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# ABE Journal

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Material Constraints

Dossier: Material Constraints

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## Accelerating Development: Taylor Woodrow and Arcon's Prefabricated Steel Structures in Decolonizing West Africa

*Accélérateur de développement: Taylor Woodrow et les structures en acier préfabriquées Arcon dans la décolonisation de l'Afrique de l'Ouest*

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### **Résumés**

English Deutsch Français Italiano

This article examines the Arcon system, a flexible prefabricated steel structure used for the construction of factories and warehouses that accompanied industrial development in Ghana, Nigeria, and Sierra Leone during 1950s and 1960s. While initially created for emergency housing in Britain during World War II, the Arcon system was successfully marketed across the West African colonies in the immediate post-war period, largely through the backing of a British-owned contracting firm, Taylor Woodrow. Although not distinctive designs, these steel sheds, clad with asbestos sheets or local materials, were highly efficient structures that supported and enabled a system of colonial resource extraction. The Arcon system, we argue, was successful because it mediated between two sets of constraints: the temporalities created by the impending timetable of independence, and the material constraints on the production of architecture in the region, including the labor required. Through this examination of the Arcon system, we show that the developmental projects instituted as a prelude to decolonization proved profitable for British contractors like Taylor Woodrow, but also that business practices and material flows shaping the built environment under colonialism persisted into the immediate post-colonial period.

Dieser Artikel untersucht das „Arcon system“, eine flexible, vorgefertigte Stahlstruktur, die zum Bau von Fabriken und Lagerhallen dient und die in den 1950er und 1960er Jahren die industrielle Entwicklung in Ghana, Nigeria und Sierra Leone begleitete. Ursprünglich während des Zweiten Weltkriegs in Großbritannien für den Bau von Notunterkünften entworfen, wurde das „Arcon system“ in der unmittelbaren Nachkriegszeit erfolgreich in den westafrikanischen Kolonien vermarktet, und zwar größtenteils mit Unterstützung eines in britischem Besitz befindlichen Bauunternehmens, Taylor Woodrow. Auch wenn sie keine spezielle Bauart aufwiesen, stellten diese Hallen aus Stahl, die mit Asbestplatten oder heimischen Baustoffen

verkleidet waren, doch hochgradig effektive Konstruktionen dar, die ein System kolonialer Ressourcennutzung unterstützten bzw. ermöglichten. Unserer Beweisführung zufolge war das „Arcon system“ deshalb erfolgreich, weil es Abhilfe schuf angesichts von zwei vorgegebenen Zwängen: des Zeitdrucks, der durch den Zeitplan der bevorstehenden Unabhängigkeit entstand, und der Materialknappheit bei Baumaßnahmen in der Region einschließlich der dafür erforderlichen Arbeitskräfte. Mittels der vorliegenden Untersuchung des „Arcon system“ kann aufgezeigt werden, dass sich die Entwicklungsprojekte, die als Vorspiel der Dekolonisation vorangetrieben wurden, für britische Bauunternehmer wie Taylor Woodrow auszahlten, aber auch, dass Geschäftspraktiken und Materialflüsse, die das Bauwesen der Kolonialzeit geprägt hatten, auch unmittelbar nach deren Ende fortbestanden.

Cet article traite du système Arcon, un ensemble de structures métalliques préfabriquées modulables utilisées pour la construction d'usines et d'entrepôts, qui a accompagné le développement industriel du Ghana, du Nigeria et de la Sierra Leone dans les années 1950 et 1960. Créé à l'origine pour les logements d'urgence en Grande-Bretagne pendant la Seconde Guerre mondiale, le système Arcon a été commercialisé avec succès dans les colonies d'Afrique de l'Ouest dans l'immédiate après-guerre, sous l'impulsion de son distributeur : l'entreprise britannique Taylor Woodrow. Ces hangars en acier, recouverts de plaques d'amiante ou de matériaux locaux, sans caractéristique de conception particulière, ont fourni des structures très adaptées à l'exploitation des ressources en contexte colonial. Le système Arcon permettait de concilier deux types de contraintes : temporelles, du fait des Indépendances imminentes ; et matérielles, liées à la construction de bâtiments dans la région, et à la main d'œuvre nécessaire ; c'est selon nous la clé de son succès. Le cas du système Arcon montre que des projets de développement mis en place en prévision de la décolonisation se sont non seulement avérés rentables pour des entrepreneurs britanniques comme Taylor Woodrow, mais aussi que les pratiques commerciales et les flux de matériaux qui ont façonné l'environnement bâti pendant la colonisation ont persisté durant la période postcoloniale qui a immédiatement suivi.

L'articolo analizza il sistema Arcon, una struttura prefabbricata flessibile di acciaio, usata in Ghana, in Nigeria e in Sierra Leone per la costruzione di fabbriche e magazzini negli anni '50 e '60, periodo del loro sviluppo industriale. Anche se inizialmente il sistema Arcon era stato creato in Gran Bretagna durante la seconda guerra mondiale per costruire abitazioni di emergenza, ha poi avuto un buon successo commerciale nelle colonie africane nel dopoguerra, grazie in particolare al sostegno di una società appaltatrice di proprietà britannica, la Taylor Woodrow. Questi capannoni in acciaio, ricoperti di lastre di amianto o di materiali locali, pur non avendo un design ricercato, erano strutture con performance molto alte, tali da favorire, anzi motivare, il sistema di estrazione delle risorse coloniali. Secondo noi il successo del sistema Arcon, insomma, viene da una capacità di mediare tra condizioni diverse: il ritmo creato dall'indipendenza imminente e le difficili condizioni locali di realizzazione architettonica, il che include anche il reperimento della forza lavoro. Grazie all'analisi del sistema Arcon, mostriamo che i progetti di sviluppo che fanno da preludio alla decolonizzazione si sono rivelati redditizi per gli appaltatori britannici come Taylor Woodrow. Dimostriamo inoltre che le pratiche commerciali e i flussi materiali che regolavano l'ambiente costruito durante il periodo coloniale si sono propagati all'immediato periodo post-coloniale.

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## *Entrées d'index*

**Index de mots-clés :** préfabrication, développement colonial, décolonisation, sociétés contractantes, acier

**Index by keyword:** prefabrication, colonial development, decolonization, contracting firms, steel

**Índice de palabras clave:** prefabricación, desarrollo colonial, descolonización, empresas contratistas, acero

**Schlagwortindex:** Vorfabrikation, koloniale Entwicklung, Dekolonisation, ausführende Firmen, Stahl

**Parole chiave:** prefabbricazione, sviluppo coloniale, decolonizzazione, imprese appaltatrici, acciaio

**Index géographique :** Afrique, Afrique de l'Ouest

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## *Texte intégral*

# Introduction

1 In 1943, in the middle of World War II, the British architects Edric Neel (1914-1952), Raglan Squire (1912-2004), and Rodney Thomas (1902-1996) created Arcon (short for Architectural Consultants). Focused on applying factory mass production systems to the building industry, Arcon engaged in an unusual, yet close, partnership with the civil engineering contracting company Taylor Woodrow. While their first project became one of Britain's most popular post-war "prefabs," it is little known that in the years thereafter a similar structural steel system was widely marketed in Britain's West African colonies, where it became one of the most frequently used prefabricated building designs. Through the support of Taylor Woodrow, which acted as the agent for Arcon's worldwide implementation, the prefabrication system was utilized in a range of contexts: to build houses for British companies, to build schools and market halls for colonial governments, and, of most interest here, to build factories and warehouses for the United Africa Company (UAC), as part of the industrialization drive that accompanied decolonization in the 1950s.<sup>1</sup> The UAC was part of Unilever, and one of the largest conglomerates of trading and manufacturing interests active across "British" West Africa. It entered a partnership with Taylor Woodrow to jointly market the Arcon system, thereby profiting from the erection of its own buildings, and the sale of the Arcon system of construction to colonial and subsequently, post-colonial governments across the region. Today, Arcon structures, often sizeable sheds clad with imported metal sheets or locally available timber, can still be found across Ghana, Nigeria, and Sierra Leone.

2 Arcon's success in the prefabrication market makes it a worthy object of study. That colonized locations were fertile grounds for experimentation with new forms of architectural prefabrication, production, and material circulation during the 1950s and 1960s is a well attested point, but this scholarship has focused on visionary, yet ultimately unsuccessful prototypes, or unimplemented designs.<sup>2</sup> Where these largely failed to engage "with the colonial conditions of production and consumption [...] locality and difference," the Arcon system was by contrast a widely used form of architectural prefabrication, implemented across a wide geographical sweep of late colonial and decolonizing West Africa.<sup>3</sup> Stripped back to the essentials of post and lintel, the lightweight Arcon system consisted of rolled steel columns with intervals of 30 or 40 ft (11-12 m) on a concrete foundation, which carried a structure of tubular steel beams and lattice trusses.<sup>4</sup> This system could be combined with different roof structures depending on the type of building, as shown by the different Arcon models put on display by Taylor Woodrow at the 1953 British Industries Fair in London. (**fig. 1**) The external walls consisted of supporting panels of lightweight cladding made of aluminum, asbestos or "any convenient material," like local timber.<sup>5</sup> In some cases, like the popular "three-pin system," where the columns were replaced by a three-pin frame of welded steel carrying a roof structure, used for market halls or classrooms, the sides were left open.<sup>6</sup> One of the system's main advantages therefore was its adaptability; the size and shape of a structure could be adjusted to a building's specific needs, and Arcon steel tubes were produced in a range of different "off the peg" sizes to support this.<sup>7</sup> Bays or units could be added, but the building systems also had varying span sizes and column spacing, "which could be combined in various additive ways to give some measure of overall flexibility."<sup>8</sup> These structures, a company report stated in 1967, "were very successful and many millions of square feet were built at home and abroad."<sup>9</sup> While the Arcon system's adaptability allowed the company to flourish, the designs themselves can best be described as what Alex Bremner, Johan Lagae and Mercedes Volait have termed "grey architecture" in the colonial built environment.<sup>10</sup> The prefabricated Arcon sheds were not distinctive designs, but they were efficient structures; they supported and enabled a system of colonial resource extraction.<sup>11</sup>

**Figure 1: Taylor Woodrow stand with different Arcon prefabricated structures on display, British Industries Fair, London, 1953.**



Source: John Pantlin, photoprint, Architectural Press Archive / RIBA Collections.

3 Another question that existing scholarship on prefabrication in the colonies has not yet explored is how these buildings were marketed and implemented on a wide scale. The mobilization of the Arcon system, we show, was achieved through collaboration between several private interests, but most particularly the backing of a successful contracting firm, Taylor Woodrow West Africa. Tracing the development of Arcon systems overseas therefore points to an important actor that shaped the late colonial and post-colonial built environment but has been occluded in architectural histories of West Africa: the private-sector construction and engineering contractor. Taylor Woodrow West Africa was a significant presence in the region during the period of decolonization, as were its direct competitors: Arup, Langs, Costains, and so on. Yet the historiographic focus on expatriate architects and public works departments before independence, and on nationalized contractors who dominated the production of the built environment in post-colonial West Africa shortly after independence, has hidden the importance of these private-sector actors.<sup>12</sup>

4 The Arcon system, we argue, was successful because it mediated between two sets of constraints in mid-century West Africa: the fraught temporal constraints created by the timetable of looming independence which saw accelerated development pursued across the region, and the material constraints on the production of architecture in the region, including the labor required. Arcon structures offered, as a marketing brochure put it, “the most comprehensive answer to the problem of building on sites where local materials and skilled labor are lacking, transport is difficult, and the climate is tough; where, too, the whole scene of operations may shift, and the building must move with it.”<sup>13</sup> For the UAC and other companies, the key benefit of the Arcon system was the limited financial risk it posed. It allowed for rapid kit construction within precarious social and geographical settings: using the Arcon system, a building frame could easily be assembled from a kit of parts arriving on a single shipment, with a crew of only a few skilled laborers. As a result, the building of new warehouses and factories to allow for the extraction of raw materials by the UAC across the region could be planned far ahead. In the context of late colonial West Africa, where, from the late 1940s, legislative changes saw imperial control reconfigured as partnerships between colonial civil servants and nationalist African politicians as a prelude to independence, these rapidly implemented large-scale factory projects were presented as a contribution to the developmentalist agendas of African leaders.<sup>14</sup> Reframed as a neutral, technocratic solution to the problems of underdevelopment, Arcon buildings appeared as part of

industrialization schemes set in motion by nationalist leaders such as Kwame Nkrumah, instituted in order to ready West African colonies for independence.

