in part, by the increasing numbers of foreign students[8]. The course in Tropical Architecture increasingly dealt with housing and developmental issues, and the name was changed to the Department of Development and Tropical Studies. In 1972, the course moved to University College London where it became known as the Development Planning Unit (AJ 1982:37). In Ghana, the school established at Kumasi tried to fulfil Nkrumah's vision of a developmental agency. By the mid 1960's, the course aspired to "comprehensive social and environmental design", dismissing the concept of architecture

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[8] Conversation with Babar Mumtaz at the Development Planning Unit, London, August 2000

as "foreign to Africa" (World Architecture 1966).

Nonetheless, approaches that promote climatic design are still common in post-colonial countries, in the curricula of architecture schools and in the representations that architects make of their work. In particular, the use of climatic design to reduce energy consumption through the reduction of mechanical cooling has tied it to the concept of environmental sustainability.

2.5 Conclusion

British architects who practised in the tropics constructed the concept of tropical architecture to describe and support their work. Drawing on their connections with the international avant-garde of modernism, its central figures took up the task of developing particular approaches to tropical climates, using sun control devices such as the *brise-soleil*. Like their modernist predecessors, these architects engaged with the media and institutions to disseminate their work.

The seminal conference on Tropical Architecture held in London in 1953 initiated a number of publications on the topic, aiding British architects abroad and responding to the call from tropical students to include information on building for hot climates in their curricula. The publication of *Tropical Architecture in the Humid Zones* (Fry and Drew 1956) developed the themes of tropical architecture, including its relation to scientific knowledge, the importance of climate, and its international location. Like the conference, it intended to induct a future group of native tropical architects into a way of thinking about architecture that draws on modern, colonial knowledge.

Colonial networks provided a great deal of technical support for tropical architecture. Government agencies sponsored and disseminated scientific research and manufacturers of products advised on their use in the tropics. At the same time, the expanding infrastructure of colonial government and international companies provided opportunities for British trained architects to build in tropical countries, including Ghana and Nigeria.

The massive expansions in towns, the provision of educational facilities and the growth of industry continued to fuel this source of work up to, and for a while after, the period of independence that began in Ghana in 1957.

While the concept of tropical architecture as a unified field did not last for long after independence, some of its concerns, particularly that of climate, remain important themes in the professional discourse and curricula of non-western architectural education.

To understand this body of work as a form of discourse, its relationship with colonial and modern networks should be seen to be a significant part of its identity. As an architectural avant-garde, tropical architecture was constructed in relation to outside discourses with which it had a reflexive relationship. In other words, innovation in tropical architecture was not represented so much by the material achievements of realising built projects, but by the thinking that relates them to a transforming world.

The broad achievement of tropical architecture lay in the relation that architects weaved their own careers and knowledge into the modern networks that characterised the colonial and modernist world. As this chapter has shown, some architects, over and above building in hot West Africa and other sites, produced the concept of tropical architecture through the media of texts, conferences and educational programmes.

The centre of the discourse of tropical architecture in London both built on and benefited from the dominant relationship between that centre and its tropical peripheries. The arrangement of this discourse around authoritative institutions located in the metropolis served to alter the conditions of tropical architecture in multiple ways. It made the work of architects in remote locations visible to their colleagues. It lent authority to the discourse of climatic responsiveness by linking it with established scientific fields. It allowed architects to share knowledge and material, and trained architects from tropical countries in the techniques of climatic design.

This in turn affected conditions which threatened the discourse of tropical architecture, in

particular the potential withdrawal of British patronage at the end of the colonial system. The institutional support for tropical architecture was used to define and publicise the international and modern nature of the expertise of colonial architects to attract the support of the post-colonial elite who in turn gave support to some of its principles. In this sense, tropical architecture reproduced itself, and in the process, allowed colonial discursive forms to continue to enter the post-colonial world.

