

Industrial Heritage Matters: Experiential Approaches in Architectural Education

Značaj industrijskog naslijeđa:
iskustveni pristupi u arhitektonskom obrazovanju

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Abstract Although industrial heritage is increasingly recognised in European discourse, it remains marginal within formal architectural curricula across the post-Yugoslav region. This study demonstrates how experiential and reflective models, tested through the Sleeping Giants project, can strengthen students' critical awareness and sense of professional responsibility towards dissonant industrial heritage. The findings indicate that field-based, collaborative, and community-oriented pedagogies foster a deeper contextual understanding and support heritage protection through education. The study further argues that integrating such models into academic curricula can contribute to both the revalorisation and safeguarding of industrial heritage. It concludes by proposing a transferable framework for the future implementation of experiential learning within architectural education.

Keywords industrial heritage; dissonant heritage; architectural education; Sleeping Giants project; practice-based learning.

Sažetak Iako se industrijsko naslijeđe sve više prepoznaje u evropskom diskursu, ono i dalje ostaje marginalno u formalnim kurikulumima arhitektonskog obrazovanja u postjugoslavenskom prostoru. Rad analizira potencijal iskustvenih i refleksivnih pedagoških modela, razvijenih i testiranih u okviru projekta Sleeping Giants, u unapređenju kritičke svijesti studenata i njihovog razumijevanja profesionalne odgovornosti prema disonantnom naslijeđu. Rezultati ukazuju da terenski, kolaborativni i zajednički orijentisani pristupi doprinose razvoju kontekstualnog razumijevanja i afirmaciji zaštite naslijeđa kroz obrazovanje. Nadalje, rad ukazuje na mogućnosti integracije ovih modela u postojeće akademske kurikule, s ciljem unapređenja procesa revalorizacije i očuvanja. U završnom dijelu predlaže se konceptualni okvir za buduću primjenu iskustvenog učenja u arhitektonskom obrazovanju.

Ključne riječi industrijsko naslijeđe; disonantno naslijeđe; arhitektonsko obrazovanje; projekat Sleeping Giants; učenje kroz praksu.

1 Introduction: Industrial Heritage Between Oblivion and Education

Industrial heritage constitutes one of the most significant yet simultaneously most vulnerable layers of the cultural landscape in the post-Yugoslav region. Although industry played a decisive role in processes of modernisation, urban development, and the formation of social identities throughout the nineteenth and twentieth centuries, its material and immaterial legacies have largely been relegated to the margins of public policy, cultural institutions, and educational curricula. This tendency is

particularly pronounced in the post-socialist context, where industrial heritage often emerges as a dissonant and difficult-to-interpret legacy, shaped by tensions between narratives of modernisation, ideological interpretations of the socialist period, and the consequences of post-war transition. This layered ambivalence positions industrial heritage as a paradigmatic example of dissonance, in which diverse – and often competing – memory, political, and economic perspectives intersect.

At the same time, recent developments across Europe point to the potential of industrial heritage as a resource of cultural, educational, and economic development. However, in the countries that emerged

following the dissolution of Yugoslavia, these trends are only sporadically reflected in institutional practice. Analyses presented in previous regional studies (Plićanić, 2024), as well as in relevant national TICCIH reports from the past decade (2015, 2018, 2022, 2025), indicate a general lack of systemic frameworks, limited museum and interpretive provision, and the absence of integrated approaches to industrial heritage education. While there are positive examples – from Slovenia's technical and mining museums to individual initiatives in Croatia and Serbia – these remain isolated cases rather than components of a coherent strategy or a formally established educational model. Bosnia and Herzegovina, despite its rich industrial past, most clearly illustrates the consequences of this institutional vacuum: industrial heritage is largely absent from cultural policy, the museum sector, and formal architectural education.

Building on these insights, this paper aims to highlight the need for the systematic integration of industrial heritage into architectural education, with particular emphasis on its dissonant character and the specific challenges of the post-Yugoslav context. The central question is how educational institutions can contribute to the understanding and reinterpretation of industrial heritage, and how they might foster the development of critical, contextually sensitive professional competencies among future architects.

