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Post-war Cities:
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Editorial

Destroyed cities do not only need to rebuild their physical urban environment, they also need to (re)organise their social fabric, secure their economic future, and in many cases (re)construct their place identities. But where do they start in the process of planning recovery and reconstruction? What processes are implemented? Which actors are involved, and in what ways does the level of destruction and the subsequent planning/decision-making affect the future of these cities? In the midst of an ongoing destructive war in Europe, as well as in the context of more-frequent natural catastrophic events taking place around the world, planning recovery and reconstruction are research topics requiring renewed, urgent attention.

On the one hand, war causes major and highly complex disruptions for a city, ranging from its infrastructure to the livelihoods of its inhabitants. On the other hand, war appears to be a major catalyst for urban change. Hence, there is still much to be studied in the field of post-war planning, reconstruction, and recovery. Existing literature has investigated this topic through several lenses: architecture, urban archaeology, heritage, urban design, city planning, critical cartography, and social geography. Researchers have documented and quantified the number/type of bomb attacks on selected cities and the subsequent damage caused, examined reconstruction efforts, alternative planning visions and designs and their legacies, and more recently shifted the focus to the maps of war, critically delineating and 'reading' their production and purpose, as well as the information they represent and communicate. This double issue builds on this work, extending the existing knowledge base, widening the geographical focus, and advancing understanding of the disparate intentions, strategies, and logics of city reconstruction and post-war urban planning and their legacies on today's cities. In doing so, it provides a critical statement on urban planning and the rebuilding of cities/countries and their communities affected by the aftermath of war and disaster.

Using the case of post-war Britain and Ireland, **Congreve** discusses how, through the New Jerusalems project, a new evidence base is being developed and made available to researchers of the New Town movement, offering a significant new resource for researching, for example, the impact of housing and urban design on public health.

Sedlmeyer, similarly, explores how recent research in the field of Second World War damage maps has resulted in the discovery of a rich collection of unstudied archival material across Germany. He investigates the alternative interpretations and missing information, and critically questions the maps' backgrounds, intentions, and accuracy.

Mathortykh explores the representation of war destruction, and the planning of post-war reconstruction and recovery, via digital forms of

mapping. Presenting several digital mapping projects, he shows how the destruction of Ukrainian cities and the general impact of contemporary wars on urban spaces can be tracked.

Using GIS and an urban analytics approach, **Alvanides** and **Ludwig** show how information can be extracted from past records of damage and can be converted into spatial data that can be visualised and analysed with a GIS. This method allows researchers to operate with the information found in maps in novel ways, providing new ways to analyse post-war cities.

Bertram explores the reconstruction process of Belfast, a city severely affected by the Northern Ireland conflict, and that is still segregated and fragmented in some parts. She evaluates and debates the ways in which the reconstruction efforts were designed to change the city's image, through a vision of 'normalisation'.

Building on the notion of city image, **Gierko** investigates how the geopolitical border changes affecting Popowice, in Wrocław, and the ensuing will to (re)construct a Polish identity, impacted the subsequent reconstruction efforts.

Examining Skopje's reconstruction after the earthquake in 1963, **Korolija** and **Pallini** explore the debates and alternative scenarios proposed for the future development of the city, and the nexus between the gigantism of planned architectural projects, the technicalities of town planning, and the basic demands of the present for emergency accommodation.

Using the example of conflict in Aleppo, Syria, **Laue** traces the emergence of formal and informal pre-conflict networks and collaborations, as well as their potential in post-conflict recovery efforts. She discusses the role of continuous international discourses and expert networks, and the need for a coordinated exchange between all involved stakeholders.

In the context of the long aftermath of the Arab Spring revolutions and associated armed conflict in Benghazi, Libya, **Serag** emphasises the need for a 'framework for intervention' and international engagement and collaboration, which he argues is vital for effective planning, investment/access to funding, and to build upon existing knowledge/past experience.

Finally, **Rizk** explores, through the lens of social capital, the governance of recovery and reconstruction using the examples of Beirut's post-war recovery in 1992 and the post-explosion recovery in 2020.

Carol Ludwig, Seraphim Alvanides & Franziska Laue

Post-war Cities: Planning Recovery and Reconstruction

Editors: Carol Ludwig, Seraphim Alvanides and Franziska Laue

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Multi-fold Perspectives on Skopje's Reconstruction Megastructures, Infrastructures, and Emergency Housing

Aleksa Korolija and Cristina Pallini

Reviewing and cross-checking available literature against articles published in international and Yugoslav journals, this paper highlights the diverging aspects of Skopje's reconstruction after the earthquake of 26 July 1963, an unmatched case study on the architectural and town planning debate of the mid-sixties. While the master plan proceeded in forced stages as alternative scenarios were pondered, new emergency neighbourhoods were expanding daily along the main arterial roads. The historic centre was considered a vital part of Skopje, yet the future of its architectural expression – according to the entries of the 1965 competition – remained entangled in the infrastructural layout. When considering the complexity of all these conditions (and the pressure of time), the notion of context takes on a plurality of meanings: Skopje, a city grafted onto place geography but periodically reshaped by tumultuous settlement processes; 150,000 inhabitants that suddenly became homeless; professionals from the town planning institutes of Tito's Yugoslavia; and experts from international organisations (e.g., seismologists, hydraulic engineers, economists, sociologists) as well as town planners and architects from different backgrounds. The subsequent planning documents highlighted some fundamental nodes, such as the physical features of the Skopska Kotlina (Skopje Basin), where a major national road junction was under construction, defining urban growth and productive articulation. Using the competition for the city centre as a starting point, we shall consider the gigantism of most of the architectural projects against the technicalities of town planning allied to emergency interventions, which opened the way to future substitutions and densification. A review of the projects submitted to the 1965 competition, in fact, clearly shows the contrast between these visionary proposals and the reality of the problems at hand. The following paragraphs dwell on the different nature of the existing problems (above all: settlement congestion, which was severe even before the earthquake), the management of which could not be separated from some major works underway, such as the road junction that would return Skopje to its strategic role in the Balkans. The deployment of forces was such that the debate on the future city drew on very different international expertise. While the architects' megastructures for 'the heart of the city' remained largely on paper, the preferred investment was in the networks on which the settlement-to-come depended. Somehow, paradoxically, the neighbourhoods built in emergency proved organic to these networks precisely because of their precariousness, which would guarantee greater degrees of freedom in the years to come.

Vielfältige Perspektiven auf den Wiederaufbau von Skopje: Megastrukturen, Infrastrukturen und Notunterkünfte

