The Post-War Metro in Moscow and in the Former USSR. Values and Significance

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The Moscow metropolitan launched only in 1935 presents an outstanding historical phenomenon and important layer in 20th century heritage. It is marked by high technical, architectural, artistic and cultural values. Essentially, by the mid-1950s, the city was duplicated in this unified and stylistically homogeneous ensemble. A second urban organism, a kind of 'parallel' metropolis endowed with an entire register of its visual signs and figurative and spatial functions appeared. Traveling through spacious 'streets' and 'squares' of this underground city, you can clearly feel the hierarchy of urban spaces lying above.

In its totality, the Moscow metro reveals an amazing variety of engineering and structural types. They demonstrate a parade of architectural styles – from Constructivism, masterpieces of Soviet Art Deco and Neo-Classicism to simplified Post-War Modernism – all reflecting the complex development of Russian architecture in the 20th century under strong ideological and political pressure. It is also a public museum underground with its synthesis of the arts – ceramics, smalt and Florentine mosaics, sculptures and stained glass décor, in the best of these works – created by the first masters. This is a collection of authors' applied design for the lighting fixtures and urban furniture, diversity and luxury of the mineralogical wealth of the country. This is also the strongest socio-political document which materially captures the meaning of a totalitarian system, a huge mass of collective labour, presented in a form of *Aufhebung* – as a holistic stratum of one time, one era – in contrast to the multi-temporal layers on the day surface of the city. The economic component of this object (performing the most important strategic function with the depth and hermetic locks of the stations, among other things) has never been really evaluated, and it will be huge. As the famous architectural historian of the 20th century and protagonist of modernism, Jean-Louis Cohen, recalled his first impression of the Moscow metro: "This archipelago of stations all different in their spatiality and decor constituted a world of sensations, noises and smells of a powerful exoticism. Members of a small expedition, Josette Bouvard and I, stayed forty years later under this strong impression that is probably not foreign to the choice we made, one and the other, to work each in his own way on the Russian culture of the Soviet period."[1]

Statistically, there are presently 261 metro stations belonging to 12 historical lines and 31 stations of the Moscow Central Ring (MTsK) under construction (with a total length of 435 km for all lines).[2] Another 55 stations should be completed by 2023.[3] This process reflects the rapid present-day development of the Moscow agglomeration and its transportation infrastructure. The most valuable first 50 stations were built during the launch of the system in the 1930s to 1950s, when the total length of the first four lines ran to 66 km. Therefore, the more important is the value and preservation of the 20 percent of these most important stations that are concentrated in the historic core of the city. The post-war stations are a significant part of this transportation and cultural resource.

Lessons and samples. The pre-war period 1935–41

The first Moscow line with 13 stations (1933−35, 11.6 km) defined the most important features in the construction of the Russian metro, laid the foundations for the development of the metro system not only in the capital, but also in other cities of the former Soviet Union during the next decades. Among them were technical achievements, including:

- Accumulation of global experience which resulted in high structural and performance qualities;
- Unprecedented complexity of geology and hydrogeology; frequent change of geological stratigraphy; mixture and interchange of bedrocks (limestone, Jura mud, unstable water-bearing soil, small-grained sand, shifting sands and subterranean mud rivers – 'plyvun');
- Unparalleled conditions of tunnelling, including innovative methods of artificial abatement of water level and ground freezing, chemical strengthening of soils; use of caisson chambers and shield within subterranean mud rivers; combined methods of shallow and deep-level construction, cut-and-cover and closed (covered) ways of tunnelling;
- Use of different construction types for metro stations and enlargement of the underground space parameters, which produced a variety of space typology: 'shallow-level' – column-type with flat overhead cover and single-vaulted stations (7.0–10.6 m depth, first lines); 'deep-level' – three-vaulted pylon-type and column-type stations (30.8–35.2 m depth, first lines).[4]

Due to these technical achievements and dimensional qualities of thus liberated space, the architectural design of the Moscow metro became its second and the most important qualitative and visual peculiarity, for which a new artistic language was created. The first stations established the bases of the Moscow school of metro construction and laid down the principles for creating the *architecture of the metro,* which has only one projection for the exterior and interior in 'windowless' underground space. Such principles included: a) clear exposure of structure; b) lack of ballast masses and volumes; c) unity of structure and décor; and d) use of light as the principal means for creating an architectural image (as formulated by Alexei Dushkin).[5] The metro projects were developed in the best traditions of classical design, on the basis of architectural contests, performed with multiple sketches, models at the scale 1:10, perspective views, architec-

tural and engineering drawings. Stations became nationally and world-famous, winning so called Stalin awards in architecture and Grand-prix or medals at the international exhibitions in Paris (1937), New York (1939) or Brussels (1958) (Fig. 1).