Methodologically, the paper combines theoretical and empirical approaches. The theoretical component draws on contemporary memory studies and heritage scholarship, which conceptualise industrial heritage as a dynamic, selective, and ideologically conditioned process of interpretation (Draganić, 2021). This framework is complemented by a regional analysis of educational, institutional, and museological practices, informed by comparative insights from a relevant publication (Plićanić, 2024) and available national reports (TICCIH, 2015, 2018, 2022, 2025). The empirical component is grounded in the *Sleeping Giants: (Re)thinking Mutual Industrial Heritage* project, within which two interdisciplinary student workshops were held in Sarajevo and Novi Sad, focusing on direct engagement with selected industrial sites. These workshops functioned as experimental models of experiential, field-based, and reflective learning, enabling students to develop a sensitivity to the complexities of industrial heritage through research, dialogue with local communities, and creative interpretation.

On this basis, the paper is structured around two complementary parts. The first elaborates the theoretical framework of dissonant industrial heritage and analyses the regional context of architectural education, emphasising the structural reasons why industrial heritage remains outside formal curricula. The second part presents empirical insights through the case studies of Energoinvest and Beton, demonstrating how experimental pedagogical models can open up space for new forms of interpretation, protection, and activation of industrial sites. By integrating theoretical and practical dimensions, the paper argues that education is not merely a mechanism for the transmission of knowledge, but also a crucial instrument for the revalorisation and long-term safeguarding of this dissonant yet highly significant aspect of shared cultural heritage.

2 Dissonant Heritage and Architectural Education: Between Memory and Practice

2.1 Dissonant Heritage as a Space of Conflicting Memories

Current European Union heritage discourse promotes an integrative and largely consensual narrative of a shared European heritage – one that emphasises harmony, diversity, and common values. Yet, as several scholars have observed, this liberal-universalist perspective often overlooks the ruptures, antagonisms, and traumas that have shaped modern European history (Delanty, 2017). Europe's experience of totalitarianism, war, and ideological polarisation challenges the notion of a unified cultural memory. Instead, the continent's heritage is profoundly marked by dissonance – the coexistence of competing interpretations, contested values, and unresolved memories.

Within heritage studies, the concept of dissonant heritage (Ashworth & Tunbridge, 1996) addresses precisely this complexity. Heritage, understood as a “contemporary product shaped from history” (Ashworth & Tunbridge, 1996, p.6), is inherently selective and interpretative, thus inevitably conflictual. Dissonance arises not only from the commodification of the past or competing uses of memory but also from deeper political and identity-based struggles that determine which histories are preserved, forgotten, or reimagined (Smith, 2006; Graham & Howard, 2008; Kisić, 2017). As Laclau and Mouffe (1985) and Couldry (2010) argue, reinterpretations of the past activate latent dissonance, generating new meanings that destabilise dominant historical narratives.

While such conflicts may threaten social cohesion, they can also serve as productive sites of dialogue and transformation. The Council of Europe's Framework Convention on the Value of Cultural Heritage for Society (Faro Convention, 2005) emphasises participatory and inclusive approaches as key mechanisms for addressing contested interpretations of the past. Scholars like Harrison (2013) and Kisić (2017) have further developed this line of argument, highlighting how the acknowledgement of pluralism and conflict within heritage processes strengthens democratic participation and cultural understanding.

In this context, the dissonant industrial heritage of the former Yugoslavia offers a particularly rich and complex terrain. It embodies not only the material and technological achievements of socialist modernisation but also the ideological, emotional, and social infrastructures of a society grounded in the principles of self-management, solidarity, and collective progress. The factories, industrial complexes, and workers' settlements of socialist Yugoslavia were spatial manifestations of a distinct social model that sought to reconcile industrial growth with social justice and cultural emancipation.

Today, many of these sites stand in ruins – physically decaying and symbolically marginalised. Their meanings are fractured, oscillating between nostalgia, denial, and indifference. For some, they represent the remnants of an authoritarian system and economic inefficiency; for others, they stand as monuments to social cohesion, equality, and a

belief in a collective future. This ambivalence makes socialist industrial heritage profoundly dissonant: it encapsulates the tension between pride and disillusionment, between the utopian imagination of the socialist project and the fragmentation that followed its collapse.