5 As an architectural product of industry that was itself used to facilitate processes of industrialization, the Arcon system illustrates Tilo Amhoff, Nick Beech and Katie Lloyd Thomas's formulation that "architecture is not outside industry, but within, or even under it."<sup>15</sup> Indeed, demonstrating this is a central concern of this article: for although the Arcon system was successfully mobilized to deal with the accelerated development conditions called for by decolonization in West Africa, the Arcon system still relied upon steel manufactured in Britain and created profit for British companies, especially Taylor Woodrow. Rather than overcoming material dependency on the former colonial metropole, we show that the increased developmental projects instituted as a prelude to decolonization proved profitable for British contractors like Taylor Woodrow and that the continued success of the Arcon system reveals that business practices and material flows instituted under colonialism persisted into the immediate post-colonial period. As such, the Arcon system, and its associated interests, were a key example of what Nkrumah called colonialism's "new guise" in the period following the political transfer of power, or "neo-colonialism."<sup>16</sup> The economic historian Vanessa Ogle has pointed to the need for more studies of how businesses profited from both empire, and, crucially, the ends of empire: the Arcon system offers an example of one product that allowed a contractor to successfully negotiate and profit from independence and the process of decolonization.<sup>17</sup>

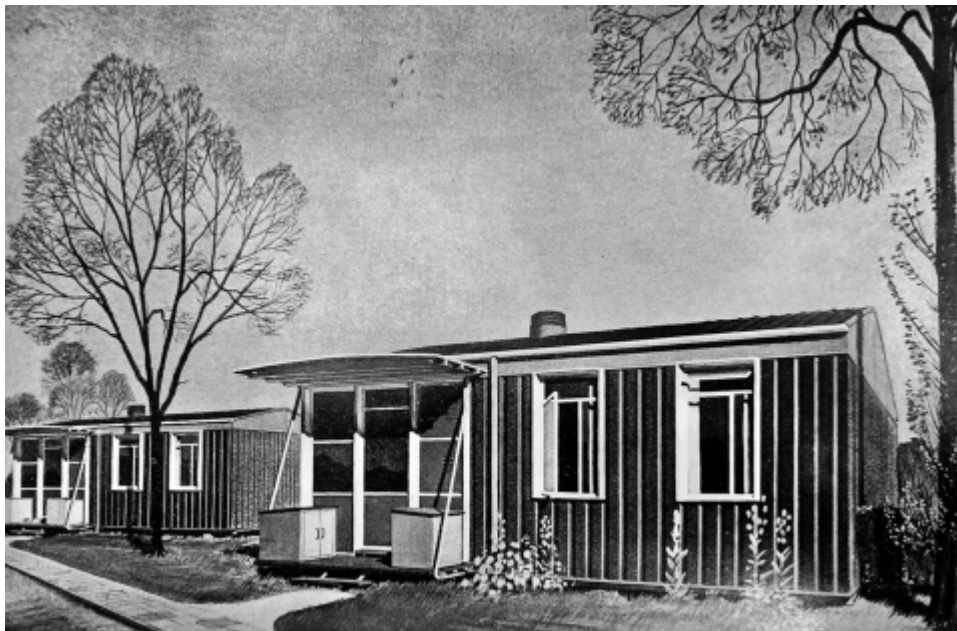
6 One of the reasons prefabricated structures like the Arcon system built by contracting firms have been absent from the historiography of colonial architecture is the lack of documentation or restricted access to business archives, as well as the reliance on government archives. In the case of Arcon, as a result of the consortium's unique but complex corporate ownership structure, archival evidence is fragmentary and spread thinly across several collections. A small number of Arcon publications, marketing materials, and drawings by Rodney Thomas survive in the RIBA collections in London. Beyond these, this article draws heavily from the partial archive of Taylor Woodrow West Africa (Ltd) and its subsidiaries. The documents have survived in the Unilever archives at Port Sunlight, as part of the UAC collection. These archives offer a unique view into the sale and marketing of the Arcon system in West Africa. Elements of this collection, such as advertisements of the factories built using the Arcon system, were propaganda materials for the actions of British capital in the region. Other aspects of the collection, such as the private minutes of Taylor Woodrow West Africa directors' meetings held in London, Accra, Lagos, and Freetown—records which were never intended for public use—offer a more candid picture of the commercial production of the built environment in mid-twentieth century West Africa, complete with the hesitations, contingencies and challenges of everyday business activity. In this article, we have considered both elements of Arcon's fragmentary archival evidence with much criticality, reading these sources both with and against the archival grain.<sup>18</sup>

## Arcon and Taylor Woodrow

7 Arcon's first product, the "Mark IV," was a small, prefabricated two-bedroom bungalow which contained 2,500 different elements, produced by 145 manufacturers.<sup>19</sup> The prototype stood in the gardens of the Tate Gallery (currently Tate Britain) in London in 1944 as part of a display that showcased temporary solutions to Britain's pressing housing problem.<sup>20</sup> (**fig. 2**) Central to the Mark IV was its lightweight steel framework, consisting of steel columns, beams and tubular steel trusses—a structural system that would come to dominate most of Arcon's future products. The walls were made of grey corrugated asbestos cement cladding, as was the pitched roof, while plasterboard and hardboard were used for the internal walls and partitions. Inside, the Mark IV contained a "service unit"; the house's kitchen, set in the center, shared the service fittings with the bathroom, situated against the kitchen's rear wall. (**fig. 3**)

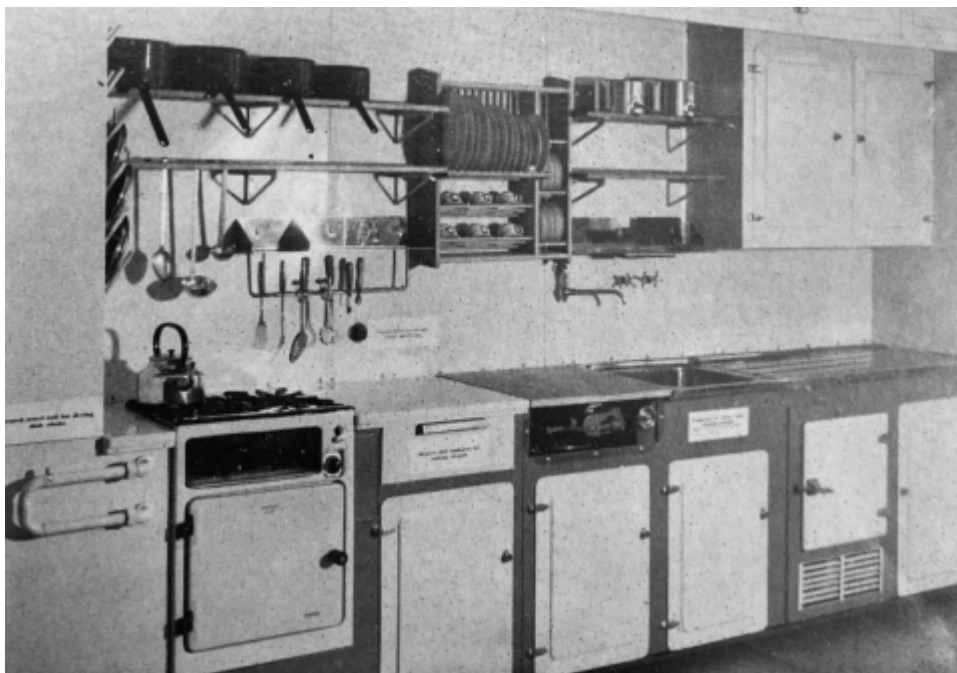
Inspired by developments in the United States, such as timber mail-order houses, but also possibly the steel-framed Weir and Atholl houses developed in Britain in the 1920s, Neel, Squire, and Thomas proposed industrializing housing construction.<sup>21</sup> In a country where most housing still consisted of brick, Arcon's Mark IV house offered a novel and fast alternative that significantly reduced work on site and could be built in a matter of hours. Compared to other models on display, such as the timber-framed Uni-Seco developed by the engineering company Selection Engineering and Co, the Mark IV distinguished itself through its design and choice of materials, although the British Iron and Steel Federation (BISF), together with the architect Frederick Gibberd, would also develop a popular steel-framed prefabricated house around the same time.<sup>22</sup> One year after the Tate exhibition, the Ministry of Works offered the company a contract of £61 million to manufacture 41,000 dwellings as part of the Temporary Housing Programme. In less than four years, 38,859 Mark IV houses were built across the country, making Arcon's design one of the most common "prefabs" during the post-war period.<sup>23</sup>

**Figure 2: The Mark IV.**



Source: ARCON, "The Arcon Group, 1947-1967," Report 4/67, London, 1967.

**Figure 3: The kitchen side of the Arcon service unit inside the Mark IV.**



- 8 From the beginning, Arcon's business model was unusual in Britain. Neel, Squire, and Thomas are an early example of architects who presented themselves as consultants, focusing on the development of buildings, or parts of buildings, and collaborated closely with building trade manufacturers.<sup>24</sup> (fig. 4) Neel, who had worked for the modernist architect Wells Coates, and Squire, who studied architecture at Cambridge and completed his exams at the Regent's Street Polytechnic, were responsible for the research and architectural design. The slightly older Thomas, who had initially trained as an artist but became involved with the avant-garde MARS group in the 1930s, specialized in interior design, while all the manufacturing and distribution aspects were outsourced.<sup>25</sup> Although Arcon's origin story was recounted by Neel, Squire and Thomas as a fascination with an "insuperable" technical problem—the design of a factory-produced house—their primary motivation for the formation of Arcon seems to have been financial.<sup>26</sup> Neel was especially gifted in business development and could have businessmen "reaching for their cheque books in twenty minutes to half an hour."<sup>27</sup>
- 9 For the creation of the Mark IV house and several future products, Neel, Squire and Thomas collaborated with a range of industrialists, including Stewarts & Lloyds, a prominent Scottish manufacturer of lightweight steel tubes, Imperial Chemical Industries, the largest British manufacturer of chemicals, Turners Asbestos Cement & Co, a leading producer of asbestos cement, the Austin-Hall-Medway Woodworking Group, United Steel Company, and Williams & Williams, a manufacturing company of building components. In doing so, Arcon brought together "what must have been one of the most powerful groups of industrialists... in the building industry," one commentator remarked in the early 1950s.<sup>28</sup> Arcon was formed as an association between these companies, who both relied upon the expertise of Neel, Squire, and Thomas, and provided the necessary materials to produce Arcon systems. Writing in 1947, Neel noted of Arcon's unusual setup that "the group is not a legal entity," something that would have been proscribed under the Royal Institute for British Architects' code of conduct regulating the business arrangements of its members: a strict separation between member architects and building trades was mandated. Nevertheless, Neel noted that Arcon achieved "coherence" through close collaboration between the group's member organizations.<sup>29</sup>

**Figure 4: From left to right: Rodney Thomas, Jim Gear, Edric Neel, and Raglan Squire.**





Source: Raglan Squire, *Portrait of an Architect*, Gerrards Cross: Colin Smythe, 1984, p. 99.

10 Yet the most significant collaboration in the Arcon collective was with the civil engineering and contracting firm Taylor Woodrow, founded by Frank Taylor and his uncle Jack Woodrow in the 1930s. It is not known how they came into contact, although the official Taylor Woodrow company history suggests that the approach came from Neel, who “persuaded [Taylor Woodrow] to put up money for research into new kinds of structures which would be adaptable and quick to assemble.”<sup>30</sup> Taylor Woodrow had its first success in speculative house building, through the development of many of the suburban developments that doubled London’s surface area in the 1930s.<sup>31</sup> Contracts to build harbors and airstrips for the British war effort saw the company’s expansion in the 1940s, and in the immediate post-war period it sought to continue this expansion internationally by securing contracts for infrastructural developments throughout the British empire. This model of expansion was not unusual among British contractors.<sup>32</sup>

11 It was Taylor Woodrow that would come to act as the agent and coordinator for Arcon’s global implementation in the decades following World War II.<sup>33</sup> Clients in the British colonies could order an Arcon building or building component directly from Taylor Woodrow Building Exports. The building’s construction would then be contracted to a local Taylor Woodrow subsidiary; in other cases, a local Taylor Woodrow subsidiary might specify an Arcon structure as part of a larger contract. In this way, Arcon’s identity gradually shifted—especially after Neel’s untimely death in 1952 and Squire’s departure from the company in the same year.<sup>34</sup> From the 1950s onwards, Arcon became less of an avant-garde collective and more of a corporate “manufacture, design, and build” product mobilized by an international contractor through a proprietary distribution arrangement. Over time, the company’s name also began to blur with the product; property ledgers of clients simply listed “an Arcon,” signifying a tubular steel structure.<sup>35</sup> Arcon was thus, at different times, a collective, a process of construction, and a finished building.