Nach Durchsicht und Abgleich der verfügbaren in internationalen und jugoslawischen Fachzeitschriften veröffentlichten Literatur beleuchtet dieser Beitrag die unterschiedlichen Aspekte des Wiederaufbaus von Skopje nach dem Erdbeben vom 26. Juli 1963, einer unvergleichlichen Fallstudie zur Architektur- und Stadtplanungsdebatte. Während der Masterplan in Phasen vorangetrieben und umgesetzt sowie alternative Szenarien erwogen wurden, entstanden entlang der Hauptverkehrsstraßen täglich neue Notquartiere. Das historische Zentrum wurde als wichtiger Teil von Skopje angesehen, doch die Zukunft seines architektonischen Ausdrucks - geprägt durch die Wettbewerbsbeiträge von 1965 - blieb in der infrastrukturellen Gestaltung verstrickt. In Anbetracht der Komplexität all dieser Bedingungen (und des Zeitdrucks) erhält der Begriff des Kontexts eine Vielzahl von Bedeutungen: Skopje, eine Stadt, die auf die Geographie eines Ortes aufgepfropft ist, aber durch stürmische Siedlungsprozesse immer wieder neu geformt wird; 150.000 Einwohner, die plötzlich obdachlos wurden; Fachleute mit unterschiedlichem Hintergrund. In den nachfolgenden Planungsdokumenten wurden einige grundlegende Knotenpunkte hervorgehoben, die das städtische Wachstum und die produktive Gliederung bestimmte. Ausgehend von dem Wettbewerb von 1965 für das Stadtzentrum werden wir den Gigantismus der meisten architektonischen Projekte mit den technischen Aspekten der Stadtplanung in Verbindung mit Notmaßnahmen vergleichen. Ein Rückblick auf diese Projekte zeigt deutlich den Kontrast zwischen visionären Vorschlägen und den realen Konsequenzen. In den folgenden Abschnitten wird auf die unterschiedliche Natur bestehender Probleme eingegangen, deren Bewältigung nicht von den laufenden Großprojekten - wie dem Straßenknotenpunkt, der Skopje seine strategische Rolle auf dem Balkan zurückgeben sollte - getrennt werden konnte. Während die Megastrukturen der Architekt:innen für das „Herz der Stadt“ weitgehend auf dem Papier blieben, wurde lieber in die Netze investiert, von denen die künftige Siedlung abhing. Paradoxerweise erwiesen sich die in der Not gebauten Viertel gerade wegen ihrer Unsicherheit als organisch mit diesen Netzen verbunden, was in den kommenden Jahren größere Freiheitsgrade garantieren würde.

Introduction: re-contextualising the 'heart of the city'

At the height of the Cold War, Skopje, at the time the capital of the Republic of Macedonia, a part of the non-aligned Yugoslavia, fell into the international spotlight following the cataclysmic earthquake of 26 July 1963. Two years later, in 1965, many architectural journals covered the competition for the reconstruction of the city centre, a sort of 'design workshop, a school, a building site and, at the same time,

an international exhibition' (Tolić 2011: 91). The call identified the centre of Skopje as a two-kilometre quadrilateral of express roads across the Vardar River. The 'heart of the city' (Rogers, Sert & Tyrwhitt 1954) acquired a specific declination: a regional centre, integrated by the governing bodies of the Republic of Macedonia (Sedlar 1966: 21), juxtaposed to both the eclectic square of the Serbian town and the Ottoman bazaar on opposite sides of the old Stone Bridge. In 1966, *Casabella* and *Arhitektura Urbanizam*, the mouthpieces of the Association of Yugoslav Architects,

Figure 1: The eight projects presented at the 1965 competition for the reconstruction of the city centre. From top left: Kenzo Tange (ex-aequo) proposed three megastructures, the City Gate built over the railway and road interchange, the City Wall along the ring road of the Serbian town, and the City Arcade between the Ottoman bazaar and Gazi-Baba Hill; Radovan Mišević and Fedor Wenzler (right) arranged residential buildings in a complex system of public spaces and green areas; Luigi Piccinato and Studio Scimemi (left); Maurice Rotival (right) envisaged the importance of the regional centre as a monumentality of the pyramidal tower; Slavko Brezovski and Makedonijaprojekt (left) proposed a new urban axis unifying the Serbian and the Ottoman towns; Aleksandar Djordjević and the Town Planning Institute of Belgrade (right) placed the regional centre along the Vardar, encompassed by a double ring road; Jaap Bakema and Jo Van den Broek (left) proposed an oversized courtyard building with three skyscrapers at the conjunction between the Vardar River and the Ottoman town; Edvrad Ravnikar (right) envisioned the city centre as a mixed low-density and skyscraper garden city meant to face the harsh summer climate. Source: *Arhitektura Urbanizam* 39 (1966).



published the competition entries (Boschini 1966; Mitrović 1966; Galić 1966: 7-15), while *The Japan Architect* dedicated a long article to Kenzo Tange's project (Tange 1967b). However, the diversity of proposals only partly reflected the contraposition between Yugoslav and foreign submissions. [Figure. 1]

Among the eight participating groups, four were coordinated by Yugoslav architects from the republics of Croatia, Slovenia, Serbia, and Macedonia, while the remaining four were led by CIAM members who had played a leading role in post-Second World War reconstruction. Indeed, the propensity for megastructures emerged not only in the respective projects of Kenzo Tange and Maurice Rotival, but also in those of Slavko Brezovski and Aleksandar Djordjević. Tange's idea of 'urbanising architecture and spatialising the city' materialised in three elements at an urban level: the City Wall along the ring road of the Serbian town, the City Gate integrating the new railway and bus station, and the City Arcade at the edge of the bazaar (Tange 1967a: 27). The City Gate, a megastructure at the forefront of earthquake-resistant technology, was to channel pedestrians into an east-west sequence of public squares reaching the old Stone Bridge (Tange 1967b: 40; Lozanovska 2012: 437). Slavko Brezovski¹ aligned the regional institutions to form an enfilade across the Vardar River, while Aleksandar Djordjević, from the Belgrade Institute of Urban Planning (Galić 1966: 10), envisioned the new city centre as an inland road junction straddling the Vardar, whose geometric layout dictated the architectural footprint. Maurice Rotival's thirty-storey pyramid – meant as a monument to international solidarity – challenged the Vodno heights, directing ground-level flows via a system of squares.

Van der Broek and Bakema tried to separate loose architecture from infrastructure (Van den Heuvel 2018): four towers at the midpoints of the two-kilometre quadrilateral, macro-blocks as a common denominator between the nineteenth-century quarters, and the new centre with the university and museum complex behind the Kale Fortress. Slovenian architect Edvard Ravnikar² and the Zagreb group formed by Radovan Mišćević and Fedor Wenzler³ envisaged green avenues as a key element of the new city centre (Galić 1966: 10). Skopje's climate, particularly arid in the summer, led Ravnikar to propose rows and masses of trees, while arcades – lower in the city centre and taller along the avenues of the Serbian town – were to unify the new townscape as perceived at eye level (Galić 1968: 111). Mišćević and Wenzler hinged their project on the Vardar, 'the natural artery in the heart of the city and one of its greatest treasures'. A ring road was proposed to free the bridge-bazaar axis from traffic, intersecting the riverbank park. The new elevated station square was to offer a vantage point, enclosing the city's geographic site and its main monuments into a single perspective (Mišćević & Wenzler 1965: 28, 46 & 50). Luigi Piccinato⁴ and Gabriele Scimemi presented a project of great specificity and methodological rigour: eschewing all self-referential monumentality, they aimed at restoring legibility to the historic city with its ethno-religious neighbourhoods (Galić 1968: 110). Only Piccinato and Scimemi bothered to consider the historical palimpsest, and advocated for professionals to recognise the local reality, hence avoiding pre-set designs derived from assumptions and generic concepts (De Sessa 1985: 147). They qualified second among foreigners,

as the competition ended with a joint prize shared between Kenzo Tange (60%) and the Mišćević-Wenzler team (40%). Despite praising Tange's proposal of organising public activities along the river, the jury considered his large-scale urban figures somewhat oversized. The scheme for the centre of Skopje was finalised in 1966 by a joint Yugoslav and Japanese team that included Arata Isozaki, Vojislav Mačkić, Radovan Mišćević, Yoshio Taniguchi, Dragan Tomovski, Sadao Watanabe, and Fedor Wenzler (Mačkić 1966: 14).

The challenge of imagining a new centre for a city still made up of ethno-religious *mahala*⁵ clustering around the bazaar led many planners to neglect the actual townscape and focus instead on functional zoning and infrastructural design as flagships of modernity. Also, the competition somewhat overshadowed the joint humanitarian effort – and knowledge transfer – displayed by experts from the international organisations that had enabled the construction of 17 emergency settlements on the fringes of the destroyed city, leading to a draft regional plan that had already integrated these same settlements in a new scheme.