However, these contradictions also open up space for critical reinterpretation and educational engagement. By revisiting industrial heritage through critical, participatory, and experiential approaches, new generations can engage with the complexities of the past without resorting to nostalgia or denial. Examining phenomena such as workers' self-management (*samoupravljanje*), youth labour actions (*omladinske radne akcije*), and organisations like the Anti-Fascist Women's Front (*Antifašistički front žena*) allows for a re-examination of the social ideals and collective practices that once underpinned Yugoslav modernity. At the same time, these phenomena can be situated within broader post-war processes of industrialisation and reconstruction in Europe, while recognising the specificity of the Yugoslav model, characterised by practices such as workers' self-management and a high degree of social participation, with few direct parallels elsewhere in Europe. Such an approach acknowledges dissonance as an inherent and valuable characteristic of heritage – a condition that invites dialogue rather than consensus.

From this perspective, education becomes a crucial tool for the protection and reactivation of dissonant industrial heritage. Engaging students and young researchers in the study of industrial sites – through fieldwork, oral history, creative interpretation, and critical reflection – fosters both cognitive and affective understanding of the socialist legacy. It transforms heritage learning into an act of civic participation, in which engagement with conflicting memories cultivates ethical awareness and intercultural empathy. The ultimate pedagogical aim is not to resolve contradictions but to develop the capacity to live with them – to understand industrial heritage as a reflection of societal complexity and a space for imagining more inclusive and solidaristic futures.

Thus, by framing post-Yugoslav industrial heritage as a space of competing memories, we can move beyond narratives of loss or nostalgia towards a more critical mode of engagement that integrates remembrance, analysis, and projection. Such an approach positions dissonant heritage not as a burden of the past, but as a catalyst for contemporary reflection on democracy, social justice, and collective responsibility – values that remain central to both European and global debates on the future of heritage.

2.2 The Regional Context of Architectural Education: Fragmentation and the Absence of a Systematic Approach to Industrial Heritage

The overview of the regional state of industrial heritage education presented in this chapter draws on a comparative analysis of national TICCIH reports from the last decade (2015, 2018, 2022, 2025) and the findings of relevant interdisciplinary research encompassing all post-Yugoslav countries (Pličanić, 2024). Taken together, these sources offer the most coherent insight into how industrial heritage is currently addressed within education, musealisation, and

cultural policy across the region.

In the post socialist context, industrial heritage occupies a paradoxical position. Although it played a significant role in shaping economic structures, spatial development, and social relations throughout the twentieth century, it is often marginalised within the institutional priorities of contemporary post-Yugoslav states. Processes of deindustrialisation, accelerated privatisation, and shifting societal values since the 1990s have radically transformed industrial spaces, in which market logic emerged as the dominant criterion for managing post-industrial sites. Industrial zones – despite their crucial role in understanding modernisation – have largely been perceived as attractive assets for real-estate development, resulting in their demolition, fragmentation, or complete disappearance before being documented or valorised.

Moreover, the ideological reinterpretation of the socialist past has profoundly influenced the perception of industrial heritage. Spaces associated with self-management, working-class identities, and collective modernisation projects were often labelled as aesthetically or ideologically problematic, creating conditions in which institutions were more inclined to tolerate their decay than to implement protective strategies. In this way, industrial heritage has been constructed as a distinctly dissonant category – culturally, politically, and symbolically charged – and consequently often excluded from institutional care.

This discursive framework is further reinforced by institutional fragmentation. Most countries lack comprehensive inventories of industrial heritage, specialised technical museums, and strategic documents that recognise industrial heritage as a relevant cultural or developmental concern. Comparative regional research (Pličanić, 2024) confirms this pattern, showing – with Slovenia as the notable exception – a widespread reliance on individual initiatives, limited professional capacities, and the absence of coordinated institutional policies.