3. REPRESENTING THE TROPICAL

3.1 Outline

This chapter will look at the ways in which representations, whether graphic, photographic or textual, constructed the identity of tropical architecture. It understands these representations as a sort of filter which structures the knowledge of the sites of tropical architecture in the minds of architects and in the media about architecture. These representations stress the role of climatic qualities. Climate is, above all else, the common element that architects seize on to construct the concept of a tropical zone as a homogenous, generic site for tropical architecture.

The first section looks at the representation of the tropical zone in the cartography of textbooks on climatic design. It looks at the way in which contradictions between local qualities and an all-encompassing concept of the tropical were resolved through mappings.

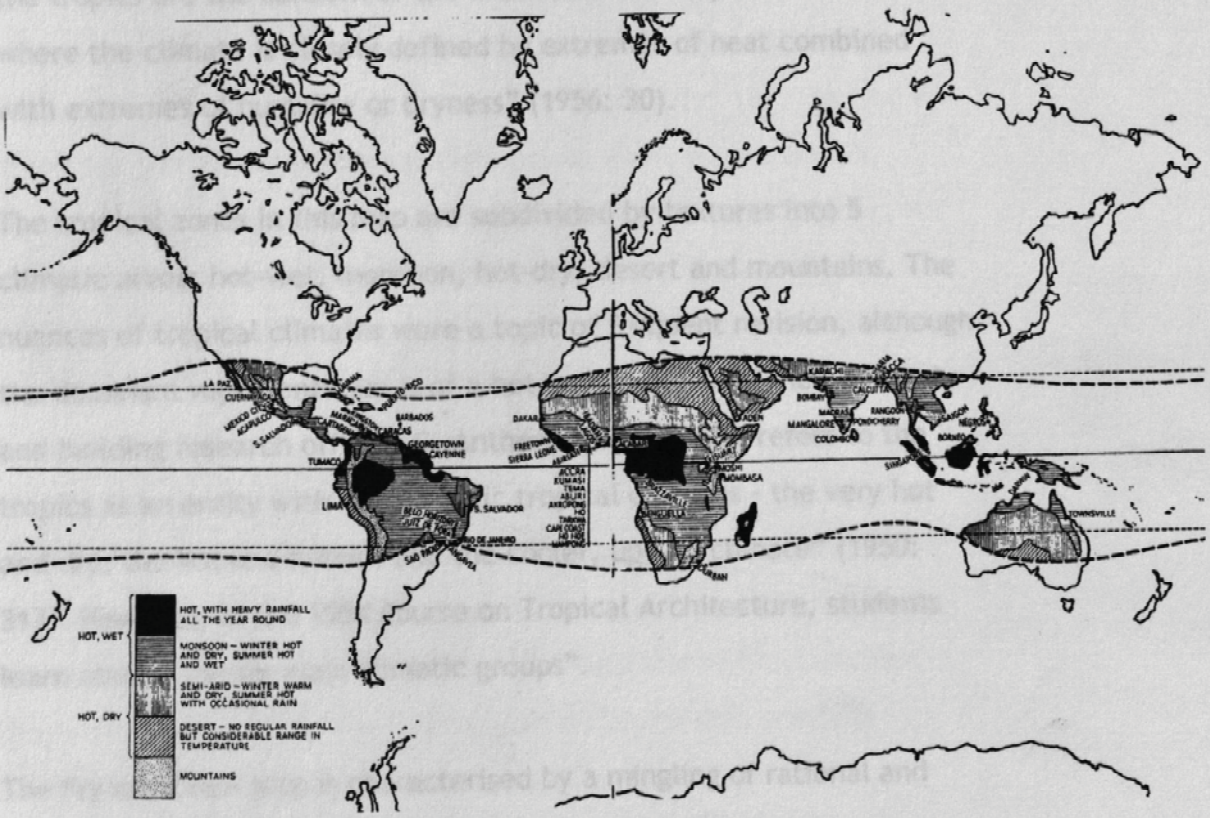
Following this is a discussion of images of buildings from the literature on tropical architecture. In a parallel way to techniques of mapping, these were used to support the concept of a typical site. The chapter shows how photographs and drawings in the media were highly structured representations that expressed an essential tropical image through the omission of unusual features or explicit images of colonial exploitation, the use of generic landscapes, and the foregrounding of iconic elements.