Skopje before the earthquake

Skopje was built at the north-eastern head of the old Stone Bridge on the Vardar, an inevitable crossing point in a system of interconnected valleys between Mount Vodno (south), Suva Gora (southwest), and Skopska Crna Gora (northeast). Stretching some 47 km in a northwest-southeast direction, the Skopje Basin interlocks the valleys formed by the Morava and Vardar rivers, which connect the Danubian plains to the Aegean port of Thessaloniki. [Figure 2] Throughout the centuries, this north-south corridor channelled the territorial gravitations of the upper Vardar valley, from seasonal transhumance to major migratory movements. Both the Slavs and Ottomans reinforced Skopje as a military stronghold. At the beginning of the 20th century, the Serbian and the Ottoman towns still faced each other across the Vardar: the first equipped with the railway station on the Nis-Thessaloniki line, the second still featuring the old ethno-religious quarters around the bazaar. Despite this persisting fragmentation, Skopje's population quadrupled from 42,368 to 171,893 in the four decades from 1921 to 1961 (Galić & Sokolov 1964: 19; Fisher 1964: 46). The migratory pressure, however, was underestimated (Popovski 1985: 3), particularly concerning the provision of new housing and related facilities.

Unlike in other federal capitals (Tolić 2011: 69), post-WWII reconstruction funds were used for interventions in Skopje's city centre. Internal migration clogged the historical centres throughout Yugoslavia, and Skopje was no exception; the newcomers quickly saturated all abandoned houses (Fisher 1964: 46). During the decade between 1953 and 1963, Skopje concentrated one-third of Macedonia's economic potential, absorbing 83% of its population increase, thus baffling the benefits of socialist planning (Sedlar 1966: 18) introduced in 1947, when the municipality entrusted the draft of a 30-year plan to a group of Czechoslovak architects coordinated by Ludek Kubeš. This plan was revised as early as 1955 due to the population increase, and envisaged the infrastructure crossroads formed by *Partizanska Ulica* and *Ulica Borisa Kidriča*. In the newly established settlements, socialist planning adopted a tiered system, namely a strict zoning and hierarchical

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distribution of public services and collective functions. In this context, the raion was the smallest administrative, social and spatial unit, providing public services for ca. 30,000-40,000 inhabitants.⁶ Skopje's periphery, however, teemed with squatter houses, far removed from the raion efficiency (Pota 1950; Galić 1962). In the aftermath of the Second World War, informality and squatting, which in Belgrade had emerged by the end of the First World War (Vuksanović-Macura 2018), became a common denominator of all Yugoslav cities. In Skopje, the housing stock was totally inadequate even before the earthquake due to the growing demographic pressure. From 1961 to 1963, the urban population rose to 198,173 (Galić & Sokolov 1964: 23), with 48,170 housing units available and approximately 4,080 flats under construction (Galić 1968).

On the night of 26 July 26 1963, the earthquake irreparably damaged 65% of the total building stock, leaving little alternative to demolition.⁶ While three-quarters of Skopje's population were suddenly made homeless (Mijalković & Urbanek 2018: 7), the damage also affected the local infrastructure (roads, railways, sewers, electricity, and telephone networks) (Petrovski 2004) to the point that reconstruction was to absorb 15% of Yugoslavia's gross domestic product by 1963 (Petrovski & Milutinović 1985: 18). The displacement and relocation of the injured to Pristina (Kosovo) in the hours following the earthquake did not prevent people from coping with emergency: they arrived from all over the country, hoping to find a job in the announced reconstruction of Skopje. Already overcrowded and with critical living conditions, the city continued to grow, consequently escalating the emergency situation.

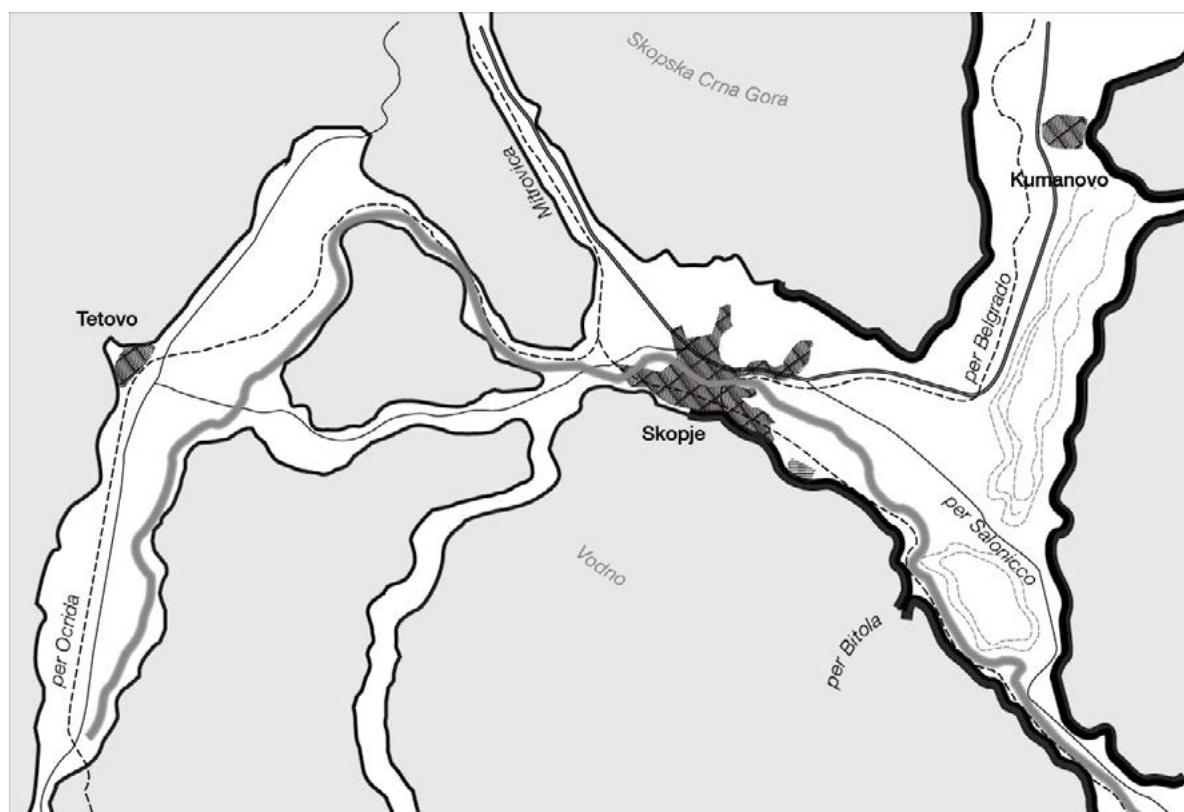
While demolition and consolidation works were proceeding in the centre, reconstruction was already underway in the outskirts. As early as September 1963, 15,000 prefabricated single-family houses could be counted along a strip of some 20 km parallel to the river and perpendicular to

the historic axis: a condition from which no plan was ever to escape (Sedlar 1966: 18).

As customary in socialist planning, statistics came immediately into play prior to any design. The Yugoslav planning practice, in fact, required a preliminary report (named 'programme for the elaboration of the urban plan') (Maksimović 1986: 64) including data on the urban area and agricultural land, mobility and the main industrial sectors, and considering future development. Statistics were used to predict the population increase within twenty years and, accordingly, the number of new raions required to meet the housing needs (Ilić 1949: 6). Usually, these preliminary reports also included a series of dossiers on the geological, hydrographical, climatological and microclimatic conditions, supplemented by a historical report and data on demographics, land use, residence, technical and health facilities, mobility, green spaces, culture and leisure (sports) system, administrative institutions, and production apparatus. This was followed by an economic assessment and a 'territorial balance' sheet (Ilić 1949).

