

SERBIAN ARCHITECTURE EXPORTS TO COUNTRIES IN AFRICA FROM 1960 TO 1990: UNDERSTANDING TROPICAL ARCHITECTURE

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Abstract. *Cooperation between the Socialist Federal Republic of Yugoslavia and countries in Africa started under the auspices of the Non-Aligned Movement. The movement was founded in Belgrade, Serbia in 1961, to provide partnership and support for countries that needed to gain their national identity and establish state and public institutions after a long period of colonization. Such collaboration continued during the 1990s, regardless of the issues that the former Socialist Federal Republic of Yugoslavia was facing. Engagements of architects from Serbia, one of the Yugoslavian republics, in the construction of numerous buildings in countries in Africa have not been fully researched and presented so far. It was not only the designs that were not properly presented to the wider audience, but also other activities and cooperation in the areas of urban planning and design, preservation of architectural heritage, or technical assistance to governments. This paper investigates the architecture export from Serbia to countries in Africa from 1960 to 1990, critically examining the concept of tropical modernism that was one of the most dominant ideas in architecture of Africa from 1950s until the end of the century. It also looks into whether architects from Serbia who designed for countries in Africa understood the countries' cultural, economic, and environmental context.*

Key words: *tropical architecture, architecture export, Africa, architecture of independence, adaptive architecture, affirmative modernism*

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1. INTRODUCTION: CHARACTERISTICS AND SCOPE OF PRODUCTION OF ARCHITECTS FROM SERBIA IN AFRICA

Until the collapse of the Socialist Federal Republic of Yugoslavia (SFRY), the Serbian architects' production on the African continent was mostly characterized by large and highly demanding projects. These projects were particularly significant in the context of the establishment of statehood in liberated African countries. A prominent role was played by companies that, due to their capacities, were able to fulfill all the requirements of the client, from planning, design, engineering to execution, supervision and consulting, as well as to offer the market of building materials and other products important for the construction and furnishing of buildings in countries in Africa. After the collapse of SFRY, the situation changed due to the political, social, and economic circumstances in the nineties [1]. This paper analyses the period from 1960s to 1990, the era of the Socialist Federal Republic of Yugoslavia, through the work of Serbian architects in conditions of different climates and cultures.

The post-war reconstruction and modernization in the newly formed SFRY were carried out through ambitious five-year social development plans [2], which mostly included construction activities in almost all social and economic spheres. Over time, this approach gave birth to a comprehensive organization in terms of construction personnel and experience. As early as the second half of 1946, design bureaus, institutes and construction companies at the federal, republic and local levels were forming in order to perform a wide variety of tasks in SFRY. Due to the mastery of the most diverse design and execution tasks, especially the more complex and demanding ones, companies became competitive even outside the borders of SFRY. The period from 1951 to the economic reform in 1964 was marked by the growth of investments and efforts to modernize the construction industry, primarily through the application of modern technological solutions, construction techniques and new materials. The introduction of workers' self-management enabled design and construction companies to conduct their entire business under market conditions – independently appearing on the open market and finding jobs through competitions (bidding), as well as independent planning and programming of activities [2]. The SFRY construction sector began to appear on the foreign market as early as 1956, by participating in international tenders. However, objective obstacles still contained the country's presence on the world market at the time, especially in terms of price competitiveness. During the second half of the 1960s, the construction sector achieved extremely favorable business results, so that by 1978, the SFRY construction industry was among the most efficient areas of the country's economy. Out of the Yugoslav republics, companies from Serbia had the largest share in the total balance of works performed abroad (41.9% in 1969)¹ [3]. By early 1980s, the SFRY construction industry was present in 35 countries of the world on five continents, including 16 countries in Africa.

Although the motives of entering the foreign market were economic, arising from the general need to generate income and ensure the continuity of employment of the increased production capacities [3], at the same time they also reflected partnership with developing countries. For SFRY, the concept of international economic cooperation implied a contribution to solving problems that other countries might have had, specifically through

¹ Companies from Croatia came in second place (26.5%), followed by Slovenia (15.3%), while companies from Bosnia and Herzegovina (12.1%) and Macedonia (4.2%) had the smallest share. See: Smail Hodžić, "Constructors on the foreign market", in: 25 Years of Construction of Socialist Yugoslavia (Belgrade: Tehnika, 1970), 215.

the provision of economic, technical and other types of support. For African countries, SFRY represented a new economic partner, while for SFRY the African market was promising not only in terms of the exchange of goods, but also in the field of professional services and scientific and technical cooperation. Architects from Serbia and other SFRY republics relied on the knowledge and experience gained in the process of intensive reconstruction and construction in SFRY after the Second World War [2].

In 1978, the value of works carried out abroad amounted to about 1.3 billion US dollars [4]. The share of design services in the total amount of works carried out abroad was about 5% on average. However, during the 1970s when activities on the foreign market were at their highest, the achieved results in the field of architectural design confirmed the wide possibilities and capacities of the SFRY architecture design companies² [5]. Thanks to the role of the SFRY in the founding of the Non-Aligned Movement and the achieved results in architectural and urban planning, companies from Serbia got their first engagements in African countries by the early sixties. The cultural center in the Sudanese city of Khartoum was among the first projects by architects from Serbia for African countries after the declaration of independence. It was the project of the Belgrade-based architect Bratislav Stojanović, created in the late 1950s. Namely, Stojanović was staying in Khartoum in 1957 at the invitation of the Sudanese government, as part of the program of cultural cooperation between SFRY and Sudan, when he was offered to design a cultural center³ [6].