This discursive construction of the generic space of the tropical is extended in the private representations made by architects of their sites in the processes of site analysis, which are codified techniques described and taught in textbooks. The chapter will discuss these through examples. As with media representations, the technical drawings that architects use to analyse sites and design buildings were practices characterised by generic inclusions and omissions.

The last section describes the virtual disappearance of the site as a local quality in the

development of an imaginary "ideal home". It shows the application of climatic thinking to an extreme where it can be used to develop a building type that, as an a-priori model, could be placed in any tropical location.

3.2 The Tropical Zone



3.1 Tropical Zones (Fry and Drew 1956: 32-33)

Representations that group sites are common in the discourse of modern climatic responsive design. An important example of grouping is the map of tropical zones, which appears in all the textbook treatments of the subject. An early instance is the use of a map of the world in Fry and Drew's manual (1956: 32-33, which is repeated in Danby (1963) and developed in Koenigsberger's (1974) manual.

The Fry and Drew map (Fig 3.1) is entitled "The Tropical Zones". It shows the lines of longitude running along 22.5 degrees north and south of the Equator called the Tropics of

Capricorn and Cancer that define the borders of the area known as the tropics. These are shown in a light dashed line, and are overlaid with a wavy, darker dashed line that appears to demarcate the real extent of the tropical zones. The darker line reflects the influence of an isotherm that links areas of intense annual heat. In the text Fry and Drew explain that the climatic, rather than the latitudinal qualities of the tropics are the concern of the architect. The tropics are "an area where the climate is closely defined by extremes of heat combined with extremes of humidity or dryness" (1956: 30).

The tropical zones in this map are subdivided by textures into 5 climatic areas: hot-wet, monsoon, hot-dry, desert and mountains. The nuances of tropical climates were a topic of frequent revision, although the dominant representation is of a hot and humid one. The architect and building research officer, G. Anthony Atkinson also refers to the tropics as an entity with "three basic tropical climates - the very hot and dry; the hot and humid; and the cooler, upland climate" (1950: 313). However, in the 1954 course on Tropical Architecture, students learn about "the six main climatic groups".

The Fry and Drew map is characterised by a mingling of rational and subjective thinking. Although the projection and climatic characteristics are clearly borrowed from geographical texts, the national boundaries of countries are omitted. In their place, Fry and Drew indicate the sites of their own work and those of the examples they select for inclusion in their text. As a result the list of locations in Ghana places the tiny mission stations of Aburi and Tarkwa alongside the large towns of Kumasi and Accra.

Although Fry and Drew's map does not show geographical boundaries, the relationship between tropical zones and colonial territories is a close one. Many of the towns listed in the map, such as Durban,

Mombasa, Aden, Bombay, Rangoon, Singapore and Darwin were important outposts of colonial Britain. Moreover, many colonial territories fell within the tropics (Fig 3.2). In this sense, the unspoken link between sites is that they were the setting for problems of colonising areas of tropical heat, in which architecture was to play an important role.



3.2 Map of world showing colonial territories after 1927 (Treharne and Fullard 1963: 98)

Although many of the journal presentations of modern architecture dealt with regions, the "linking logic of climate" (Fry 1972) guided the editors of some of the larger anthologies on architecture outside Britain. These use an implicit cartography to divide contributions. For instance, the special editions of the *Architectural Review* on Commonwealth architecture are set out in two issues, one showing work from the tropics (1959b) and a second on temperate regions (1960).

Tropical Architecture (Fry and Drew 1956) collates dozens of built projects from tropical locations around the world. The way the images are presented stresses the climatic logic underscoring this selection (Fig 3.3). Below each project, a tabulated strip of data presents information relating to the climatic qualities of the site: "Town, Country; Latitude; Height above Sea Level; Annual Mean Temperature (Max. Min); Relative Humidity (Jan July); Rainfall".