After the earthquake, when planning had to respond simultaneously to both reconstruction efforts and population relocation, Skopje's basin was considered an asset, the mapping of which started with industrial and agricultural areas and smaller towns (Galić & Sokolov 1964: 20). This opened a new scenario for Yugoslavia. Until this point, regional plans had been reserved for sparsely urbanised areas with a predominant productive, tourist or recreational vocation. However, since Skopje was a chemical and metallurgical hub linked to the towns that were part of the same basin (such as Tetovo, Kumanovo, and Titov Veles), decentralisation was recognised as a logical strategy to shunt migratory flows to smaller centres. Skopje's geographical condition and industrial apparatus enabled the decision to keep the factories running despite the emergency and, with housing provided for their workers, to recover 80% of productivity

Figure 2: Skopje's basin (Skopska Kotlina) as revealed highlighting the 500 m contour line. The basin reaches the Morava-Vardar corridor (marked with a thicker line) at the point where it diverges from the river course. To the west, the Lepenac and Treska rivers flow into the Vardar. The towns of Titov Veles (today Veles) and Kumanovo lie along the continental corridor, while Tetovo guards the upper Vardar valley. The railway junction connects the Thessaloniki-Mitrovica and Thessaloniki-Belgrade lines. The *Bratstvo i Jedinstvo* motorway passes along the Morava-Vardar corridor; the *Jadranska Magistrala* was to enter the basin coming from the northwest. Source: Re-elaboration by the authors based on a sketch by Doxiadis Associates (1965: 312).



by October 1963 (UN 1970: 85). Furthermore, the polycentric settlement structure at the regional level was supported by two major infrastructures under construction, for both of which socialist Yugoslavia had obtained international funding (Čavlović 2018; World Bank 1963): the *Bratstvo i Jedinstvo* (Brotherhood and Unity)⁷ motorway, completed in 1963 and projected towards Austria and southwards towards Greece, and the *Jadranska Magistrala*, the Adriatic road from Rijeka to Bar with a section from Bar to Skopje (which remains incomplete to this day, when compared to the original plans). The junction between the two was in the Skopska Kotlina. Skopje, once the 'key to the Balkans', was to become the node of a modern transport system between Western Europe, the Northern ports, and the Middle East (Galić & Sokolov 1964: 14). In 1962, with the mediation of the Investment Bank, the Yugoslav government requested \$35 million for the Ljubelj-Skopje section (174 km) of the *Bratstvo i Jedinstvo* motorway (World Bank 1963) and a 422-km section (out of a total of 764 km) of the *Jadranska Magistrala*.

In some respects, the 1965 competition for the new city centre was a manoeuvre to attract architects and experts who had worked either in non-aligned countries or in reconstruction across Europe. This way, the reconstruction process could trigger socialist planning in a federal capital which, unlike the others, could not rely on a cutting-edge planning office. Besides, the problems at hand were of an unprecedented scale and complexity for Yugoslav planners.

In situ

Immediately after the earthquake, Yugoslav architect Ernest Weissmann, who had spent the Second World War years in the United States working for the United Nations Relief and Rehabilitation Administration UNRRA, travelled to Skopje together with UNESCO experts and the International Advisory Committee.⁸ In 1963, as Deputy Director of the United Nations Department of Economic and Social Affairs in charge of Housing, Building and Planning (UN 1970: 68; Bjazić-Klarin 2015), Weissmann was among the first to seize the Skopje earthquake as an opportunity to obtain immediate technical aid, thereby accelerating the modernisation of Yugoslavia with the help of international institutions. In fact, Macedonia lacked technical personnel, so architects and engineers often arrived from other republics (Antolić 1949: 19).

Beginning in October 1963, when the UN sent the Soviet Anatolii Nikolaevich Rimsha and the Franco-American Maurice Rotival to Skopje, it was clear that international experts and Yugoslav architects would cooperate. Maurice Rotival (1892-1980) had moved to the United States in 1939 and then to Latin America, ultimately returning to Europe during the Second World War. Rotival assisted the Skopje Institute of Urban Planning in the execution of four alternative strategies (called 'Keys')⁹ of concentration or decentralisation consistent with the infrastructural networks. The diversity of the four proposals and their frameworks revealed all the uncertainties regarding the seismological condition, which became clear only in the following months (Ambrasey 1965), confirming that the entire region was at a high risk (Galić & Sokolov 1964; Ciborowski 1967; UNESCO 1968). In the absence of a real estate market, and without the pressure of private interests and expropriation

costs, each of the four Keys was equally feasible. This aspect had already been pointed out in 1949 by Yugoslav architects: in the West, despite examples of remarkable beauty and scope, urban projects often remained on paper or misinterpreted due to the interests of private capital (Ilić 1949: 16).

Robert Home (2007: 8) argued that rebuilding Skopje *in situ* was a choice dictated by the city's key position in the infrastructure network (ensuring supplies from other republics) as well as when reassessing the historical and symbolic brotherhood between the Yugoslav people. The key involvement of international experts was to bring about new earthquake-proof technology, while also contributing to the advancement of local town planning. In 1964, the Special Fund contracted Doxiadis Associates to draw up the Skopje Master Plan. At the same time, the Polish company Polservice offered its support to the Skopje Institute of Urban Planning as a sign of solidarity, involving the Warsaw City Planning Office.

Normally, Polservice¹⁰ facilitated contacts between Polish professionals and foreign investors and did not deal directly with design (Gzell 2011; Stanek 2012). Both Doxiadis Associates and Polservice had to follow the indications derived from Rotival's Keys (Galić 1968: 37; UN 1970: 81). Considering the significance of time in the planning, Doxiadis Associates introduced mid- and long-term scenarios: the seven-year reconstruction phase until 1971 and the thirty-year scenario, when urban development was to involve the entire Skopska Kotlina (Galić 1968: 43; UN 1970: 82). With the replacement of the Thessaloniki-Mitrovica railway at the foot of Mount Vodno with a large urban boulevard, Skopje was to stretch in a south-easterly direction with industrial areas converted into residential districts. The debate on the plan was moving along; Rotival's four Keys opened the way to the proposal by Doxiadis Associates, resulting in a series of principles/constraints – the limits of the basin, the presence of the river – orienting urban development within a given time frame (Doxiadis Associates 1965: 313).

Adolf Ciborowski, chief architect of the Warsaw Institute of Urban Planning from 1956 to 1964, coordinated the Polish group (Stanek 2012), who mapped the low-density emergency quarters built immediately after the earthquake in view of embedding them into the plan (UN 1970: 96; Mijalković & Urbanek 2018). Ciborowski (1967) argued that the reconstruction of Skopje left little room for a utopia. Translating urban expansion into quantitative figures, he relied on the method of 'optimised analyses' (Sedlar 1966: 20), thence simulating alternative solutions: a mono-centric growth, decentralisation into two satellite towns, and a polycentric regional city, which was deemed more appropriate precisely because it embedded the new quarters. A greater grasp on the reality, particularly considering projections on population growth, brought the Polish planners to draft a master plan in which Skopje was to develop towards Tetovo, Titov Veles and Kumanovo, while also keeping its industrial apparatus (Galić 1968: 130). In December 1964, Polservice and Doxiadis Associates started collaborating with the Skopje Institute of Urban Planning on a draft master plan for the second reconstruction phase, to be supplemented by quantitative and qualitative analyses by 1965. The profound diversity of the planning groups rendered this goal even more ambitious. Yugoslav and Polish

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Figure 3: Tent camps among damaged historical buildings in the aftermath of the earthquake. Source: UN Development Programme (1970: 33).



