The Local History of an International Type: The Structural Panel Building in Czechoslovakia

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Keywords
Housing, Postwar, Prefabrication, Communist, Czechoslovakia

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The Local History of an International Type: The Structural Panel Building in Czechoslovakia

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Focusing on the state-run system of architectural offices as a mediator between politics and practice, this article considers how the 1948 Communist Party takeover of Czechoslovakia affected architectural practice and the establishment of housing types in the early 1950s. The legacy of a strong local construction industry before 1948 was critical to these developments. At the new Institute of Prefabricated Buildings, created in 1952, architects and engineers continued earlier research on prefabricated construction technologies. Through this work, the Czechoslovak government and its architectural administration soon concluded that its best long-term option for solving the country’s housing crisis was the use of structural panel construction. Fifty years later, one in three Czechs still lives in the more than one million apartments built with this technology between 1954 and 1990. Structural panel construction was not a Soviet import, instead it developed out of local wartime experimentation at the Bat’a Shoe Company in Zlín, independently of similar research undertaken in the Soviet Union and other parts of the Eastern Bloc in the same years. Although buildings that look similar were constructed in the region and similar housing types appeared across Europe after World War II, the essay argues that structural panel technology in Czechoslovakia is most interesting as an example of the local continuities in the building industry, rather than as evidence of the homogenization of the post-war European landscape.
Introduction

In the 1950s, Czechoslovakia, a country with a rich architectural past and a history of exceptional interwar modern architecture, became the early leader in the research and deployment of concrete housing blocks constructed with structural panels. Today these drab and often dilapidated buildings have become synonymous with the failures of European communism and the triumph of capitalism over state socialism. At the time they were first proposed, however, they reflected an unparalleled dedication to technological innovation, social equality, and utilitarian form that eventually led to the construction of millions of similar housing units across the Eastern Bloc and the Soviet Union. For many, this shift from the elegant forms of the interwar years to the crude and heavy designs of the postwar period appeared as the loss of an aesthetic sensibility or the imposition of a ‘Soviet’ point of view in the realm of art. This essay argues, instead, that this transition was a symptom of local cultural, political, and economic changes in Czechoslovakia which recalibrated the relationship between artistic creativity and technological determinism in design, altering the role of architects in society, their relationship to the structures of power, and the types of buildings they produced.

After the Communist Party took power in February 1948, this transformation was not immediate or linear. There were several transitional years and an interlude from 1950-1954 when the party leadership pushed for the adoption of Socialist Realism, bringing aesthetics and form momentarily to the forefront of the architectural discussion, although most Czech and Slovak architects had little enthusiasm for it. Yet, as the discussion will show, even during these years, Czech and Slovak architects continued to pursue the industrialization of architecture with the full support of the state institutional apparatus.

By the early 1950s, these competing agendas led to two modes of architectural practice within Stavoprojekt — the state-run system of architecture offices established in September 1948 to replace private practice. The dominant mode was the public campaign for Socialist Realism, evident on the pages of the main architecture journal, Architektura ČSR
(Czechoslovak Architecture), the newly-created bi-monthly journal, *Sovětská architektura* (Soviet Architecture), and in the most widely-publicized commissions such as the design for the new town of Nová Ostrava near the coal-mining and steel-producing city of Ostrava in Moravia. This architectural path was short-lived in Czechoslovakia, however, as the combination of a strong interwar modernist tradition and Nikita Khrushchev’s December 1954 speech denouncing the excesses of Stalinist architecture, (Whitney 1963: 153-192) led to the rapid decline of official interest in Socialist Realism.

The second mode, experimentation with new industrial building technologies and housing prototypes, was less visible, but ultimately more important. This work occurred at Stavoprojekt’s research institutes which multiplied in the early 1950s to include theoretical, technical and operational aspects of architecture. These investigations included additional designs for standardized housing blocks and small single-family homes, innovations in new building materials such as lightweight concrete mixtures and synthetic flooring, as well as the testing of new construction methods such as the use of mobile gantry cranes, prefabricated building elements, assembly-line production, and year-round construction schedules.