200 *Typical market stall, Accra*

Accra, Gold Coast	Latitude	Height above Sea Level	Annual Mean Temperature Max. Jan.	Min. Jan.	Relative Humidity Jan.	July	Rainfall
	5° 33' N.	68 ft.	85° F.	65° F.	76%	89%	27·6 in.

Market Places

3.3 Climatic data (Fry and Drew 1956: 200)

These images represent knowledge of sites and their climates that is scientific and comparative. Their layout mimics scientific literature in its tabulated format and specialised terms. The density of this information presents a challenge to an uninitiated reader. What does, for instance, a relative humidity of 75% in July actually mean? The language only becomes accessible through a process of study and knowledge which entails entering the discursive field of the representation. In this sense, this presentation of arcane knowledge is

enticing in its suggestion of techniques for knowing about the multiple and diverse locations of tropical architecture.

The style of these descriptions reflects the provenance of this knowledge in a metropolitan location and in a rationalist tradition. Each site is tabulated and compared in the centre. Information from peripheral locations is used as material to expand a "global" approach to practice, both in terms of its field of reference and in its claims to authoritativeness.

From the perspective of metropolitan media, these images of comparative sites and designs illustrate the similitude and differences of the sites of tropical architecture. In terms of this thinking, sites are comparable when their climates are comparable. Their differences arise from the climatic differences between sites.

The representations support the construction of a monolithic "tropical" essence. For instance, sites with annual temperatures above 70 degrees Fahrenheit are set apart from the temperate zones which might be, as defined in the *Architectural Review* (1960) located anywhere from Sydney to Toronto. This (climatically inaccurate) division suggests that the identity of tropical sites is constructed as a monolithic alterity to the west, or even to settler colonies in slightly cooler areas. In this respect the repetitive concern with the climate of the tropical zone is chimeral, concealing the less acceptable classification of countries around the politically charged outcomes of colonial development.

3.3 Photographing tropical sites

Alongside the collective representation of sites, images of sited buildings in drawings and photographs in professional publications set

out the discursive field of tropical architecture. These forms of representation are often interrelated in the media, in which analytical and emblematic images are presented side by side.

The depiction of tropical architecture draws from the precedent of international modernism, which engaged with the media in structured ways to create a representation of architectural practice that was in many ways removed from the realities of practice (Crawford 1991, Colomina 1994). The images of modern architecture in publications often omit reference to the greater physical context in which they are set while including certain emblematic aspects of that context. It was common to use techniques of framing to exclude or include elements in photographs, which were sometimes deliberately touched up to enhance their narrative content. Drawn images often follow similar conventions to photography in the description of three dimensional scenes, and in drafting for private or construction, architects use highly conventional ways of describing the building site.

The literature of climatic design includes a number of photographic images representing actual buildings and their settings. These images are an important element of the journalistic presentations of the subject and are used in the major practical texts, such as *Tropical Architecture in the Humid Zones* (Fry and Drew 1956), *Grammar of Design* (Danby 1963) and *Tropical Houses* (Oakley 1961). As visual references they not only illustrate the text but constitute material to be consumed by the architect and reproduced in other buildings.

An initial reading of these images suggests that they, like modernist images, should not be taken at face value as neutral and objective scenes. The consistency of style across images of diverse sites suggests that they not only represent specific buildings but collectively build up an iconography of tropical design. They repeatedly frame certain

physical aspects of the buildings and sites while omitting other aspects. The use of certain conventions to arrange the visual content suggests the presence of symbolic narratives.

Most of the images of contemporary buildings in the media of tropical architecture are credited to the architect or to the publications' own photographers. This suggests that control over the building representation has been structured at two stages within the discourse. In the first instance, architects have been allowed to re-present their work to a community that experiences their buildings only through the media. In the subsequent editing, editors choose images that support the written texts while constructing unwritten narratives.