Within this broader landscape, Slovenia represents the most advanced model for integrating industrial heritage into both educational and museological sectors. Here, industrial heritage is linked to themes such as sustainable development, the circular economy, and adaptive reuse. A well-established museum infrastructure – including the Technical Museum of Slovenia, the Mining Museum of Slovenia, and the Idrija Mining Museum – continually develops programmes that interpret industrial history as an integral part of national cultural identity. At the same time, the Faculty of Architecture at the University of Ljubljana offers courses on industrial buildings, modern heritage preservation, and adaptive reuse, ensuring that industrial heritage is firmly embedded within the curriculum. Projects such as the reconstruction of Cukrarna or the revitalisation of the Rog factory further illustrate the capacity of Slovenian institutions to reinterpret industrial heritage as a resource for development. This framework is underpinned by a robust body of literature, including works such as *Zaštita i ponovna upotreba industrijske baštine: dileme, problemi, primjeri* and research published by the Slovenian ICOMOS and TICCIH committees (Ifko & Stokin, 2017; Ifko & Marušić, 2018, 2022, 2025).

Croatia has developed distinct yet complementary approaches, characterised by strong engagement from universities, museums, and civil society organisations.

The first university lectures in industrial archaeology were introduced at the Faculty of Architecture in Zagreb as early as 2000, after which interest expanded to Rijeka, Split, and Osijek. There, students of architecture, civil engineering, and art history engage in the study of abandoned industrial complexes and develop project proposals for their revitalisation. Museum institutions – such as the Zagreb City Museum, the Museum of Modern and Contemporary Art in Rijeka, and the interpretation centre Nizozemska kuća – develop exhibitions and educational programmes dedicated to industrial heritage. Numerous adaptive reuse projects (Lauba, Rikard Benčić, Jedinstvo, Labin) further demonstrate the cultural sector's capacity to transform industrial spaces into new forms of urban infrastructure. The long-standing work of the Pro Torpedo association, along with the production of industrial heritage maps in Rijeka and Sisak, provides an important documentary foundation for future research and education (Barišić Marenčić, 2022, 2025).

In Serbia, education on industrial heritage has developed primarily through strong academic and project-based initiatives. The Faculty of Technical Sciences in Novi Sad plays a particularly important role, offering courses on the adaptive reuse of built heritage and regularly organising project workshops at industrial sites such as the Beton factory, Veliki Liman, and the former railway marshalling yard. The Museum of Science and Technology in Belgrade, together with numerous local initiatives—including projects related to the revitalisation of the Creative District – contributes to raising public awareness of industrial history. The professional literature, including relevant monographic studies on research, restoration, and presentation methodologies, as well as studies on the industrial development of Vojvodina, provides a theoretical and documentary framework for interpreting this heritage (Pašković, 2015; Draganić & Siladić, 2018, 2022, 2025).

North Macedonia is currently in the early stages of developing this field. The translation of key texts from TICCIIH's Industrial Heritage Re-tooled, the publication of the digital edition Perspectives for the Protection of Industrial Heritage, and the organisation of international expert forums represent initial yet significant steps towards establishing a specialised discourse. However, educational and museum practices remain limited, with no substantial integration into higher education or cultural institutions (Kocevska, 2022).

Bosnia and Herzegovina most clearly reflects the fragmentation of the regional approach. Although industrial heritage is a key element of the country's historical development, it remains largely unintegrated into cultural policy or the museum system. There is no national technical museum, and existing museum formats, such as the Solana Tuzla Museum, the Sarajevo Brewery Museum, or various internal industrial museums, operate within narrow, site-specific frameworks. Within education, industrial heritage is addressed only sporadically, primarily through the individual engagement of faculty members at the University of Sarajevo, where it is occasionally included in teaching at the Faculty of Architecture and the Faculty of Education. Over the past decade, significant academic research emerged, offering methodological frameworks for the valorisation of industrial heritage; however, its translation into public policy has remained absent. This

gap further reinforces the dissonant status of industrial heritage in Bosnia and Herzegovina (Plićanić, 2025).

In the broader European context, Poland represents a relevant comparative example. Like the post-Yugoslav region, Poland developed within a socialist framework, albeit as part of the Eastern Bloc, in contrast to Yugoslavia's non-aligned position, yet it has become one of the most active countries in Europe in the field of industrial heritage, as highlighted in reports by TICCIIH. Its extensive network of technical museums, substantial body of scholarly literature, and systematic approaches to the revitalisation of post-industrial areas position Poland as an important reference point for understanding potential developmental trajectories in post-Yugoslav contexts (Dąbrowski & Walczak, 2022).