The most intense research and experimentation occurred in the area of prefabricated building panels—non-load-bearing and structural—for use in mass housing projects. In the early 1950s much of the research on panel construction for residential apartments blocks was conducted at the new Institute of Prefabricated Buildings *(Ústav montovaných staveb)*, headquartered in Prague with branches in Brno and Gottwaldov (formerly Zlín). It was at the Institute’s Gottwaldov branch in 1950 that the first mass-deployed structural panel building, what is called in Czech ‘*panelový dům*’ or ‘*panelák*’ for short, was designed by architects who previously worked for the Baťa Shoe Corporation’s Building Department in the same city. (Dufková and Koželuha1999: 16) Within five years, the structural panel building was the basis of a nationwide building strategy that would attempt to alleviate the decades-old housing shortage in the country.
Since architects at this time were officially beholden to Socialist Realism and its preoccupations with architectural imagery, the earliest research into prefabricated housing technologies was undertaken largely out of the public’s eye and with little acknowledgement in the professional press, although the work was not done in secret. Architects in the Soviet Union followed a similar path in the 1940s and 1950s, exploring large block and panel construction in research institutes, although they had still not perfected the structural panel by the end of the 1950s. (Červenka and Sůva 1953; Červenka and Vašíček, 1958; Žukov, 1953) The well-developed building industry in Czechoslovakia, which operated on a much smaller scale than in the Soviet Union, proved more capable of responding to the technical challenges and production needs of the new technology. In the late 1950s, architects from the Soviet Union and other Eastern Bloc countries looked to Czechoslovakia for guidance in this area, sending delegations to tour research facilities, panel factories and structural panel building construction sites. (1)

The Czech and Slovak architects and engineers who set out to find viable solutions to this problem were often those whose interest in the topic originated in the 1930s and early 1940s when architects around the world were investigating the potential of prefabricated housing. Their counterparts included German architects Walter Gropius, Konrad Wachsmann and Ernst May, as well as the French architect Marcel Lods and American outfits such as the Lustron Corporation. (Davies 2005; Herbert 1984; Weddle 2001) Czech and Slovak architects working at Baťa in Zlín in the 1930s were particularly engaged with the methodology of prefabrication as part of the company’s campaign to expand Zlín and build Baťa cities around the world. During the war, research by Baťa architects Bohumír Kula and Hynek Adamec led to the first large panel constructions in Czechoslovakia. Within a few years, these same architects, now working for the Institute of Prefabricated Buildings, succeeded in developing a structural panel building prototype that would become the standard in Czechoslovakia for decades.
Stavoprojekt as a Mediation Junction

This shift — from individually designed and constructed buildings to collectively designed and mass-produced buildings — was not predetermined. It was the result of processes of negotiation between the competing interests of politicians and architects and engineers, who not only had their own professional interests to protect, but who were also expected to represent projected users, or what one might call the ‘consumers’ of housing, in the absence of typical capitalist supply and demand conditions. The site of such negotiations, what historians of technology Johan Schot and Adri Albert de la Bruheze have termed the “mediation junction,” was the institutional framework of Stavoprojekt. (Schot and Albert de la Bruheze 2003) Created in September 1948 to replace all private architectural and construction engineering firms in the country, Stavoprojekt’s state-run system of regional offices employed more than 11,000 people by the end of 1949. (Nový 1973: 488) One of the institution’s core missions was to design and oversee the production of thousands of new housing units to alleviate long-term housing shortages and bolster the Stalinist push for heavy industry in early years of communist rule in Czechoslovakia. Although politicians, architects, engineers, and the consumers of housing agreed on the need for more housing units, this case study shows how the formal and technical dimensions of their production were by no means established or fixed in the late 1940s and early 1950s. This created a situation in which processes of mediation were necessary, although the state socialist system meant that they occurred within the state institutional framework rather than as a dialogue between state and civil society.

