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Abstract

Almost twenty years after the end of Communism in Czechoslovakia, more than 30% of the inhabitants of the Czech Republic still live in structural panel buildings—the anonymous concrete apartment blocks that occupy the edges of the country's towns and cities. In these fully prefabricated buildings, constructed by the thousands from the mid-1950s until the end of the 1980s, every wall, floor, and ceiling panel is structural. Massive stair towers provide additional stability in the absence of structural skeletons. The first post-Communist president, Vaclav Havel, famously referred to them as 'rabbit warrens' since the interiors are a series of boxy rooms, always the same size, and packed full of people.

Disciplines

Architectural History and Criticism | Architecture | History of Art, Architecture, and Archaeology | Slavic Languages and Societies

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Fig. 1. View across Olomouc, Czech Republic in May 2008.

Introduction

Almost twenty years after the end of Communism in Czechoslovakia, more than 30% of the inhabitants of the Czech Republic still live in structural panel buildings—the anonymous concrete apartment blocks that occupy the edges of the country's towns and cities. In these fully prefabricated buildings, constructed by the thousands from the mid-1950s until the end of the 1980s, every wall, floor, and ceiling panel is structural. Massive stair towers provide additional stability in the absence of structural skeletons. The first post-communist president, Václav Havel, famously referred to them as “rabbit warrens” since the interiors are a series of boxy rooms, always the same size, and packed full of people.

With the economic boom that followed the country's entry into the European Union in 2004, large state-funded renovation projects began to make these buildings more livable, and importantly, more pleasant to look at. The most popular transformation has been installing new vinyl windows and wrapping the buildings in sheets of rigid polystyrene foam insulation. A layer of stucco is then applied and the buildings are painted in bright colors, often with multiple hues and patterns on a single facade. This process improves the thermal qualities of the buildings, which are notorious for being drafty, hard to heat and cool, and loud. At the same time, this is an opportunity to literally paint rainbows across a previously gray skyline. (Fig. 1) These changes are merely inches deep, however, as state funds are only available for window replacement and façade work and rarely do the owners have money to update the buildings' systems or fixtures. Is this the colorful future of communist-era housing stock in the Czech Republic or just a temporary attempt to cover the physical remnants of communism?

Using material collected in the Czech Republic over the past six years, this paper will explore the changing landscapes of communist-era housing developments and the implications of these changes for the long-term viability of the neighborhoods. The paper developed out of a dissertation project on prefabricated housing in early communist Czechoslovakia.¹ As research for that project progressed, many of the buildings in the study underwent this type of renovation, leaving them altered and in some cases, almost unrecognizable. This paper is a

first attempt to understand the mechanisms and meanings of these changes.

Starting with a discussion of the history of these buildings in the 1950s and the design methodologies that led to their construction, the paper will propose that as time goes on, the architectural style of the prefabricated apartment blocks in the Czech Republic may prove less important than the social and spatial ideas that were infused in the original designs. If new windows and colorful façades alone can make the buildings seem more friendly and livable, then maybe it is finally time to arrive at some different conclusions about the overall success of the communist government's massive housing programs and the architects' initial intentions, including the creation of functional neighborhoods with green spaces, schools, services, and public transportation.

The Czechoslovak Case

Architectural historians and the general public have long assumed that the Soviets forced concrete panel technology on helpless architects in the Eastern Bloc. Many find it difficult to accept that a region with such a vibrant architectural tradition and beautiful cities could so quickly accept a gray, monotonous landscape without pressure, in this case from the Czechoslovak Communist Party taking orders from Moscow. My research has shown that the situation was much more complex and fluid, especially in Czechoslovakia, where a long-standing interest in prefabrication and mass production resulted in the independent development of a local technology.² There is also an emerging argument among cultural historians of state socialism that everyday life was much more varied, comfortable, and pleasant than many in the West acknowledged during the Cold War and after.³ I argue in my work that not only is the assumption that Czech and Slovak architects lost their independence during these years incorrect, but the perception of the socialist built environment as only oppressive and ugly also deserves some reinterpretation.