Four traits characterise the images in the texts of Tropical Architecture. These present the landscape as empty, or inhabited by children. They primarily describe the forms of buildings, and enhance their formal qualities through contrast with the adjacent landscape. They include icons of the tropical in the form of abstracted images of plant or human life.

By the careful choice of the station point in the images, their authors present their buildings in a largely uninhabited landscape. There are few images that place tropical architecture alongside traditional buildings or show people. Even within the exceptions to this, the images present a selective aspect of tropical contexts. One convention is to include subjects - usually children - in the foreground, sometimes shown in silhouette, and often in repose. The image of children silhouetted against the hall at a school in Mampong, Ghana (Fig 3.4), used as an emblematic figure to preface a special edition on educational buildings in West Africa (*Architectural Review* 1953) , was also included in Fry and Drew's manual (1956).



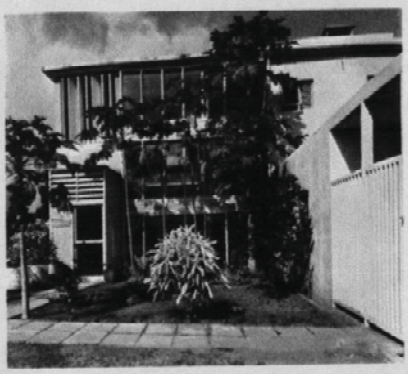
3.4 **Fry, Drew and Partners St Andrew's Teacher Training College,** Mampong c1950 (*AR* 1953: 308)

One of the few images (Fig 3.5) that does place a building in an urban and social context shows the Allen and Hanbury office building in Lagos, designed by Godwin and Hopwood, alongside buildings in the colonial styles (Kultermann 1963:22) The site of the building is near a public transport node, meaning that it would be surrounded by travellers and street markets. This image picks up on contrasts between the informality of the (unavoidable) street life, colonial architecture and irregular street layouts and the pristine and highly abstract forms of the building's facade. Interestingly, the image does not contain any European subjects who presumably are concealed within the shaded interior, or not yet at work.



3.5 Godwin and Hopwood **Offices for Allen and Hanbury's** Lagos c1955 (Kultermann 1963:22)

Images such as these try to describe the building's form. Buildings are usually photographed from the exterior, at a slightly oblique angle to the facade, or from the interior, such as in two images (Fig 3.6, 3.7) of a detached house designed by James Cubitt (Oakley 1961: 236). The composition narrates the three dimensional qualities of the building's form to architects. In these conventions the surrounding landscape is often cropped almost to a minimum or is a faded image seen through the windows.



3.6 Cubitt, Scott and Partners, **Semi-detached house**, Accra c 1955 (Oakley 1961: 236)

An example serves to show the effect of such framing. In the representation of a school in West Africa, visible additions made to modern architecture have been erased. This deliberate cropping of the building's context shows how such practices not only void the site of people, but of alternative spatialities.