By the mid-1940s, the most fruitful stage in building the metro was over. The first lines were full of architectural purity and austere logic of Constructivism. With time, the splendour of almost kitsch décor of the 'Stalinist baroque' penetrated the underground space, which had been alien for these heavy masses.

From shelters to victory halls. The war period 1941–45

During the period of World War II, the metro in Moscow did not close and the stations were used as strategic objects. The protected command post of the air defense (PVO) and the country's general staff were located at Kirovskaya station. A branch of the Historical Library was opened at Kurskaya station. The huge space of the deep-lying Mayakovskaya was used both as a bomb shelter and as a hall with a capacity for up to 2000 people for a solemn meeting and concert on November 6, 1941, at which Stalin made a report on the eve of the military parade on Red Square.

At the same time, the construction of the third metro line, which began in the late 1930s, continued. Bearing in mind the war conditions, the austerity, the lack of metal and the evacuation of many factories that produced equipment and structures for the Moscow metro, this difficult construction could be considered a heroic deed and a phenomenon. Architects and engineers worked under extreme conditions and hardship. Smalt mosaics created by Vladimir Frolov (1874–1942) in the famous mosaic workshops of the Academy of Arts in besieged Leningrad were delivered to Moscow on the 'Road of Life'. However, under these circumstances, in 1942–44, overcoming the abundance of ground waters, shifting sands and mud rivers, tunneling twice under the Moscow-river by using a shield (but without caisson chambers as in western practice), seven new stations connecting the major industrial areas of the city were opened.[6] Inscriptions "Built in the days of the Patriotic War" were made in the vestibules of these stations.

Despite the almost mandatory presence of the visual images of military heroes and home-front warriors (various types of mosaics, marble inlays, sculptural reliefs, large-scale round sculptures), the constructive clarity, space, classical lines and proportions are clearly seen in the architecture of most of these stations (Avtozavodskaya by A. Dushkin, 1943; Elektrozavodskaya by V. Shchuko, V. Gelfreich et al., 1944). In 1944, the widest three-way shallow-level station Izmailovsky Park by B. Vilensky was opened. According to the initial project, this station was to be connected with the grandiose Stalin Stadium, which was not built (Fig. 2).

At the same time, some stations turned into temple-like ensembles, to be inspiring for victory; they were overloaded with décor, military narratives and symbols, and sculptural images of the war heroes (i.e. Novokuznetskaya by I. Taranov and N. Bykova). During the war period, a new type of metro station began to emerge as a triumphal underground hall, in which the revealed ideology and magnificent decorativeness began to prevail over the constructively conditioned architectural image. It is noteworthy that the stations built during the war or related to the war events were the first to be listed as monuments of Regional significance in 2000.[7]

Post-war Stalinist 'Triumphalism' 1945–55

The post-war metro stations of the 1950s fully depicted the stylistic diversity and the apotheosis of Stalin's personality cult. 12 deep-level stations of the Ring line (1950–54), conceived in the pre-war period and almost repeating the Garden ring in the layout of Moscow, represented a kind of triumphant flowering crown paradoxically woven into the metropolis' bowels. Almost all these stations, including three stations of the 1953 Arbatsko-Pokrovskaya line, glorified the generalissimo, whose portraits were eliminated after the political debunking in 1956. The system of artistic means (from painted plafonds, ceiling mosaics, sculptural friezes, stained glass, decorative ceramics to ventilation grilles) – narrated the military history of the country. The abundance of gilding in combination with polychromy, flower garlands and banners expressed the victorious pathos (Fig. 3). Ground vestibules, in contrast to the functional entrance pavilions of the 1930s, began to be erected in the form

Fig. 1: Mayakovskaya station by A. Dushkin, 1938, a visit card of the Moscow metro. Photo 2017

Fig. 2: Elektrozavodskaya station by V. Shchuko, V. Gelfreich et al., Moscow, 1944. Photo 2018

Fig. 3: Majolica panel depicting the war heroes at Taganskaya station by K. Ryzhkov, A. Medvedev, sculptors A. Brzhezitskaya, A. Sokolov et al., Moscow, 1955. Photo 2012