The decades following 1960 marked a time of great expectations in Africa. Namely, at the beginning of the 1960s, a large number of countries regained their independence from the colonial powers⁴ [1]. Despite numerous problems, the general impression of the countries' development was extremely optimistic.⁵ The optimism of the first years after the independence of African states was expressed through the establishment of new state capitals, which significantly reduced the administrative importance of the former capitals during colonialism. Researchers wrote that the continent was a "laboratory of modernism" during colonialism, with colonial powers conducting social experiments in architecture and urbanism in African countries. They could do so without opposition from the population and the administration – which would have occurred if such experiments were attempted in the countries of the colonizers [7]. However, the newly founded capitals of independent countries in Africa were also experiments of their independent governments. For example,

² On the African continent, Yugoslav companies performed works in Algeria, Angola, Botswana, Central African Republic, Egypt, Gabon, Ghana, Guinea, Cameroon, Kenya, Congo, Libya, Mali, Morocco, Nigeria, Sierra Leone, Sudan, Togo, Tunisia, Zambia and Zimbabwe.

³ Krešimir Martinović writes that the success of companies from Serbia in Africa was preceded by a series of competition victories. Examples include Rajko Tatić's design for the residence of the President of Lebanon, as well as certain notable Yugoslav realizations such as the pavilion of Vjenceslav Richter in Brussels.

⁴ In a conversation on September 26, 2023, Zoran Marković warned the authors that they should be more careful with the use of certain terms, especially "countries have regained their independence". He noted that those countries had never existed before in that form (with those borders and those peoples). The size of the states never existed in today's borders and with today's population (Niger, Mauritania, Central African Republic, etc.), and was the result of the violent colonial division of the continent. Zoran Marković also suggested the use of the term "colonial recomposition of territories and peoples". While pre-colonial Africa was not divided into today's borders and arrangements, there was nevertheless a certain degree of independence of various tribal peoples and kingdoms and in that context the term "re-independence" is used.

⁵ Optimism was shaken by the assassination of Congolese Prime Minister Patrice Lumumba in 1961, as well as by civil wars across the continent in which former colonial rulers played an important role.

Dodoma as the capital of Tanzania and Yamoussoukro as the capital of the Ivory Coast.⁶ Libreville in Gabon and Abuja in Nigeria were built according to the plan of the Japanese architect Kenzo Tange.⁷ The German architect Max Gutter developed the new capital of Ethiopia Bahir Dar in the Amhara region on Lake Tana in cooperation with Peter Petzold. The government center, ministries, imperial mansion and large residential complexes were designed to face Lake Tana. Belgian architect Lucien Kroll planned the new capital of Rwanda, Kimihurura.

Continuous contributions to the architecture of cities in African countries during the 1960s and 1970s came primarily from those architects who previously worked in Africa during colonialism. The most famous among them were British architects Edwin Maxwell Fry and Jane Drew. They were largely responsible for the “migration of modernism” and the creation of “colonial modernism” [8], as well as “tropical modernism”. In addition to British and French firms, architects from the United States of America⁸ [9], Israel, Italy, the Scandinavian countries, and Eastern European countries including SFRY, began to work on large complexes. The National Theater in Lagos, Nigeria, was designed by the Bulgarian architect Stefan Kolchev in 1976, while Kano Dundakov designed the Central Mosque in the same city, as well as the Sports Center in Ilorki, Nigeria. The buildings of the Ministry of Post, the Telecommunications Authority of Ethiopia and the General Post Office in Addis Ababa, Ethiopia, were designed by Ivan Štraus and Zdravko Kovačević from SFRY between 1964 and 1969 [10], while Cezar Lăzărescu from Romania designed the Parliament building in Khartoum, Sudan. Eastern European countries and other members of the Non-Aligned Movement increased their presence in African countries in the 1970s by offering African countries “alternative ways of modernism” [11]. Of course, if we understand modernism as a revolt against certain traditional norms, the question arises – what are the traditional norms in Africa against which the “imported” modern architecture revolts [12]? In parallel, during the 1960s and 1970s, African architects trained in the countries of Western Europe and North America, designed projects in African countries, mainly in the cities of Nigeria and Kenya⁹ [13].

2. MATERIALS AND METHODS

Until the beginning of the 1990s, information about the designs and architectural realizations of companies from Serbia on the African continent was available for the professional, as well as the general public. Most often, it came in the form of articles in professional magazines, statements and comments of architects in media, exhibition catalogs, articles in the daily press, announcements in newsletters and summaries in

⁶ A typical example is the establishment of the city of Yamoussoukro in the Ivory Coast based on the ideas of its president at the time to copy the plan of the Saint Peter's Basilica in the Vatican. After the death of the president, his successor left the city and started planning his own capital in the northern part of the country.

⁷ Tange previously worked for SFRY and designed the master plan of Skopje after the earthquake.