Schot and Albert de la Bruheze define the meditation junction in a capitalist context as “the place at which consumers, mediators, and producers meet to negotiate, articulate, and align specific technical choices and user needs.” (Schot and Albert de la Bruheze 2003: 234) Building on earlier work by Ruth Schwartz Cowan and others, the authors distinguish between mediators or “actors who focus on articulating and aligning demand” and “a specific institutional locus — an agency or a platform” that is created “for mediation purposes.” (Cowan 1987; Schot
and Albert de la Bruheze 2003: 234) Most European mass-housing markets cannot be understood simply in terms of supply and demand because they operate within a variety of institutional and civil society–like configurations. In this case, architects and engineers working as state-employed professionals took on the roles of mediators in internal processes of negotiation and articulation since independent interest groups and non-state institutional platforms did not exist. In their capacity as mediators, they were required to consider both the needs of consumers, however abstract they might be, and those of the state’s production apparatus. Historians have often portrayed state socialism as an authoritarian and top-down cultural context, which would imply the absence of mediators and therefore a mediation junction, however the case of structural panel technology in Czechoslovakia illustrates how sites of mediation operated and were essential in state socialist countries to the same degree as in the capitalist world. The differences occurred in the composition of actors and the particular role of the state, which by its very nature precluded independent voices and established mediation junctions fully within state control.

As the actors within Stavoprojekt considered the problem of housing production, two sets of concerns emerged which led to the adoption of structural panel technology as the dominant method of housing production in Czechoslovakia. The first were influences from outside the architectural and engineering professions: structural issues about the workings of state socialism and its capacity for planning; the desire for rapid social change; the Soviet influence on managerial structures; and the possible limitations and appropriate form for a state administration to organize construction. Second, there were those discussions generated among architects: the changing role of the profession; the direction of technological progress; the scientific nature of architectural research; and the need to retain some control over design decisions. The resolution of these disparate, yet related, concerns resulted in the widespread adoption of structural panel technology. This was much to the chagrin of design architects in local offices, many of whom still believed in the artistic capacity of architecture, and to the
pleasure of the technocrats in the architectural administration responsible for fulfilling plan quotas and managing production.

The move towards panel construction was, therefore, a compromise resulting from the processes of mediation. It was accepted by architects, engineers, and the state because it was seen as the only practical solution to meet the demands of the planned economy given the available resources and political goals. Since consumers were represented symbolically by these same actors, there were no opportunities to articulate demands distinct from those of the state. This is another way to understand how the absence of typical capitalist supply and demand conditions left consumers with no bargaining power within state socialism and its mediation junctions.

Despite this, there was negotiation, articulation, and acceptance within Stavoprojekt. As this case study shows, the transition from individual commissions to standardized prefabricated building types was neither a decision made by politicians and imposed on architects, nor the result of untalented or malicious practitioners. Instead the materialist philosophy of the government meant that, by the mid-1950s, the production of housing units was by far the most important work that designers could undertake. The means and methods by which this occurred were left up to the actors at Stavoprojekt who considered a variety of construction systems, materials and planning patterns. In the end, it was determined that the structural panel building offered the quickest and most economical solution to the housing crisis as it was understood in the 1950s, although architects and engineers would continue to seek out other answers until the end of state socialism in Czechoslovakia.

The Architectural Legacy of the Interwar Period

The vision of architectural practice that emerged after the war in Czechoslovakia was influenced in large part by the debates and experiences of the avant-garde in the 1930s. Although it was not clear at the time, the line of architectural thinking that would have the most
significant impact on post-war developments was “scientific functionalism.” (Pokorná, Ryndová, and Švácha 2000) Architectural historian Rostislav Švácha describes this as a belief in “creation based on scientific foundations – architecture as a scientific discipline, architecture as science – as a positive opposite of creation based on subjectivity.” (Pokorná, Ryndová, and Švácha 2000: 20)

Promoted by critic and theorist Karel Teige and his supporters in the avant-garde circles of Prague and Brno in the 1920s, the ideological basis of scientific functionalism was shared with Russian and Swiss constructivism, especially the group around the Swiss journal, ABC. Teige visited the Soviet Union in 1925 and became a well-known expert on Soviet architecture, although he became disillusioned with the Soviets after the 1932 Palace of the Soviets competition. (Dluhosch and Švácha 1999: 129-134)

Among architects active after World War II, it was Teige’s work in the late 1920s and early 1930s that had the most influence. It was the time when his interest in Marxism had deepened and he devoted himself to the study of social housing; producing his treatise on the subject, Nejmenší byt (The Minimum Dwelling), in 1932. (Teige 2002) His increasing radical stance became untenable for some of his early collaborators and, Devětsil, the avant-garde artists’ collective that he founded in 1920, disbanded in 1931. (Švácha 1990) Tensions were growing within the profession as the effects of the Depression challenged architects to stake out positions on economic and social issues. The former members of Devětsil and other modern architects splintered into multiple factions. Teige himself wrote a critique of Soviet architecture in 1936 before he turned his attention to surrealism.