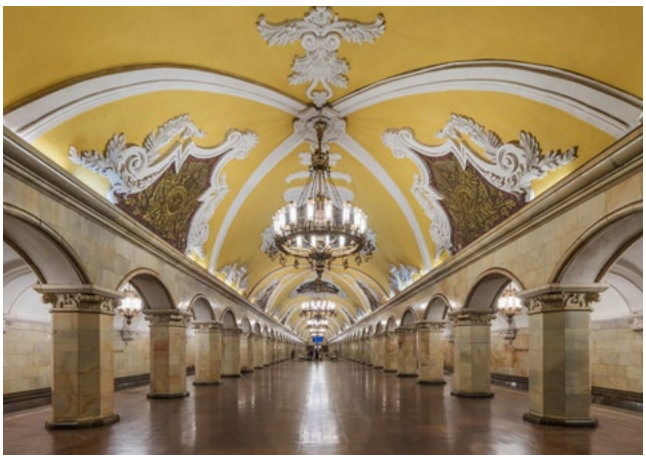

Fig. 4: Grandiose epic construction of Komsomolskaya station by A. Schusev et al., Moscow, 1952. Photo 2018

of triumphal arches and solemn rotundas, topped by domes. At some stations, the richness of semantics and the sacralisation of space in combination with the festive parade march and heraldic motifs reached an incredible density, amazed the imagination and bordered on absurdity. Together with the seven post-war Stalinist 'skyscrapers' that created a ground ensemble of megastructures, dissociated in scale from the historic urban landscape, the flamboyant essence of the 'Grand style' was thus presented.

As the famous Russian art historian Mikhail Allenov wrote about the Soviet phenomenon of metro stations in the late 1980s, it is important to "show in what absolutely obvious forms the monstrous improbability of the Stalin regime existed and continue to exist".[8] In the complex of the Ring line stations, Komsomolskaya by Alexei Schusev was assessed by him as the top of scale, splendour and ideological 'saturation'. "It is the apotheosis of the Moscow metro, approved as one of the wonders of the world. It represents the installation of the System on the miraculous – 'we have no barriers either at sea or on land' – able in a rush to the supernatural 'to overcome space and vastness', erecting a temple-palace in the dungeon, arranging a pompous architectural feast in a poor country, when it was barely five years after the devastating war…"[9] However, over time, the sharpness of this perception dulled (Fig. 4).

Being the gates of Moscow at Komsomolskaya Square with three terminals, this grandiose epic construction with the central 'nave' of 190 x 11.5 m became the symbolic end of the Stalinist metro golden age. With the change of the political vector, the course of the magnificent post-war 'Triumphalism', the crown of the romantic myth of 'SocRealism', was transferred to the rails of Khrushchev's typified design (Fig. 5).

From Khrushchev's minimalism of the 1960s to modernist monumentality

After the 1955 party resolution "On the Elimination of Extravagances in Design and Construction", the directive rejection of the whole apparatus of classical art followed. In the period of the so-called Khrushchev's 'Thaw' (1953–64), the Empire style (already embarked on the path of internal transformation) was laid hastily in a unified framework of Modernism in the light of the collapsed 'Iron Curtain'. Freed from the heavy megapode of the Stalinist architecture, there was hope to return to modernist values. However, a breath of 'fresh air' unfortunately did not mean the revival of the Russian Avant-garde. Political de-Stalinisation was almost equivalent to the dismantling of architecture and to its almost complete subordination to the construction industry.

A new cycle of architects' persecution began. As the first guide on Soviet Modernism comments, "[a]lthough Khrushchev did not attack directly on the subway in his speeches, Alexei Dushkin, author of several of the best metro stations, including the 'Novoslobodskaya' opened in 1952, and the teacher of many architects in Metrogiprotrans was deprived of awards, titles and work. Frightened, humiliated and confused, they could not find support also in borrowing foreign samples…"[10] Leonid Polyakov befell the same fate. This generation of architects went through the Constructivist revolution, then through the totalitarian counter-revolution. Those who managed to survive professionally despite all these changes were strangled by the subsequent 'standard' regulations in the 1960s. The requirements of industrial methods, simplicity in forms and structures, overall economy, sharp decline in costs and speed of construction became crucial.

