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ABSTRACT

In this paper, three case studies of various natures, scales and positions within the discipline are identified and analyzed as exemplary of Vojvodina in the discussion of large-scale projects of socialist Yugoslavia. The interpretive-historical method is used to describe and interpret the case studies, while primary sources are subjected to qualitative content analysis in order to extract the underlying narratives of these projects, as well as to establish their position more firmly in the field. The first one is the Grand Canal Danube-Tisa-Danube (*DTD* waterway), the biggest spatial project of Vojvodina, conceptualized by the engineer Nikola Mirkov in 1947 and completed by the early 1980s. The second is the case of two plans for road and railway networks in Vojvodina by the architect Dimitrije Marinković, from his 1950 General Plan of Novi Sad, which proved to be more visionary than plans made by spatial planning institutions since. The third case is a network of memorial graveyards *Rohalj Baze* (1973) and *Jabuka* (1974) on the Fruška Gora mountain by the architect Milorad Berbakov, as an example of a new landscape-based paradigm of Yugoslav memorial architecture in Vojvodina. The questions discussed in this paper are as follows: 1) the importance of narratives for the success of a project; 2) the expanded definition of projects to include networks; 3) arts as networks (with *Neoplanta Film* as a showcase); 4) the creative output of individual creators versus institutions.

Key words: *Vojvodina, spatial planning, Great Canal Danube-Tisa-Danube, DTD waterways, canals, Nikola Mirkov, Dimitrije Marinković, Yugoslav monuments, Milorad Berbakov, Fruška Gora, Rohalj Baze, Jabuka, Neoplanta Film*

1. INTRODUCTION

1.1. RESEARCH CONTEXT

Vojvodina is a historical region and an autonomous province in northern Serbia, with the city of Novi Sad as its administrative center. After WW2, Vojvodina was given this special political status with the foundation of socialist Yugoslavia. It lies in the Pannonian (or Great Hungarian) Plain and is a major European hydrological node where many rivers flow into the Danube. The landscape of Vojvodina has been subjected to intense cultivation and infrastructural modernization since the 18th century. These undertakings transformed the land from swampy and often flooded plains to a highly productive agricultural landscape crisscrossed by canals, railways, industries, and planned urban and rural networks. This process was conducted when the region was part of the Habsburg Austrian Empire (later renamed Austria-Hungary) and built upon in times of socialist Yugoslavia.

1.2. RESEARCH GOALS

The goal of this paper is to offer a new nomenclature of the most significant cases of large-scale projects of Vojvodina, which could substantially contribute to the history of territorial modernization of socialist Yugoslavia. Moreover, this proposed nomenclature consists of a triptych of case studies that are very different in their nature and scale, with the goal to demonstrate that disparate instances and edge cases from this field can serve as better benchmarks in the discussion about local spatial modernization than the nominally biggest institutional plans and projects. For this purpose, an expanded definition of territorial infrastructure is introduced in one case study, which includes networks of memorial projects. The significance of the case studies is to be demonstrated through deep reading of original materials by the creators of the showcased projects. From a historical distance, the narratives extracted from these materials appear to be of crucial significance for the success and legacy of these projects. The additional goal, therefore, is to discuss the strength of these narratives and to measure individual creators' visions against the routine institutional planning practice since the circumstances analyzed in the case studies offer an opportunity to do so.

1.3. SELECTION OF CASE STUDIES

The three case studies analyzed in this paper and proposed as the benchmark projects of large-scale modernization of Vojvodina are: 1) The Great Canal Danube-Tisa-Danube by Nikola Mirkov – a built territorial infrastructure project, 2) Vojvodina plans by Dimitrije Mariković – a concept for a spatial plan, and 3) Milorad Berbakov's monuments for Fruška Gora – a network of memorial landscape architecture sites.

The choice of these case studies came from the realization that they have, perhaps, not yet been represented in the discussion about the history of planning and modernization of Yugoslavia and were, especially, not analyzed alongside each other. Moreover, the realization that these individual large-scale plans and projects came outside of the regular institutional urban and spatial planning procedures was additionally interesting from a researcher's perspective. In addition to the stated goals of the research, the very placement of such disparate case studies alongside each other is an experiment of its own, conducted in order to test how many common conclusions can be extracted from them and discussed. It is particularly interesting to test new combinations of case studies of large-scale projects

in Vojvodina since this region owes its very existence to the centuries-old grand projects of territorial modernization and cultivation.

1.4. METHODOLOGY

The general methodological approach in this paper is interpretive-historical research, applied in the manner outlined by Linda Groat and David Wang in [1]. This means that the stages of the research consisted of data/evidence collection, identification/organization of data, evaluation, and narration, i.e. description of the reconstructed history, with interpretation of the data happening all along [1:137]. The materials collected can be grouped as follows: 1) primary sources by the designers of the case study projects, including their writings and designs; 2) institutional sources from the construction phase later representation of these projects, or both; and 3) secondary analyses and interpretations by researchers.

The differences in the three case studies and their related materials required somewhat different methodological approaches. The vast scale and historical complexity of the first case study (the canal network) required more attention, which resulted in more space dedicated to it in the paper, but this was expected in a paper that had the goal of measuring up smaller cases against larger ones.

In all case studies, primary sources and project documentation were thoroughly sought, not only to assemble the correct historical timeline but primarily to acquire a body of text and drawings authored by the original creators. The dominant method then applied to these materials was qualitative content analysis. Even though this method is normally applied to a text, the drawing materials that were collected were also analyzed in this way, as a sort of an "extended text" that researchers familiar with these disciplines are well equipped to "read". Content analysis was applied along the lines of Bernard Berelson's definition of this method as a "research technique for the objective, systematic and quantitative description of the manifest content of communication" [2:18]. Berelson had this method in mind primarily for the analysis of media communication, but others have expanded the method into humanities and beyond, like Holsti did in the case of history [3:173]. Nevertheless, the fact that the original writings analyzed in this paper were published by their authors as a sort of personal public-relations media or popular engineering texts aimed at decision-makers and the broader public goes along with the originally intended purpose of this method.

Moreover, the choice of the three disparate case studies for this paper is further supported by the recommendation by Matthew Miles and Michael Huberman to use a three-tiered sampling approach if the goal of the analysis is to broaden the understanding of a field, which should consist of these: 1) a typical/representative example; 2) a negative/disconfirming example; and a 3) exceptional or discrepant example [4:3, as discussed in 5:10]. The three case studies correlate to some degree to this nomenclature: The Great Canal by Nikola Mirkov is a typical large-scale project, the Vojvodina plans by Dimitrije Marinković is (to a lesser degree) a disconfirming example due to its speculative nature and lack of fruition, and the network of memorial sites by Milorad Berbakov is an exceptional case that had not been included before in similar analyses. In that sense, this paper is an example of a qualitative analysis that "intentionally seeks to identify and understand the perimeters of a field, including 'outliers'" [5:10].