3.7 Cubitt, Scott and Partners, Interior, **Semi-detached house**, Accra c 1955 (Oakley 1961: 236)

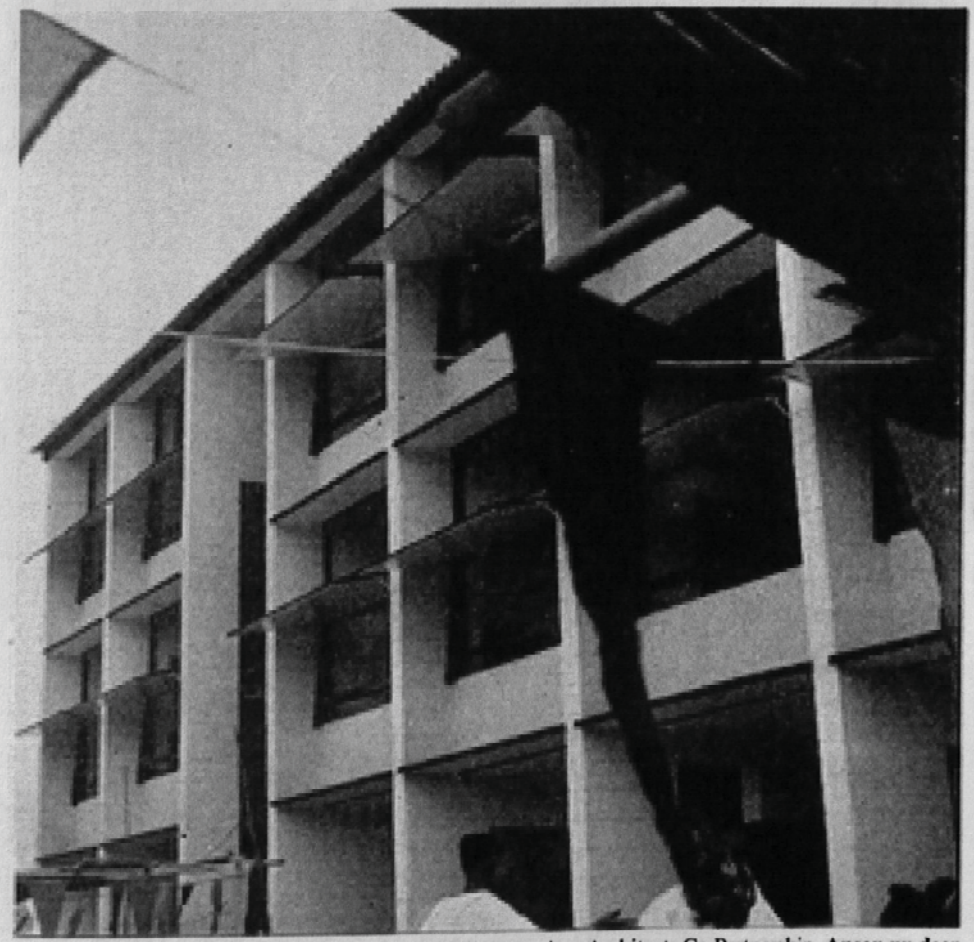
A common West African spatial practice involves erecting temporary lightweight shade structures, especially in relation to public gatherings. As described in a Ghanain novel, "we [schoolchildren] built shelters of palm branches around the school playing-field to shield our guests from the burning sun" (Selormy 1966: 85). Such shelters are

seen today around Ghana and Nigeria at places such as roadsides or beaches where people might need to wait (Fig 3.8).