⁸ Since the 1970s, the strong influence of American architecture can be seen on several capital projects, especially in South Africa where former students of Louis Kahn worked on complex designs, especially Wilhelm Meyer, Glen Gallagher, Ivan Schlapotersky and Roelof Sorel Uytendogaardt, which raised the architecture of the region to the level of quality of the international standard. See more in: Udo Kultermann, "Introductory Essay: Continent of Hope", XXVI

⁹ Architects Olewole Olumuyiwa, Ifeanyi Chukuwa, Olayiwola Osuolate Balogun, and others built in Nigeria. In Kenya, David Mutiso stands out for his designs.

monographs of companies, reports in statistical yearbooks and economic analyses. These documents constitute a significant corpus of sources for today's research. With the disintegration of SFRY and the change in the social and economic context, this practice was almost completely lost. The available sources on the work of architects from Serbia in Africa are incomplete, uneven, unsystematized and scattered in various, mostly private archives of architects, and often inaccessible archives of former state enterprises that worked for foreign markets. Due to the dissolution or privatization of designing companies after the collapse of SFRY, but also during the bombing of Belgrade in 1999, many archival materials on designs and realizations were lost or destroyed. In addition to primary sources, publications in professional periodicals and the daily press, newsletters of construction companies, catalogues of the Architecture Exhibition of the Museum of Applied Arts¹⁰ [14] and other exhibitions¹¹ [15], monographs of architects¹² [16] and overviews of the development of Yugoslav and Serbian architecture are also important for research. Among these, publications by author Mihajlo Mitrović are particularly important for understanding the "Energoprojekt" designs [17].

For the purpose of acquainting the domestic professional public to the work of Yugoslav architects abroad, which intensified in the 1960s, "Architecture Urbanism", the magazine of the Association of Architects of Yugoslavia, devoted issue 58 from 1969 to this topic. In a short editorial called "Our builders abroad", the architect Aleksandar Đokić stated that the activity of Yugoslav builders in the world remained largely unknown to readers [18] compared to the architectural creativity from other areas realized in Serbia, such as the work of architects from Russia, Hungary, Austria, Italy, etc. Until now, these have been in the domain of interest of researchers and historiographers to a certain extent. In contrast, the works of architects from Serbia in Africa, the most architecturally diverse and the longest lasting in terms of foreign achievements, were not included in the reviews of the development of Serbian architecture, nor were they considered more fully¹³ [19].

Available studies of the recent African architecture by authors from the Western countries, as well as authors from Africa, are usually conceived and directed by interpretations through the colonial context, that is, the aspirations of colonialism. Engagements and commitments of the younger generation of researchers from Serbia and other former Yugoslav republics, as well as the interest of the international scientific public in the architecture created in socialist Yugoslavia, influenced the works of architects and

¹⁰ For more information about the exhibitions of the Salon of Architecture in Belgrade from 1974 to 2001, with reference to the exhibited architectural works and authors, and the tendencies presented in the selection of articles published in the daily press, see: Aleksandar Milenković, *Architecture: Salonska Vizura* (Belgrade: Alliance of Architects of Serbia and the author, 2001).

¹¹ The exhibition "Three points of support: Zoran Bojović" was held in the Museum of Contemporary Art in Belgrade, from September 18 to October 22, 2012. See: Dubravka Sekulić, Katarina Krstić, Andrej Dolinka (ed.) *Three points of support: Zoran Bojović* (Belgrade: Museum of Contemporary Art, 2013).

¹² Ljiljana Bakić published the monograph "Anatomy of B&B Architecture" in 2012, in which she describes in detail the project work of hers and her husband's, including projects in African countries. See: Ljiljana Bakić, *Anatomy of B&B architecture* (Belgrade: Ljiljana Bakić, 2012).

¹³ So far, the most extensive work on the development of Serbian architecture of the 20th century was written by Miloš R. Perović. It does not cover the creativity of our architects outside of Serbia, except for the presentation of Vladimir Lojanica's project in Rwanda in the "Portfolio" part of the book. See: Miloš Perović, *Serbian Architecture of the 20th Century: from Historicism to the Second Modernism* (Belgrade: Arhitektonski fakultet, 2003). Also, the overview of Yugoslav architecture from 1945 to 1990 by Ivan Strauss did not provide a more specific insight into the works of Yugoslav architects outside of Yugoslavia. See: Ivan Strauss, *Arhitektura Jugoslavije: 1945-1990*. (Sarajevo: Svjetlost, 1991).

urban planners from Serbia in Africa to be modestly included in the recent research [1].¹⁴ A representative exhibition of Yugoslav architecture, organized in 2018 at the Museum of Modern Art (MoMA) in New York, entitled “Towards a Concrete Utopia: Architecture in Yugoslavia 1948-1980”, has a text in the accompanying catalogue about the architecture from Serbia in Africa [20]. In foreign monographic overviews of contemporary African architecture, certain projects built by architects from Serbia were highlighted. In addition to Ivan Štraus, born in Serbia, and Zdravko Kovačević with their complex of buildings in Addis Ababa [21], the skyscraper Findeco House in Lusaka, the capital of Zambia, by architects Dušan Milenković and Branimir Ganović from 1975 was also published [1].¹⁵ Furthermore, the Ministry of Agriculture in Tripoli, Libya, the project and realization of Milorad H. Jevtić, was published in “Architecture Review” (Fig. 1). The text about the building by Milorad H. Jevtić is entitled “Xenophilia in Libya” and criticizes the accelerated urbanization of cities after the discovery of oil in Libya and the engagement of foreign architects, as well as the aesthetics of an international style whose facade is covered with white marble. Also, there are frequent announcements of urban and architectural projects for cities in African countries by the trio Kandilis, Josić, Woods [44], which we include in the chronological presentation of the works of architects from Serbia, as Aljoša Josić was born in Bečej and educated in Belgrade, Serbia. Zoran Bojović’s International Trade Fair in Lagos 1973-1977 is presented in the catalogue of the exhibition at the Museum of Modern Art in New York, as well as the Ministerial Complex in Kano, Nigeria by Milica Šterić and Zoran Bojović from 1978 (Fig. 2). However, it is presented in the context of the work of architects from Yugoslavia [20], and not in the form of an overview of the architecture of the African continent, like the previously mentioned examples.