Taken together, these findings confirm a deeply rooted continuity in the marginalisation of industrial heritage across the region—driven by market pressures, ideological reinterpretations, and institutional passivity. Industrial sites today appear as fragmented, difficult-to-read, and often invisible elements of urban landscapes, their meanings stretched between nostalgia, negation, and commercial interests.

In this context, experimental and short-term pedagogical formats – such as workshops, field research, and projects like Sleeping Giants – emerge as rare yet vital spaces for experiential learning. They create opportunities for developing new educational models capable of responding to the complex and dissonant nature of industrial heritage, while also providing the conceptual groundwork for the pedagogical analysis that follows in the next section of the paper.

3 Learning Through Space: The Experimental Model of the Sleeping Giants Project

3.1 A Pedagogical Experiment: Learning Through Practice and Reflection

The Sleeping Giants: (Re)thinking Mutual Industrial Heritage project was conceived as a pedagogical experiment in architectural education, grounded in theories of experiential, reflective, and transformative learning. It emerged from the recognition that industrial heritage – particularly that of socialist Yugoslavia – remains a neglected and ideologically contested field in post-socialist societies. The project sought to activate this dissonant heritage through education, positioning it as both a pedagogical resource and a platform for critical reflection on the social, cultural, and spatial legacies of modernity.

At its core, the project sought to foster critical engagement through experience. Rather than treating heritage as a static repository of forms and narratives, Sleeping Giants approached it as a dynamic process of interpretation, participation, and re-creation. This approach aligns with Dewey's (1938) concept of learning through experience, in which knowledge emerges from the active transaction between the learner and the

environment, as well as with Schön's (1983) notion of the reflective practitioner, which foregrounds reflection-in-action as an essential mode of professional learning. Recent contributions to architectural pedagogy (Salama, 2015; Akcan, 2023; Gürel & Anthony, 2023) further reinforce this approach, demonstrating how participatory, place-based, and inclusive methods can generate more socially responsible forms of knowledge production. These insights position the Sleeping Giants project within contemporary global trends that emphasise transformative education and active citizenship in architectural learning.

Methodologically, the project was structured around four interconnected phases, combining research, creative practice, and public dissemination:

1. Peer-to-peer learning and knowledge exchange formed the theoretical and collaborative foundation of the project. Seminars led by partner institutions and European associates (ID20, Slovenia; Design Factory, Slovakia) introduced participants to interdisciplinary approaches in industrial heritage studies, adaptive reuse, and cultural production. This phase encouraged the development of shared conceptual frameworks and the co-construction of knowledge, resonating with Vygotsky's model of social learning (Vygotsky, 1978) and Wenger's (1998) theory of communities of practice.

2. Research residencies in Novi Sad and Sarajevo constituted the experiential core of the project. Through participatory research and ethnographic fieldwork, participants engaged directly with both the physical and social dimensions of post-industrial sites and their surrounding communities. Encounters with former workers and residents enabled intergenerational dialogue, fostering an understanding of industrial heritage as lived experience and a site of collective memory. This situated and dialogic mode of inquiry reflects Freire's (1970) pedagogy of conscientisation, in which learning becomes an act of critical awareness and transformation.

3. Creative workshops translated research insights into tangible artistic, architectural, and curatorial outputs. These laboratories of collective experimentation encouraged students to test ideas through material and spatial practices, aligning with Kolb's (1984) experiential learning cycle of concrete experience, reflective observation, abstract conceptualisation, and active experimentation. The workshops deliberately blurred disciplinary boundaries, promoting transdisciplinary collaboration as a method for reinterpreting industrial heritage.

4. Public presentation and reflection were realised through two major cultural platforms—the Days of Architecture Sarajevo and the Industrial Culture Festival Novi Sad. By integrating project outcomes into these festivals, student work was positioned within a broader public discourse, opening to critique, dialogue, and exchange. The festivals served as arenas for reflection-on-action (Schön, 1983), enabling participants to assess the social and cultural implications of their work in real-world contexts.

The project thus proposed an integrative pedagogical model in which learning unfolds through iterative cycles of doing, reflecting, and sharing. Rather than relying on linear knowledge transmission, it cultivated a collective

process of meaning-making that empowered learners to critically engage with their socio-historical environment. In this sense, the model reflects a broader shift in architectural pedagogy towards critical, participatory, and place-based education (Till, 2009; Salama, 2015), where architecture is understood not merely as a technical discipline but also as a cultural and ethical practice embedded in complex social realities.