As the images of the riots in the Paris suburbs a few years ago reminded us, large scale prefabricated housing blocks were built in many European countries after World War II. They often became slums for the urban poor and immigrants in western capitalist countries. In eastern Europe, these neighborhoods were more commonly home to middle-class residents, especially young families and profes-

sionals. This is now changing and “slums” are beginning to appear in areas where building maintenance and stable employment have been long-term problems, but many postwar neighborhoods remain popular middle-class options, especially in larger and more expensive cities like Prague, Brno, Ostrava, and Zlín.

Prefabricated housing had already been a popular topic among avant-garde architects in Europe and the United States in the 1930s. Projects by well-known modernists such as Ernst May, Walter Gropius and Marcel Lods had proven that despite individual successes, large scale production was going to be much more difficult than anticipated.⁴ Soviet architects working in state-run research institutes had also been trying to construct fully prefabricated multi-story apartments buildings since the 1930s. Unlike many modernists who saw prefabrication as a method to bring quality design to more people, the Soviets approached the technology pragmatically as a solution to the growing housing shortages that were hindering the economy and creating discontent among the population. Although some progress had been made by the late 1940s, they still had not found a viable technical solution to replace typical masonry construction on a nationwide scale, even a decade after World War II. In fact, by the end of the 1950s, the Soviet government was forced to buy structural panel technology from a French company to achieve the massive production of basic housing units that they sought.⁵

Czechoslovakia, by comparison, was far ahead of the Soviet Union and the rest of the Eastern Bloc in technology and implementation. The first Czechoslovak structural panel building was designed in 1950 and constructed in 1954. (Fig. 2) By 1960, 17% of all new apartment units were constructed using this method and another 53% were built with prefabricated skeletons and clad with prefabricated panels.⁶ By the 1960s, structural panel buildings were the norm. Although two French companies, Camus and Coignet, were designing similar buildings as early as 1948, their output was limited in France.⁷ Camus was the company that would eventually sell its technology to the Soviet Union and build thousands of units, but they never succeeded in reaching the mass market in western Europe.

Besides Czechoslovakia, there was no other country in the world where structural panel technology became so dominant so quickly. My

research ties this accelerated development to two particular circumstances in Czechoslovakia: first, the influence of the Baťa Shoe Company, headquartered in the southeast Moravian town of Zlín; second, the nationalization and centralization of architectural practice after the war. In both cases, these factors were shaped by local concerns and managed by local actors adding strength to the argument that the Soviet Union did not forcefully control architecture in the Eastern Bloc.

Fig. 2. Model of first Czechoslovak panel building by Bohumír Kula and Hynek Adamec, 1950. The prototype was designed for Gottwaldov (formerly Zlín) where the Baťa Shoe Company had its headquarters until 1946.

The Baťa Legacy

Although it may seem unusual to credit a single corporation with such a significant role, the Baťa Shoe Company was not a typical enterprise. Founded by the family of a small-town cobbler from Zlín, it grew from a single storefront to become one of the largest producers of footwear in the world. The company's founding visionary, Tomas Baťa, had spent time as a manual laborer in the United States in 1904-1905 to learn modern manufacturing techniques and returned to Habsburg Austria to build a new factory in his hometown. Fifteen years later, flush with money earned from military contracts for boots in World War I and optimistic about the future of the new country of Czechoslovakia (established in 1918), Baťa ventured back to the United States in 1919. He toured Ford's River Rouge Plant, then under construction, and the shoe towns of Endicott and Johnson City in upstate New York.⁸

This trip resulted in his next big building campaign in Zlín which included company-owned housing for his workers and amenities such as a shopping center and the largest movie theater in Czechoslovakia. He also built more factory buildings and earned the nickname the "Czech Ford" for his adoption of Fordist principles. He himself pioneered many business practices which survive to this day as the "Baťa system of management."⁹ By the time he died in a plane crash in 1932 (he was piloting his own private Baťa-made airplane at the time), he had built a manufacturing empire as well as a prosperous modern city with brick factories, brick houses, abundant green space, and a civic complex that included a hotel, department store, community center, museum and movie studio.