¹⁴ Researchers from Croatia who have dealt with the oeuvre of Croats in African countries have considered the “translation”, i.e. the “transfer” of some value systems of Croatian modern architecture and working conditions to a design approach. See: Mojca Smode Cvijanović, Marina Smokvica, Andrej Uchytel, “Dragica Crnković Očko – African works of the Croatian architect”, 91-101; Marina Smokvica, Mojca Smode Cvijanović, *Heritage of International Cooperation: African and Asian Works of Croatian Architects*. Exhibition catalog (Zagreb: University of Zagreb Faculty of Architecture, 2021). 12 Ljiljana Bakić, Dragoljub Bakić, Bakić & Bakić (Beograd: Energoprojekt, 1983), Mihajlo Mitrović, *Na kraju veka: arhitektura Energoprojekta 1951-1995* (Belgrade: Energoprojekt – Urbanizam i arhitektura, 1995), Ljiljana Bakić, *Anatomija B&B arhitekture* (Beograd: Lj. Bakić: D. Bakić, 2012), Dubravka Sekulić et al. (ur), *Zoran Bojović: tri tačke oslonca* (Beograd: Muzej savremene umetnosti, 2013); Dubravka Sekulić, *Izgradnja nesvrstanosti: Slučaj „Energoprojekta“* (Beograd: Muzej suvremene umetnosti, 2016); Ива Њуџић, Тихомир Дичић, У рефлексима: 6°27'48.81"N – 3°14'49.20"E [Каталог изложбе представљања Републике Србије на 18. Међународној изложби архитектуре – La Biennale di Venezia] (Београд: Музеј примењене уметности, 2023)

¹⁵ Manuel Herz Ingrid Schroder, Hans Fockety, Julia Jamrozik (Ed.), *African Modernism: The Architecture of Independence*. Ghana, Senegal, Cote d'Ivoire, Kenya, Zambia (Zurich: Park Books, 2015), 574-577. Then, the skyscraper Fidelco House in Lusaka, the International Fair in Lagos and many other modern facilities for public and business purposes in urban centers built after the re-independence of African countries, contributed to mass migration from villages to cities, and thus to the creation of numerous informal and unhygienic settlements in cities. More in: Bert Lemmens, Daan van Tessel, “Finding the fruits of Modern Architecture in urbanizing Dar Es Salaam”, in: *ArchiAfrika Conference Proceedings: Modern Architecture in East Africa around Independence* (Dar es Salaam, Tanzania, July 27-29), 159. Consequently, projects in the cities of African countries that dealt with affordable housing, in order to eradicate informal, unsanitary settlements, tried to provide the population with socialist ideas and aesthetics in block buildings, but those projects did not prove to be successful. In the conversation that the authors of this paper had with Zoran Marković on August 1, 2023, he states that the misunderstanding of local needs (climate, history, tradition, way of life, etc.) resulted in the construction of completely inappropriate monuments-buildings such as the skyscrapers in Lusaka.

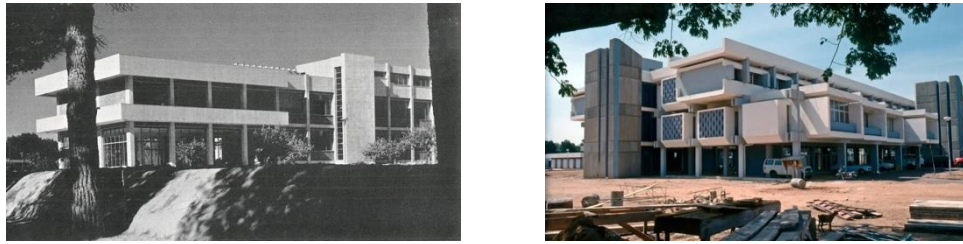


Fig. 1 and 2: Milorad H. Jevtić, Ministry of Agriculture in Tripoli, Libya, 1968. Source: *The Architecture Review*, No. 862 (1968), 28 (left); and Milica Šterić, Zoran Bojović, Vladimir Dobrović and Milan Petrović, Ministerial complex (partially built), Kano, Nigeria, 1970-1974. Source: Private archive of Zoran Bojović (right).

In order to further analyze the period and the works, the authors of this research conducted interviews with architects who lived and worked in Africa: Vladimir Lojanica, who worked on projects in Rwanda, Dr. Zoran Marković, who lives and works in Botswana, Dr. Dušan Ignjatović and Dr. Nataša Ćuković Ignjatović who worked on projects for Guinea-Bissau. These interviews helped the authors understand changes in practices in the last decade of the last century and understand whether or not there was a legacy of the work of the architects from Serbia in countries in Africa. In addition, the authors had an opportunity to read unpublished journals by the architect Zora Mitrović Pajkić from her trips to Libya and Algeria, as well see personal photographs and notes by Zoran Županjevac – both thanks to their families.