Because of his views, Teige became a marginal character for all but the most radical architects in the 1930s. He found new affinities, however, among the young Marxist architects who joined leftwing groups in Prague around this time including the architectural section of the Left Front (Levá fronta), established in 1929. The members of the Architectural Working Group (Pracovní architektonická skupina, henceforth PAS) were his most dedicated admirers. PAS was a collaboration between three classmates from the Technical University in Prague—Karel
Janů, Jiří Štursa and Jiří Voženílek—who were ten years younger than Teige and the members of Devětsil. Their strident Marxism and vocal support for Soviet housing types such as the koldom and urban planning models such as Miliutin’s linear city put them on the far left of Prague’s leftist circles in the early 1930s. The basis of their position lay in the belief that “the industrialization of the building industry” and “the principles of scientific methods” were the keys to making architecture “a component of scientifically governed production and the distribution of vital means.” (Pokorná, Ryndová, and Švácha 2000: 258)

No one would have foreseen in the late 1930s that these three founding members of PAS would be among the most powerful architects in the first postwar decade. Janů would lead the Czechoslovak Building Works, the corporation created after the nationalization of the building industry in 1948. After its dissolution in 1951, he researched housing prototypes in a Stavoprojekt institute until becoming Deputy Minister of Building in 1956. Voženílek left Prague in 1937 to take a job in the architecture offices of the Baťa Company in Zlín. He stayed there until he was appointed the first director of Stavoprojekt from 1948-1951 and then he led a research institute on architecture and urbanism before becoming Deputy Minister of the State Committee for Construction in 1956. Jiří Štursa stayed closer to design work as the author of two of the early standardized housing developments while working at the Ministry of Labor and Social Affairs from 1946-48, and, with his wife Vlasta Štursová, as the designer of the site plan and architectural foundations for Otakar Švec’s winning entry to the Stalin Monument competition in 1950. (Aman 1992) The three architects were successful in part because they carried their belief in architecture as a form of production from the interwar period, when it was considered a radical position, into the socialist era when it became the dominant point of view.

Architecture at Baťa

Postwar experiments in prefabrication, standardization and typification took many forms in Czechoslovakia. Stavoprojekt was the umbrella organization for research including the
development of standardized building types for all new residential construction, published and distributed in manuals sent to local branches starting in 1950. The focus of this essay is one strand of Stavoprojekt’s research agenda, the search for structural panel technology. This interest can be traced back directly to the activities at the Baťa Corporation in the 1930s when the company’s Building Department designed some of the earliest examples of mass-produced prefabricated and standardized buildings in the world.

The Baťa Corporation was founded by the family of a small-town cobbler from the Moravian town of Zlín and grew from a single storefront to become one of the largest producers of footwear in the world. The company’s founding visionary, Tomas Baťa, not only concerned himself with shoe manufacturing, but he also wanted to build a modern city for his workers much like the American businessmen he admired. He 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. (Elman 2000: 25-35)

He was inspired to undertake a massive building campaign as a result of this trip. His plans 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 that survive to this day as the “Baťa system of management.” (Baťa 1992) By the time he died in a plane crash in 1932 (while piloting his own private Baťa-made airplane), 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.” 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. (Jenkins 2007)

In addition to new models of industrial architecture, the search for ideal housing types was one of the highest priorities in the Baťa organization. As the company expanded into western Europe, Canada, the United States, Africa and Asia in the 1930s, it 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. 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. (Jenkins 1999)