After his death, the company's interest in architectural innovation continued under the leadership of Jan Baťa, Tomas's half-brother. The most famous project is the company's highrise headquarters, a 1937 sixteen-story building that was one of the first skyscrapers in Europe. Designed by Vladimír Karfík, a Czech architect who had worked with Wright at Taliesin and in the offices of Holabird and Root in Chicago, the building is best known for its "elevator office."¹⁰ As the name suggests, this was an office located in a luxurious elevator car so that Jan Baťa could move between floors and work near different employees each day or week.

During this time, the company also began to pursue aggressive research into prefabrication technologies. As Baťa expanded into western Europe, Canada, the United States, Africa and Asia, the company built a new factory town at each site, always based on the Zlín model and made of Baťa's typical brick, concrete and glass standardized construction.¹¹ As architect Eric Jenkins has shown, the company developed a kit that would be shipped to a new site to aid in construction of the factory buildings and the adjacent town. This included a machine for prefabricating building panels on site.¹² During World War II, the research in Zlín was directed towards fully prefabricated houses that would be quicker and cheaper to construct than the traditional brick models, although other aspects including size, layout, and orientation remained the same.

One of the details that I uncovered in my research is that these experimental single-family houses and a few small apartment buildings

were designed at Baťa's in-house architecture offices by the same two architects who would pioneer structural panel technology only a few years later. This creates the remarkable situation that the immediate precursors to the concrete panel buildings that became synonymous with the failures of the communist era were designed for an aggressively capitalist company which modeled itself on American examples and remains one of the most famous economic success stories of interwar Czechoslovakia.

Architectural Practice under State Socialism

Baťa architects developed the technology to produce structural panel buildings, however the profession in Czechoslovakia also needed to transform in order for this method of building to become the standard. In this way, the nationalization of architectural practice after the war was the second factor that contributed to this accelerated development. As early as July 1945, just weeks after the liberation of Prague from German occupation, the professional organizations representing Czech architects began calling for the end of private practice. There were many factors that led to this declaration such as the country's general move to the political left as a response to fascism, the desire for publicly funded building and reconstruction projects, and a progressive social agenda that carried over from the Great Depression and the war. The allure of steady state-funded employment after the lean years of the war should not be underestimated either.¹³

Nationalization was achieved sooner than expected when in September 1948, only seven months after the Communist takeover, a centralized state-run system of architecture and engineering offices was established by the new government. Called *Stavoprojekt*, this organization replaced all private firms by 1950. Its leaders were chosen from an interwar generation of architects who had championed Czech critic Karel Teige's concept of "scientific functionalism" in the 1930s. This point of view was itself was a further development of Russian and western European avant-garde ideas about architecture as a scientific and quantifiable endeavor.¹⁴ In the postwar context, these priorities fit well with the requirements of the planned economy.

From the start, Stavoprojekt was portrayed by its proponents as the fulfillment of the interwar desire for efficient, functional, and modern architecture. Its leaders encouraged the standardization of working methods and construction documentation, the centralization of resources and information, and the creation of a strong institutional hierarchy. In his inaugural speech, the deputy director described the philosophy this way, "in order to transition the building industry from handicraft to production, we must transform our building sites into factories."¹⁵

Architecture ateliers, engineering offices, and research centers were established in major regional centers with the Prague offices acting as the organization's headquarters. Attention was directed immediately to the standardization and typification of building types, especially for housing. The goal was to create a limited number of building options, classified by programmatic type and space needs, which could be repeatedly built across the country on any given site. This level of standardization was possible in part because of the relatively small size of the country, especially when compared to the Soviet Union. The legacy of the interwar years also cannot be underestimated, since the Czechoslovak building industry had been one of the most technologically advanced in Europe before World War II.