3. EXAMPLE OF PRACTICE BY SERBIAN ARCHITECTS IN COUNTRIES IN AFRICA

In the 1960s, the Belgrade company “Energoprojekt” developed activities in the Middle East, as well as in the greater part of the African continent. Simultaneously, the design institute “Centropjekt”, based in Belgrade and founded under the auspices of the Central Administration of Military Industry, focused its design activities in Ethiopia¹⁶ [22]. The first engagement of “Centropjekt” in Africa in 1962 was the design of the Sekondi military seaport in Ghana. As early as the middle of 1963, the institute was entrusted with the design of the new imperial palace in Addis Ababa, the capital of Ethiopia, which was designed by Branko Petrović, Kasim Osmančević, T. Nikolić and Jovan Zabukovec. Even though this project was not built, it helped “Centropjekt” establish itself in Ethiopia, thanks to the project’s complexity and size. “Centropjekt” soon received offers for other jobs, so that the institute’s activity expanded to include supervision and consulting services. Due to the volume of work, “Centropjekt” established a branch in Ethiopia.

The projects carried out during the 1960s for African countries by companies from Serbia were mainly for state administration buildings (headquarters of the government and

¹⁶ Slobodan Sindelić, “Our construction experts in Ethiopia”, *Arhitektura urbanism*, No. 58 (1969), 43-44. Namely, by the decision of the SFRY Government, on February 10, 1950, the Central Project Institute CUVI (Central Administration of Military Industry) was established, and then during 1950-1951 CUVI formed the Project Institute “Centropjekt” with headquarters in Belgrade. The accelerated professional rise of “Centropjekt” resulted in one of the largest and most important design houses in Yugoslavia, and later in Serbia. Apart from Belgrade, “Centropjekt” opened offices in Zagreb and Ethiopia.

state administration) and other state institutions of educational, health and cultural purposes or of social importance. Dragoljub Bakić, an employee of “Energoprojekt” at the time, is the author of the government headquarters project of Zambia in Lusaka (1968-1969), recognizable for its organic-futurist architecture. A year earlier, Bakić, in consultation with Milica Šterić, worked on the project of the School of Technical Sciences of the University of Lusaka (1967), while Dušan Milenković and Zoran Bojović designed the Independence Stadium in Lusaka for 100,000 visitors. Aleksandar Keković, Slobodan Milićević and Pavle Pašić designed the school center for Lagos, Nigeria. None of the above-mentioned designs from mid-sixties of the last century were built.

Almost all architects from Serbia that worked on projects in countries in Africa belonged to the new generation educated after the war, whose interest in architectural trends in the world influenced the development of their own ideas and mastery of contemporary approaches, expressed in the functionalism of international modernity, and later in critical regionalism [45]. The experiences gained during the work in Serbia, primarily from the end of the fifties, when the authors focused more on the social importance of architecture, were also transferred in the work on projects for African countries. Architecture was supposed to support the premises of development, modernization and optimism of independent states and their social needs, creating the so-called “affirmative modernism”¹⁷ [1] which sublimates the efforts of African countries to build buildings significant for the statehood of free countries in a short period of time. By early 1970s, companies from Serbia had already established themselves well with the realization of a university town in Libya, a hospital in Addis Ababa, industrial facilities in Sudan and other important projects. In some instances, the work was given to these companies directly without a bidding¹⁸ [23].

During the 1970s, the company “Energoprojekt” realized the most architectural projects in Africa. The company formed a special organizational unit for architecture and urban planning in 1971 headed by the architect Milica Šterić. This period in the company remained known as the “golden African phase” [24]. In its work, “Energoprojekt” remained primarily focused on the foreign market, which was its main comparative advantage, while organizationally it strove to integrate architectural and urban planning expertise with construction practice – from basic infrastructure to interiors. There were also other design firms from Serbia, mainly from Belgrade, such as “Architecture and Urbanism”, “Centroprojekt”, and “Invest-biro” and “Osnova” to a lesser extent, which participated in several architectural competitions. “Energoprojekt” achieved several realizations until the dissolution of SFRY, including the Ministerial Complex in Kano, Nigeria (1970-1974) designed by Milica Šterić, Zoran Bojović, Vladimir Dobrović and Milan Petrović; the International Trade Fair in Lagos, Nigeria (1973-

¹⁷ The authors Ilija Gubić and Nebojša Antešević coined the term “affirmative modernism” to indicate that architecture at that time most often served to make a certain country and government more “modern”, while such architecture renounced any other context in terms of inherited building values, local materials and capabilities of the local construction sector, climate and other local conditions. The term “affirmative modernism” represents a kind of criticism of “architecture for export”, a precursor to today’s global conditions and construction often without reference to local contexts.

¹⁸ One of the first planning and design tasks in Africa in the early 1960s was the creation of an urban plan for Conakry – the capital of the Republic of Guinea, and within it the urban and architectural project of the state administration and government complex, entrusted to the Urban Planning Institute in Zagreb. At the time, the Institute already had a developed practice and numerous experiences in making plans and projects in Yugoslavia. It developed the architectural designs of numerous residential, business, commercial, service, educational, sacral buildings for other purposes according to the urban plan of Conakry in cooperation with the Belgrade-based “Energoprojekt”. For the creation of the urban plan of Conakry, see: Radovan Mišćević, “Urban plan of Conakry, the capital of the Republic of Guinea”, *Arhitektura urbanism*, No. 58 (1969), 39-42.