Figure 4: Location of the emergency neighbourhoods (in black) in relation to the two-kilometre quadrilateral that defined the project site in the competition for the reconstruction of the city centre. Source: Drawing by A. Korolija, based on maps from *Arhitektura Urbanizam* 28 (1964).

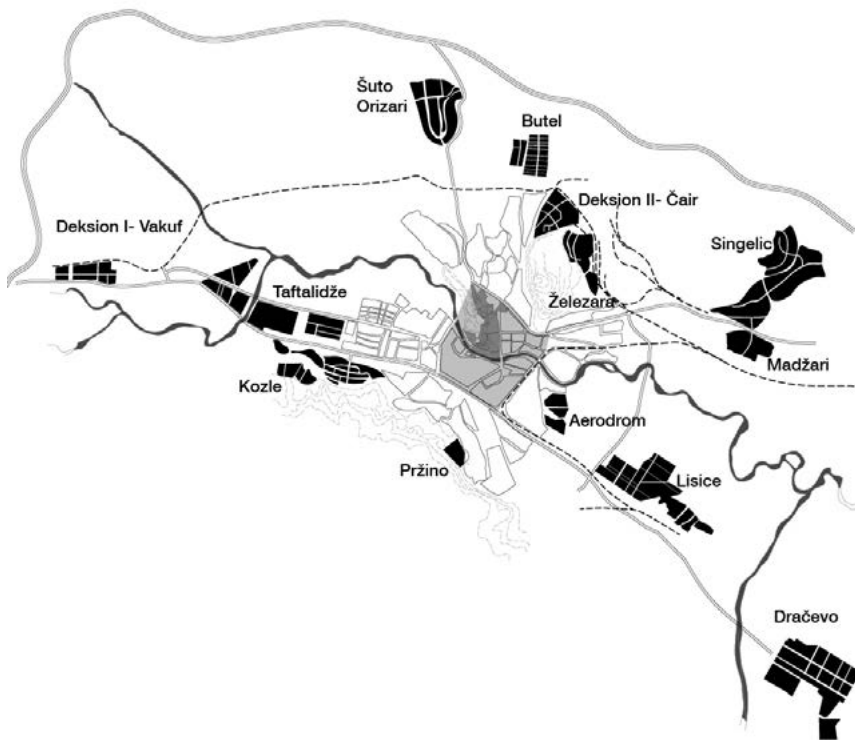
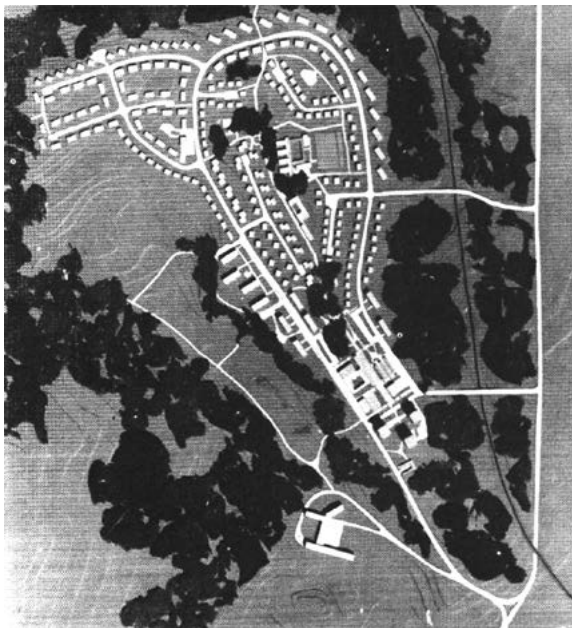


Figure 5: Plan of the Železara neighbourhood drafted by the Town Planning Institute of the Republic of Croatia. The urban layout followed the existing topography, while public functions (schools, post office and shops) were located along the main roads. Source: *Arhitektura Urbanizam* 28: 38 (1964).



planners worked under the guidance of Ciborowski (appointed project manager by the UN): analysis and design proceeded in parallel, breaking the customary methods. For those working side by side, the project plans became a kind of *lingua franca* and the team a *veritable multiplier of knowledge*. For Yugoslav town planners, trained in the institutes of each respective city, this was a chance to measure themselves against other professionals, while the international environment accelerated the exchange of new methodologies for data collection and processing in accordance to different disciplinary practices. At this very early stage, for example, computers were used to calculate the housing construction cost in relation to family composition. At the same time, a social survey was carried out for the first time, depicting the housing conditions of the different ethnic groups (Home 2007; UN 1970).

Debate on reconstruction and reality of post-disaster needs: the low-density parallel city

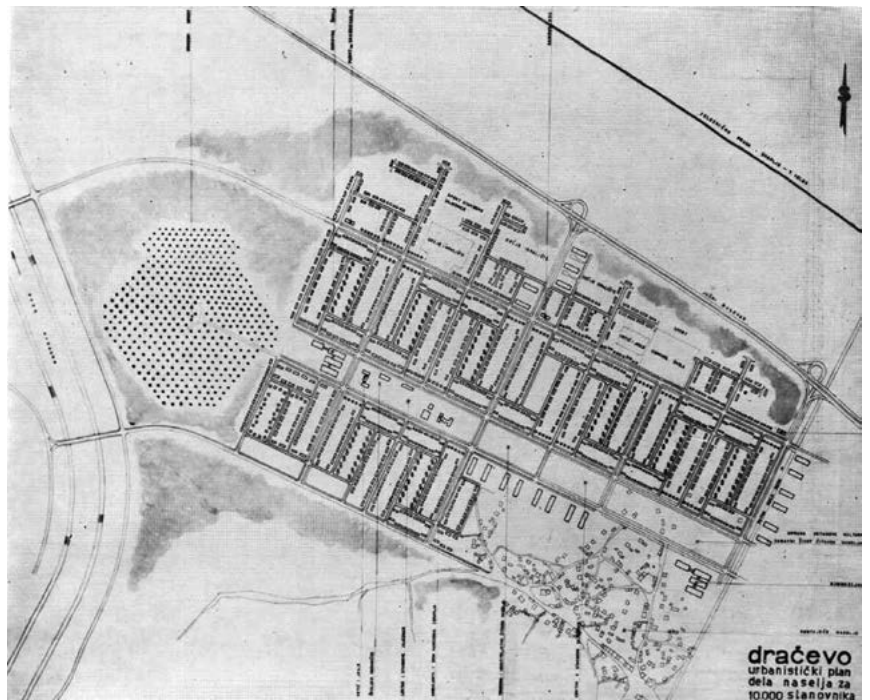
Despite the economic difficulties, and the technical backwardness of Macedonia, in 1963 Yugoslavia could claim a leadership in the Non-Aligned Movement and thus open a channel of communication with both the Western Bloc and Soviet Union. Three months after the earthquake, on 22 October 1963, this 'thaw' (also favoured by Stalin's death) resonated in Tito's heartfelt appeal to the General Assembly of the United Nations for international solidarity to avert the consequences of a nuclear conflict (UN 1970: 52). The reconstruction of Skopje opened a bridge between worlds ideologically apart (Galić 1968: 25), drawing both the Red Army and US soldiers to the aid of the Yugoslavians, in a daily routine rendered even more critical by the seismic swarm as well as by the 150,000 uninhabitable buildings (UN 1970: 20). Soviets removed rubble and assisted homeless people, while Americans repaired damaged buildings, initiating the Homecoming Project (*Povratak Kući*).

The Serbian and Ottoman cities facing each other across the Vardar – one with its fragmentary showcase of eclecticism, and the other with its small wooden houses – had become a single expanse of tent camps, schools, and field hospitals in the shadow of minarets and socialist quarters. [Figure 3] In August 1963, Weissmann recommended Robert Fitzmaurice, an expert in emergency solutions and building techniques, to the Yugoslav government. Fitzmaurice arrived from Great Britain ten days after the earthquake with 800 prefabricated houses (UN 1970: 68).