When it comes to secondary sources, i.e. later researchers' publications, their existence or lack thereof was used as evidence of general awareness about the significance of these projects, which helped underline the intended goals of the paper in the discussion.

2. CASE STUDIES

2.1. CASE STUDY: THE GREAT CANAL DANUBE-TISA-DANUBE BY NIKOLA MIRKOV

Vojvodina inherited an extensive canal system in its sub-regions of Bačka and Banat, built in the era of Austria-Hungary. The canal network, together with accompanying hydrotechnical structures like sluices, locks, and earthworks, was a critical infrastructural backbone of these lands. This system enabled the land to be drained from excess water and protected from seasonal floods, which massively increased its habitability and productivity but also resulted in the anthropogenic character of its landscape, dominated by endless croplands, as well as dense networks of settlements, railways, and industries.

However, one man was not nearly as satisfied with this condition and devoted his career to solving the problem of waters in Vojvodina. This was Nikola Mirkov, an engineer from Novi Sad who specialized in hydrotechnical work and spent the entire 1920s and 1930s studying the peculiarities of local water management. He became the foremost expert in this field and started to see the bigger picture of the territory as a unified and organic waterway system rather than a set of diverse local water management policies (as was then the practice). After WW2, Mirkov immediately started to publish his thoughts on the condition of waterways in Vojvodina in 1945 [6]. On top of his vast knowledge about local waters, he also kept his eyes on references and experience from around the world, from canal-building efforts in Japan to the Tennessee River projects in the USA [7:8]. He admired the examples from history that spoke about the central role of water management in a society, such as the apparent role of Chinese Emperors as chief water managers or the Dutch treatment of water management authorities as "water state" (*Waterstaat*) [7:18]. He then finally came forward with a radically ambitious new concept for the canal network in Vojvodina in 1947 (Figure 1), which would supplement and expand the existing waterways [7:8-11]. His new canal system was centered around one main waterway, *Veliki kanal Dunav-Tisa-Dunav* (The Grand Canal Danube-Tisa-Danube). Mirkov always insisted on calling the whole system 'grand canal' (*veliki kanal*) rather than 'network', perhaps in order to emphasize the importance of the central arterial canal of his proposed network [7:13]. Today, however, it is most commonly referred to as *Hidrosistem DTD* in the Serbian language, which is more true to its nature, or simply *DTD*.

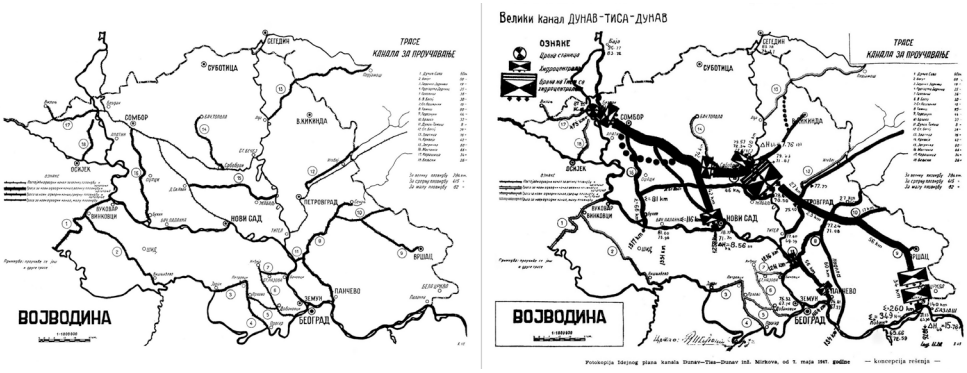

Figure 1. Left: the existing waterways in Vojvodina in 1945, with proposals for new canals in 1945-1947 (bold) [6:25]. Right: Nikola Mirkov's concept for the DTD canal network in 1947 [7:9].

Mirkov conjured up an elaborate argumentation in favor of such a project, which he published in a couple of texts: [8], [9]. In short, his idea was that Vojvodina needed an integrated canal network system that could outperform the existing canals in gravitational drainage of land and flood protection. Such a network would lead to agricultural expansion, an increase in grain yields, shorter shipping routes, opportunities for hydro-power, and water supply for industries and inhabitants, together with a plethora of other advantages [10:231]. Remarkably, he succeeded in persuading the provincial and the republic authorities to embark on such a project, and they included it in the 5-year plan for the economic development of Serbia for 1947–1951 [7:9].

It is worth analyzing his 1947 writings about the canal (especially [9]), which are a poetic exhortation in their character as much as a technical rationale for the canal construction. Mirkov understood well the narrative potential of such a project for the societal self-perception and its identity-creation. He saw his canal project as an opportunity for total social reconstruction. This is an interesting case of identity-building based on conquering space and taming nature with grand engineering projects. Such an approach completely made sense for Vojvodina, whose *raison d'être* was not founded on ethnic principles, like in the case of other Yugoslav federal units. Mirkov starts off by saying that the canal construction will be among the biggest projects in the world; that we are not yet aware of the creative powers that can be unleashed from the people through it; that the new grain fields enabled by the canal will revive "our Mesopotamia"; that it will enable the flourishing of new life, new civilization and new culture in the backwaters of Balkans [9:183], and that the pinnacle of this concept would be the creation of a new human [9:202]. He claims that it is historically unheard of that a plan for a new water management regime went on together with planning a new province, new agriculture, new nature, new industries, new traffic network, new towns and villages [9:184]. He writes that "the canal would draw together all the healthy spiritual, moral, material and labor powers of the nation"; he especially emphasized the inseparable role of creative professions in this grand project, singling out writers, artists, poets, musicians, painters, sculptors, inventors, and cinematographers, alongside natural sciences, engineering and technical experts [9:184]. He saw the canal system and water management as a foundation not only of the material but also of the spiritual culture of Vojvodina [7:13]. This is just a small sample of highlights from his grandiose narrative for the canal, which is also illustrated by a candid map of Vojvodina with the new canal network (Figure 2).

Figure 1. An illustration of Nikola Mirkov's 1947 concept of the DTD canal system by the famous pre-war architect from Novi Sad, Djordje Tabaković. It features the exaggerated Great Canal, in comparison to actually bigger rivers (Danube, Tisa, Sava) [9:185].