## Temporal constraints: Rapid construction in late colonial Africa

12 Taylor Woodrow's desire to expand into the colonial development market in the late 1940s was shared by Neel, Squire, and Thomas. Not only was Arcon's method financially dependent on scalability, but the difficulty of obtaining building licenses for domestic development in the post-war years, along with a re-orientation of steel production for export markets, also meant that producing a version of the Mark IV "prefab" for the overseas market made sound commercial sense.<sup>36</sup> Accordingly, in 1947, Neel and Taylor Woodrow approached the Colonial Office.<sup>37</sup> They suggested that the prefabrication technique was not just applicable to temporarily solve Britain's housing shortage but also particularly suitable for export to the colonies, or any other overseas region where Britain did business. To adjust the Mark IV house to tropical conditions, Arcon and Taylor Woodrow simply proposed maintaining the lightweight tubular steel frames but adding walls of local, and thus cheaper, materials instead of asbestos cement. They also promoted steel as a material perfectly fit for the tropics: resistant to termite attacks, and not easily corrodible.<sup>38</sup>

13 Soon thereafter, Arcon and Taylor Woodrow began exporting steel structures to a variety of different overseas territories. One of its first contracts outside of Britain was for prefabricated housing for the Anglo-Iranian Oil Company in Abadan in 1948 and 1949.<sup>39</sup> But Britain's colonies, particularly in West Africa, would become the consortium's major market. While prefabricated steel construction designed for the colonies was nothing new—Peter Christensen has described iron and steel manufacturers as "fine partners in the European colonial project"—Arcon and Taylor Woodrow's proposal was well-timed.<sup>40</sup> During this period, a new emphasis on development projects in many European colonies in Africa emerged. In 1940, the British government passed the Colonial Development and Welfare Act, which, when it came into force in 1945, allowed colonial regimes to raise loans from the British treasury to fund development projects such as housing, infrastructure, and industrialization programs within their territories for the first time.<sup>41</sup> This development spending was intended to fend off anti-colonial protest both within and outside the colonies, by recasting the colonial "exercise of power" as "legitimate, efficient and progressive," as the historian Frederick Cooper put it.<sup>42</sup> But it was also intended to boost British earnings through the accelerated extraction of raw materials within colonial territories—raw materials which were also enjoying record-high prices in the context of immediate post-war scarcity. "Development in the periphery," in other words, was to be accompanied by "profit in the metropole."<sup>43</sup> The new development funds "fell into British business laps," at the moment they were enjoying record profits in the African colonies.<sup>44</sup> The twinning of colonial development and a rush of new business activity geared towards extracting raw materials throughout Africa saw an acceleration of construction work across the continent, just when large development projects were freighted as necessary imperial contributions to a future process of decolonization.

14 Arcon's first contract in the British colonies in 1949, through Taylor Woodrow, was for prefabricated housing associated with the infamous Ground Nut Scheme in Tanganyika, present-day Tanzania—a project described as "the most dramatic" failure of the government's new colonial development policy.<sup>45</sup> The Ground Nut development scheme intended to grow peanuts for vegetable oil production but after several years of heavy investment it was shut down due to droughts and mismanagement. While a semi-public project, overseen by the government's Overseas Food Corporation, it is still little-known that numerous private contractors were involved in land clearance, the construction of roads, rail lines, oil pipelines, harbor facilities, houses, schools, and office buildings to service the scheme. Chief among these was Taylor Woodrow, which secured a contract to build 127 miles of oil pipelines from the coast to Mikindani, in the center of the proposed growing zone, and a new town at Noli, complete with "a shopping center, a school, a bank, a hospital, sports fields, a club, mess, police lines, a green belt."<sup>46</sup> The housing component of the Noli contract was awarded to Arcon, which created a single-story house for mass production, although it never passed the prototype stage due to the project's unforeseen shutdown. Largely resembling the Mark

IV house in terms of design but not in materials, it contained a similar kitchen-bathroom unit, yet was made of local timber instead of tubular steel.<sup>47</sup> (fig. 5)

**Figure 5: The Prefabricated House for Tanganyika.**



Source: ARCON, "The Arcon Group, 1947-1967," Report 4/67, London, 1967.

15 After its bruising experience as part of the Ground Nut Scheme, Taylor Woodrow backed away from government-related projects and switched its focus to West Africa, where it obtained a guaranteed workstream through a collaboration with the UAC.<sup>48</sup> In 1946, Taylor Woodrow had formed a partnership with the UAC, active across West Africa, to profit from local construction jobs. In that year, a special subsidiary company, Taylor Woodrow West Africa, a 50/50 partnership between Taylor Woodrow and the UAC, had taken over the UAC's entire building program in the region.<sup>49</sup> A UAC executive described the arrangement thus: "Many of our senior men in the field are in a position from time to time to steer business in their direction and should be encouraged to do so [...] It is not our policy to negotiate any construction job with a contracting company other than Taylor Woodrow."<sup>50</sup> By entering this partnership, Taylor Woodrow was guaranteed a steady number of commissions through UAC contracts, and the UAC became a profit participant in the construction of its own buildings - a mutually profitable arrangement.<sup>51</sup> The role of large contracting firms in simultaneously facilitating colonial development and profiting from it, has been unexplored by historians, but these conditions proved incredibly fertile for British contractors, including Taylor Woodrow.

16 The Arcon system was central to the post-war expansion of the UAC, as well as several other, mainly British companies in late colonial West Africa. The lightweight steel system, combined with different roof structures and built in different shapes and sizes, was utilized in the construction of company housing, warehouses, factories, sawmills, retail outlets, and office buildings for the UAC throughout West Africa-buildings, in other words, that facilitated a colonial system of resource extraction and manufacturing.<sup>52</sup> But, from the outset, the Taylor Woodrow partnership with the UAC also sought work from external clients. Before an office in Africa was even established, the UAC brokered contact between Taylor Woodrow directors and representatives of the Elder Dempster shipping line, Shell, Vacuum Oil Co, the Ashanti Gold Fields Corporation, and the Nigerian Public Works Department in an effort to secure advance contracts for Taylor Woodrow.<sup>53</sup> Indeed, work for the UAC was intended to advertise Taylor Woodrow's efficacy to these other potential clients. The construction of the new Lagos Brewery Complex for the UAC, for example, which included Arcon structures as part of the brewing sheds, was conceived of as a "show job," its construction programmed around material delivery to ensure, "for advertisement reasons," that there were no delays in construction.<sup>54</sup> (fig. 6) This was certainly successful in that Taylor Woodrow did work extensively for Elder Dempster, Shell, and the Nigerian

government in the years to come, constructing headquarters for Elder Dempster in Freetown and Lagos, office buildings for Shell in Lagos and Port Harcourt, and road schemes in collaboration with the Nigerian PWD.

**Figure 6: Lagos Brewery Complex, ca. 1953.**

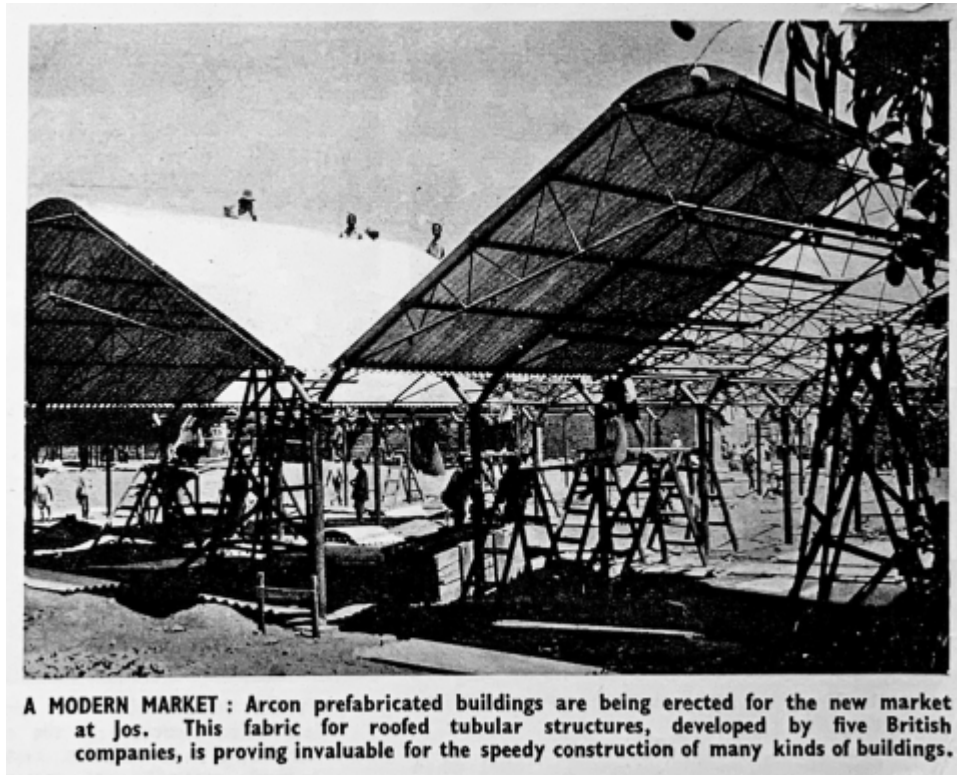


Source: Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC/2/1/A/4/1/7/3.

- 17 In West Africa, Taylor Woodrow increasingly mobilized the Arcon system as the answer to the need for speedy development projects to keep up with the impending timetable of decolonization. Within these temporal constraints, rapid construction was a necessity. Following large-scale civil unrest across West Africa in the late 1940s, British colonial regimes were legislatively reconfigured to provide for more African political representation. In 1951, colonial rule in the Gold Coast, Nigeria, and Sierra Leone colonies was then further recast as a partnership between democratically elected African politicians working with civil servants appointed by the Colonial Office in Whitehall, to manage each colony on the road to independence.<sup>55</sup> Fixed timetables for formal decolonization were not articulated, and, indeed, the formal end of British rule was still felt to lie at some temporal distance: in 1952, the directors of Taylor Woodrow West Africa believed the retrenchment of European civil servants would occur in “the very distant future.”<sup>56</sup> Nevertheless, that the political process of decolonization had been initiated was palpably felt by African politicians and their constituents.<sup>57</sup>
- 18 Arcon was poised to take advantage of these conditions. Materials for Arcon structures could be fabricated and delivered within a matter of weeks. For example, in correspondence about the building of a UAC-owned factory in Abeokuta, located north of Lagos, it was mentioned that Taylor Woodrow could probably supply the necessary structure within four weeks.<sup>58</sup> In an article about industrialization in Nigeria, the Arcon “roofed tubular structures” were described as invaluable “for the speedy construction of many kinds of buildings,” illustrated by an image of an Arcon market hall in Jos.<sup>59</sup> (**fig. 7**) In Samreboi, Ghana and Sapele, Nigeria, Taylor Woodrow delivered multiple Arcon sheds to the African Timber and Plywood Company, a particularly lucrative UAC subsidiary. (**fig. 8**) Used as saw- and plywood mills, the large-scale steel sheds were quickly supplied and constructed, and helped enable Sapele and Samreboi to quickly grow into one of the “largest and most-up-to-date industrial enterprises in British West Africa” in the early 1950s.<sup>60</sup> In many such industrial locations that were remote and hard to reach, like Samreboi, located in a dense tropical forest and only accessible by dirt roads, Arcon designs offered a reliable but also particularly fast solution.<sup>61</sup> That another Arcon project, a prefabricated house designed for the “intermediate African market” was marketed during the same period under the slogan “The New Era House” demonstrates that Taylor Woodrow was acutely aware of the temporalities of

decolonization in which it operated, and the accelerated development market it sought to both service and profit from.<sup>62</sup>

Figure 7: Jos Market Hall. "Industrial development in Nigeria," *The Sphere*, 1956, p. 259.



Source: Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC1/11/3/1/7.

Figure 8: Construction of the Sapele Sawmill, Nigeria, 1946.



Source: Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC 2/13/b/7/1.

## Material constraints: Imported building materials

19 If the growing demand for development initiated by the imminence of decolonization provided one reason for Arcon's success in West Africa, material constraints on

development offered another. The Arcon system allowed for an easily constructable structural system, plus cladding materials if required, that could be cheaply and easily transported over long distances. This was of particular importance in the context of colonial West Africa, where building materials such as concrete, steel, and corrugated iron were imported from Britain.<sup>63</sup> The fact that shortages of building materials slowed the realization of visions of colonial modernity was acknowledged by administrators across European empires in early and mid-twentieth century Africa: this had led colonial authorities to invest in cement production in the Belgian Congo, for example.<sup>64</sup> But in the British West African colonies, closely tied to the metropole through shipping routes, there was no equivalent effort, and building materials, especially those required for structural systems like steel and concrete, were all produced in Britain and imported to the colonies by (British owned) shipping firms, creating a steady stream of income.

20 The material reliance on British manufacturers and shippers was remarked upon by African politicians, including Nkrumah, who as leader of the Convention People's Party became Ghana's prime minister following the country's first open elections in 1953. The African-American writer Richard Wright commented in his seminal book *Black Power*, which documented his visit to a decolonizing Ghana in 1954, that "practically nothing, under British colonial policy, was manufactured in the Gold Coast," and a similar situation prevailed in both Nigeria and Sierra Leone.<sup>65</sup> Nkrumah noted to Wright about the profit creation by the British, for the British:

We have a wonderful soil out of which to make bricks. We've also found locations with soil from which we can make cement. But the British ship us cement from England [...] And nothing is done about the natural advantages of making cement here [...] Why should the English care about things like that? They don't die here. They came here to make money in government or business and then they go back.<sup>66</sup>

21 Around the same time, the economist Arthur Lewis, who served as an advisor to Nkrumah, recommended in a 1953 report on industrialization to invest in the construction of a brick and tile factory, as well as a cement factory in Ghana.<sup>67</sup> It would, however, not be until 1957—the year of independence—that the government signed a contract to build a cement factory in Takoradi.<sup>68</sup> In the middle of the 1960s, with help of the USSR, a factory making concrete slabs emerged in Accra.<sup>69</sup>

22 But this material dependency was also the source of much frustration for Taylor Woodrow's directors. In the immediate post-war period, when building materials were in high demand in Britain itself to support reconstruction, supplies of these materials were subjected to further control through a complex system of quotas, with only 3000 tons of cement assigned to the entirety of British West Africa each month.<sup>70</sup> The company's management attempted ways of gaming the allocation of materials by simultaneously applying for cement quotas and getting clients to do the same, and investigated other sources of cement importation from Belgian and Polish suppliers.<sup>71</sup> Supplies for structural members were in particularly short supply, and Taylor Woodrow experimented with replacing steel with timber in smaller construction jobs, something that was clearly not scalable in the ways Taylor Woodrow and its clients needed.<sup>72</sup> Throughout the late 1940s, Taylor Woodrow's directors complained of shortages, irregular supplies and "bottlenecks"; attempts to address these issues by stockpiling materials in Freetown, Accra, and Lagos were made, but even then it was woefully reported that "practically everything required is in short supply."<sup>73</sup> By providing a stripped back structural system that could be transported in a single shipment and then clad in local materials, the Arcon system was mobilized as one solution to these issues.