77) by Zoran Bojović; International Conference Center in Kampala, Uganda (1970-1971) by Dušan A. Milenković; Business building “Findeco” in Lusaka, Zambia (1973-76) by Dušan Milenković and Branimir Ganović; Sports complex in Bangui in the Central African Republic (1974-1975) by Zoran Bojović; Arua International Airport, Uganda (1977-78) by Predrag Đaković and Miodrag Cvijić; International Conference Hotel in Libreville, Gabon (1975-76, 1977-78) by Dušan A. Milenković; City Hall in Libreville, Gabon (1977-1978) by Radomir Stopić, Mario Jobst and Dušica Maksimović; Hotel De Ville in Libreville, Gabon by Radomir Stopić, Mario Jobst and Dušica Maksimović (1978), etc. Due to their appearance, function and position, most of the buildings of Serbian architects in countries in Africa were in an isolated landscape, and most of them did not contribute to the improvement of the urbanity of the cities.

In terms of design, over time, the authors moved away from established modernist premises. They articulated their ideas more freely in light of the new aspirations brought about by the rise of postmodernism. On the other hand, there was a lack of research into the characteristics of the context that would be applied in architecture. Only a few architecture designs adopted aspects of regionalism – mostly hotels and other architecture for tourism. Dubravka Sekulić stated that due to the volume of work, architects did not have time to study the context in which they worked, because they were expected to be enterprising while working abroad and to try to get new orders. Such pressure did not allow architects to consider the impact of their projects on the existing environment [24]. The authors of this paper claim that there was enough information about the architectural practice of “Tropical Modernism” in African countries in Belgrade at the time, through foreign magazines that institutions in Serbia and individual architects were subscribed to.¹⁹ While describing the architecture of the convention center complex and the “Sheraton” hotel in Harare (Zimbabwe) from 1987 (Fig. 3), architect Ljiljana Bakić states how she and her husband tried to capture something of the general spirit of Harare, previously unknown to them. In the rounded parts of the building’s volume, one can see a distant reminiscence of the curves of the Great Zimbabwe complex [25]. In addition to emulating traditional forms from the environment, contemporary architecture should also resolve the issue of building in different climatic conditions, which turned out to be foreign to architects from Serbia.



Fig. 3 Ljiljana Bakić and Dragoljub Bakić. Conference center and hotel Sheraton. Harare, Zimbabwe, 1981-1985.

Source: Mihajlo Mitrović, *Arhitektura Energoprojekta*. Beograd: Energoprojekt, 1995.

¹⁹ The foundation of the architect Milan Zloković based in Belgrade, Serbia, was kind to give authors “Architectural Review” from its library to research tropical architecture. The journals are from 1959, 1960 and 1968, and they provide an overview of contemporary practices in Africa.

4. TROPICAL ARCHITECTURE – THE MAIN THEME AND DESIGN DILEMMAS IN THE ARCHITECTURE OF AFRICA IN THE 20TH CENTURY

Today, many schools of architecture in Africa espouse an “Afrocentric” position, claiming that all important lessons of the history of architecture can be read from the African continent’s own history [26]. Even though modernist architecture in African countries was also built in the period between the two world wars, it became increasingly present after gaining independence. Modern architecture was commissioned for or by ministries and departments in charge of public affairs, faculties or departments for architecture, as well as through the private sector. Architects from countries out of Africa who worked in those institutions integrated the modernism they experienced in their countries or in the former colonies into designs.

In the overview of architectural movements and schools in Africa, the term “tropical architecture” is used for the movement that arose in the west of the continent in today’s Ghana, Nigeria, Sierra Leone and Gambia, mid-20th century while under the administration of Great Britain [27]. The Architectural Association (AA) School in London worked closely with the School of Tropical Medicine and Hygiene, and that was how the idea of tropical architecture for colonial countries came about [28]. In the 1950s, the AA opened a department dedicated to the research and studies on “Tropical Architecture” providing specific courses on this new design language. Many of the AA school were appointed later as responsible town planners and architects in colonial offices, such as Maxwell Fry and Jane Drew in West Africa, first in Ghana, then Nigeria. This is considered the beginning of the development of tropical architecture on the continent [29, 30, 31]. This architecture movement was later called African critical regionalism, where the works and theoretical discussions of Anthony Almeida in Tanzania, Jean Francois Zevaco from Morocco, Norman Eaton from South Africa and Demas Nwoko from Nigeria were particularly important [32]. Alex Tzonis and Liliane Lefaivre, who first coined the term in 1981, were followed by Kenneth Frampton and his collection of critical essays on the topic: “Towards a Critical Regionalism: Six Points for an Architecture of Resistance” and “Ten Points on an Architecture of Regionalism: A Provisional Polemic” [33]. In 1959 and 1960, the well-known British architectural magazine *Architectural Review* published two special issues devoted to new architecture throughout the “Tropical Commonwealth” in which selected authors wrote articles for each territory or region with an emphasis on technical issues related to warm climates [34]. The editorial introduction to the second part devoted to Africa states: “Most of the buildings shown here were either designed in England by English architects (as in the case of many of those in West Africa) or by architects of English origin, mostly trained in England or America, whom they work locally” [35]. The descriptions and solutions presented in the magazine concerned material problems at the expense of engaging with more subtle local demands. In addition to the presentation of realizations in African countries, the magazine also published an article on the principles of design in the tropics. The author of the book was the head of the Department of Tropical Buildings in Britain and included relevant information that architects should know (aspects of shading, air movement, thermal insulation, heat capacity and air conditioning) [36]. Also, the architects mentioned above, Maxwell Fry and Jane Drew, produced a manual called “Tropical Architecture in the Dry and Humid Zones” in 1956, as well as an updated version in 1964 based on their experiences in West Africa for designers working in similar contexts [37].