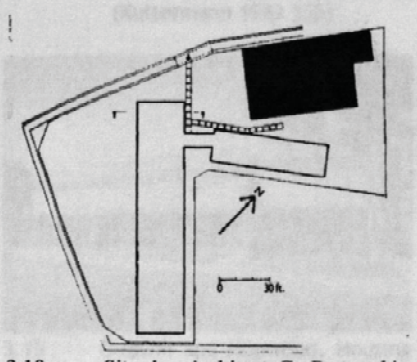


3.8 Unknown builder, **Shade shelter**, Ghana (photo Hannah le Roux)

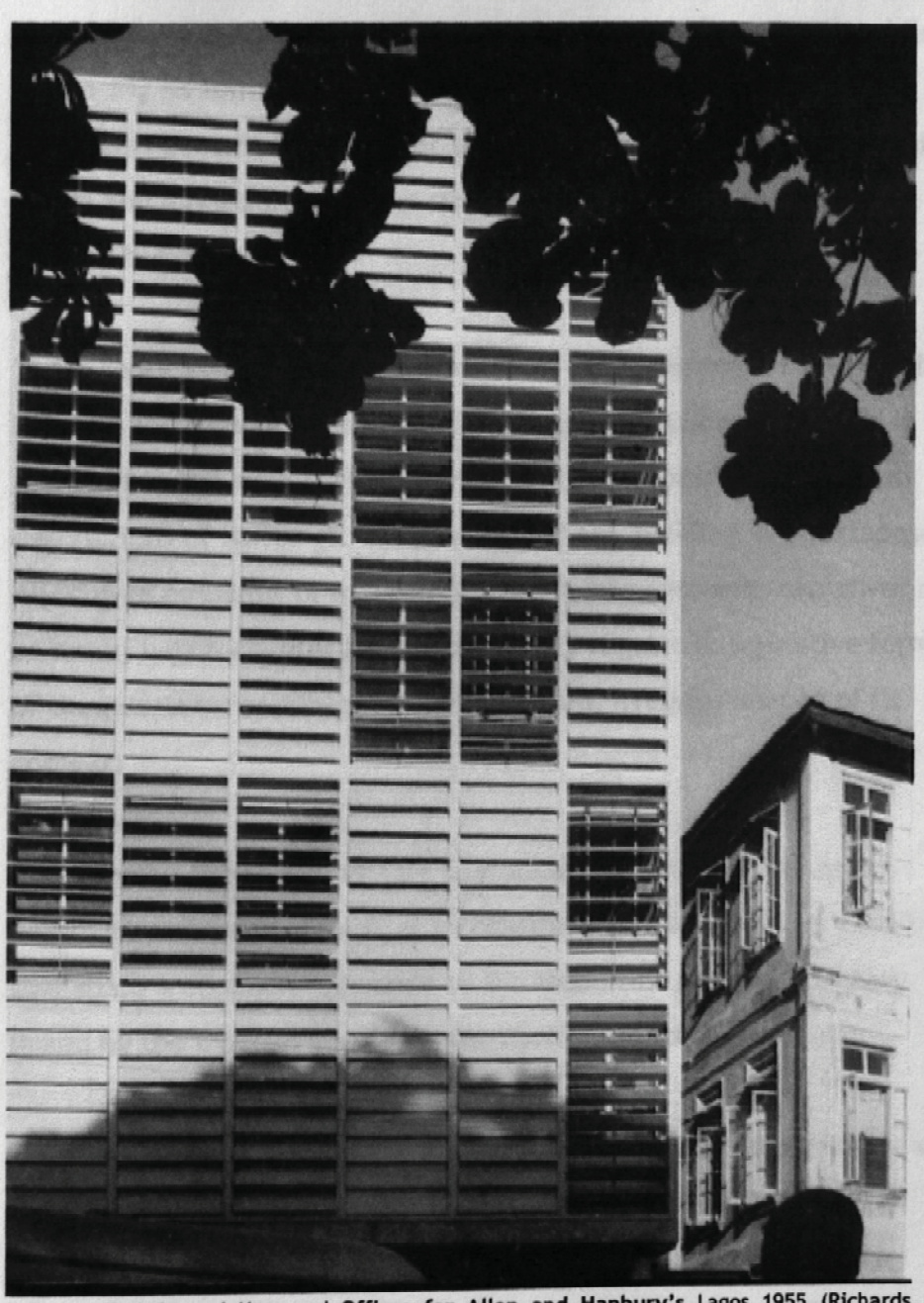
In a set of photographs of the Ansar-ur-deen School in Lagos, designed by the Architect's Co-partnership, similar shelters have been erected (Fig 2.15, 3.9). A caption notes that this "temporary sunscreening in the playground was for the official opening" (AD 1959 300). Some of the images show an attempt to crop the banners from the representation of the building. Moreover, the site plan (Fig 3.10) shows the site as empty except for the permanent building. Although the local additions are entirely functional in climatic terms, they are either cropped or erased from the official record of the media.