In 1964, the journal *Arhitektura Urbanizam* published a special issue on the reconstruction of Skopje that included material from the preliminary report, tables from the *Definitive Preliminary Fundamental Town Plan of Skopje* drawn up by the City's Town Planning Office (with support from the International Consultative Committee), as well as visual documentation – plans, detailed layouts, models and photos – on the temporary housing quarters. The latter were built along the main roads to facilitate the provision of construction materials and the management of parallel sites. [Figure 4] Public services – mainly schools, kindergartens, and health posts – were also built in close relationship with infrastructure (Janković 1964; Mijalković & Urbanek 2018). [Figures 5 and 6] The widespread perception that multi-storey buildings were unsafe accelerated the flight from the centre, backed by the urban planning institutes from all

Yugoslav republics (Janković 1964).¹¹ These low-density neighbourhoods of standardised housing units equipped with a basic provision of services and public spaces were to accommodate a total of 70,000 homeless families (Pesić 1963: 58). They were conceived as embryos for future raions; over time, multi-storey buildings (or even single-family houses of a better quality) were to replace prefabricated dwellings, fostering a typological mixture uncommon in a socialist country. As early as 1950, trusting that Yugoslav socialism would allow a certain plurality, Vladislav Ribnikar had raised the question of single-family houses, which represented a refuge from the chaotic urban life and could be realised in rural or natural areas under more favourable economic conditions. After the first five-year plan, the rising cost of building materials forced the prioritisation of group housing (Ribnikar 1950: 17); nevertheless, particularly after 1950, many leading Yugoslav architects designed single-family houses, proposing a catalogue of solutions aimed to challenge squatting and self-building (*Ekonomski Institut Narodne Republike Srbije* 1958).

Mass construction of single-family houses, however, only concerned temporary accommodation, while tourist settlements and multi-density neighbourhoods remained largely unexplored (Ilić 1964: 42). In apparent contradiction to the country's political orientation, single-family houses gained momentum after the Skopje earthquake. By October 1963, 1,586 prefabricated houses were imported from England and, to a lesser extent, from other countries: Bulgaria, East Germany, Denmark, Sweden, Czechoslovakia, Poland, Austria, France, and Norway, as well as from Switzerland, Mexico, and the United States. All these countries seized the opportunity to provide reconstruction aid in a clearly tangible way. The twenty houses donated by Mexico in the neighbourhood of Taftalidže I, for example, were designed by the well-known architect Pedro Ramirez Vazquez as Mexican-style haciendas. Other emergency shelters showcased different prefabrication techniques. The 700 houses donated by Great Britain in the Djordje Petrov neighbourhood were built in steel frames, whereas those at Taftalidže II (donated by France) and Trndol (donated by France and manufactured by the Austrian union of timber builders) were built in wood. Significantly, the Soviet Union donated a factory to produce precast concrete elements for multi-storey housing. An additional 1,620 houses were commissioned by the Yugoslav government and built abroad, complementing the 11,500 houses produced in the country (Mijalković, Urbanek 2018). Croatian architect Bogdan Budimirov argued that the earthquake had opened the domestic market to Yugoslav companies such as Eksportdrvo (among others), which produced prefabricated wooden houses for export. The urgency to build entire neighbourhoods led to the testing of new building techniques, which soon turned Skopje into a permanent prefabrication fair (Mattioni 2007: 41). Talking at the Permanent Conference of Cities, the President of the Federal Parliament Edvard Kardelj (1963) argued that prefabrication of single-family houses was to foster an economic and timely response to the housing shortage in Yugoslav cities (Fisher 1964: 48). In Skopje, experimentation also concerned the relationship between neighbourhood schemes, topography, and infrastructure; disentangling vehicular from pedestrian flows; and checking the most convenient location for schools, kindergartens, community, and shopping centres in locations with a minimum of 3,000 inhabitants to a maximum of 10,000 (Janković 1964: 38). In many



cases, a non-central location, or alternatively one set along inbound roads, was preferred as convenient for two adjoining neighbourhoods. [Figures 7 and 8]

In anticipation of the redistribution of 18,000 inhabitants by 1971 and 62,000 by 1981, the emerging 'parallel city' was to become part of the medium- and long-term plan (Sedlar 1966: 20). Fast-paced housing experiments contributed to raise the urban standard from 8.23 sqm (1963) to 14.7 sqm per inhabitant (Galić 1966: 89). Despite the uncertainty about the costs of primary urbanisation, the short life cycle, and the distance from the centre, Doxiadis included the emergency neighbourhoods in the residential stock (Doxiadis 1965: 321). By housing labourers near the factories, they helped to keep production running. [Figure 9]

The notion of 'scaffolding' – currently used in the field of psychology – has been recently used to explain the 'deep structure' of socialist cities, identifying both the built environment produced by socialist planning and the resulting 'development potential' (Zarecor 2018: 100); in other words, residential and cultural programmes generated a structure that revealed all the latent potential in the ability to react to critical situations. In the reconstruction of Skopje, rather than the centre-periphery opposition (Zarecor 2013: 59), the unchangeable feature of the built environment led in the complementarity and proximity of housing and factories. Temporary neighbourhoods did require a primary urbanisation consistent with their layout, thereby allowing a possible linear re-composition along infrastructural networks. The quarters built for earthquake victims became a resource for the Yugoslavian construction industry as well (Ilić 1964: 42), disclosing new fields of intervention.

Once integrated in the final plan (the 'Second Elaboration of the New-Town Plan' begun in 1964 and drafted with the participation of UN), the emergency neighbourhoods built around greenery and public spaces could eventually become an asset for urban expansion, providing room for densification. Thereby, investments in primary urbanisation were to pay off (Ciborowski 1967) with the 17

▲ **Figure 6:** Plan of the Dračevo neighbourhood drafted by the Belgrade Town Planning Institute. The central elongated area included public functions meant to cover the essential needs of the 10,000 inhabitants of the prefabricated single-family houses, and of those living in the pre-existing neighbourhood (lower right corner). Source: *Arhitektura Urbanizam* 28: 39 (1964).

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Neki tipovi montažnih zgrada u prigradskim naseljima Skopja