The adoption of the Stavoprojekt system signaled a change from a studio-based architectural culture to one focused on production. This strategy was implemented most clearly in the Typification and Standardization Institute in Prague whose mission was to bring together design and industrial production. One of the most important research centers in the Stavoprojekt system, its departments included special sections such as industry, agriculture, education, recreation, transportation and housing. In 1951, the Institute published its first series of *Typification Guides*, which were distributed to the regional offices of Stavoprojekt for use on local projects.¹⁶ These guides were divided by sector and included the specifications for a limited number of buildings to fulfill all programs related to that sector. Although the organizational structure was constantly in flux and there were many leadership changes over the years, Stavoprojekt's mission as conceived in 1948 and its role in establishing standardized building types remained largely the same for more than forty years until it was dissolved in 1990.

Structural Panel Buildings

While the typification guides were distributed to the regional Stavoprojekt offices for immediate use, research into better options for the standardized designs continued. One of the most important research centers was the Institute for Prefabricated Buildings in Gottwaldov, which was the new name for the former Baťa office where the prefabricated houses had been designed during the war. In 1949, Zlín itself had been renamed in honor of Communist Party leader Klement Gottwald. The institute, led by the same architects who had worked there as Baťa employees, was charged with developing viable prefabrication methods for apartment buildings as soon as possible. Architects at branch offices in Prague, Brno, and Gottwaldov tested several alternative methods including skeleton construction and large block construction, but by 1954, it was determined that the best long-term option was the structural panel building.

The term structural panel building or *panelák* in Czech refers to a building that has no structural skeleton. Each wall panel, floor/ceiling panel, and roof panel is structural, with the prefabricated stair towers providing additional support. Earlier designs had proposed a similar solution, but the most important innovation in the 1950 design by Kula and Adamec was their ingenious solution to stabilize the joints. The reinforced concrete panels were cast with two upside-down V-shaped hangars embedded in them, not at the corners where the joints would be weak, but within the interior of the panels with the joint of the "V" hitting the top edge of the panel. It was designed to be cut away at that point to reveal a small hook at the base of the "V." These were then fastened with metal staples to the two panels intersecting the joint perpendicularly from above. Mortar was poured into the space of the joint and then it was sealed with a PVC gasket. Since the joints occurred away from the corners, the weight of the panels rested fully on the panel below and the hook and staples added lateral stability. All of the corner joints were also sealed with mortar and gaskets, giving the facades of panel buildings their distinctive grid pattern.

The first structural panel buildings were five-stories high with two stair towers. (Fig. 3) They were often grouped in small ensembles and located among similarly scaled buildings within the existing fabric of cities. By the

1960s, the technology had improved and the buildings expanded vertically to eight stories and more. This was also a time when neighborhood units grew in size from a few residential buildings to large developments constructed with amenities including shopping centers, schools, and recreational facilities; most often on open land at the edge of existing cities and towns. By the 1970s, it was becoming the norm to see a single development with thousands of apartments in dozens of panel building high rises. The difference between the early and late examples is not only the height of the buildings, but also the urban planning strategies. The pedestrian scale of the early projects was left behind in favor of the massive scale of urban transportation infrastructure and vast green spaces. One of the largest and most indicative examples of this trend is the Petržalka development in Bratislava which was built in the 1970s and 1980s.¹⁷



Fig. 3. Early Structural Panel Buildings in Zlín by Bohumír Kula and Hynek Adamec, 1954. Example before renovation (top) and example after renovation (bottom).

All of the buildings in the neighborhood are structural panel buildings. (Fig. 4) The results make clear the difficulty of creating good architecture and usable urban spaces with the repetition of single building type or at least a building technology that shows its basic structural unit on the facade. Chronic maintenance problems also contributed to the overall sense of degradation in many of these neighborhoods.

The Colorful Future

When I first began traveling regularly to the Czech Republic in 2002, many of the postwar neighborhoods were falling apart. Foreign investors had poured money into renovating tourist areas in city centers and the newly rich were buying modernist villas from the 1920s



Fig. 4. Structural Panel Buildings in Petržalka neighborhood of Bratislava, Slovakia in 2003. Renovations were done on the building in front.

and 1930s or building custom homes, but there was little other money. Unlike in the former East Germany where the wealth of the former West Germans was available for improvement projects, Czechoslovakia did not have a lot of resources to draw from, especially given that one in three people live in a structural panel building.