The book by Fry and Drew is the forerunner of a series of manuals on construction in tropical zones: *Village Housing in the Tropics with Special Reference to West Africa*, [38] *Manual for Tropical Housing and Building* [39], and *Design with Climate Bioclimatic Approach to Architectural Regionalism* [40]. Significant pioneering work dedicated to tropical architecture in central Africa was published in the Republic of Zaïre in 1992: *L'Architecture Tropicale. Théorie et mise en pratique en Afrique tropicale humide* [*Tropical Architecture. Theory and Practice in Humid Tropical Africa*], written by Paul Dequeker, Kanene Mudimubade and A. De Herde. In the first paragraph of the introduction, the fundamental question for a correct reading of the buildings is posed. It is a question of defining an architectural grammar that would fit the context: "We have tried to define an architectural grammar capable of uniting twentieth-century technology with the particular conditions of the region, with the local materials and construction techniques available, with the human scale and with a climatic and geometric rigour" [41]. Dequeker and Kanene exhaustively describe and illustrate the construction process in the Congolese humid tropical Africa: climatic approach, wind and ventilation, concealment or solar protection, protection against heat transmission and natural lighting. This climatic problem, connected with the composition of the constituent parts of the buildings, had given birth to an identity. Field research for architecture linked to climate and place leads, therefore, the language of the modern movement to align itself with the context. The identity of the place is found expressed in the artefacts through the use of materials and with the epiphany of an architectural grammar composed and regulated by a few but precise principles capable of providing an adequate protection [46]. These principles are also a pretext for creating a set of construction details aimed at optimizing the use of these two natural elements, the sun and the wind, to which the relationship with the local tradition is embedded. In tropical Africa, orientation is a determining factor for thermal comfort. Usually, the layout of the internal spaces of the building is favored along the east-west axis, with the north and south facades less exposed to direct solar radiation [40]. Another critical factor in orientation is the distance from the equator, which allows us to know the sun's inclination during the day, to equip the building with adequate and appropriate protection devices. However, even the walls exposed to the east and west, sunny in the morning and afternoon respectively, must be protected and insulated so that the heat is not transmitted inside. The roof, more exposed to the sun during the day, must be able to reflect the heat, as well as provide an adequate distance from the ceiling to ventilate constantly. In humid tropical climates, it is also advisable to arrange the buildings in such a way so as to exploit the prevailing winds as a natural resource capable of cooling the internal spaces [47, 48]. The tropical decorative apparatus consists of those architectural elements peculiar to the modern language adapted to the context: canopies to increase the protection of the façade, vertical or horizontal slats (*brise-soleil*), perforated walls, ventilated façades, overhangs to protect openings, air intakes for cross ventilation and the use of sheltered entrances [47, 49].

5. READING TROPICAL MODERNISM IN WORKS BY ARCHITECTS FROM SERBIA. EXAMPLE OF PRACTICE BY SERBIAN ARCHITECTS IN COUNTRIES IN AFRICA

The features of "Tropical Architecture" mentioned in the previous section are recognizable in various projects, for instance in the Residence of the Company ZECCO (1972) in Lusaka, Zambia, by Vera Dukić and in the Ministerial Complex in Kano, Nigeria

(1970-74). Shading is a simple method of blocking the sun before it enters the interior spaces of the building. The brise-soleil device, or “sun breaker”, refers to a permanent solar screening technique: simple patterned concrete walls or aluminum panels first used in Africa in Le Corbusier’s *Maison Locative Ponsik* project (1933).

In contrast to “Tropical Architecture” buildings that were built to respond to the climate, to have passive cooling systems, etc., new buildings at the end of the 1960s had the aesthetics of corporate buildings, glass facades, utilitarian block structures and air conditioning systems [32]. In 1970s, the “Tropical Architecture” movement died down, especially due to the feeling of prosperity when oil was discovered in Nigeria and when architecture became “American”, using corporate glass. In order to support broader SFRY exports, architects from Serbia that built in African countries were suggesting the building solutions and materials that would be depending on Yugoslav companies. The Yugoslavian export was mostly construction, while in comparison the share of Yugoslavia’s architectural activity was small [42]. Since the early 1990s, the political and social development of Africa has been defined by numerous internal struggles and constant external interventions, complicating the earlier optimistic picture of the continent’s development. The civil wars in Nigeria, Sudan, Somalia, Angola, Burundi and the genocide against the Tutsi in Rwanda in 1994 slowed down the development of the continent. As a result of these events, which were additionally intensified by natural disasters and epidemics, construction slowed down. Commercial architecture started booming, which seems to be trying to keep an image of global competitiveness of cities in Africa. Yet, the commercial architecture built also managed to have some elements of the buildings inspired by the heritage of countries in Africa.