TEHNIČKE KARAKTERISTIKE, OPREMA, LOKACIJA I CENA STANOVA U PRIGRADSKIM NASELJIMA

Br. sl.	Tip stana	Tehničke karakteristike							Oprema stanova					Lokacija u naselju	Cena stana din.	
		Stan	Neto površ. m ²	Visina m	Konstrukcija	Unutrašnji zidovi	Spoljni zidovi	Izolacija	Podovi	Kuhinja	Kupatilo	Roletne	Pisakari			Peći
1	„Edilit“ 1792, Ljub.	jednosobni	32,46	2,5	Siporeks ivokal	tapeti za pranje	Siporeks	Siporeks	PVC	elektr. špor, dvodel. sud. topla, hlad. voda	kada, lavabo, WC	plastno	kuhinja	za drva	Vlase	2,130.000
2	„Edilit“ 1839	četvoro-sobni	72,89	„	„	„	„	„	„	„	bojler 80 l	„	„	„	„	4,800.000
3	„Jelovica“ D-IDA	dvosobni	56,51	„	drvo, salon. ivok. pl.	„	drvo salonit	staklena vuna	PVC vinaz	„	„	„	„	„	„	3,820.000
4	„Sport“ Beograd	„	54,38	2,55	iver. sip. drvena	iverica mas. boja	ravne salonit pl.	porcer ploča	parket	jednodelni sudop. bojler 10 l.	kada (sed.), lavabo, WC, bojl. 50 l. grej.	„	„	nafta	Kozle	3,270.000
5	SP 8 „Drvo-prpm“ N.Sad	trosobni	60,4	2,6	„	masno bojleri	daščana obloga	heraklit	brodski	jednodelni sudop. topla voda	tuš, WC, lavabo-bojler, 50 l.	„	„	„	Dručevo	2,500.000
6	Indkop MK, 63, Bgd.	dvosobni	46,53	2,5	„	„	bojene pozd. pl.	mineral. vuna	PVC	„	sed. kada, lavabo, WC, bojler 50 l.	„	kuhinja	„	„	1,820.000
7	Bosna-sport Sn-490 Sar.	„	56,6	„	„	tapeti	malter	siporit	parket	„	„	„	„	„	„	2,160.000
8	„Soko“ Most. III-1	četvoro-sobni	81,2	„	želična	„	salonit	podcer ploča	parket vinaz	„	„	„	„	„	„	3,490.000
9	DS-002 Pljevlja	dvosobni	44,7	„	drvena	„	daščana obloga	„ vazduh	brodski	dvodelni sudoper	„	„	„	Lisite	1,730.000	
10	„Bosna“ II. SB-63	„	53,06	2,6	„	„	ravne sal. ploče	staki. vuna	parket teraco	jednodelni sudoper	„	„	„	Mađari	2,680.000	
11	„Ogulina“ TS-56	„	48,05	„	„	„	„	„	parket vinaz	jednodelni sudoper bojler 10 l.	„	„	„	Mađari Zelenara	2,730.000 2,890.000	
12	„Spačva“ Vinkovci	trosobni	61,85	„	„	„	daščana obloga	„	parket teraco	sudoper	sed. kada, lavabo, WC, bojler 50 l.	„	kuhinja	kaljeve	Mađari Zelenara	3,400.000 3,950.000
13	„R. Sadik“ GR-5	„	63,51	„	„	„	malter	„	parket	jednodelni sudoper	bojler na drva	„	„	Mađari Zelenara	2,960.000 3,670.000	
14	„Kotka“ Finska	„	70,53	2,5	„	tapeti preko iv.	daščana obloga	staklena vuna	brodski	dvodelni sudoper, el. špor. bojler 10 l.	bojler 50 l	veneci-janeri	kuh. soba	nafta	Taftal. Zelenara	4,630.000 4,410.000
15	„Loki-3“ Finska	dvosobni	56,86	„	„	„	„	„	„	„	„	„	„	Taftal. Zelenara Mađari	3,780.000 3,560.000 3,310.000	
16	„Puutalo“ Risto Fin.	trosobni	64,05	„	„	„	„	„	„	„	„	„	„	Taft. Kozle, Mađari	4,210.000 3,720.000	

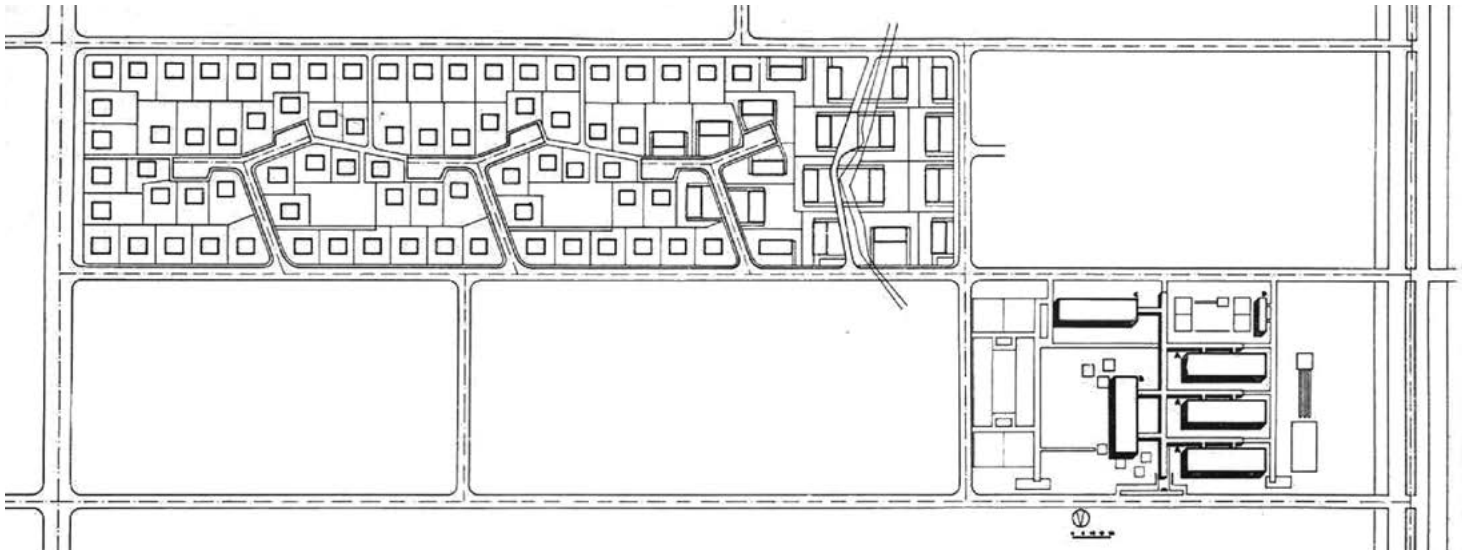
▲ **Figure 7:** Comparative analysis between Yugoslav and foreign types of single-family prefabricated houses. The table entries include data surface, structure, insulation, basic furniture and final costs. Source: *Arhitektura Urbanizam* 28: 41-42 (1964).

neighbourhoods marking the limit of urban growth. In Yugoslavia, Sedlar (Sedlar 1966: 20) emphasised that it was the primary infrastructure that determined the value of land, as the cost of land in the suburbs was not always lower than in the city centre.

By means of the new infrastructure network, Skopje was also to upgrade its geographical role. It was the above-mentioned final version of the plan, accompanied by a mid-term (1975) and a long-term projection (1981), that anticipated a multi-polar, regional city with residential districts on both banks of the river. The incorporation of single-family houses into quarters with an increased density was to consolidate the temporary neighbourhoods. The plan proposed to channel car traffic along three arteries parallel to the Vardar,¹² shunted by five north-south transversals. The neighbourhoods made the city's 'expansion threshold' tangible, an invisible barrier not to be crossed without facing substantial development costs. The bus system was planned for a maximum journey time of 45 m. between home and work (Home 2007).

Conclusion

Most certainly, the debate on the reconstruction of Skopje after the earthquake of 26 July 1963 brought to the fore some difficulties in focusing the mutual inductions between planning, architecture, urban and landscape design. Proposals for the heart of the city – a programme with a context-specific declination at that historical juncture – almost all leaned toward new configurations marking a clean break with the architecture of the historic core. Somehow, paradoxically, while these projects seem eager to fit in the design of the new infrastructure layout, the same infrastructure laid the groundwork for the construction of emergency neighbourhoods, thereby trying to make a virtue out of necessity, namely bringing into coherence major national roads under completion, the know-how sedimented in Yugoslav technical offices, and the prefabricated houses received from foreign countries to cope with the emergency.