During World War II, building research in Zlín was directed towards fully prefabricated houses and later small apartment buildings that would be quicker and cheaper to construct than the traditional brick models, although other aspects including size, layout, and orientation remained the same. In 1940, the Department for Cast and Prefabricated Buildings (Oddělení pro lité a montované domky) was established. As an indication of the lack of resources during the war, its first assignment was to research the construction of cast concrete houses using mixes lightened with waste materials such as slag, pumice, and sawdust. The following year two duplexes were constructed with prefabricated hollow blocks. These experimental houses were built near each other in the residential quarter east of the factory. In 1943, the first experimental panelized prefabricated building, the Type A (Typ A), was designed by Baťa architects Hynek
Adamec and Bohumír Kula from the Department for Cast and Prefabricated Buildings—the “A” referred to Adamec. (Fig. 1) Between 1943 and 1945, three Type A duplexes were built using panels made at the building site and mounted onto a structural frame; the joints were closed with mortar. A movable crane that ran on a track along the street was used to position the panels. This was similar to the methods used in Germany and France before the war and important for the later developments in Czechoslovakia. (Dufková and Koželuha 1999: 15-16; Voženílek 1947: 84)

The Institute for Prefabricated Buildings

In the years between the war and the establishment of the Stavoprojekt research institutes in 1950, the architects in the Department of Cast and Prefabricated Buildings continued their research in Zlín. From 1945 until late 1948, the architectural offices at Baťa were run by Jiří Voženílek, the Teige follower and member of the interwar collective, PAS, who had left for a job at the company in 1937. When he became head of Stavoprojekt in September 1948,
Fig. 1: Hynek Adamec and Bohumír Kula, Type A duplex, Zlín (1943-1945) from Architektura ČSR (1947)

the local projects of the Zlín architects suddenly gained national significance. In 1949, Kula and Adamec built a prototype of a fourplex using the prefabricated ribbed panels. (Dufková and Koželuha 1999: 16) The following year, they completed work on a single, three-story, 18-unit apartment building using the same technology. At this larger scale, straps were added around the horizontal joints for lateral stability. There were also balconies on the back facade that were built as self-supporting open boxes, presumably because the bolted panels could not withstand the additional weight. However the cost of the building was determined to be too high, so this was the last building constructed with this method. (Červenka and Sůva 1953: 65) In 1950,
under Voženílek’s leadership, the administration of the Department of Cast and Prefabricated Buildings was taken out of the former Baťa Corporation and it became part of Stavoprojekt; offices were then added in Prague and Brno. In January 1952, the Institute of Prefabricated Buildings (Ústav montovaných staveb) became a stand-alone organization within the Stavoprojekt system.

The institute’s three work sites in Gottwaldov (formerly Zlín), Prague, and Brno, were the locations of the most intensive and systematic investigations of housing prototypes in the country. Karel Janů, Voženílek’s collaborator in PAS and head of the nationalized building industry, later wrote that the activities of this institute defined “a new period of technical progress” in the industrialization of the building industry. (Stavebnictví včera 1973: 13) With a ‘scientific’ methodology that was rooted in the first Stavoprojekt administration’s technocratic point of view and the work of PAS, the institute decided to test the four available prefabricated construction technologies and perform a comparative analysis to determine which one would result in the cheaper, faster and more efficient construction of new housing units. These tests were mostly concerned with the construction method, but the resulting buildings were expected to be similar in material, scale and layout to existing types.

Four systems were used for prototypes. The first was large block construction, which used factory-produced large blocks for the interior and exterior walls with prefabricated reinforced concrete floor panels and stairways. The second was a hybrid system with the same large-block exterior walls, floor panels and stairways, but in this case they were combined with a reinforced prefabricated concrete skeleton system which allowed the interior walls to be partitions. The third system was completely prefabricated with a reinforced concrete skeleton, floor panels and stairways clad on the exterior with lightweight concrete panels. The fourth system, which was the most coveted technology at the time, used structural panels for the exterior and interior walls and required no skeleton. There was a clear narrative about progressing forward through these systems to reach complete prefabrication, although the
inherent problems with the system were already noted. For example, the authors commented that “the prefabrication system from large panels with a skeleton, which is economically the most advantageous, has the disadvantage that the interior walls are structural and therefore it is not possible to use this kind of building where open floor plans are needed, or for buildings that are frequently altered.” (Červenka and Sůva 1953: 72)