From there, things started to develop quickly. The team of engineers and technicians who were to design the project was assembled at the newly-founded *Direkcija za izgradnju kanala Dunav-Tisa-Dunav* (Directorate for the Construction of the Danube-Tisa-Danube Canal). The 'Basic Project' for the canal was already done by December 1947, and the 'General Project' a year later [11:20-30]. However, the project was interrupted by the harsh economic situation that arose in 1948 when the country experienced deteriorating relations with the Soviet Union and faced an economic blockade, making the construction of the canal within the 5-year-plan financially unfeasible [11:30]. This, however, proved advantageous for the designers of DTD as it provided them with more time for the blueprints. They continued surveying the landscape and designing the segments of the network until the mid-1950s. One such elaboration was the intricately designed Southern Bačka Hydrotechnical System, developed from 1951-1956 (Figure 3) [11:35].

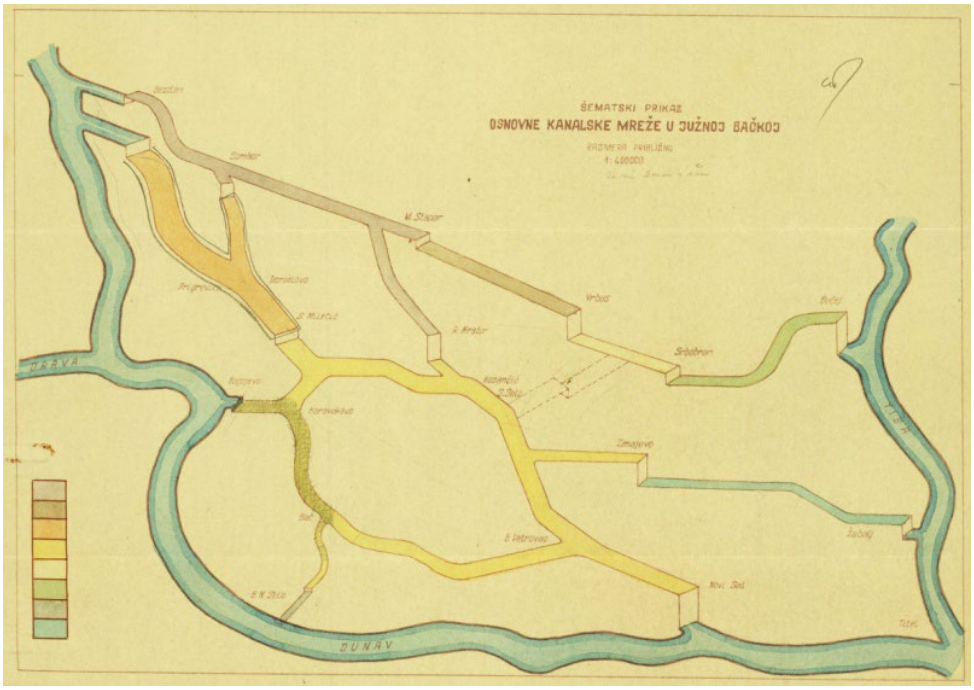

Figure 2. Scheme of the Southern Bačka Hydrotechnical System, by the engineers Žarko Šuput and Petar Vandrovski, 1954 [12].

However, the beginning of the construction was nowhere in sight, so Nikola Mirkov once again stepped in with his narrative-crafting skills in order to arouse the government to ensure the funds for the project. He drafted a new argumentation that was focused on economic opportunities that the canal would deliver, suggesting that the canal project was self-sustainable because it could pay for itself during construction due to the immediate benefits of irrigation that the completed sections of the canal would bring about [11:32]. He named this concept "self-construction" (*samoizgradnja*) and presented it in a series of texts and booklets – [13], [14], [15] – in which he intertwines the engineering with the economic rationale. However, even here, he could not help but wind up his hyperbolic storytelling. He extrapolated the importance of this local project to the continental level by pointing out the project's central position in the inner waterways axes of Europe. He was also pushing for a documentary movie about the canal to be filmed, not only for propaganda

reasons but also in order to "[...] suppress the dangerous misconception that the DTD Canal is a fruit of our megalo and grandomania. No, it's a life issue of our country" [7:17]. This resonates with his 1947 statement mentioned above that the canal construction should mobilize cultural and artistic forces, including cinema.

Finally, the federal government decided to carry on with the construction of the DTD system in October 1956 and allocated the funds for it after an extensive review of the project. A new preliminary design was completed in 1957, and the construction finally set off in the same year. Most of the canal network was completed by the mid-1970s, including the dam on the Tisa near Novi Bečej in 1977, which was the single biggest structure of the system. Upon completion in the early 1980s, the network encompassed 939 kilometers of canals, 664 of which were navigable (Figure 4, Figure 9). The canal network included 26 sluices, 16 locks, five safety sluices, and six pumping stations. It drained 1,060,000 hectares of land while simultaneously irrigating 510,000 ([11:91] and [16]). Eighty-four new bridges were built over the canals [11:98]. In total, 127 million cubic meters of earth were excavated when new canals were dug out, which lies in between the Suez Canal's 75,000,000 m^3 and the Panama Canal's 205,000,000 m^3.

Figure 3. The final shape of the DTD canal network (blue/bold), with sluices and locks [18].

However, Nikola Mirkov did not live to see any of that. The creator of DTD died of cancer in 1957, the very year in which the definite construction of the project finally took off. He lived long enough to design the canal system and to give it two critical pushes with his writing in 1947 and 1955. He was nevertheless remembered as the undisputed author of the entire project and was commemorated by his colleagues and water management institutions in later publications such as [20] in 1967 and [21] in 1976. The narrative about the canal and the argumentation he came up with were used by institutions and government long after, in their showcase publications about the canal network, like [22] and [23] (which also feature the first graphically interesting cover designs with the motifs of the canal, Figure 5).

Figure 4. Covers of the 1960's showcase publications about the canal project [22] and [23].