23 The Arcon system was also developed at a time when steel exports were of major economic significance for Britain. The immediate post-war period saw the rationing of steel, with tight quotas issued for the task of post-war reconstruction.<sup>74</sup> In a sense, however, this scarcity was an artificial one; Britain had the largest steel output in post-war Western Europe.<sup>75</sup> But in the immediate post-war years steel was reorientated towards servicing the export market, with the intention that steel exports would

increase to 20% of the total production, as a palliative to Britain's adverse balance of payments.<sup>76</sup> In the 1950s, as the balance of payments crisis eased and steel came off the ration in Britain, steel circulations, especially to the colonies and former colonies, took on new significance. As the empire was transforming into the Commonwealth, the movement of steel from Britain to its colonies and former colonies was framed as evidence for the new brotherhood of nations. In a parliamentary debate concerning the formation of the Commonwealth Development Corporation in 1956, the MP for Harrow West, Sir Albert Braithwaite, noted:

The well-being of our island home has been built up over many decades around this great consortium of peoples. Our great shipping industry, our great steel industry, and the work of supplying food to our island have each formed an integral part of the great master plan of bringing together many different peoples all over the world.<sup>77</sup>

24 Within a world being remade at the threshold of empire's end, the export of steel products to support the development of former colonies was yet another tie that bound former metropole and former colony together in a harmonious global union. While steel imports to West Africa were necessary to support development driven by decolonization, steel exports were also both a carefully calculated contribution to the British economic balance sheet, and evidence for Britain's significance at the center of the Commonwealth of Nations. The Arcon system sat at the nexus of these intersections. It is also possible that the Arcon system itself relied on the continuation of colonial patterns of mineral exploitation in West Africa. In some years, Sierra Leone's iron ore provided for as much as 40% of Britain's import of foreign mined iron ore used in the manufacture of steel products, something with major ramifications for the Sierra Leonian landscape.<sup>78</sup> As a contemporary account noted, "1.25 million tons of ore are extracted every year [...] the rich hematite ore has been cut off the top of some of the hills of Marampa..."<sup>79</sup> This landscape of extraction, centered on Marampa and Tonkolli, some 40 miles from Freetown, was tightly controlled by a private British-owned firm, the Sierra Leone Development Company (DELCO). Ore mined by DELCO was transported by a company railway line, to a port at Pepel also owned by DELCO. Sierra Leone's iron ore extractive industry therefore provided for a "self-contained enclave providing few linkages either backwards or forwards with the Sierra Leone economy."<sup>80</sup> DELCO was part owned by the UAC, and provided numerous construction contracts for Taylor Woodrow's locally registered subsidiary in the 1950s and 1960s, which built much of the port at Pepel as well as DELCO's multi-story headquarters in Freetown. This network of connections is suggestive of how developmental products and paradigms, like those encoded in the Arcon system, sat alongside, and relied upon, capital circulations and landscape despoliation in the middle decades of the twentieth century.<sup>81</sup>

## Material constraints: Expatriate staff, local labour

25 Another benefit of the Arcon system to expatriate firms like the UAC and colonial governments undertaking development projects in the late African empire was its ease of construction, and in particular, the relative lack of "skilled" labor it required for assembly. This was a significant concern because construction labor formed a major development constraint in late colonial West Africa. In the late colonial period skilled staff and site foremen active in West Africa were often European expatriates, although the binary of skilled versus unskilled staff may have had a racial connotations with an elision made between skill level and ethnicity in the Taylor Woodrow company minutes.<sup>82</sup> Taylor Woodrow generally employed such "outside" staff on 18-month contracts, with a fifth of that time being apportioned to paid home leave, usually timed

for the rainy season when construction contracts were slowed, or paused altogether.<sup>83</sup> As well as being inefficient, such contracts were also expensive. Expatriate staff required both subsidized company housing and free passage, which combined constituted a substantial overhead for the company, something reflected in Taylor Woodrow's often uneconomic tendering prices.<sup>84</sup> At the same time, African politicians consistently pushed for the Africanization of contracting workforces and as a result restricted visas for expatriate staff.<sup>85</sup> Hiring skilled European construction workers was, therefore, both expensive and, in the context of impending decolonization, a political liability for Taylor Woodrow's West African subsidiaries.

26     Meanwhile organized labor relations became increasingly uneasy in the 1940s and 1950s. A series of high-profile strikes, slowdowns, and labor stoppages across the mining towns and ports of colonial Africa led to the official recognition of an African proletariat as a constituency of colonial citizens with political clout, and a concomitant reorientation of imperial policy. As Frederick Cooper has persuasively argued, late imperial developmental policies were formulated, at least in part, as a response to "the labour question," as well as the need to frame imperial rule as benign developmentalism described above.<sup>86</sup> Construction and contracting have not previously figured largely in the story of labor struggles in late colonial and decolonizing West Africa, but Taylor Woodrow's West African company minutes and correspondence are peppered with instances of uneasy relationships between the company management and local workforces throughout the region, across national boundaries, and in both the late colonial and post-independence periods. In 1956, Taylor Woodrow's directors complained of a "go-slow" and "generally inferior" attitude among construction workers in Eastern Nigeria, following the cessation of a planned strike.<sup>87</sup> In 1957, the Accra police were called to the Brewery Road headquarters of Taylor Woodrow Ghana to disperse a demonstration of workers armed with lumps of laterite and iron rods, protesting against the unfair dismissal of a colleague by a European foreman.<sup>88</sup> The directors of Taylor Woodrow Sierra Leone described the men working on the construction of the new Teachers Training College at Goderich as "unamenable [*sic*] to discipline and [liable to] come out on strike for the least little thing."<sup>89</sup> In general, the Taylor Woodrow board recorded gloomily "we have to face up to our African Labour troubles."<sup>90</sup> The Arcon system was one strategy in the "facing up" to these challenges surrounding labor, something reflected in the sale and marketing of the Arcon system. The phrases "each component can be easily manhandled" and "designed for rapid erection and dismantling by unskilled labour," which appear regularly in Arcon advertising material produced by the Taylor Woodrow group, reveal the technology's instrumentalization as an answer to the "labour question," both for Taylor Woodrow West Africa, and for those commissioning buildings across the region.

## Decolonization, industrialization, and the Arcon System

27     In the years leading up to and immediately following independence, Taylor Woodrow's profitable position in West Africa was increasingly challenged by new competitors. New government-owned contractors were established, such as the Ghana National Contracting Company, with the intention of developing African businesses. The success of the new contracting company was the cause of bitter complaint by the board of Taylor Woodrow Ghana, who grimly noted in a memo that "we have been unsuccessful in every competitive tender we have submitted. Undoubtedly, the reason for this is that the bulk of Government work is given to the Ghana National Contracting Company."<sup>91</sup> At the same time, as detailed by Lukasz Stanek and Ayala Levin, independence saw other nations pursuing diplomacy through construction aid across West Africa. New partnerships with Eastern European socialist states and, to a lesser extent, Israel, led to development projects enabled through foreign technical expertise



and imported materials.<sup>92</sup> As African politicians across West Africa sought to realize industrialization through new modes of building production, the pre-eminence of firms like Taylor Woodrow in West Africa was increasingly challenged.

28 But at the same time, the Arcon system remained a profitable mode of development in West Africa precisely *because* African leaders sought to break material dependencies on the old colonial metropole. In these years leading up to the formal ends of British rule, industrialization programs in both Ghana and Nigeria increased. Industrialization was utilized as a tool of both economic development and decolonization. African politicians were keen to avoid an adverse balance of payments through an overreliance on imported goods and to break their dependency on imported materials and finished goods, especially those from the former colonial master. To this end, they channeled state resources into developing industrial concerns. Business historians have noted the strategies that British capital undertook in order to prolong profitable operations in West Africa beyond independence, demonstrating that British businesses sought new kinds of legitimacy in the region by presenting themselves as sources of “scarce capital, manpower, technology, and skills.”<sup>93</sup> This was, we argue elsewhere, a central component of industrialization schemes backed by the UAC across West Africa in this period.<sup>94</sup> But the ways in which contracting firms, like Taylor Woodrow, directly profited through the mobilization of projects such as the Arcon system in order to satisfy programs of industrialization and development initiated by the process of independence, decolonization and Africanization, have, before now, been absent from this scholarship. The industrialization drive that accompanied post-war political devolution in West Africa resulted in many commissions for Arcon and Taylor Woodrow. By the early 1960s, Arcon’s main marketing had shifted completely towards the construction of “factories and other industrial buildings.”<sup>95</sup> While other contractors were experimenting with prefabricated systems such as Laing’s Silberkuhl roof, the Arcon system offered far more flexibility, and its ability to be readily scaled and adapted saw it being used for industrial purposes across Ghana, Nigeria, and Sierra Leone.<sup>96</sup>

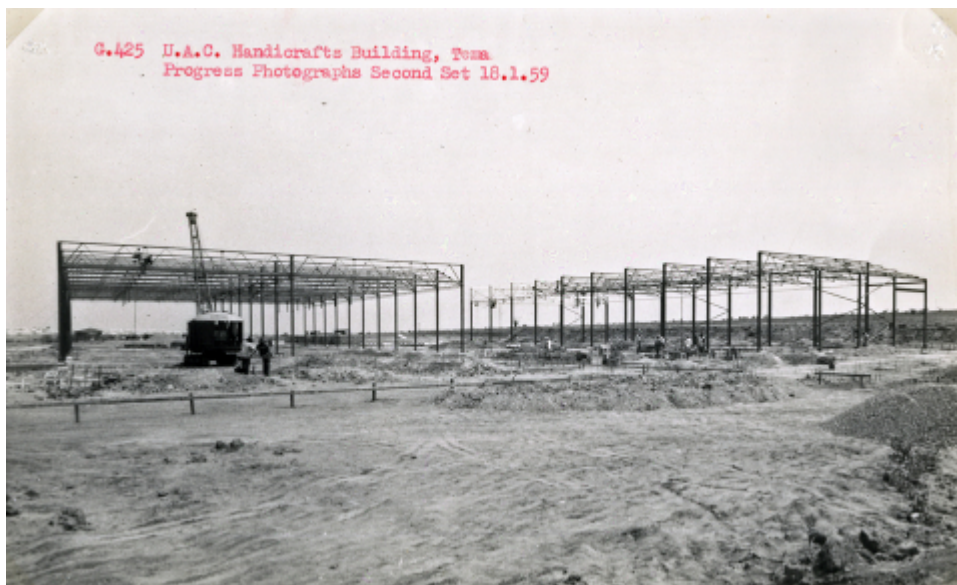
29 In Ghana, these ambitions coalesced around the development of Tema, a new deep-sea port and industrial town 30km from Accra. Much has been written about the development of housing at Tema, but the connected industrial developments have received little scholarly attention.<sup>97</sup> In fact, numerous factories were constructed at Tema in 1950s, several of which made extensive use of the Arcon system. Tema’s vehicle assembly plant, operated by the UAC, demanded a large open space with no “vertical stanchions supporting the roof. As most of the work is suspended from overhead runways the roof would have to be sufficiently strong to take the load.” The company decided on a sawtooth Arcon roof and completed the works in ten months as “no special problems were encountered.”<sup>98</sup> The UAC Handicrafts factory in Tema also utilized the same lightweight roofing structure.<sup>99</sup> (**figs. 9, 10, 11**) The economic viability and political cachet of places like Tema were dependent on the ability to rapidly construct these large buildings. Conventional construction not only carried additional cost risks, but the slow process of construction coupled with importation of expensive and heavy products could jeopardize the enterprise. The speedy construction of new factory buildings was crucial in demonstrating political efficacy, encouraging labor and capital to relocate to Tema and to allow production to start repaying the investment at the earliest opportunity.