Within this framework, industrial heritage emerges as a laboratory for experiential learning – a space in which the negotiation between past and present can be enacted through creative and critical practices. By combining empirical research, interdisciplinary collaboration, and public engagement, Sleeping Giants demonstrated how architectural education can contribute to the reactivation of marginalised cultural narratives. It further illustrates how reflective practice, grounded in lived experience and community interaction, can generate new forms of knowledge that are both academically rigorous and socially transformative.

3.2 Case Studies

3.2.1 "Energoinvest" - Sarajevo

Energoinvest represents one of the key symbolic and material complexes of socialist modernisation in Bosnia and Herzegovina. Its development, initiated with the founding of Sarajevo Elektroprojekt in 1951 under the leadership of Emerik Blum, reflects the transformation of post-war Sarajevo from a war-devastated periphery within the Yugoslav economic and urban system into a major industrial and technological centre. By integrating design, production, and research capacities – ranging from Elektroporcelanka and the Machine Factory in Stup to the facilities in Alipašino Polje and the testing stations in Halilovići – Energoinvest by the late 1970s had evolved into a multinational industrial system employing tens of thousands of workers and delivering projects worldwide (Emerik Blum: monografija, 2002). This industrial infrastructure shaped not only the economy but also the urban fabric, social relations, and professional identities of generations of workers, engineers, and experts.

The post-1992 disintegration – driven by war, transitional privatisation, and technological obsolescence – led to the collapse of most production facilities, leaving contemporary Energoinvest as little more than a symbolic continuation of its former scale, with a reduced set of technical functions. Recent corporate documentation (Energoinvest, 2025) confirms this dramatic contraction. This tension between past expansion and present-day fragmentation positions Energoinvest as a paradigmatic example of dissonant industrial heritage in the post socialist context.

Within the Sleeping Giants project, the workshop held in Sarajevo was conceived as an intensive, short-format model of experiential learning that combined historical contextualisation, fieldwork, and reflective analysis. Throughout the programme, participants were introduced to the industrial genealogy of Energoinvest through introductory lectures and a visit to the Blum Lab, a contemporary research and development unit within the company that symbolically connects its industrial

legacy with current digital technologies. The pedagogical dimension of the workshop was further strengthened by the screening of the documentary *Blum – gospodar svoje budućnosti* (Blum – Master of His Own Future, 2023) by Jasmila Žbanić. The film served as a reflective framework for understanding the professional values, work ethics, and social ideals that shaped the development of Energoinvest.

The fieldwork component included visits to key sites - Stup, Alipašino Polje, Halilovići - where students documented spatial organisation, the condition of surviving structures, and traces of former production processes. Through a combination of visual documentation, morphological observation, and conversations with former employees, participants identified multiple layers of material and immaterial heritage while examining contemporary processes of erasure, fragmentation, and reinterpretation within post-industrial landscapes.

As in the case of the Beton complex in Novi Sad, the Sarajevo workshop approached industrial heritage as both an interpretative and didactic resource. Within this framework, Energoinvest served as a platform for critically exploring narratives of modernisation, postsocialist transformation, and urban memory. The case study illustrates how experiential and interdisciplinary approaches can help students develop sensitivity to complex and often overlooked industrial legacies, encouraging them to understand industrial sites as active fields of cultural and professional reflection.

3.2.2 “Beton” – Novi Sad

The workshop in Novi Sad focused on the former Beton concrete products industry, once a key driver of socialist industrialisation in Vojvodina. Founded in 1946 as the region's first state-owned construction company, Beton played a pioneering role in post-war reconstruction and industrial modernisation. Its development mirrored the broader evolution of the Yugoslav construction sector – from the early production of basic concrete elements to the adoption of advanced prefabrication systems such as IMS-Žeželj, RN, NS-71, and Premis. Through successive mergers and technological innovation, Beton eventually integrated into the large construction enterprise Neimar Novi Sad, which shaped the modern urban fabric of the city through its extensive housing, infrastructure, and public building projects. The rise and subsequent decline of this industrial complex thus encapsulates both the ambitions and contradictions of socialist modernity: collective progress, technological optimism, and the gradual erosion of industrial identities during post-socialist deindustrialisation (Andrić et al., 1995).