Each system was assigned to a branch of the Institute of Prefabricated Buildings. Brno tested the large-block system. During this period, Karel Janú from PAS worked for the Prague office of the institute, and along with Karel Prágr who would later built the first curtain wall building in Czechoslovakia, they tested system two at a site in Otrokovice near Gottwaldov. Another team at the Prague office, led by Miloslav Wimmer, began work on system three; their first prototype was a three-story apartment building with twelve units accessed by a single stair. The institute named this the “S” house. Modernist Karel Honzik, famous for his interwar partnership with Josef Havlícek, worked with Wimmer on the prototype and his sketches for possible facade treatments were published in Architektura ČSR in 1954. (Fig. 2) The designs show the extent to which the panels themselves created some anxiety among architects who felt that their scale and proportion should be underplayed by adding additional horizontal emphasis, decorative doorway details and patterning on the surface of the panels.

The Gottwaldov branch of the Institute of Prefabricated Buildings was the site of testing for system four, which they named the “G” house. Given the long history of this research in Zlín, it was logical that the most sophisticated prefabrication system would be tested at the former Baťa facility. Bohumír Kula and Hynek Adamec, who had been progressing towards the goal of a structural panel building since the early 1940s, succeeded in developing a workable prototype for a structural panel building by 1953, although the planning for the building had started as early as 1950. (Fig. 3) Their prototype, which became the G40 because it contained 40 apartments, was five-stories high with two access stairs and eight apartments per floor. Construction was finished in 1954.
Fig. 2: Karel Honzík, Sketches for Wimmer system buildings (system three) from Architektura ČSR (1954)
For the first time, Karel Janů’s concept of the “living core” was put into use for a building intended to be mass produced. The living core was a prefabricated unit with a kitchen, WC and bathroom that could be dropped into place with a crane. Although all the walls in the prototype were structural, the layout used a three-bay system that placed the windowless bathrooms, WC’s and kitchen wet wall in the center bay of the building with the kitchens occupying the space between the wet wall and windows to the outside. (Fig. 4) All of the doors were placed on the walls parallel to the exterior facade, presumably for structural integrity. The only exception were doors around the staircase which were moved to the side walls. This created the spatial
sense of entering into a series of small boxes and the apartments lacked the natural flow of units without such restrictions.

The real innovation in the 1953 structural panel building designed by Kula and Adamec was the solution they found for the joints. Working from their experience with the ribbed, bolted panels, they devised an ingenious stabilization system for their prototype. (2) 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. Just as they did with their original bolted panels, there was also a special corner piece that acted as an anchor for the exposed end joint. All of the corner joints were also sealed with mortar and gaskets, which gave the facades of the early panel buildings their distinctive grid pattern.

Fig. 4: Hynek Adamec and Bohumír Kula, Plan of G40, Gottwaldov (formerly Zlín) from Architektura ČSR (1954).
The Institute for Prefabricated Buildings built six G40 buildings in Gottwaldov in 1954 and another twelve G57 buildings, a type named for the year of anticipated completion of the projects, in Prague starting in 1955. (Fig. 5) In an effort to blend in with the buildings around them and to adhere to the stylistic expectations of Stavoprojekt, these early structural panel buildings incorporated neo-classical decorative elements such as pilasters, cornices and elaborate entrances. These details were applied to the completed building and often hid mortar joints. After 1955, the facades were stripped of such ornamentation and the patterns of the panels became more pronounced, making the buildings look more crude and unfinished than the first experiments.
Once the Institute of Prefabricated Buildings began its analysis, the differences between structural and non-structural panel technologies became more clear. It was obvious from the start that systems three and four would offer the most benefits, however the distinction between the two were still being investigated. According to the 1953 statistics comparing the “S” type (Wimmer, system three) to the “G” building (system four), a housing block with a skeleton required 55% more reinforcing steel than one without. Although the building without a skeleton required 50% more cement, this was a more abundant and less expensive material. Steel was not only more expensive, but it had other lucrative uses, particularly for military equipment, which made it a less desirable material for housing construction. Another important statistic was that 15% more labor was required to construct a building with a skeleton—4.9 months of work versus 5.7 months. In economies facing shortages of skilled laborers and steel, the advantages of the structural panel-building were clear. There was a problem, however, with the new technology. A “G” building cost more than the other systems despite the material and labor savings. The equipment and cost of production was much higher than less industrialized technologies. (Červenka and Sůva 1953: 53-83)