At the same time, even in the stations of the Khrushchev period with all their standardisation and prefabricated constructions, it was possible to obtain high-quality public spaces based on professional culture. Dushkin, by that time already a 'living legend' of the subway, after all persecutions continued his activities as the chief architect of the 'Metrogiprotrans' Institute in 1959–67. Refraining from his own participation as a metro designer, he headed the architectural design of standard stations as an artistic process based on modern industrial methods. Under his direct guidance, the first typified projects for a low shallow station and ground vestibule based on a post-and-beam reinforced concrete construction were created in 1959. Being himself inherently Constructivist, he considered that simple architectural forms, organically associated with the supporting structure, can have no less emotional expressiveness than the complex images of the metro of the 1930s–50s. Thus, classical proportions and new modernist aesthetics were introduced into

the elements of industrial production. Typified stations with a ribbed overlap and four metres column spacing (also varying at six or eight metres), which received the meme 'centipede', became the main structure of the expanding Moscow metro system. The Kaluzhskaya, Zhdanovskaya and Filyovskaya lines were newly built under the supervision of Dushkin, who claimed that "a harmonious, proportional solution allows building separate lines in a single ensemble, in restrained 'elegant' architectural forms".[11] At the end of the 1960s, there were 22 stations of that kind in total. Most of the stations' authors were Dushkin's former students, graduates of the Moscow Architectural Institute, whom he invited to Metrogiprotrans (M. Markovsky, L. Lilye, V. Litvinov, B. Tkhor, Yu. Vdovin, A. Strelkov, M. Bubnov, A. Markelov and others), as well as his closest adherents and employees Ya. Tatarzhinskaya and N. Alyoshina.

Under the new conditions of standard design, architects had a poor set of artistic means and minimum varieties of marble and granite, also simple facing tiles, whitewash, standard lamps, solid glass entrance vestibules. There were also new finishing materials – plastics, Plexiglas, tempered glass (Stemalite). Against the background of the significant saving of metal when using precast concrete, aluminum was widely applied in the finishing process (Fig. 6).

The first in a series of 'centipedes' was the strict and indeed elegant station Pervomaiskaya (M. Markovsky, Ya. Tatarzhinskaya, 1961), the leitmotif of which was an enfilade of 80 slightly flaring-up columns faced in red marble with white specks. The floor was covered with granite of two colours using a simple geometric pattern, and the track walls received square glazed ceramic tiles (Fig. 7). The visual contrast between this 'new' metro and the 'old' one was almost shocking. Nevertheless, these perfectly designed (in proportions) stations bear a stamp of culture of the Moscow school of metro construction and are worthy of being listed as quality signs of their time. The same applies to some entrance vestibules, among which the elegant pavilion of Oktyabrskaya station (N. Alyoshina, Yu. Vdovin, A. Strelkov, 1962) stands out. Strongly protruding as if flying, the console removal of the overlap rests on the perforated walls of a simple geometric pattern, creating an unusual tectonic and visual effect.

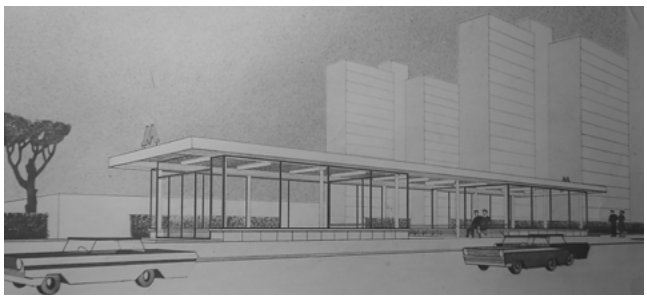

Fig. 6: Project of the metro entrance pavilion Yugo-Zapadnaya station by Y. Tatarzhinskaya, Moscow, 1963

The outstanding construction from the time of Khrushchev's 'Thaw' was a bold modernist metro bridge with the station 'Lenin's Hills' – the first in the world located above water (M. Bubnov, M. Markovsky, B. Tkhor et al., 1959) (Fig. 8). As if being 'suspended' from the transport bridge, the almost completely glazed 270-metre-long station allowed one to enjoy the beautiful natural scenery of the Moscow river and the hills themselves, a favourite vacation spot of the Muscovites. Due to mistakes during the construction, which led to the partial destruction of the structural frame, the station was closed in 1985 and later significantly modified. Opened again in 2002, it was structurally strengthened, almost lost its original finishing and detailing, but retained the transparency of the walls. However, the audacity of its architectural vision, in tune with the pioneering spirit in the history of Soviet metro construction, has been preserved. Later, technologically brave metro bridges were built in Kiev across the Dnieper (H. Fucks, 1965; 684.5 m) and in Novosibirsk across the Ob (1978–85; total length 2145 m).