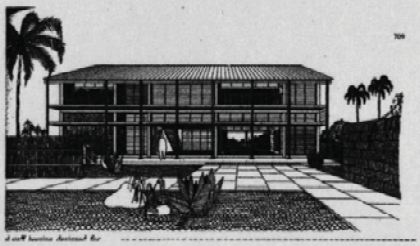
3.9 Banners and roofs of sun shelters at building opening. Architects Co-Partnership, **Ansar-ur-deen** School, Lagos, c1958 (AD 1959 301)



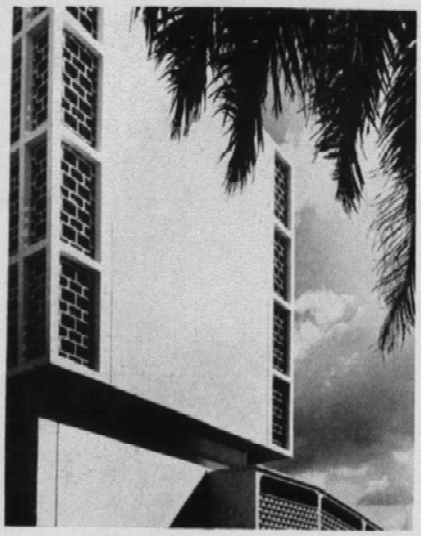
3.10 Site plan. Architects Co-Partnership, **Ansar-ur-deen** School, Lagos, c1958 (AD 1959 300)



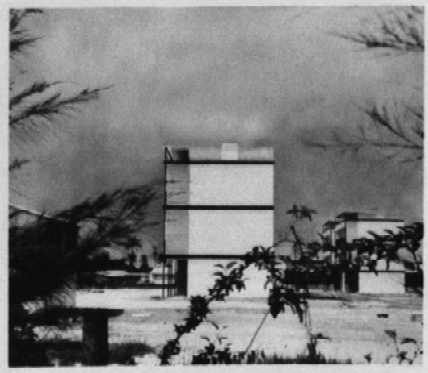
3.11 Godwin and Hopwood **Offices for Allen and Hanbury's** Lagos 1955 (Richards 1961:122)



3.12 Architects' Co-Partnership **housing** (Architect and Building News 1957: 709)



3.13 Fry, Drew and Partners **University Library**, Ibadan 1951 (Fry and Drew 1956: 222)



3.14 Architects' Co-Partnership, **Housing** in Lagos, Nigeria c 1960 (Kultermann 1963 155)



3.15 Godwin and Hopwood, Housing in Lagos-Ikeja, Nigeria c1958 (Kultermann 1963: 157)

In many of the images, the cropping of the real context happens alongside an aesthetic convention of re-presenting the landscape through a few emblematic fragments of the surrounding. These are usually in the form of slopes, in patches of the kinds of tropical vegetation that seem exotic to a western eye or in shadows produced by the bright sunlight (Fig 3.11 - 3.15). Set in the foreground of the image, off centre but in front of a repetitive facade, or breaking the

skyline of a flat roof, these shapes anchor the building visually while enhancing its formal qualities. These images play off the formal contrasts between the irregular and even fantastic forms of tropical plants and landscapes and the repetitive, rectangular patterns of modern buildings.

These representations create a sense of the detachment between the building and its specific site. As this chapter describes later, this is apparent in the ways buildings relate to landscapes, and in written descriptions of buildings. The situation of the building in a juxtaposed relation to emblems of tropical life ties it into aesthetic narratives of contrast, which counter the geometrically regular or repetitive forms of the (western) architecture with the wild, irregular shapes of its context.

Collectively, the sets of images that appear in journals and books construct an idea of a tropical architecture as a scattering of buildings that share a common relevance to the modernist project. They are linked by the tropical sites that are signified in iconic elements.

These representations reflect the subjectivity of the photographer and the networks into which these images were published. The images reflect an itinerant view of places, generated by the architects' experiences of the tropics as a temporary posting or the editor's sense of the tropics as a travel destination. In these experiences, the stopping points become interchangeable and eventually merge into a generic aesthetics that composes sky, building, plant/child into an iconic tropical style.

The consumption of these images in the metropolis reinforced these stereotypes. Seen from London, the presentation of the tropics as singularly hot and verdant, dotted with modern buildings is a