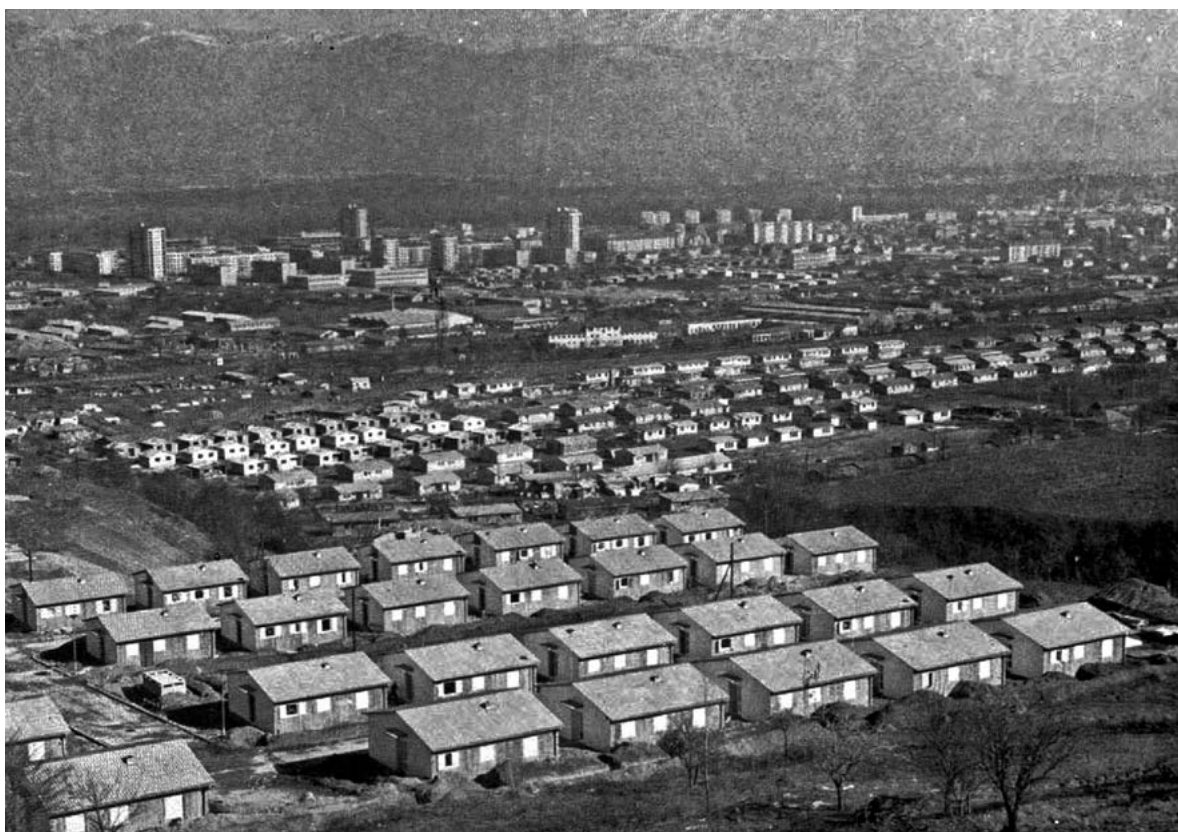
The ambivalent relationship between physical features, infrastructure, and architectural gigantism embedding anti-seismic technology stands in stark contrast with the pragmatism of the emergency neighbourhoods made up of prefabricated houses, which left medium- to long-term degrees of freedom: expandability, densification, or replacement.

In this sense, the post-earthquake phase triggered a non-standardised response. Despite the tight timeframe, emergency solutions were to crystallise networks, leaving some room to modify the built environment at a later stage. This approach was possible thanks to the design experience accumulated in the Yugoslavian town planning institute. Furthermore, it allowed the time-folding parallel work of different teams of international experts, mediators, and institutional bodies. In some cases, a

month after the catastrophe it was already possible to move on to the realisation.

Buying into James Lewis's idea that that 'relief includes use of mostly external resources externally mobilised', whereas 'planning makes use of mostly resources internally mobilised' (Lewis 1979: 249-252), we may conclude that the neighbourhood schemes provided a long-term strategy for regional development. By placing their cores along the roads in such a way as to allow future change, Yugoslavian town planning institutes seized the crisis as an opportunity to endorse socialist scaffolding as a long-standing concept. For both architects and urban planners in socialist Yugoslavia, neighbourhoods design opened a broad field of experimentation in formal, economic, and social terms.

▲ **Figure 8:** Taftalidze neighbourhood and the project for an elementary school. Source: *Arhitektura Urbanizam* 39: 18 (1966).



◀ **Figure 9:** Kozle and Taftalidze neighbourhoods with prefabricated houses from Yugoslavia, Czechoslovakia, Finland, France, Italy, Poland, Romania and UK. Source: *Arhitektura Urbanizam* 28: 40 (1964).

Poignantly, Slovenian architect Saša Sedlar argued that great catastrophes, with all their consequences, elicit reactions that reveal the man's spirit, vitality, and social conscience: 'Epidemics, fires, wars, earthquakes, and floods are thus decisive moments in human history. Even Europe after the Second World War rose from the ruins exhausted, purified and full of new ideas. Many modern and progressive ideas were realised in this period. [...] The days and weeks after the storm are the most precious because one must in the shortest possible time, amidst the ruins and misery, make decisions that will determine the development of a city or a country for many centuries. (Sedlar 1966: 18)'

Notes

1. A Macedonian architect trained in Belgrade and Zagreb, Slavko Brezovski (1922-2017) participated in the collaboration with *Makedonija Projekt*.
2. A pupil of Jože Plečnik, Edvard Ravnikar (1907-1993) moved to Paris in 1939 to collaborate with Le Corbusier. After the war, he worked for the Planning Department of the Ministry of Construction and participated in numerous urban planning competitions in Yugoslavia.
3. Both Radovan Miščevič (1925-2015) and Fedor Wenzler (1925-2008) graduated from the Zagreb Faculty of Architecture. Miščevič worked at the Department of Urban Planning with Joseph Seissel.
4. Luigi Piccinato (1899-1983) had been a protagonist of the Italian town planning debate of the interwar period.
5. The term derives from the Arabic *māhallā*, which means to live, to settle. In the Ottoman cities of the Balkans, it indicated the smallest administrative urban entity, including a place of worship, a school, and a bakery. The predominantly residential function of the *mahala* contrasted with the *čaršija*, the commercial street which aggregated the main public buildings such as the *hammams* (baths) and the *han* (urban caravanserai).
6. Encompassing the neighbourhood level (micro-raion), a raion covered approximately 15-20 ha so that cultural, educational, and sports facilities would be at a maximum distance of 700 to 850 m from each residential neighbourhood (Maksimović, 1986: 88-89). Usually lined with roads on all sides, a micro-raion was equipped with shops and basic educational facilities (school and kindergarten) set in a central green area.
7. The damage was quantified as follows: 15,766 houses and flats were lost, of which 3,152 were completely destroyed and 12,614 had to be demolished; 36,578 housing units were in need of repair or reconstruction, of which 13,730 were classified as heavily damaged.
8. This infrastructure of national unity aligned four of the six capitals: Ljubljana, Zagreb, Belgrade and Skopje. The route from Belgrade to Skopje ran along the valleys of the Morava and Vardar rivers.



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9. Established in 1964 as the operational body of the Special Fund financed by the UN and UNESCO in agreement with the Yugoslav government.
10. It was a question of redefining the routes and stops of freight and passenger railway lines. For road transport, regional routes had to be connected to the new national level infrastructures; urban accessibility had to be prioritised accordingly.
11. Polservice was established in 1961 to operate in the field of foreign trade, providing employment opportunities for experts in various fields.
12. The Belgrade Institute of Urbanism designed Dračevo and Kozle; the Croatian Institute of Urbanism designed Madžari, Kamenik and Železara; the Skopje Institute of Urban Planning designed Deksiion I, Deksiion II and Taftalidže.
13. The junction between *Jadranska Magistrala* and the *Bratstvo i Jedinstvo* National Highway, with *Partizanska Ulica* on the left bank and *Juzni Bulevar* further south on the opposite bank.

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