Within this historical and spatial framework, the Novi Sad workshop was conceived as an experiential learning laboratory, exploring how industrial heritage can be reactivated through direct engagement and critical reflection. It brought together students of architecture, art, and heritage studies to examine the Beton complex as a living document of post-war urban and industrial transformation.

The pedagogical process unfolded in several interrelated stages:

- Historical contextualisation: Participants were introduced to the history, technological development, and

urban role of the Beton factory through lectures, archival research, and engagement with primary sources.

- Field exploration: Students conducted on-site investigations of the abandoned factory complex, documenting its spatial organisation, material decay, and traces of production processes.

- Oral history and intergenerational dialogue: Through interviews with former workers and engineers, participants gained insight into the lived experiences of socialist industrial labour, including gender roles in production, and the broader meanings of work, progress, and community.

- Analytical reflection: The collected material – photographs, sketches, maps, testimonies, and archival data – formed the basis for collaborative interpretation. Students were encouraged to identify layers of both tangible and intangible heritage and to critically examine the shifting values attributed to industrial ruins in post-socialist contexts.

The workshop thus combined empirical research with reflective interpretation, foregrounding learning through immersion, dialogue, and creative analysis. By positioning the Beton factory as both a site of memory and a pedagogical environment, the exercise reframed students' understanding of industrial heritage – not as an obsolete physical remnant but as a catalyst for critical engagement with social history, material culture, and urban identity.

Through this process, participants not only acquired methodological skills in heritage documentation and participatory research, but also developed a heightened awareness of the ethical and emotional dimensions of working with contested heritage. The workshop demonstrated how experiential encounters with post-industrial landscapes can cultivate empathy, critical reflection, and professional responsibility – core competencies in contemporary architectural education.

4 Insights from the Workshops: Education as a Tool for Heritage Protection

The student reflections emerging from the Sleeping Giants workshops reveal a transformative learning process in which industrial heritage became a medium for understanding both material culture and collective memory. Working with sites such as the Beton factory in Novi Sad and Energoinvest in Sarajevo, participants engaged with abandoned spaces not as derelict remnants but as repositories of memory, identity, and social relations. Their reflections demonstrate how experiential learning redefined industrial ruins from inert vestiges of socialism into meaningful cultural texts that continue to shape urban and human landscapes.

The outputs of this process included analytical essays, visual documentation, and reflective accounts, through which students articulated their interpretations of industrial heritage, later presented through a curatorial concept and exhibition at the final festival in Novi Sad.

Across these essays, a recurring theme is the recognition of interdependence between city and industry. As one student observed, Novi Sad “grew out of its industry”; concrete and cement were understood not merely as materials but symbols of modernity and self-reliance.

Students thus came to see industrial heritage as a foundation to urban identity, linking processes of material production to the collective ethos that shaped the socialist city. In this sense, heritage education brought into focus the social dimension of architecture – the idea that space and community are co-constitutive and evolve together.

Another key insight concerns the ethics of memory and the politics of forgetting. Several students reflected on their generational distance from socialism, observing that post-socialist societies tend to suppress collective memories of solidarity, labour, and equality. By moving through abandoned industrial halls and engaging with former workers, students encountered embodied testimonies that challenged dominant narratives of decline and obsolescence. These encounters fostered a more empathic understanding and underscored that safeguarding heritage also entails preserving lived experience and affective geographies.

The reflections further position education as empowerment. Some participants emphasised that engaging with dissonant heritage equips young professionals to question entrenched urban paradigms. Rejecting reductive binaries such as demolition versus musealisation, they instead advocated for critical reuse, the integration of industrial heritage into academic curricula, and the recognition of its intangible dimensions, including knowledge systems, labour cultures, and social ideals. Such perspectives reflect the core ambitions of critical heritage pedagogy: to cultivate reflective practitioners capable of navigating the tensions between conservation, transformation, and public engagement.

Moreover, several students highlighted the importance of regional and transnational connections as intrinsic to understanding socialist industrial heritage. By tracing parallels between Sarajevo and Novi Sad, they identified a shared Yugoslav cultural and emotional landscape, illustrating how heritage education can transcend contemporary political boundaries and reopen spaces for dialogue across the former federation. In this sense, the workshop functioned not only as a learning environment but also as a platform for reconnection and shared belonging.