As per his wish, Mirkov was never employed by the state as a public servant in the socialist period, even though he was the central person in one of the country's grandest construction projects. Instead, he acted as an advisor on all matters of the project and had a peculiar lifestyle arrangement: he was content to live in a studio office that the authorities had provided him with, located at 4 Miletićeva Street in Novi Sad [7:17]. Later, he was similarly granted full board lodging at the Hotel Park in Novi Sad, which was his last place of residence [19:195]. His aura of a secluded genius author was also amplified by his growing habit of avoiding attending any meetings or conferences; he would instead get reports from his colleagues and communicate with them on a person-to-person basis [7:17]. Also, the institutional ecosystem whose experts he advised (and in which he could have been employed) was vast: *Direkcija za izgradnju kanala Dunav-Tisa-Dunav* (founded in 1947), *Direkcija kanala DTD* (f. 1950), *Uprava za izgradnju kanala DTD* (f. 1953), *Hidrozavod – Preduzeće za studije i projektovanje hidrosistema i objekata, Novi Sad* (f. 1953), their later iterations, and various provincial, republic, and federal bodies, offices, councils, and revision commissions that were included in the project [11:100]. Mirkov thrived in his studio solitude instead, removed from all of that, and focused on his life's project and mission: the Grand Canal. The success of this mission granted him the label of "The Man Who Completed the Creation of Vojvodina" by later researchers [19].

The fact remains that DTD was the largest project constructed in socialist Vojvodina since other infrastructural networks were rather a palimpsest of smaller individual projects. It was a major driver of the modernization of the province. Not only did it support sectors like agriculture, industry, or transportation, but it could also be linked to the development of agricultural and technical sciences at the newly-founded University of Novi Sad, or the success of the Novi Sad International Agricultural Fair. One of the editions of the fair even featured a model of the DTD network as a flagship project of Yugoslav modernization (Figure 6).

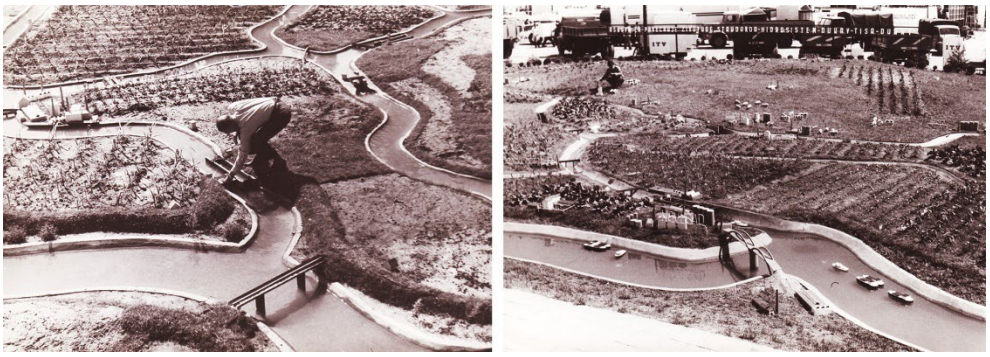

Figure 5. A schematic model of Vojvodina with DTD waterways, exhibited at the Novi Sad International Agricultural Fair in 1964 and 1965 [24].

However, where were architecture and urbanism in the DTD project? It seems that the entire endeavor was conducted outside these professions and executed exclusively by other kinds of engineers. In between Mirkov's poetic narratives and the engineers' technical blueprints, a concern for the urban-scale quality of the spaces that were built along the canals seems to have been entirely absent. In fact, one can even find instances of interventions that were later deemed deeply anti-urban, such as in the case of the change of course of the Begej river in Zrenjanin in 1971, done within the DTD project in the name of the waterway efficiency for cargo traffic [25:324-325], which eventually led to the removal of large segments of the river from the city. To make matters worse, this undertaking took some architectural victims, such as the beloved historical steel bridge from 1904 (*Veliki most*) [26], which was illegally demolished by the city in 1969 [27:104]. These sacrifices look particularly unjustified today when there is no large cargo boat traffic on this section of the canal system. In the case of Novi Sad, the location of the confluence of the old, the 19th-century canal with the Danube was shifted away from the urban core, which was one of the major innovations of the 1950 General Urban Plan of the city [28:416] that also catered to the DTD project. The old canal course was then completely covered, depriving the city of an entire typology of the urban landscape that a historical canal bank could have offered in future urban renewals [29:28].

The first explicitly architectural and urban planning project we can find within the DTD brackets is a study of areas along the canal done by the Urban Planning Institute of Vojvodina (*Zavod za urbanizam Vojvodine*) in 1968 [30]. The study, or rather plan, tried to suggest new land uses and programs for towns and villages in whose vicinity the canals were cut through since DTD's grander spatial logic seemingly neglected these aspects. The plan proposed new locations and zones for recreation, water sports, auto-camps, protective tree belts, marinas, beaches and other leisure activities. It also offered typical models for vacation cabins along the waterways (Figure 7) and proposed new nature reserves, including the entire course of the Tamiš River that remained unchannelized by the DTD project. It is also interesting that this study drew a direct connection between the canal water quality and the "aesthetic and artistic experience" of the environment [31:612], making architects and urban planners among the first to raise the alarm about the issue of water pollution in DTD canals, which they deemed to be an existential urban problem [31:618]. In any case, the effects and implementations of this plan have yet to be attested and studied, if any.

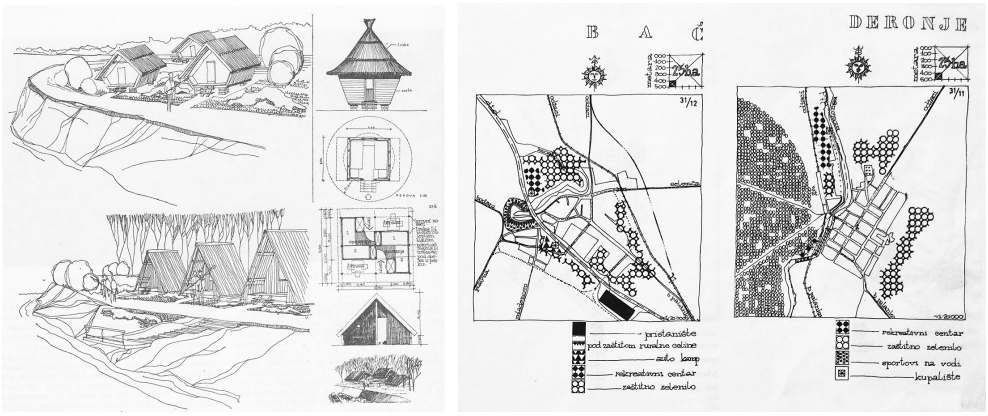

Figure 7. Designs for leisure cabins and plans for villages along the canal, from the 1968 study by the Urban Planning Institute of Vojvodina [30], [31:614-615].