For the first decade after the end of communism, the government tried to protect the status quo. They kept rents at 1989 rates for existing tenants and forbid foreigners from buying property to avoid a run-up in the property market. At the same time, they allowed landlords and municipalities to stop making repairs since so little income was coming to them from tenants. This meant that people were still in the same apartments and paying affordable rents, but the buildings were often

crumbling. For example, I had Czech friends with no heat or hot water in their apartments for long stretches or with rooms that could not be used in the winter because of broken windows or faulty heating units, but they were paying only \$30 a month for rent and did not want to leave.

Slowly the situation has started to stabilize as the Czech and Slovak economies strengthen; the countries are benefitting from their EU membership, and many residents purchased their apartments at low prices directly from the government or property managers. The new resident-owners form cooperatives and manage the buildings themselves, including collecting funds for renovations.



Fig. 5. Building in Brno undergoing façade renovation in 2006.

With the country's entry into the EU in 2004, new funds became available to assist apartment owners with exterior renovations. Only buildings owned by private citizens and run by cooperatives are eligible and, according to Martin Strakoš of the Institute for the Care of Monuments, most have taken advantage of the offer. As described at the start of this paper, new vinyl windows and rigid polystyrene foam insulation have been the most popular fixes.

This can be done to masonry buildings and structural panel buildings. The process involves hanging thick sheets of foam directly on the existing façade. (Fig. 5) A layer of stucco is then applied and the buildings are painted in bright colors, often with multiple hues and patterns on a single façade (Fig. 1, 3-4). This process improves the thermal qualities of the buildings and at the same time, provides a chance to brighten up the façades with colorful paint choices. The difference can be surprising. In Fig. 3, some of the first panel buildings from Zlín are shown. When I first visited in 2003, only a few of the buildings had been renovated. Each year when I return there are more and in May 2008, there was not a single unrenovated example left from 1954 in this particular neighborhood. Fig. 4 shows a renovated building in front of an unrenovated building.

Once the tell-tale grid lines have been covered and the colors have been applied, it is difficult to know what is under the smooth finish, but perhaps this is only a concern for architects. From my perspective, one of the problems with the process is that buildings lose any sense of architectural proportion or detailing; instead they appear to be cartoon likenesses of a shape an apartment building might take. Residents, however, seem to genuinely appreciate the new look of their buildings. The colors provide a long-desired means for expressing individuality. If anything, the rainbow colors advertise that someone cares about the property, in itself a contrast with still state-owned buildings that are always in the worst condition. There is also a renewal occurring within the neighborhood units. In some cases, entrepreneurs are renting the commercial spaces and offering services to local residents. In other cases, the stores have gone out of business due to competition from big box retailers and new programs must be found to utilize the spaces, but this will happen in time.

There are reasons to be optimistic about the possibilities for these housing developments to become something more than only the sad reminders of the communist era. As Czech cities continue to grow, the edges are becoming more dense and less monotonous. Newer and more expensive apartment buildings are appearing near the postwar neighborhoods. This is due in part to the amenities that were built into their designs and which current real estate developers will not build such as schools, parks, grocery stores, and transportation hubs. In Prague specifically, the metro system has expanded in the past five years and many of

the new stations connect far-flung housing developments with the city center in minutes.

This brings me to my final point. Although it is clear that these apartment buildings were not designed to meet high aesthetic standards, they may have achieved a range of other goals set by the architects working at Stavoprojekt from 1948-1990. To assume that architects in postwar Czechoslovakia would have preferred to operate with aesthetics as their most important criterion is to lose sight of the modern project as it was conceived by many socialist architects after World War II. These buildings provided millions of people with new apartments and within them they have formed communities that outlasted the communist regime. The current wave of exterior renovations may improve thermal and noise conditions inside the buildings and take away the outward signs of how the buildings were constructed, yet the most honest reflection of the success of structural panel buildings may be that these neighborhood units, the green spaces, and the community infrastructure seem to be bolstered rather than weakened by these changes.

Notes

¹ Kimberly Elman Zarecor, "Manufacturing a Socialist Modernity: The Architecture of Industrialized Housing in Czechoslovakia, 1945-56," Ph.D. Dissertation, Department of Architecture, Columbia University, 2008.