In the political sense, African countries remained friendly countries even after the breakup of Yugoslavia, because Serbia continued to inherit and cherish the values of the Non-Aligned Movement from previous decades. However, economic cooperation and business exchange decreased, primarily related to planning, architecture and construction. Companies in Serbia in the 1990s, within the limits of realistic possibilities, continued cooperation with African countries, primarily thanks to previously achieved results, professional qualities and the trust gained. The 1990s were also years of chaos, confusion and contradictions for architecture in Serbia [43], especially as a result of sanctions imposed on the country. Architects from Serbia who independently organized their practice in Africa in those years relied more and more on local opportunities and needs, and not on current architectural tendencies in Yugoslavia, as was the case decades before. They, unlike the increasingly rare engagements of large design firms, found themselves able to get to know the local environment better and approach the development of projects with more attention paid to the context. For example, Ljiljana Bakić and Branislav Lakić won the invitational competition and built the estate consisting of 55 houses in a row for platinum mine managers (1995-1996), and then the regional peacekeeping center in the Zimbabwe Army General Staff complex in Harare (1997-1999). Both projects used “absolutely” local material: bricks [16] (Figs. 4 and 5). As political and social conditions had changed in certain African countries since then, some of the Serbian architects returned to Serbia, some went further afield to countries in the Middle East, a certain number of them stayed in Africa working in different jobs, while some of the architects continued to participate in the design competitions from Serbia – which is one of the practices that has been constant for all these decades.



Fig. 4 Ljiljana Bakić and Branislav Lakić, Regional Peacekeeping Center, Harare, Zimbabwe, 1997-1999. Source: Ljiljana Bakić, *Anatomy of B&B architecture*, Belgrade: Publikum, 2012, 84-87.

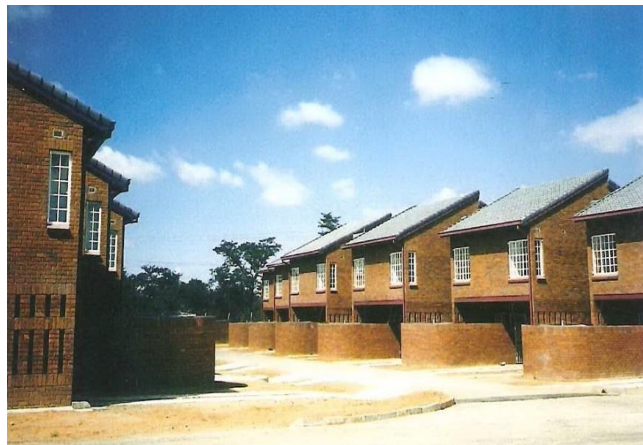


Fig. 5 Ljiljana Bakić and Branislav Lakić, "Norton" Housing Estate, Norton, Zimbabwe, 1995-1996. Source: Ljiljana Bakić, *Anatomy of B&B architecture*, Belgrade: Publikum, 2012, 78-81.

6. CONCLUSION: PERCEPTIONS OF TROPICAL ARCHITECTURE – BETWEEN IDEOLOGICAL-POLITICAL INCLINATION AND ECONOMIC PRAGMATISM

Despite the fact that the work of architects from Serbia was not documented in Africa, friendly relations between Serbia and African countries were preserved and continued to develop. The valorization and research that were carried out in this paper, will contribute to the international affirmation of the contribution of architects from Serbia to the architectural heritage of African countries. This is particularly significant due to the increasing influence of African countries on the cultural politics of the world. Finally, the

paper reflects on how valuable the work of Serbian architects is for an architectural heritage in Africa and questions did it inspire local practice and should it be included in the discourse on contemporary architecture in Africa.

What deserves further research is valorization of the architecture by Serbian architects in African countries, in the context of the overall history and theory of architecture in Africa. The current valorization of individual buildings is guided by the valid theoretical principles of post-war architecture in the SFRY and international modernism, especially brutalism as its expression, which might not correspond to the real circumstances and conditions of that time in many of the African countries. This gap was bridged by introducing the tropical modernism concept and reviewing the practice through that concept.

Future research should investigate whether the work of Serbian architects in African countries led to a form of negation of the particularities of each country's context (air humidity, temperature, local materials, local opportunities), and whether this had consequences on architecture in those countries.

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IZVOZ ARHITEKTURE IZ SRBIJE U ZEMLJE AFRIKE OD 1960. DO 1990. GODINE: RAZUMEVANJE TROPSKE ARHITEKTURE

Saradnja Socijalističke Federativne Republike Jugoslavije i zemalja Afrike započela je pod okriljem Pokreta nesvrstanih, osnovanog u Beogradu, Srbija 1961. godine, kao prijateljska i partnerska podrška zemljama koje su imale potrebu da steknu svoj nacionalni identitet i uspostave državne i javne institucije nakon dugog perioda kolonizacije. Takva saradnja nastavljena je i tokom devedesetih godina prošlog veka, bez obzira na prilike u Srbiji i regionu. Angažman arhitekata iz Srbije na izgradnji brojnih objekata u zemljama Afrike do sada nije u potpunosti istražen i prikazan. Ne samo da projekti nisu na pravi način predstavljeni široj publici, već ni druge aktivnosti i saradnja u oblastima urbanizma i projektovanja, očuvanja arhitektonskog nasleđa, niti tehničke pomoći vladama. Ovaj rad istražuje izvoz arhitekture iz Srbije u zemlje Afrike od 1960. do 1990. godine, kritički ispitujući koncepte tropskog modernizma koji je bio jedna od najdominantnijih ideja u arhitekturi Afrike od 1950-ih do kraja veka.

Ključne reči: *tropska arhitektura, arhitektonski izvoz, Afrika, arhitektura nezavisnosti, prilagodljiva arhitektura, afirmativni modernizam*