**Figure 9: The sawtooth roof of the UAC Handicrafts Factory, Tema, 1959.**



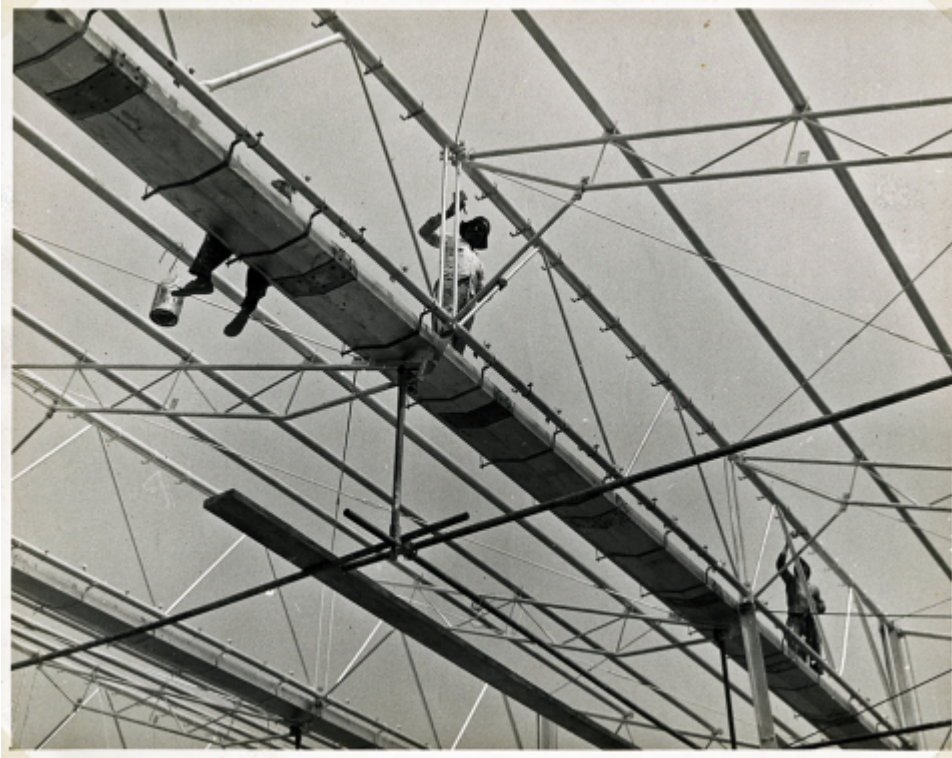
Source: Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC/1/11/9/55/30.

**Figure 10: Constructing the UAC Handicrafts Factory, Tema, 1959.**



Source: Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC/1/11/9/55/6.

**Figure 11: Assembling the roof of the UAC Handicrafts Factory, Tema, 1959.**



Source: Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC/1/11/9/55/19.

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The UAC and Taylor Woodrow seem to have been acutely aware of these loaded political realities: the visibility of Arcon developments at Tema were amplified in richly visual depictions of the factories in local magazines and newspapers. One such full page advertisement shows a drawn depiction of the Motor Vehicle Assembly complex, accompanied by a text that read: *A New Chapter in the Story of Ghana's Industrial Progress*. (fig. 12) Instead of depicting the trucks assembled in the plant, this advertising image focused on the modern factory complex, emphasizing the sawtooth roof. Stephanie Decker has described how these advertising images produced by British companies in decolonizing West Africa were aimed at multiple audiences.<sup>100</sup> This image of the Tema factory suggests an attempt to position foreign capital in the service of Nkrumah's developmentalist agenda, and to depict the UAC and Taylor Woodrow as agents of "investment" in the region rather than neo-colonial profit extraction.<sup>101</sup> At the same time, these advertisements depict the efficacy of the Arcon system to other potential clients in the region.

**Figure 12: Motor Vehicle Assembly in Tema, advertisement "A New Chapter in the Story of Ghana's Industrial Progress."**



Source: Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC/1/11/20/8.

31 In Nigeria, industrialization programs were pursued by both the federal government and state governments, often through quasi NGOs such as the regional Development Corporations. An example of this is the Arcon textile mill complex opened with much fanfare in 1958 by the Sardauna of Sokoto, Sir Ahmadu Bello, premier of Northern Nigeria. A partnership between the Northern Region Development Corporation and the Nigerian subsidiary of a Lancashire-based textile manufacturer, Kaduna Textiles Ltd, it was the largest textile mill in Nigeria at over 400,000 square feet of factory and warehouse space, “spinning 40,000 bales of Nigerian cotton into 38 million square yards of cloth” annually.<sup>102</sup> (fig. 13) Between 1959 and 1963, the Arcon group shrewdly responded to this market by developing a range of building components and parts specifically formulated for industrial development.<sup>103</sup> One of these, the north-light roof, was an adaptation of the tropical roof, a popular Arcon product consisting of a tubular steel roof span developed in the early 1950s. The north-light roof was designed specifically for industrial development and included a sawtooth roof structure, with a glazed portion on its northern face, providing even light to factory floors. It was utilized at the Kaduna textile mills, and in many other locations.

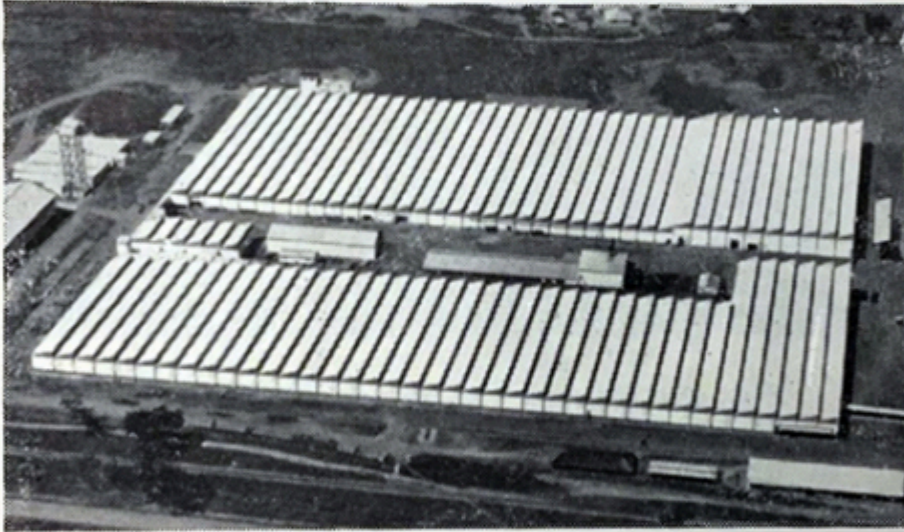
Figure 13: “Nigeria’s Biggest Textile Mill,” advertisement for Taylor Woodrow, Nigeria. *Nigeria Magazine*, no. 76, March 1963, p. vi.

# NIGERIA'S BIGGEST TEXTILE MILL

Kaduna Textiles Mill – the largest in Nigeria – was an impressive constructional project. Opened in 1958 by Alhaji Sir Ahmadu Bello, Sardauna of Sokoto, and recently extended in size, the Mill now has a floor space of 400,000 square feet. Here over 40,000 bales of Nigerian cotton are used annually to produce 38 million square yards of cloth, all for local consumption.

Taylor Woodrow are proud to have been associated with this important contribution to Nigeria's economic progress.

For Kaduna Textiles, Ltd.  
Managing Agents, David Whitehead & Sons (Nigeria) Ltd.  
The extension building, a 'North-light' Arcon structure, was supplied by Taylor Woodrow (Building Exports) Ltd.



**TAYLOR WOODROW**  
*a symbol of teamwork in construction*  
This fine Mill is one more example of the Taylor Woodrow policy of close co-operation with clients and consultants, and of the spirit of teamwork that inspires the entire Taylor Woodrow organisation.

**TAYLOR WOODROW**  
BUILD EVERYWHERE

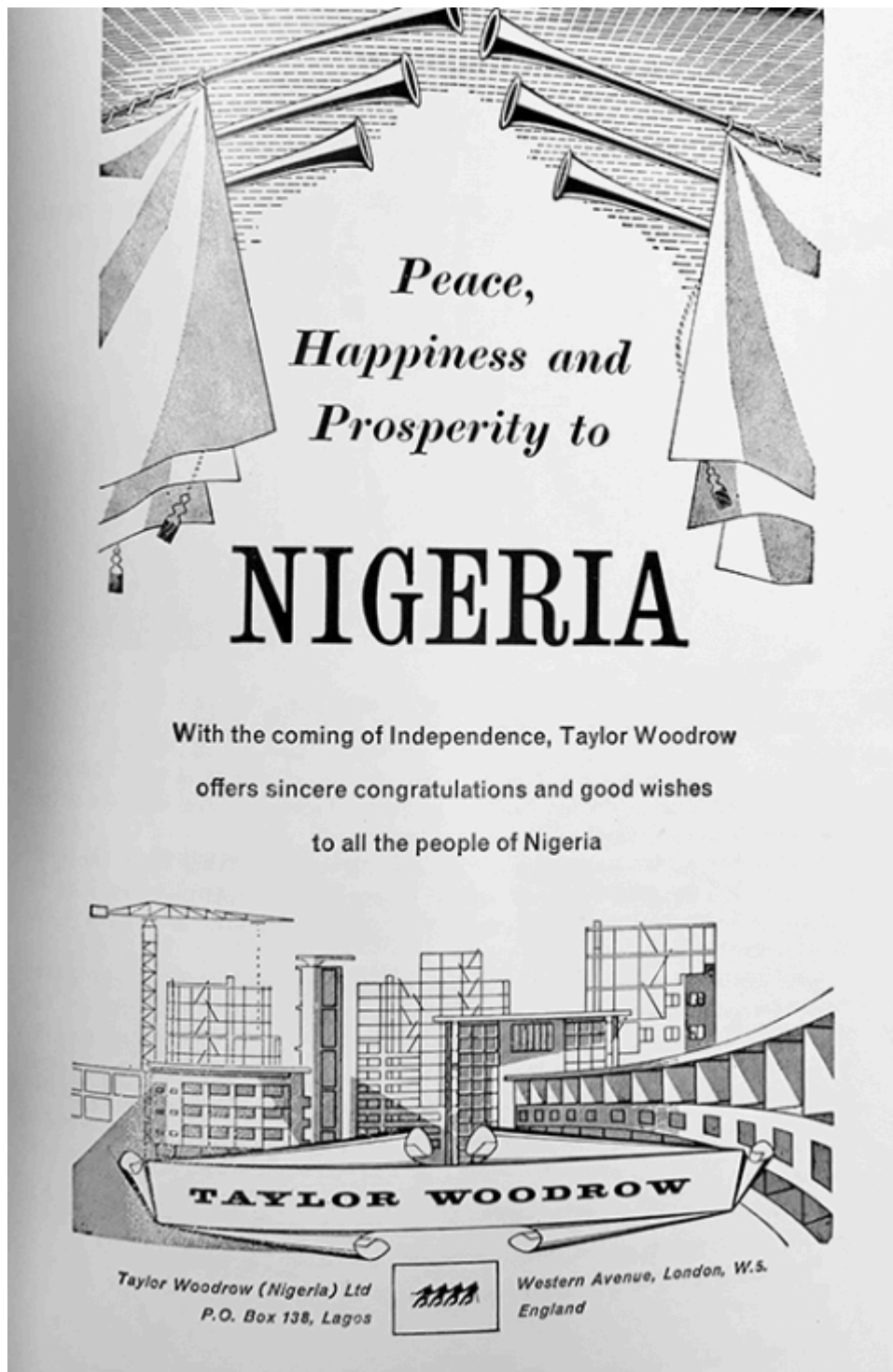


BUILDING, CIVIL AND MECHANICAL ENGINEERS  
TAYLOR WOODROW (NIGERIA) LTD · P.O. BOX 138 · LAGOS · NIGERIA

Source: Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC 1/11/3/2/44.

- 32 But the Arcon group and Taylor Woodrow also responded to this desire for industrialization among African leaders over and above merely building factory commissions with the Arcon system. In 1959, Taylor Woodrow (Building Exports) moved the production of the tubular steel required by Arcon contracts in Nigeria to a dedicated factory in Lagos: "henceforth all the tubular steelwork for the Nigerian Arcon market will be fabricated, welded, painted and assembled on the spot, with the exception (for the present) of specialized contracts."<sup>104</sup> This reflected the importance of Nigeria as a market for Arcon, something explicitly recognized by Taylor Woodrow Building Exports, and the industrialization drive among Nigerian politicians.<sup>105</sup> (fig. 14) Yet, the system still relied upon imported components and the actual erection of Arcon structures remained a proprietary process controlled by Taylor Woodrow Nigeria, which despite its name, was headquartered in London and owned largely by British shareholders. The localization of manufacture of parts of the Arcon system to West Africa, in other words, masked the continuity of flows of capital and profit from West Africa to Britain.

Figure 14: Taylor Woodrow Nigeria Independence Advert, 1960. *Nigeria Magazine*, October 1960 (a special Independence issue).



Source: Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC/1/11/3/2/38.