Some structures that were built as a part of the DTD project, like locks, sluices, and pumping stations, have an undeniable architectural quality. Such is the 'command house' at the Sombor lock, which could even be more loosely tagged with such popular terms as 'space-age modernism' (Figure 8). These structures added a significant layer onto the existing hydrotechnical architectural heritage in Vojvodina from previous centuries, establishing continuity with it. Even more significant is the landscape architecture quality of lock and sluice compounds. They often looked like small parks with their abundant tree ensembles and were used by locals from nearby villages as leisure areas if access was not denied. Overall, the hydro-technical structures of DTD were designed by engineers from *Hidrozavod* [31:615] and not by architects, which may be the reason why they have so far been completely overlooked in studies and reviews about the history of architecture of socialist Yugoslavia.

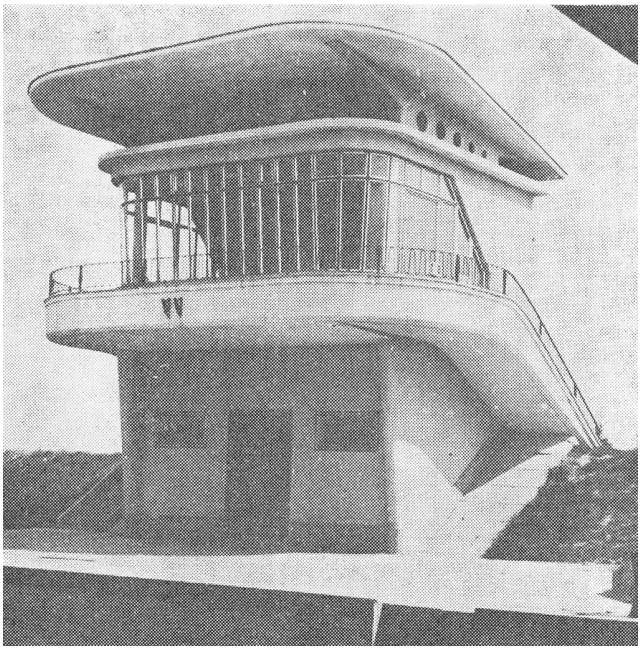

Figure 8. Command house at the Sombor lock, designed by Hidrozavod, Novi Sad [32:430-431].

Finally, the effects, success, and lessons of the DTD project have yet to be comprehensively re-evaluated from a critical standpoint. Different types of engineering disciplines that were directly involved in its construction already have their consensus about DTD, as they hold the project in the highest esteem. However, the disciplines of architecture–urbanism–spatial planning have the potential to synthesize all those particular insights, spot their shortcomings, and propose more holistic strategies for the future development of DTD. In terms of criticism, various points could be brought up. Yes, the hydrotechnical network allowed for extensive irrigation of farmland, but how feasible is that if the canal water is polluted by the food industry located along the waterways? According to some, the canal section between Crvenka and Vrbas is one of the most polluted waterways in Europe [33]. To make the whole matter even more alarming, the products of this industry, like sugar and seed oils, have a detrimental impact on human health [34], which makes this whole business seem rather absurd. Also, the runoff of pesticides used on the irrigated croplands back into the canals further brings this entire endeavor into question. Moreover, while the canals have opened up vast swaths of Vojvodina territory to nautical tourism, very little has been built that would serve it, such as fully-equipped marinas, even though regattas are nowadays regularly held. Passenger traffic on the canals is still non-existent, and it is hard to think of any intermodal node that connects the canals to any other infrastructural networks.

One of the rare contemporary efforts to soberly analyze the legacy of the canal, with enough time distance and with the synthesizing wisdom of urbanism, is Vladimir Mattioni's 2010 essay on the urban networks of Vojvodina [35]. In it, Mattioni pointed out the necessity to separate the impressive aspect of the seemingly over-encompassing technicality and scientific methodology of spatial planning in Vojvodina, including the DTD project, from the actual effects and results of those plans. That would open up a possibility to examine the self-proclaimed scientific approach of the past planners' grand projects and establish whether the discipline was indeed efficient in their modeling and prescriptions or rather trapped in its self-sufficient logic; nevertheless, Mattioni describes DTD as a crucial element of Vojvodina's modernization [35:158].

Finally, the canal continues to inspire contemporary researchers and designers, from its oldest sections, to which Vojvodina owes its modern appearance [36], to future narrative speculations about re-imagining the identity of the canal network in a completely new key [37]. Maybe such shifts and turns in the canal re-imagination will again create conditions for fulfilling even the most ambitious ideas from Nikola Mirkov's narratives, like connecting Vojvodina's canal system the Aegean and Adriatic seas by new international canals (which he dwelled upon as early as 1924 in [38:338], and repeated in 1947 in [9:200]).

Figure 9. DTD branch in Novi Sad (photo by Wikipedia (Micki|CC BY-SA 3.0), cropped by A. Bede)

2.2. CASE STUDY: VOJVODINA PLANS BY DIMITRIJE MARINKOVIĆ

This short case study is entirely based on a text and a couple of sideline and slightly off-topic drawings, almost sketches, published in 1953 in a showcase book by the Urban Planning Institute of Serbia from Belgrade (*Urbanistički zavod NR Srbije*), in the chapter about the General Plan of Novi Sad from 1950 [39] written by Dimitrije Marinković. He was the planner from this institution who designed this plan. Marinković's career is little known today. As a newcomer to the planning scene of Novi Sad in the late 1940s, he introduced some radical changes in the cityscape with his 1950 General Plan. One of the aims of his plan was to liberate large swaths of urban territory from railway and industrial uses, which had indeed initiated a new era for the spatial layout of the city [40:142] but ended up creating new "urban conflicts" in the city's morphology as well [41:1936]. However, some of these changes might have been deduced from his consideration of a much broader scope. Namely, his Novi Sad plan had a methodological innovation: Marinković first analyzed the entire territory of Vojvodina and proposed new concepts for its development, perhaps since no spatial plans for the province existed at that moment [42:101]. Thus, an analysis of the province's spatial and economic situation, which includes two plans for its future road and railway networks, figures as an introduction in the general plan of Novi Sad (Figure 10), and in the book chapter that describes the plan and that is analyzed here. The reason this instance was chosen as a case study is the fact that these two modest drawings offer a strikingly more ambitious vision for Vojvodina than any spatial plan later produced by spatial planning institutions whose nominal mandate was to be the hub of such visions.