In sum, these student experiences show that education on dissonant heritage operates as an act of protection – not solely through preservation of physical form, but through the cultivation of meaning. By engaging critically

and affectively with contested pasts, learners reconstruct fragmented narratives and re-articulate forgotten values of solidarity, equality, and collective agency within the present. In doing so, educational practice becomes both a method of heritage safeguarding and a vehicle for social renewal.

5 Conclusion: Education as a Form of Protection and Reinterpretation of Industrial Heritage

This research has examined the position of industrial heritage within architectural education, situating it at the intersection of dissonant memory, post-socialist transformations, and contemporary pedagogical practices. The analysis shows that the marginalisation of industrial heritage in some post-Yugoslav societies cannot be attributed solely to material decay or economic restructuring. While Slovenia and Croatia exhibit more advanced and institutionalised approaches to industrial heritage, such practices remain uneven and fragmented elsewhere in the wider post-Yugoslav region. More fundamentally, this marginalisation reflects deeper epistemological and institutional discontinuities that shape how the socialist past is interpreted, silenced, decontextualised, or selectively valorised. Within this framework, architectural education emerges as a critical arena for interrogating these tensions and translating them into pedagogical practice.

The pedagogical experiment conducted within the Sleeping Giants project shows that experiential, spatially grounded models of learning can generate forms of knowledge largely absent from conventional curricula. Direct engagement with industrial sites enabled students to develop analytical sensitivity to complex socio-historical contexts, as well as to the intangible dimensions of industrial heritage. This approach confirms that practice-based learning can offer a meaningful response to institutional gaps and to the persistent marginalisation of industrial heritage within formal education. Recent scholarship further underscores the value of such approaches in advancing transformative and socially engaged architectural pedagogy (Salama, 2015; Akcan, 2023).

Table 1 Pedagogical principles tested and directions for their future integration in architectural education. Source: Plićanić & Draganić.

Pedagogical principles tested:	Directions for future application:
Experiential and field-based learning through direct engagement with sites.	Integrate industrial heritage modules into architectural curricula and design studios.
Reflective and dialogic processes linking theory and practice.	Promote reflective writing and collaborative research as standard learning outcomes.
Peer-to-peer and interdisciplinary collaboration.	Establish a multidisciplinary approach to studying industrial heritage from social, economic, political, and architectural perspectives.
Integration of community narratives and oral histories.	Develop cross-sectoral collaborations with museums and local archives.
Public dissemination as a means of civic participation.	Expand public presentation formats (exhibitions, digital archives, open lectures).

To clarify the project's pedagogical contribution and its potential for broader application, the following table synthesises the core principles tested alongside proposed directions for integration.

At the same time, several limitations must be acknowledged. The workshops were short and involved a relatively small cohort of participants, which inevitably constrains the wider generalisability of the findings. Furthermore, the absence of sustained institutional support limits the long-term impact of such initiatives, underscoring the need for more stable collaboration between academia, cultural institutions, and local communities, as well as for a stronger multidisciplinary approach within academia.

Nevertheless, the insights presented here offer meaningful directions for future application. The pedagogical principles tested through this project can be adapted and incorporated into existing architectural curricula and related disciplines, particularly in contexts where industrial heritage education remains underrepresented. The methodological framework

– combining fieldwork, creative interpretation, and reflective analysis – may serve as a model for future educational, research, and community-based projects dealing with dissonant and marginalised spaces.

In practical terms, this implies the introduction of industrial heritage into both design studios and theoretical courses, the development of field-based and community-oriented learning formats, and the strengthening of interdisciplinary collaboration as a standard component of architectural education.

Ultimately, architectural education holds transformative potential not only as a means of knowledge transmission but as a vehicle for shaping cultural attitudes toward the past. Integrating industrial heritage into pedagogical practice opens up pathways for broader societal recognition and encourages context-sensitive approaches to its future interpretation and use. By clearly articulating and visualising its pedagogical framework, this study lays the foundation for future research, curriculum development, and regional collaboration in the field of industrial heritage education.

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