- 33 At the same time, the Arcon system was also servicing the business needs of the Taylor Woodrow group. The Labour victory in the 1964 British election led to a re-emphasis on export earnings for Taylor Woodrow.<sup>106</sup> This had political benefits, as the new Labour government was keen to boost Britain's balance of payments through export revenue and therefore looked more favorably on companies with substantial export income, as well as financial ones, for foreign earnings were likely moved by Taylor Woodrow to offshore accounts subject to lighter taxation regimes.<sup>107</sup> In a 1964 shareholder meeting, Frank Taylor stated "it is essential that we increase the volume of work undertaken overseas, with its attendant risks, if we are to continue to make a real and substantial contribution to exports."<sup>108</sup> The result of this was a greater emphasis on the mobilization of the Arcon product globally, not just in the former colonies.<sup>109</sup>

34 However, the mid-1960s saw a slump in work for Taylor Woodrow across West Africa, with a concomitant contraction of the Arcon business. Taylor Woodrow's minutes record several reasons for this, shifting in scale from the structural to the hyper-local. Throughout the region, Taylor Woodrow's business was squeezed by new competitors especially from newly formed state-owned contractors, while in Nigeria many jobs were lost to smaller African and Italian-owned contractors, able to undercut Taylor Woodrow on price. Offers of subcontracting work and attempts to market Arcon products to these new state-owned contractors received some limited success, but in general, the period saw a shrinkage of the Taylor Woodrow business in West Africa.<sup>110</sup> At the same time, there was a shift away from large-scale state-led developmental projects in West Africa. As economic growth faltered, the logic of costly developmental projects requiring reserves of foreign exchange to pay for imported materials and expatriate expertise no longer seemed so secure. Accordingly, as Hannah Le Roux has noted, the mid-1960s saw a general shift in development discourses towards embracing "the developmental value of local, organic materials including adobe or bamboo" over costly imported construction components.<sup>111</sup> For example, in their United Nations report on housing in Ghana, the housing expert Charles Abrams and architects Otto Koenigsberger and Vladimir Bodiansky recommended focusing on the use of local building materials such as mud.<sup>112</sup> In fora such as the United Nations Conference on Trade and Development, "the power of the developing bloc pushed back at one-way technological transfers [from the Global North]."<sup>113</sup>

35 While this probably contributed to the contraction in the Arcon business in this period, it also seems possible that Taylor Woodrow was in some ways a victim of the Arcon system's success, or at least, of its durability. The market for prefabricated structures providing rapidly erected industrial premises may simply have been satisfied across the region. While in Britain Arcon's first product, the prefabricated house, was explicitly developed as a temporary solution, with an estimated life span of ten years, this was not the case overseas. Some of their designs were marketed as "sturdy construction" which ensured "a long life and low maintenance charges."<sup>114</sup> The success of the Arcon system may also account for the general winding down of the collective. While it is unclear from the fragmentary archival material how connected these two events are, by late 1966 no new Arcon products were being manufactured and one year later, the Arcon group had disbanded.<sup>115</sup>

## Conclusion

36 A reflection on the Arcon system penned in 1967, as the consortium officially dissolved, suggested that the system had never quite lived up to its potential to revolutionize construction: "although the Arcon work was in van [*sic*] of progress, it needed more time, money and development to bring it to practical application [...] many interesting ideas and systems were evolved, but there were few commercial successes."<sup>116</sup> But, for a time in the late colonial and immediate post-colonial years in West Africa the Arcon system was widely disseminated. Despite false starts in the Tanganyika Ground Nut Scheme and failed attempts to sell the technology for mass housing to the devolved government of late colonial Ghana and Nigeria, the lightweight Arcon steel system was utilized widely in the construction of factories and warehouses across the region. While perhaps anonymous colonial structures that tend to get sidelined in architectural histories—examples of "grey architecture"—these factories, warehouses, and stores were integral to the intensified period of resource extraction central to late colonial development.<sup>117</sup> The Arcon technology was adapted to both support and profit from late colonial development initiatives, with, for example, its best-selling tropical roof described as designed "to meet a demand expressed by engineers engaged in colonial development."<sup>118</sup>

37 Yet as decolonization loomed, the system was mobilized instead to support the developmentalist ambitions of nationalist African politicians in both Ghana and

Nigeria, and in the years immediately surrounding decolonization the same system was utilized in the construction of numerous factories for African state clients. This study of the Arcon system thus shows the continuing influence of Britain in the post-independence period in West Africa, in terms of architectural construction but also financially. As the local manufacturing of materials such as concrete and steel had been intentionally prevented by Britain during the colonial period, in the years after independence, Arcon systems using British steel, manufactured in Britain and marketed by a British consortium, offered a reliable solution for national industrialization schemes such as Nkrumah's project for Tema.

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## Notes

1 Decolonization is understood here as the process leading towards political independence, including "Africanization" of government as well as business ownership and management, and the changing economic, fiscal, and cultural policy of the nation. The term is used here to reflect the notion of decolonization as a protracted process seeking to reshape colonial and imperial systemic and structural norms. On the UAC and its building activities in West Africa, see Iain JACKSON, Ewan HARRISON, Michele TENZON, Rixt WOULDSTRA and Claire TUNSTALL, *Architecture, Empire, and Trade: The United Africa Company*, London: Bloomsbury, 2024.

2 The scholarship on Jean Prouvé's Maison Tropicale (1949-1952) made of aluminum and steel for French administrators in colonial Africa are a good example of the former. See, for example Robert RUBIN, "Maison Tropicale," in Barry BERGDOLL and Peter CHRISTENSEN (eds.), *Home Delivery: Fabricating the Modern Dwelling*, New York, NY: MoMA, 2008, p. 108-115 and D.J. HUPPATZ, "Jean Prouvé's Maison Tropicale: The Poetics of the Colonial Object," *Design Issues*, vol. 26, no. 4, 2010, p. 32-44. URL: <http://www.jstor.org/stable/40983102>. Accessed 19 July 2024. For the latter, see discussions of Yona Friedman and Jean-Pierre Pecquet's proposal for the Sahara Cabins, a prefabricated system designed for oil workers in French colonial Africa, in Ginger NOLAN, *Savage Mind to Savage Machine: Racial Science and Twentieth Century Design*, Minneapolis, MN: University of Minnesota Press, 2021. For a longer history of prefabrication in the African colonies, see for example, George KUBLER, "The Machine for Living in 18th-Century West Africa," *Journal of the Society of Architectural Historians*, vol. 4, no. 2, 1944, p. 30-33; Gilbert HERBERT, "The Portable Colonial Cottage," *Journal of the Society of Architectural Historians*, vol. 31, no. 4, 1972, p. 261-275; Itohan OSAYIMWESE, *Colonialism and Modern Architecture in Germany*, Pittsburgh, PA: University of Pittsburgh Press, 2017 (Cultural, Politics and the Build Environment), p. 187-242; and Marc LINDER, *Projecting Capitalism: A History of the Internationalisation of the Construction Industry*, Westport, CT: Greenwood Press, 1994, p. 9-13.

3 D.J. HUPPATZ, "Jean Prouvé's Maison Tropicale, *op. cit.* (note 2), p. 37.

4 R.M.E. DAIMANT, "Arcon System," *The Architect & Building News*, December 1963, p. 1049-1052. The constructive details of the Arcon system are not discussed in any further detail in the company's promotional materials, or in articles about the Arcon system. Instead, emphasis is on the mass production of the system.

5 *Ibid.*, p. 1052.

6 London (United Kingdom), RIBA Library, Taylor Woodrow Building Exports, Brochure "Arcon Structures: The Three-Pin Frame," undated.

7 ARCON, "The Arcon Group, 1947-1967," Report 4/67, London, 1967, p. 4.

8 *Ibid.*

9 *Ibid.*

10 Alex BREMNER, Johan LAGAE and Mercedes VOLAIT, "Intersecting Interests: Developments in Networks and Flows of Information and Expertise in Architectural History," *Fabrications*, vol. 26, no. 2, 2016, p. 227-245. DOI: <https://doi.org/10.1080/10331867.2016.1173167>.

11 By repositioning the Arcon system as central to development initiatives in late and post-colonial West Africa, we are participating in a growing field of scholarship concerned with the extraction, manufacture, circulation, and construction of building materials across colonized and colonizing nations in the twentieth century. See Hannah LE ROUX, "Circulating Asbestos: The International AC Review 1956-1985," in Kim FÖRSTER (ed.), *Environmental Histories of Architecture*, Montreal: CCA, 2022, p. 6.1-6.17. URL: <https://www.cca.qc.ca/en/articles/87164/environmental-histories-of-architecture>. Accessed 19 July 2024; Robby FIVEZ, "The rubble in the jungle: A fragmented biography of Lukala's cementscape, DR Congo," *Journal of Landscape Architecture*, vol. 15, no. 1, 2020, p. 78-87, DOI: <https://doi.org/10.1080/18626033.2020.1792691>; Also see Jonah ROWEN, "Pipes, Provision, Profits, Privatization: The Materials of Water Infrastructure in Nineteenth-Century Kingston,



Jamaica, and London, England,” *Aggregate*, vol. 11, May 2023. URL: <https://we-aggregate.org/media/files/98aee92839d8b4f638f6aa3acab8e16a.pdf>.

12 While Arup opened up their first overseas office in Lagos, a history of the engineering company’s significant presence in West Africa remains to be written. As the collaborator for many well-known projects associated with tropical modernism, its name appears briefly in publications such as Iain JACKSON and Jessica HOLLAND, *The Architecture of Maxwell Fry and Jane Drew: Twentieth Century Architecture, Pioneer Modernism and the Tropics*, Farnham: Ashgate, 2014 (Ashgate Studies in Architecture); Ola UDUKU, “Modernist Architecture and ‘the Tropical’ in West Africa: The Tropical Architecture Movement in West Africa, 1948–1970,” *Habitat International*, vol. 30, no. 3, 2006, p. 396-411. DOI: <https://doi.org/10.2307/j.ctvkwnpko>; Łukasz STANEK, *Architecture in Global Socialism: Eastern Europe, West Africa and the Middle-East during the Cold War*, Princeton, NJ: Princeton University Press, 2020. The activities of Langs and Costains are even less well-documented, although their work as part of the “Big 5” in Kuwait has received more interest; see Simon SMITH, “The Making of a Neo-Colony? Anglo-Kuwaiti Relations in the Era of Decolonization,” *Middle Eastern Studies*, 2001, vol. 37, no. 1, p. 159-172. URL: <https://www.jstor.org/stable/4284143>. Accessed 19 July 2024. Taylor Woodrow’s role in constructing large post-colonial civil engineering schemes is referred to in Marc LINDER, *Projecting Capitalism*, *op. cit.* (note 2), p. 208-215.

13 London, RIBA Collection. Taylor Woodrow Building Exports, Arcon Brochure, undated. Papers relating to Rodney M. Thomas (1902-1996), including lecture notes and Arcon pamphlets, 1976 & undated. TnR/1.

14 For more on this moment of political change, see Frederick COOPER, *Africa Since 1940: The Past of the Present*, Cambridge: Cambridge University Press, 2014. DOI: <https://doi.org/10.1017/CBO9780511800290>; and Frederick COOPER, “Writing the History of Development,” *Journal of Modern European History*, vol. 8, no. 1, 2010, p. 5-23. URL:

<https://www.jstor.org/stable/26265901>

. Accessed 19 July 2024. For examples of architectural change wrought during this period of partnership see Ian JACKSON and Jessica HOLLAND, *The Architecture of Maxwell Fry and Jane Drew*, *op. cit.* (note 12) and Mark CRINSON, *Modern Architecture and the End of Empire*, London: Routledge, 2003 (British Art and Visual Culture since 1750). For an analysis of the temporalities of decolonization upon the Gold Coast Public Works Department see a forthcoming article by Łukasz Stanek in the *Journal of the Society of Architectural Historians*.

15 Tilo AMHOFF, Nick BEECH and Katie LLOYD THOMAS, *Industries of Architecture*, London: Routledge, 2020, p. 4.

16 Kwame NKURMAH, *Neo-Colonialism: The Last Stage of Imperialism*, London: Thomas Nelson, 1965, p. 31.

17 Erik LINSTRUM, Stuart WARD, Vanessa OGLE, Samia NASAR and Priyamvada GOPAL, “Decolonising Britain: An Exchange,” *Twentieth Century British History*, vol. 33, no. 2, 2022, p. 274–303. DOI: <https://doi.org/10.1093/tcbh/hwaco18>.

18 Ann Laura STOLER, *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense*, Princeton, NJ: Princeton University Press, 2009.

19 Richmond (United Kingdom), The National Archives (TNA), “The Arcon Temporary Mark V House,” CO822/136/3.

20 *Ibid.* Arcon’s creation was prompted by the recommendations of the Interdepartmental Committee on Housing (better known as the Burt Committee), which came into existence in 1942. Estimating a post-war shortage of around 500,000 dwellings, the committee conducted research on affordable and available methods and materials to construct temporary houses, that would last approximately ten years. Nick BULLOCK, *Building the Post-War World: Modern Architecture and Reconstruction in Britain*, London: Routledge, 2002. Also see Jean-Louis COHEN, *Architecture in Uniform: Designing and Building for the Second World War*, Exhibition Catalogue (Canadian Centre for Architecture, 2011), Montreal: Canadian Centre for Architecture, 2011.

21 On steel-framed prefabricated houses in the interwar period, see Herbert GILBERT, *The Dream of the Factory-Made House: Walter Gropius and Konrad Wachsmann*, Cambridge, MA: MIT Press, 1984, p. 67-103. DOI: <https://doi.org/10.7551/mitpress/2494.001.0001>.

22 On Britain’s wartime and post-war “prefabs,” see Brenda VALE, *Prefabs: A History of the UK Temporary Housing Programme*, London: Routledge, 2022 (Routledge Revival); Nick HAYES, “Making Homes by Machine: Images, Ideas and Myths in the Diffusion of Non-Traditional Housing in Britain 1942-54,” *Twentieth Century British History*, vol. 3, no. 10, 1999, p. 282-309. DOI: <https://doi.org/10.1093/tcbh/10.3.282>.