For this reason, the structural panel building was not immediately adopted on a nationwide scale. Infrastructure needed to be built including a network of panel factories that could balance the cost of production and transportation. Projects that used all four construction systems were built around the country in the next five years as panel technology was embraced as the best method for fulfilling the plan numbers for housing units. By 1960, “G” buildings accounted for 17% of all new apartment units, while apartment blocks using a panel system with a prefabricated skeleton accounted for an additional 53% of the total. (3) The remainder used large-block and hybrid systems. As the cost was reduced for structural panel technology in the 1960s, it became the dominant construction method.
The Long Life of the Panelák

The building types tested by the Institute of Prefabricated Buildings became the basis of the housing programs after 1956. G-houses proliferated and their popularity accelerated in the 1960s. The Janů system of large block and skeleton construction developed into a series of types called the T 01 – T 08 blocks, but the potential of these buildings was undermined in the 1960s by the enormous political power of panel production industry itself, which according to Rostislav Švácha lobbied to keep other technologies out of the construction industry. (Dušek 1995: 41) During this time, housing developments also grew in scale as the low-rise compact designs of the 1950s gave way to the immense sprawling developments of the 1960s such as Jižní město (South City), a Prague district with 100,000 inhabitants built entirely out of structural panel buildings to a single master plan starting in the late 1960s. (Lizon 1996: 108-109) In the 1970s, the structural panel building, which had started off as a largely urban type in the Czech lands, made its way into smaller communities and Slovak territory as the post-1968 regime attempted to placate its citizens with hundreds of thousands of new apartments during the period of ‘normalization.’ By this time, architects were forced to use lower-quality materials including plastics and design smaller apartments in larger buildings.

The developments of the 1960s and 1970s were typically at a massive urban scale—without trees, a pedestrian landscape or usable community spaces—and nothing like the older districts nearby. Today these groups of often shabby apartment blocks dominate the edges of Czech and Slovak cities and towns. Over 3 million people, or one-third of the population of the Czech Republic, still live in more than 1,100,000 apartment units in 80,000 structural panel buildings. (Reynolds 2005) In the years since the end of communism, for residents and visitors alike, these drab buildings have come to represent everything that was wrong with Communism. President Václav Havel famously referred to them as “undignified rabbit huches.” (Reynolds 2005) For Czechs and Slovaks, who are proud of their intact medieval cities and cathedrals, picturesque country towns, and a celebrated history of interwar modernism, it remains difficult to
understand how structural panel buildings could have become so ubiquitous less than forty years after the apex of the avant-garde. As this essay argues, understanding this building type as the product of local building conditions, as well as specific cultural, political, and economic circumstances which came together at Stavoprojekt as mediation junction, makes the context of the structural panel building more clear and integral to the history of modern architecture in Czechoslovakia.
References


Vladimír Červenka and Stanislav Sůva, *Průmyslová výroba stavebních konstrukcí* (Prague: Ústav architektury a územního plánování, 1953)


*Stavebnictví včera, dnes a zítra* (Prague: Stavební informační středisko, 1973)


**Notes**

1 For documents related to the exchanges, see fond: *Ministerstvo kultury* (Ministry of Culture), carton 311, *Národní archiv* (National Archive, henceforth NA), Prague, Czech Republic.

Additional documentation of research trips in 1957-1958 can be found in fond: *Státní výbor pro výstavbu* (State Committee for Construction), cartons 138-139, NA.

2 A set of drawings showing the construction method for the G57, the prototype that followed the G40 in 1955, can be found in fond: *Vladní výbor pro výstavbu* (Government Committee for Construction), cartons 212-214, NA.

designated to be “G” buildings and 22,547 as T01-03B buildings, the panel system with a prefabricated skeleton.