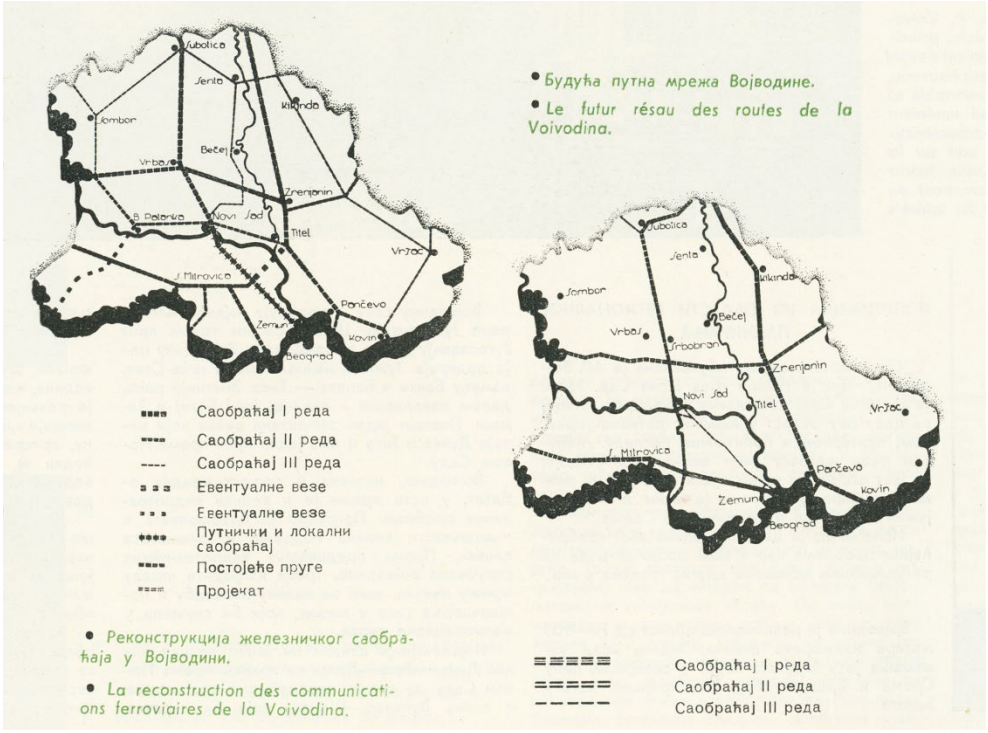

Figure 6. Railway (left) and road (right) network proposals for Vojvodina by Dimitrije Marinković [39:72].

Marinković's ambitious vision can primarily be observed in the international connections that he proposed. For instance, the two roads that cross Banat and intersect at Zrenjanin: one leading straight to the important gravitational center of western Romania – the city of Timisoara – and connects it over Vojvodina to Croatia and the rest of western Yugoslavia; the other one is the new north-south axis of Banat, a kind of a parallel alternative to the E-75 road that runs from Belgrade to Hungarian border via Novi Sad and Subotica. If built, these two corridors would have become the shortest links between entire European regions. The east-west route could have been the shortest connection between Romania and Italy, but today, the passenger traffic is mostly served by air due to bad road or rail alternatives on this corridor. The north-south corridor would have relieved the presently congested A1 highway in Serbia between Horgoš and Smederevo because it could have enabled the shortest link between Hungary and Greece/Bulgaria/Turkey. Marinković offered similarly far-seeing solutions in the railway plan, with drastic optimization of the network within Vojvodina that could have served the same international corridors (via, for example, a proposed connection between Banat and Syrmia [*Srem*] across the Danube).

However, such strong local, national, and international connections were almost nowhere to be seen in later spatial plans and are mostly still lacking today. The institution nominally in charge of producing spatial plans for Vojvodina, and supposed to be the generator of such ambitious visions was the Urban Planning Institute of Vojvodina (*Zavod za urbanizam Vojvodine*; for name changes, see [43]), founded in 1950. The analogous plan to Marinković's Vojvodina sketches, and the biggest plan this institution produced, was the Spatial Plan of Vojvodina, commissioned in 1966 and enforced in 1978 (see more about the plan in [44], with details on methodology in [45] and [46:48]). Other major spatial plans that they produced in this period were the two for nature parks: Fruška Gora (1981) and

Deliblato Sands (1981). Among planners, such plans, as well as the entire planning, methodological, and scientific output of this institute in the socialist Yugoslav period, have been lauded ever since as the historical pinnacle of planning in Vojvodina, such as in [46] and [47]. However, this judgment deserves a more objective assessment that would compare their output to that of other institutions and even measure the success of the physical implementation of their plans. The numerous volumes of these plans, with hundreds of pages each, consist primarily of extensive mapping and analyses of the existing spatial conditions, which is of great historical value. However, those chapters always seem to overshadow the final drafts of those plans and any creative proposals they had. Moreover, none of those final drafts have ended up in publicly accessible libraries. This lack of tangible outputs that might be of interest to researchers today seems to be the result of institutionalization and bureaucratization of planning in Vojvodina, which was captured by a self-centered institutional ecosystem, unaware of the importance of communicating their work outside the house.

In contrast, Marinković's drafts for the road and rail networks of Vojvodina seem to have been incepted the other way around: from the creative and ambitious vision rather than from many years and hundreds of pages of analyses by numerous institutional employees. On top of that, he wrote about them and published them in a book chapter aimed at a wider audience, unlike later institutional planners. The result is that the two sideline sketches from a local urban plan from 1950 offered an international vision of the future of the entire province, while such a future does not exist in later nor today's spatial plans [48:32]. Marinković, on the other hand, was also an institutional employee, but he, nevertheless, seems to have been playing an individualist role as an outsider from Belgrade who came to Novi Sad to tackle the urban and spatial problems on his own without much interference from others. In any case, this situation opens up the question of institutional capacity for generating ambitious concepts and ideas for plans.

2.3. CASE STUDY: FRUŠKA GORA MEMORIALS BY MILORAD BERBAKOV

This case study features a series of 'memorial cemeteries' (*spomen-groblje*) of WW2 Yugoslav Partisan fighters on the insular Fruška Gora mountain in the Syrmia (*Srem*) sub-region of Vojvodina. They were designed by Milorad Berbakov, an architect from Zrenjanin, according to his winning design from the 1972 competition [49:40]. These locations are dotted along a 12-km-long ridge road in the mountain forest and consist of two major memorial cemeteries – *Rohalj Baze* (completed in 1973, Figure 12) and *Jabuka* (1974, Figure 11) – along with three additional remote gravesites of individual fighters (*Lepinjicin*, *Mošin*, and *Maksin grob)*. Original project documentation – designs and photographs – were available for this analysis, but no textual materials about this project penned by Berbakov (beyond technical description) seem to exist. In any case, Berbakov treated all these sites as one project, as a network of memorial nodes that feature variations of the same design principle he introduced into this landscape. That design is completely subordinated to the natural context, and all spatial interventions are adapted to the topography [50:97]. By clever use of natural surroundings, as well as local stone and oak logs, without big building interventions, he managed to create unique landscape memorials [51:269]. Indeed, the biggest elements of those memorial ensembles seem to be trees, such as an old apple tree that is central to the spatial ensemble of the *Jabuka* memorial.