23 Daniel O’NEILL, and Samantha ORGAN, “A literature review of the evolution of British prefabricated low-rise housing,” *Structural Survey*, vol. 34, no. 2, 2016, p. 209.

24 On the architect as a consultant in the post-war period, see Monika MOTYLIŃSKA and Tim VERLAAN, “Introduction: Architects as Global Entrepreneurs in the Long 20th Century,” *Architectural Histories*, vol. 13, no. 1, 2023, p. 1-10. DOI: <https://doi.org/10.16995/ah.8777>.

25 Neel had known Squire before the war, and following a chance encounter at an RIBA exhibition, they set up the new practice. Thomas was already working with Squire, after he applied to the RIBA Employment Registry. The name ARCON was coined because it sounded like "TECTON"; ACP was a compromise because the partners could not agree whose name was to go first on the letterhead. Raglan SQUIRE, *Portrait of an Architect*, Gerrards Cross: Colin Smythe, 1984, p. 95. On Thomas Rodney's work, see Gareth WILLIAMS, "The Return of the Curve: Rodney Thomas, Architecture and Interior Design," *The Journal of the Decorative Arts Society 1850-present*, 1995, no. 19, p. 41-50. URL: <https://www.jstor.org/stable/41805874>. Accessed 19 July 2024. Not long after Arcon's creation, the architect and designer Jack Howe also joined for some years. Howe had worked closely with Walter Gropius and Maxwell Fry on Impington College.

26 Richmond (United Kingdom), The National Archives (TNA), "The Arcon Temporary Mark V House," CO822/136/3.

27 In his obituary, Neel was described as the "Golden Boy of architecture." "Obituary Edric Neel," *The Architect's Journal*, 1 May 1952, p. 541.

28 *Ibid.* and Raglan SQUIRE, *Portrait of an Architect*, *op. cit.* (note 25), p. 95.

29 Richmond (United Kingdom), The National Archives (TNA), Edric Neel to J. Wallace, East Africa Department, Colonial Office, 25 September 1947, CO927/35/4.

30 See Alan JENKINS, *On Site 1921-1971*, London: Heinmann, 1971, p. 47.

31 For the official Taylor Woodrow company history see Alan JENKINS, *On Site*, *op. cit.* (note 30). While on the margins of British architectural history, Taylor Woodrow also played a significant role in the 1960s, when Theo Crosby headed Taylor Woodrow's experimental Design Group and brought in several members of Archigram to work with him. In the 1970s, Taylor Woodrow Group was responsible for projects such as the redevelopment of St. Katherine Dock, in London's dockyards.

32 Taylor Woodrow's competitors the Laing Group and Sir Robert MacAlpine had longer histories than Taylor Woodrow. Both had, like Taylor Woodrow, profited from state contracts building war time installations, before undertaking work internationally in the empire and Commonwealth after the war. British engineering practices such as WS Atkins had similar trajectories.

33 See John CARMICHAEL, *Together We Build: Fifty Years of Taylor Woodrow in Ghana*, London: Taylor Woodrow Building Services, 1997.

34 "Obituary Edric Neel," *op. cit.* (note 27), p. 541. Squire set up his own office and pursued several projects in post-independence Burma, such as the Rangoon College of Engineering. See Su SU, Swe Swe AYE and Win SHWIN, "The Modern Movement in Myanmar," *Docomomo Journal*, vol. 57, no. 2, 2017, p. 39-45. URL: <https://docomomojournal.com/index.php/journal/article/view/296>. Accessed 19 July 2024. At this point, it seems that the architect A.M. Gear took over. Thomas left Arcon in 1956.

35 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC Property Ledger, UAC/1/5/8/1/3.

36 ARCON, "The Arcon Group, 1947-1967," *op. cit.* (note 7), p. 4; HAYES, "Making Homes by Machine," *op. cit.* (note 22), p. 300.

37 Richmond (United Kingdom), The National Archives (TNA), Edric Neel to J. Wallace, East Africa Department, Colonial Office, 25 September 1947, CO927/35/4. Two representatives from Imperial Chemical Industries and Stewarts and Lloyds were also present at the meeting.

38 "Maison Coloniale Système Arcon," *L'Ossature Métallique*, vol. 17, no. 1, 1952, p. 19-21.

39 ARCON, "The Arcon Group, 1947-1967," *op. cit.* (note 7), p. 42.

40 See Peter CHRISTENSEN, *Precious Metal: German Steel, Modernity, and Ecology*, Pittsburgh, PA: Penn State University Press, 2022, p. 127. DOI: <https://doi.org/10.5325/j.ctv2jo4shn>.

41 See Frederick COOPER, "Writing the History of Development," *op. cit.* (note 14), p. 5-23; Frederick COOPER, *Africa Since 1940*, *op. cit.* (note 14); Sarah STOCKWELL and Veronique DIMIER (eds.), *The Business of Development in Post Colonial Africa*, Cambridge: Cambridge University Press, 2010 (Cambridge Imperial and Post-Colonial Studies Series); Bekeh UKELINA, *The Second Colonial Occupation: Development Planning, Agriculture and the Legacies of British Rule in Nigeria*, Lanham: Lexington Books, 2017.

42 Frederick COOPER, *Africa Since 1940*, *op. cit.* (note 14), p.65.

43 Charlotte Lydia RILEY, "The Winds of Change Are Blowing Economically: The Labour Party and British Overseas Development, 1940s-1960s," in Chris JEPPESEN, Andrew W.M. SMITH (eds.), *Britain, France and the Decolonization of Africa*, London: UCL Press, 2017, p. 53.

44 Quoted in Sarah STOCKWELL and Veronique DIMMIER, *The Business of Development*, *op. cit.* (note 41), p. 12.

45 Matteo RIZZO, "What Was Left of the Groundnut Scheme? Development Disaster and Labour Market in Southern Tanganyika 1946-1952," *Journal of Agrarian Change*, vol. 6, no. 2,

2006, p. 205-238; Nicholas WESTCOTT, *Imperialism and Development: The East African Groundnut Scheme and its Legacy*, Woodbridge: Boydell and Brewer, 2020 (Eastern Africa Series).

46 Alan JENKINS, *op. cit.* (note 30), p. 52. Only a small amount of this was built; most of the staff who worked on the scheme did so from under canvas.

47 ARCON, "The Arcon Group, 1947-1967," *op. cit.* (note 7), p. 64. Thomas also developed several pieces of demountable, flatpack timber furniture for the houses. London, RIBA/V&A. ARCON O.F.C. Furniture. PA1098/2 (1-28).

48 On the UAC, see D.K. FIELDHOUSE, *Merchant Capital and Economic Decolonization: The United Africa Company*, Oxford: Clarendon Press, 1994.

49 Bob Aldred, the Chairman of Taylor Woodrow International, was stationed in Sierra Leone during the Second World War. Another leading figure in the company, Angus McLarty, had also spent war time service in West Africa.

50 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Circular from Frederick Pedler to the UAC, 22 January 1962, UAC/1/3/4/17/3.

51 Furthermore, UAC also ran building supplies, office equipment, and transport businesses and were therefore able to profit from each stage of construction and fitout.

52 See the Taylor Woodrow Series at the Unilever Archives. Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow Series, UAC/3/35/3/TC and TD, TE, TF, TG, BN and CM.

53 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow West Africa, Minutes of a Meeting, 17 July 1946, UAC/2/35/3/TC/1/1/4. On the role of the Public Works Department in Nigeria, see Ibeyimi Omotayo SALAMI, *The Architecture of the Public Works Department in Nigeria during the Early to the Mid Twentieth Century*, PhD dissertation, University of Liverpool, Liverpool, 2016.

54 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow West Africa, Minutes of a Meeting, 22 August 1946, UAC/2/35/3/TC/1/1/4. Kaduna Brewery was later constructed using the same system, see UAC/2/1/A/4/1/6/1, as was Kumasi Brewery, see UAC/2/1/B/4/1/4/1.

55 Much has been written about this moment of political change. See, for example, Frederick COOPER, *Africa Since 1940*, *op. cit.* (note 14).

56 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow West Africa, Notes of a Meeting, 18 November 1952, UAC/2/35/3/TC. The whole quote reads, "it is foreseen in the very distant future that the European population in the Gold Coast will decline, and many of the European positions will be held by Africans," so decolonization was not the subject of this discussion but nevertheless is implied. The discussion was in fact about a proposed development in Nigeria, not the Gold Coast, which illustrates how partial the view from the Taylor Woodrow boardroom could be. In this, the company directors were echoing the beliefs of at least some in the colonial office, who, as Charlotte Lydia Riley has noted, believed decolonization to be a distant event even in the post-war years. See Charlotte Lydia RILEY, *Monstrous predatory vampires and beneficent fairy-godmothers: British post-war colonial development in Africa*, PhD dissertation, University College London, London, 2013.

57 There is an extensive scholarship on this moment of political change in West Africa, especially in Ghana. See Basil DAVIDSON, *Black Star: A View of the Life and Times of Kwame Nkrumah*, London: James Currey, 1989 (1973); Harcourt FULLER, *Building the Ghanaian Nation State*, New York, NY: Palgrave MacMillan, 2014 (African Histories and Modernities); and Nkrumah's own account, Kwame NKUMAH, *Revolutionary Path*, London: Panaf Books, 1973. For Sierra Leone see the first two chapters of John CARTWRIGHT, *Political Leadership in Sierra Leone*, London: Croom Helm, 1978.

58 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Minutes of an informal meeting held in the offices of Compagnie française de l'Afrique occidentale, 25 November 1953, between the representatives of The United Africa Company, Taylor Woodrow and the Compagnie française de l'Afrique occidentale, UAC/2/19/BS/1/31.

59 "Industrial development in Nigeria," *The Sphere*, 1956, p. 259. Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC1/11/3/1/7.

60 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, UAC/2/13/A/3/2/42.

61 Another example of this was the development of the "Export House," a light steel prefabricated house sent to Ascension Island in the south Atlantic. ARCON, "The Arcon Group, 1947-1967," *op. cit.* (note 7), p. 44.

62 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow West Africa, Notes of Meetings and Interviews carried out by Mr Hill on the 29th and 30th of July 1952, UAC/2/35/3/TC/1/1/2. As an adaptation of an existing house model, likely the Mark IV House, the New Era House was aggressively marketed to the government of the

Gold Coast in 1952 and 1953. Following meetings with the Ministers for Housing, Mr. Ahsah-Koi, and the Minister for Local Government, Mr. Asafu Adjaye, Taylor Woodrow's management believed it had secured orders for hundred "New Era" houses for estates at Kumasi, Ghana's second city and a prosperous center of the cocoa trade, and a similar scaled order for Labadi, a coastal town midway between Accra and the new harbor and industrial port under development at Tema. Yet after "a lot of trouble in designing and experimenting with these homes," the venture proved unsuccessful. Taylor Woodrow's expatriate status and connection to the prominent UAC had counted against it, with African ministers committed to the localization of the construction sector. Here, the temporal constraints of decolonisation acted against the success of the Arcon system. African ministers were determined to see the construction of housing projects done by African contractors, and accordingly the Arcon system, tainted by its association with Taylor Woodrow and the UAC, could not provide a vehicle for housing ambitions. See Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow West Africa, Notes of a Meeting, 4 November 1953, UAC/2/35/3/TC/1/1/2.

63 The import of materials from Europe goes as far back as the seventeenth century, when many of the slave forts on the West African coast were constructed with bricks imported from Europe. See Louis NELSON, "Architectures of West African Enslavement," *Buildings & Landscapes*, vol. 21, no. 1, 2014, p. 102-103; John Kwadwo OSEI-TUTU (ed.), *Forts, Castles and Society in West Africa: Gold Coast and Dahomey, 1450-1960*, Leiden: Brill, 2018 (African History).

64 See Robby FIVEZ, "The rubble in the jungle," *op. cit.* (note 11) Also see Monika MOTYLIŃSKA and Robby FIVEZ, "Addiction to cement: Narratives and strategies for tackling the lack of cement in sub-Saharan Africa (1920s-1980s)" in the same issue.

65 Richard WRIGHT, *Black Power: A Record of Reactions of a Land in Pathos*, New York, NY: Harper, 1954, p. 123.

66 *Ibid.*, p. 88-89.

67 Arthur LEWIS, *Report on Industrialisation and the Gold Coast*, Accra: Government Printing, 1953.

68 In the immediate post-independence period, multiple African countries attempted to boost the production of cement, as detailed by Robby FIVEZ and Monika MOTYLIŃSKA, "Cement as a Weapon: Meta-infrastructure in the World's Last Cement Frontier," in Joseph HEATHCOTT (ed.), *The Routledge Handbook of Infrastructure Design: Global Perspectives from Architectural History*, London: Routledge, 2023 (Routledge International Handbooks), p. 40-50. In Ewekoro, Nigeria, the UAC also founded the West African Portland Cement Company, which was supposed to be in full production by the end of 1960. Godfrey HARRISON, *To the New Nigeria: A story of co-operation and fulfilment*, London: Newman Neame Limited for the United Africa Company, 1960. More generally, see Monika Motylińska's ongoing research project, Conquering (with) Concrete. German Construction Companies as Global Players in Local Contexts, at the Leibniz Institute for Society and Space, 2020-2024.