² See Marie-Jeanne Dumont and Françoise Fromonot, "Le Logement (Housing)," *Architecture d'aujourd'hui* 67 (Feb. 1996): p. 86.

³ Authors to read include Brad Abrams, Paulina Bren, Malgorzata Fidelis, Irina Gigova, Sandor Horvath, Laurie Koloski, Katherine Lebow, Mary Neuburger, Basia Nowak, Patrick Patterson and Mark Pittaway.

⁴ See Gilbert Herbert, *The Dream of the Factory-Made House: Walter Gropius and Konrad Wachsmann* (Cambridge, Mass.: MIT Press, 1984); Robert Weddle, "Housing and Technological Reform in Interwar France: The Case of the Cité de la Muette," *Journal of Architectural Education* 54, no. 3 (2001): pp. 167-75.

⁵ Dumont and Fromonot, "Le Logement (Housing)," p. 86.

⁶ Out of 42,301 apartments scheduled to be built in 1960, 7,061 were designated to be structural panel buildings and 22,547 were built with a prefabricated skeleton clad with panels; the remaining units were made with more typical construction methods. Statistics on construction for 1960 can be found in car-

ton 412 of the Ministry of Technology files at the National Archive in Prague, Czech Republic.

⁷ M. Raymond Camus, "Fabrication industrielle de huit logements par jour dans la région Parisienne (Industrial Fabrication of Eight Dwelling Units Per Day in the Paris Region)," *Annals de l'Institut Technique du Batiment et des Travaux Publics* 101 (May 1956): 428-53. Another company building structural panel buildings was Coignet, see "Procédé Coignet: Béton Préfabrique en Usine (The Coignet Process: Concrete Prefabricated in a Factory)," *Techniques & Architecture*, no. 5 (June-July 1962): pp. 152-53.

⁸ See Kimberly Elman [Zarecor], "Garden Cities and Company Towns: Tomáš Baťa and the Formation of Zlín, Czechoslovakia," *The Harriman Review* 12, no. 4 (2000): pp. 25-35.

⁹ Tomáš Baťa, *Knowledge in Action: The Bata System of Management*, trans. Otilia M. Kabesova (Amsterdam; Washington: IOS Press, 1992).

¹⁰ Eric J. Jenkins, "The Bata Shoe Company's Elevator-Office in Zlín," *Centropa* 7, no. 3 (2007).

¹¹ Jean-Louis Cohen, "Zlín: An Industrial Republic," *Rassegna* 19, no. 70 (1997): pp. 42-45; Jane Pavitt, "The Bata Project: A Social and Industrial Experiment," *Twentieth-Century Architecture*, no. 1, Special Issue (Summer 1994): pp. 31-44.

¹² Eric J. Jenkins, "Utopia, Inc.: Czech Culture and Bata Shoe Company Architecture and Garden Cities," *Thresholds* 18 (1999): pp. 60-66.

¹³ For a history of the 1945-1948 period, see Bradley F. Abrams, *The Struggle For the Soul of the Nation: Czech Culture and the Rise of Communism* (Lanham, Md.: Rowman & Littlefield, 2004).

¹⁴ For the best discussion of Czech scientific functionalism, see Rostislav Švácha, Sona Ryndová and Pavla Pokorná, eds., *Forma sleduje vědu/ Form Follows Science* (Prague: Jaroslav Fragner Gallery, 2000).

¹⁵ "Zápis I.celostátní porady vedoucích všech oddělení Stavoprojektu (Minutes of the First Nationwide Conference of the Heads of All Stavoprojekt Departments)," p.25. Files of the Ministry of Technology, carton 431, National Archive, Prague, Czech Republic.

¹⁶ Only a few such guides survive and can be found at the National Library in Prague under the title, *Typisáčnický sborník*. They were updated and republished each year, but fell out of use in this form by the 1960s.

¹⁷ Peter Lizon, "East Central Europe: The Unhappy Heritage of Communist Mass Housing," *Journal of Architectural Education* 50, no. 2 (1996).