Figure 7. Jabuka Memorial Cemetery after the 1974 completion [52:17].

It was Bogdan Bogdanović who had, in fact, previously introduced landscape architecture and even land art phase into memorial architecture tendencies in Syrmia, Vojvodina, and Yugoslavia, with his Partisan memorial cemetery in nearby Sremska Mitrovica, built in 1959. This architectural approach replaced the previous phase dominated by figurative sculpture and, in the context of Vojvodina, was, perhaps, crowned by the large memorial site *Sremski Front* by the architect Miroslav Krstonošić in 1984-87. Both of these structures encompass large-scale landscape ensembles, but what sets Berbakov's project apart is the fact that it is a *network* of different sites, making it more illustrative for the intentions of this paper (Figure 13). The network emerges once we imagine the routes that connect individual memorial sites within his Fruška Gora project. More examples like this can be found on the mountain, such as another memorial network that overlaps with Berbakov's and even compliments his *Jabuka* site: a series of simple stone blocks by the sculptor Pavle Radovanović, which are placed as markers of important sites on the mountain [53:23-24].

Figure 8. Rohalj Baze Memorial Cemetery in 2023 (photo by A. Bede).

If we expanded Berbakov's network in order to include all of his memorial projects in Vojvodina, of which there are plenty, perhaps the most prominent node in it would be his memorial museum near the village of Bezdan in Bačka sub-region, dedicated to the 1944 Battle of Batina, which opened in 1981. This project, again, relies heavily on land art and is located on a narrow cape between the Danube and the DTD canal. This is the very place where Nikola Mirkov's *grand oeuvre* connects to the river and both symbolically and hydrologically begins. It could, therefore, be denoted as a connecting node between two networks that critically marked both the physical reality of Vojvodina and the province's post-WW2 foundational narrative: the canals and the memorials/monuments.

Finally, a specific significance of Berbakov's work could be ascribed to his use of minimal and natural construction elements for memorial purposes and monumental ensembles. This approach might stem from a certain Banat or Vojvodina attunement to seemingly monotonous landscape, which, in fact, is sensible to the slightest changes in topography and nature and is content to work with them and to ascribe them meaning. Such lowlands sensibility stems from the context we described as profoundly anthropogenic and artificial but seems to create landscape architecture that is primarily natural and organic in form.

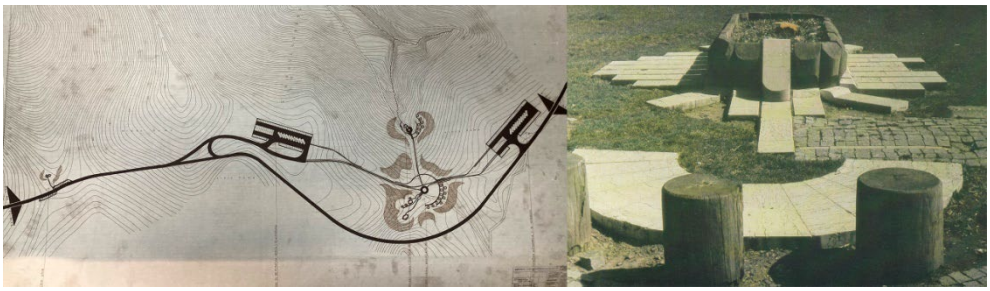

Figure 9. Left: the network of two sites in Berbakov's design – Jabuka (right) and Lepinjicin grob (far left); the two parking lots were not built. Source: [54]. Right: Lepinjicin grob – individual grave site of a Partisan fighter [49:84].

3. DISCUSSION

One of the most striking phenomena analyzed in this paper is the powerful role of Nikola Mirkov's narrative craftsmanship in ensuring the success of his DTD project. The impression is that his grand stories do not at all come off as some Soviet propaganda genre when read today. On the contrary, many other projects could have used some of that approach, like the road and railway networks proposed by Dimitrije Marinković. One wonders if his spatial ideas for Vojvodina would have had more chances for fruition if he had focused more on narrative crafting and text producing, as Mirkov did for his canals. Vojvodina's roads and railways could have easily been envisioned as a critical infrastructural node in Europe, on par with its hydrological centrality demonstrated by Mirkov. Instead, Marinković's proposals for Vojvodina's infrastructural networks were forgotten, while the problems they were tackling remain pressing issues nowadays.

Moreover, a strong narrative could help in the *post-festum* maintenance efforts during the lifetime of built structures. In his earliest 1945 water management manual for youth [55], Mirkov even advocated for nurturing "the cult of water" [7:8] with this aim in mind. Maintenance is especially important for anthropogenic landscapes like Vojvodina that depend on these structures, like canals and flood protection, being functional, so a "cult" like this makes sense. If the narratives of such structures were forgotten, the question is what would remain of the local community, which is defined by and physically dependent upon its built surroundings [56:38]. Finally, narratives help with remembering the relevance of past projects, which was so painfully apparent for Vojvodina at the occasion of the Museum of Modern Art's exhibition *Toward a Concrete Utopia: Architecture in Yugoslavia, 1948–1980* in New York in 2018. Not a single project from Vojvodina was showcased at this most important global review of Yugoslav architecture to date (other than a department store in Novi Sad by a Slovenian architect). This is, perhaps, the consequence of the lack of substantial local attention given to projects of Vojvodina in research and publishing.

When it comes to the issue of the definition of networks, one of the criteria for choosing the case studies for this paper was that they were individual single projects rather than networks that resulted from many different building projects. However, they still have a structure of networks: Mirkov's canals are literally an infrastructural network, as well as in Marinković's Vojvodina plans. Berbakov's monuments are a constellation of points. However, in future studies, expanding the definition of projects to include entire territorial infrastructural and other built networks could be a sensible tool for analyzing an anthropogenic region like Vojvodina, which is so saturated with various construction efforts of many generations that had the same aims. Mattioni used this approach when he proposed to map all the buildings of communal and social infrastructure in Vojvodina, as well as new housing estates, through which a new layer of urban topography would emerge [35:151].