69 Godwin ARKU, "The economics of housing programmes in Ghana, 1929-66," *Planning Perspectives*, vol. 3, no. 24, 2009, p. 292-293. DOI: <https://doi.org/10.1080/02665430902933952>.

70 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow West Africa Board Meeting, 5 June 1947, UAC/2/35/3/TC/1/1/2. Perhaps this is an instance of a collision between colonial developmental policy and the needs of the metropole. With building materials strictly licensed in the post-war years, in order to accomplish the most efficient reconstruction of Britain's war-damaged urban fabric, sending building materials to the colonies perhaps seemed less important. This also coincides with an increased emphasis on experimentation with local building materials, such as soil, or a mixture of cement and soil, in for example the Public Work Department in the Gold Coast, and projects such as the Asawasi Estate in Kumasi built by Alfred Alcock.

71 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow West Africa Board Meeting, 5 June 1947, UAC/2/35/3/TC/1/1/2.

72 Taylor Woodrow West Africa Board Meeting, 5 June 1947. An example of this were some structures for the African Timber and Plywood Company in Samreboi, Ghana, where timber was, of course, widely available.

73 Taylor Woodrow West Africa Board Meeting, 5 June 1947.

74 See Catherine FLYNN, *Rebuilding Britain's Blitzed Cities: Hopeful Dreams, Stark Realities*, London: Bloomsbury, 2019, p. 36-37 and p. 44-50.

75 Ruggo RANIERI, "The Productivity Issue in the UK Steel Industry: 1945-1970," in Nick TIRATSOO and Mathias KIPPING (eds.), *L'américanisation en Europe au XXe siècle: économie, culture, politique=Americanization in 20th Century Europe: Business, Culture, Politics*, Lille: Université de Charles de Gaulle, 2018, p. 357-373.

76 See David HEAL, *The Steel Industry in Post War Britain*, London: David & Charles, 1974, p. 26. There is some evidence that British steel manufacturing companies also developed prefabricated building systems and sold them directly to building clients in West Africa. See

“Shoe Factory at Lagos,” *The West African Builder and Architect*, vol. 4, no. 3, 1964, p. 62 which references a development for Bata International “comprising over 200-tons of steelwork fabricated and erected by Dorman Long & Amalgamated Engineering Ltd.”

77 “Commonwealth Development,” debated on Friday 30 November 1956, *Hansard*, vol. 561, URL: <https://hansard.parliament.uk/Commons/1956-11-30/debates/14cd828e-dcc7-4fda-83a2-e5be6d3ab895/CommonwealthDevelopment>. Accessed on 17 July 2024.

78 “Sierra Leone: The Voice of the Commonwealth,” *The Sphere*, 29 April 1961, p. 164-183.

79 *Ibid.*

80 John CARTWRIGHT, *Political Leadership in Sierra Leone, op. cit.* (note 57), p. 35.

81 See, for example, Sophie HOCHHÄUSL, Ross EXO ADAMS, Daniel A. BARBER, Aleksandr BIERIG, Kenny CUPERS, Isabelle DOUCET, Jennifer FERNG, Sabine VON FISCHER, Kim FÖRSTER, Maroš KRIVÝ, ANDRES KURG, AYALA LEVIN, GINGER NOLAN and ALLA VRONSKAYA, “Architecture and the Environment,” *Architectural Histories*, vol. 6, no. 1, 2018, p. 20. DOI: <http://doi.org/10.5334/ah.259> and Kim FÖRSTER, “Undisciplined Knowing: Writing Architectural History through the Environment” in *idem* (ed.), *Environmental Histories of Architecture, op. cit.* (note 11). For a specific example of this scholarship that deals with the landscape-scale impacts of building material manufacture see Janet ORE, “Workers Bodies and Plywood Production: The Pathological Power of a Hybrid Material,” *Aggregate*, vol. 10, 2022. URL: <https://we-aggregate.org/piece/workers-bodies-and-plywood-production-the-pathological-power-of-a-hybrid-material>. Accessed on 17 July 2024.

82 Taylor Woodrow company papers refer to expatriates as “Europeans.” It is likely that the majority were British, although papers in the Ghana Public Records and Archives suggest that the colonial regime looked favorably upon visa applicants from other European nationals to the Gold Coast Colony if they had construction experience. It is therefore possible that Taylor Woodrow employed non-British “skilled” staff in West Africa. Accra (Ghana) Public Records and Archives Administration, Immigration Quotas, GH/PRAAD/RG.5/1/161. For more on the falsely constructed notion of skilled and unskilled staff, see Linda CLARKE and Christine WALL, “Skilled Versus Qualified Labour: The Exclusion of Women from the Construction Industry,” in Mary DAVIS (ed.), *Class and Gender in British Labour History*, London: Merlin Press, 2011.

83 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow West Africa, Notes of a Meeting, 22 July 1946, UAC/2/35/3/TC/1/1/4.

84 *Ibid.* The cost of sea passage for staff was around £85 per person, and that of BOAC air passage £110. Taylor Woodrow West Africa’s minutes are full of instances of complaints at the higher costs of their work.

85 See Łukasz STANEK, “Race, Time, and Architecture: Dilemmas of Africanization in Ghana, 1951-66,” *Journal of the Society of Architectural Historians*, vol. 83, no. 2, 2024. DOI: <https://doi.org/10.1525/jsah.2024.83.2.191> on the Africanization of the Gold Coast’s Public Works Department. See also Accra (Ghana) Public Records and Archives Administration, Immigration Quotas, GH/PRAAD/RG.5/1/161. Taylor Woodrow’s explanation for its often high prices—which saw it lose many open tendering projects to smaller competitors, increasingly especially after independence in Ghana and Nigeria to African owned competitors—was that the company overheads were higher due to the maintenance and depreciation costs of its fleet of heavy earth moving machinery required for specialist civil engineering and infrastructure jobs like road and harbor construction, costs that smaller general building contractors did not have to bear.

86 Frederick COOPER, *Decolonisation and African Society: The Labour Question in French and British Africa*, Cambridge: Cambridge University Press, 1996 (African Studies), p. 110-167. DOI: <https://doi.org/10.1017/CBO9780511584091>.

87 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow West Africa, Notes of a Meeting, 16 May 1956, UAC/2/35/3/TC/1/1/2.

88 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow Ghana, Notes of a Meeting, 2 August 1957, UAC/2/20/BN/1/2/1.

89 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow Sierra Leone, Notes of a Meeting, 5 February 1963, UAC/2/21/E/1/2.

90 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Taylor Woodrow Sierra Leone, Notes of a Meeting, 5 February 1963, 4 June 1963, UAC/2/21/E/1/2.

91 Port Sunlight (United Kingdom), Unilever Archives, United Africa Collection, Chairman’s Correspondence Box 61, Memorandum from Directors of Taylor Woodrow Ghana to Sir Frederick Pedler regarding future policy in Ghana, 12 January 1962, UAC/1/3/4/17/3.

92 Łukasz STANEK, *Architecture in Global Socialism, op. cit.* (note 12) and Ayala LEVIN, *Architecture and Development: Israeli Construction in Sub-Saharan Africa and the Settler Colonial Imagination, 1958-1973*, Durham, NC: Duke University Press, 2022.

93 Stephanie DECKER, "Corporate Legitimacy and Advertising: British Companies and the Rhetoric of Development in West Africa, 1950-1970," *Business History Review*, vol. 81. no. 1, 2007, p. 62. DOI: <https://doi.org/10.1017/S0007680500036254>. See also Stephanie DECKER, *Postcolonial Transition and Global Business History: British Multinational Companies in Ghana and Nigeria*, New York, NY: Routledge, 2022 and Sarah STOCKWELL, "Political Strategies of British Business During Decolonisation: the Case of Gold Coast/Ghana," *Journal of Imperial and Commonwealth History*, 1995, vol 23, no. 2, p. 277-300. DOI: <https://doi.org/10.1080/03086539508582953>.

94 Iain JACKSON, Ewan HARRISON, Michele TENZON, Rixt WOUDESTRA and Claire TUNSTALL, *Architecture, Empire, Trade: The United Africa Company, op. cit.* (note 1).

95 R.M.E. DAIMANT, "The Arcon System," *op. cit.* (note 4), p. 1049-1050. See "A New Head Office for the Bank of West Africa Ltd," *The West African Builder and Architect*, vol. 1, no. 1, 1961, p. 39.

96 The Silberkuhl system was used by Laings for the Wall's ice cream factory in Gloucester as well as at Apapa, Nigeria, for the UAC's vehicle assembly plant there. The system was invented by Wilhelm Silberkuhl in 1956.

97 Viviana D'AURIA, "From Tropical Transitions to Ekistic Experimentation: Doxiadis Associates in Tema, Ghana," *Positions: On Modern Architecture and Urbanism/Histories and Theories*, no. 1, 2010, p. 40-63. URL: <https://www.jstor.org/stable/25835101>. Accessed 19 July 2024; Michele PROVOOST, "Exporting New Towns: The Welfare City in Africa," in Mark SWENARTON, Tom AVERMAETE and Dirk van den HEUVEL (eds.), *Architecture and the Welfare State*, London: Routledge, 2014, p. 277-297; Iain JACKSON, "Development Visions in Ghana: From Design Schools and Building Research to Tema New Town," *Architectural History*, vol. 65, 2022, p. 293-326. DOI: <https://doi.org/10.1017/arh.2022.13>.

98 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Corporate Planning Box 7, "Tema Case Study," UAC/1/9/1/4/14.

99 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, "UAC Handicrafts Factory," UAC/1/11/9/55.

100 Stephanie DECKER, "Corporate Legitimacy," *op. cit.* (note 93), p. 59-86.

101 In his speeches and writings, Nkrumah made a clear distinction between the neo-colonial actions of foreign firms in Africa, which were to be strongly resisted, and "investment" from foreign capital which was to be encouraged. See for example, Kwame NKUMAH, *Neo-Colonialism, op. cit.* (note 16), x-xi.

102 "Nigeria's Biggest Textile Mill," an advertisement for Taylor Woodrow Nigeria. See *Nigeria Magazine* no. 76, March 1963, p. vi. On the Kaduna Textile Mill, see Salihu MAIWADA and Elisha RENNE, "The Kaduna Textile Industry and the Decline of Textile Manufacturing in Northern Nigeria, 1955-2010," *Textile History*, vol. 2, no. 44, 2013, p. 171-196, DOI: <https://doi.org/10.1179/0040496913Z.00000000027>.

103 ARCON, "The Arcon Group, 1947-1967," *op. cit.* (note 7), p. 5.

104 Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, Public Relations Box 56, "Report on African Economy," 1959, UAC/1/11/19/88.

105 *Ibid.*

106 Alan JENKINS, *On-Site, op. cit.* (note 30), p. 76. Jenkins notes that "with a change of government, economic difficulties and uncertainty over future taxation" the company laid more emphasis on export earnings in the 1960s.

107 This is suggested by the fact that when the Taylor Woodrow partnership with the UAC was finally dissolved in the early 1970s, the residual capital was distributed to a Taylor Woodrow subsidiary registered in the Bahamas. See Port Sunlight (United Kingdom), Unilever Archives, United Africa Company Collection, correspondence related to winding down, UAC/2/20/BN/1/2/5.

108 Alan JENKINS, *On-Site, op. cit.* (note 30), p. 76.

109 *Ibid.* The 1960s saw Arcon developments completed in Pakistan, British Honduras, Ascension Island, and Hungary. The prefabricated house was rebranded as the "Arcon Export House". "The Arcon Export House," *The Builder*, 11 June 1965, p. 1275-1276.

110 In Northern Nigeria, Taylor Woodrow had entered a partnership with the Northern Region government as a palliative to this contraction. As a result of this partnership, Taylor Woodrow's directors were unofficially informed that they had received contracts from the Northern Region government for a school building program, and accordingly began developing a range of Arcon primary and secondary school standardized models to be rolled out across the region, a contract worth £350,000 to the Taylor Woodrow group.

111 Hannah LE ROUX, "Circulating Asbestos," *op. cit.* (note 11), p. 12. Le Roux cites Otto Koenigsberger's list of alternative fibers including abaca, copra, or ramie in Charles ABRAMS,

*Man's Struggle for Shelter in an Urbanizing World*, Cambridge, MA: The MIT Press, 1964, p. 210, as evidence for this shifting emphasis in contemporary development discourse.

112 Charles ABRAMS, Otto KOENIGSBERGER, Vladimir BODIANSKY, *Report on Housing in the Gold Coast*, New York, NY: United Nations Technical Assistance Administration, 1956.

113 Hannah LE ROUX, "Circulating Asbestos," *op. cit.* (note 11), p. 13.

114 Brochure "Arcon Structures: The Three-Pin Frame," *op. cit.* (note 6).








115 ARCON, "The Arcon Group, 1947-1967," *op. cit.* (note 7).

116 *Ibid.*

117 Alex BREMNER, Johan LAGAE and Mercedes VOLAIT, "Intersecting Interests," *op. cit.* (note 11), p. 227-245.

118 "A New Lightweight Roofing Unit: A Design for Colonial Development," *The Builder*, 30 January 1948, p. 146.

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