The "network as a project" method becomes especially exciting when applied to structures of cultural use (like networks of cultural centers, museums, or WW2 memorials that we showcased in the previous chapter) and then overlapped, conjoined and viewed integrally with infrastructure such as canals. This method has already been taken further into the realm of cinematography: consider the development of a thesis that the cinematic output from Vojvodina could be viewed as its territorial infrastructure in [56], [57], and [58]. This thesis has now been unexpectedly supported by Nikola Mirkov's statement from 1947, as paraphrased above: "An important role in building the canal will be held by our [...] painters and sculptors, our musicians, [...] our cinematographers" [9:184]. Indeed, in the 1960s, there was a group of

amateur filmmakers from Novi Sad who learned their craft by filming documentaries about modernization and construction projects in Vojvodina, including the canals (the 1962 documentary *Nove reke* by Branko Milošević). Soon after, they switched to making short and feature art films under the label of the newly founded *Neoplanta Film* Company. These films became a crucial part of the neo-avantgarde movement known today as New Yugoslav Film, as they swept through European film festivals where they won the highest awards (like the *Grand Prix* at Berlin Film Festival 1969, which went to Želimir Žilnik's *Rani radovi*).

The main claim of this thesis is that the entire production of *Neoplanta Film* could be viewed as a part of the urban and spatial planning heritage of Novi Sad and Vojvodina. The artistic phase of this company emerged thanks to their initial experience in filming the construction sites of urban and territorial modernization projects. Analogous to that, Vojvodina's towns and villages owe their vitality and productive output to infrastructural networks on which they are dependent, like canals. Thus, the movies of *Neoplanta Film*, i.e. the locations that they feature, represent a spatial network of historical memory that is integral to the modernization project of a territory that owes its existence to the radical transformation from the natural state [58:209]. Moreover, these movies reveal the "narrative foundations" on which the structures, such as canals and earthworks, were built. By keeping these narratives alive over time, the movies have a significant role in the vital and permanent project of maintenance of these structures. Thus, we should consider them as part of the territorial infrastructure and network projects and mark their locations accordingly.

Finally, one of the main impressions that emerged from the case studies is that the individual creators over-performed entire institutions whose missions were nominally to come up with ambitious plans for the future. The analyzed case studies notably are products of the geniuses of their authors rather than institutional group effort and planning procedures. Nikola Mirkov's vision for the 'Grand Canal' kept an entire ecosystem of institutions busy for decades while he himself enjoyed a lifestyle of artistic seclusion away from those institutions. Moreover, they never produced anything that would overshadow him, and his most futuristic visions are yet to be dealt with by upcoming generations (canal links to the Aegean and Adriatic, or even a branch to Subotica). Mirkov was perhaps lucky to hold a lead with his project, which he launched before local planning institutions with the mandate to produce such projects were founded. Similarly, a couple of unseemly sketches by Dimitrije Marinković are more visionary than anything produced later by generations of employees in spatial planning institutions of Vojvodina, Serbia, and Yugoslavia. In the case of Milorad Bebrakov, his creative genius was crucial in contributing to a new nature-based paradigm in memorial architecture in Vojvodina, although least surprising since this was always a domain of the creativity of individual architects and sculptors and not of institutions.

One cannot help but notice that these insights resonate with a certain popular or philosophical adage that "academia" is not the place where good "art" is created. It is difficult to approach this issue scientifically, as the topic is somewhat captured by the contemporary political polarization between strong reliance on and strong suspicion of institutions and bureaucracy in general. Nikola Mirkov was himself quite wary of the institutional condition and its burdens, which is maybe why he completely rejected it. In his best manner, Mirkov saw his *grand oeuvre* as the solution to this predicament as well: "The Great Canal will root out any bureaucratizing, any untidiness, and any unsystematic and unprogrammatic work" [9:205].

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Aleksandar Bede (1986) earned his M. Arch. Degree at the Faculty of Technical Sciences, University of Novi Sad, Serbia (2011), and a Ph.D. Degree in urbanism at IUAV University of Venice, Italy (2017), with a doctoral dissertation titled "Prototyping a Provincial Capital: Socialist Modernization of Novi Sad". In 2023, he participated in the CSCA Summer School in Classical Architecture at the University of Cambridge (UK) and Engelsberg (Sweden). He is the author of the book *U paru za društvo: Arhitektura Sibina Đorđevića i Milene Stanković Đorđević* (Stuttgart, 2015) and co-author of the book *Spens: Mera grada* (Novi Sad, 2022). He has been editing and co-editing the Serbian architecture magazine *DaNS* since 2016. He works as an architect and researcher with the status of an independent artist in Serbia.

ВИЗИЈЕ И НАРАТИВИ ПРОЈЕКАТА ВЕЛИКЕ РАЗМЕРЕ ИЗ СОЦИЈАЛИСТИЧКЕ ВОЈВОДИНЕ

Сажетак: Овај рад идентификује и разматра три студије случаја различите природе, размере и позиције унутар дисциплине, као илустративне примере из Војводине у расправи о пројектима велике размере из доба социјалистичке Југославије. Интерпретативно-историјски метод је коришћен за опис и интерпретацију студија случајева, а примарни извори су подвргнути методи кавлитативне анализе садржаја како би се извукли изворни наративи тих пројеката, као и да би се учврстила њихова позиција унутар овог поља. Први је Велики канал Дунав-Тиса-Дунав, највећи просторни пројекат у Војводини, којег је од 1947. осмишљавао инжењер Никола Мирков и чија је изградња завршена до раних 1980-их. Други је случај две скице путне и железничке мреже Војводине архитекте Димитрија Маринковића, из његовог Генералног плана Новог Сада из 1950, које су се показале далековидијим од каснијих институционалних планова. Трећи је мрежа спомен-гробаља Рохаљ базе (1973) и Јабука (1974) на Фрушкој гори архитекте Милорада Бербакова, као примера нове парадигме југословенске меморијалне архитектуре у Војводини, засноване на пејзажној архитектури. Питања о којима се у закључку расправља су: 1) важност наратива за успех пројекта; 2) проширена дефиниција пројекта која укључује мреже; 3) уметност као мрежа (на примеру Неопланта филма); 4) одмеравање креативности појединачних аутора наспрам институција.

Кључне ријечи: Војводина, просторно планирање, Велики канал Дунав-Тиса-Дунав, хидросистем ДТД, канали, Никола Мирков, Димитрије Маринковић, југословенски споменици, Милорад Бербаков, Фрушка гора, Рохаљ базе, Јабука, Неопланта филм.