By the early 1970s, along with the stabilization of Brezhnev's political course known as the stagnation era (1966–82), the longing for a 'beautiful metro' began to declare itself. The multiple 'mindless repetition' of cloned stations was condemned. As a result, a policy to preserve the industrial methods and construction pace combined with individuality and artistic expression was proclaimed. The deep shallow stations, this time designed in a simplified but monumental modernist

Fig. 5: Baltyiskaya station by M. Benois, A. Kubasov et al., Leningrad (presently St Petersburg), 1955, monumental style and grey colour convey the severity of the Baltic waters. Photo 2014

Fig. 7: The first in a series of 'centipedes' in Moscow was strict and elegant station Pervomaiskaya by M. Markovsky, Y. Tatarzhinskaya, 1961. Photo 2010

Fig. 8: Bold modernist metro bridge in Moscow with station Lenin's Hills (now Vorob'evy Hills) by M. Bubnov, M. Markovsky, B. Tkhor et al., 1959. Historical photo

key, replaced the naked minimalist transport objects. However, the solutions were only rarely artistically successful. Massive marble supports, often in the form of faceted or corrugated pillars, which Dushkin condemned as 'skirts' hiding the constructive skeleton, returned to the metro. The 'synthesis of the arts' was given a second chance. The stations again flourished with decorative grids, embossed panels, stained glass and mosaics. Non-ferrous metals – aluminum, brass, copper, aluminum anodized in bronze – first appeared at the Novoslobodskaya station and became a favourite decorative material.

However, Kuznetsky most (N. Alyoshina, N. Samoilova, 1975) became a real creative success of all the stations in the centre of Moscow. It is hard not to agree with its assessment: "...this is certainly one of the strongest statements in the architecture of the Moscow metro in the 1970s–1980s: it is impossible to find such a synthesis of structure and architecture in the image of other, later deep-level stations".[13] Powerful and at the same time elegant two-centre arches with a step of 5.25 m, faced with golden-grey marble with a beautiful layout of plates, convey both the strength of this place (the site of an 18th century bridge) and the lyrical idea, combined with simplicity and monumentality (Fig. 9).

Fig. 9: Kuznetsky most station by N. Alyoshina, N. Samoilova, Moscow, 1975. Photo 2010

The complex historical development of the 20th century Moscow metro, the periods of Constructivism, luxury and unbridled eclecticism, rigid standardisation almost beyond architecture, the wandering and searching within modernist aesthetics and traditions of Stalin's underground spawned a huge stylistic diversity of stations as well as secondary images. Gradually, the development of subways in other cities of the USSR deprived the Moscow metro of its uniqueness, and the collapse of the Soviet empire in 1991 prepared the weakening of its national traditions.

Post-war metro systems in the cities of Russia and the former USSR

The original school of metro construction, created in Moscow and equipped with the famous design institutes 'Metroproject' and later 'Metrogiprotrans', spread its influence far beyond the capital. In the post-war period, subways were built in Leningrad (now St Petersburg, 1955) and in the former capitals of the Union republics – in Kiev (1960, Ukraine), Tbilisi (1966, Georgia), Baku (1967, Azerbaijan), Tashkent (1977, Uzbekistan), Yerevan (1981, Armenia), Minsk (1984, Belarus), and in other cities of the former USSR (Kharkov, now Ukraine, 1975; Nizhny Novgorod, 1985; Novosibirsk, 1986; Samara, 1987; Ekaterinburg, 1991). After the disintegration of the USSR in 1991, metros were built in Dnepropetrovsk (now Dnepr, 1995, Ukraine), Kazan (2005, Russia) and Almaty (2011, Kazakhstan).[14] Along the existing norms, subways were built when the population of the city reached one million people. The total number of stations for all previously mentioned subways in 2018 is 566.

These metro systems inherited from the Moscow subway the technical and artistic school of construction, the technological brevity and experience, the variety of construction types, the stylistic diversity, light interpretation, the synthesis of the arts, the colour and texture of natural materials, the decorativeness and representativeness, and finally, the specialists themselves – architects, engineers, technologists, builders. In addition, the new subways were enriched with added values: regional peculiarities and a national architectural and artistic character depending on the character of the cities and on local traditions and climatic conditions (Figs. 10-12).

For decades, the leading design and technical developer was the 'Metrogiprotrans' Institute in Moscow, one of the largest specialised project institutes in the USSR and Russia, founded in 1933 on the basis of the 'Metroproject' design office (1931–33). Until recently, it was the developer of all metro lines in Moscow and other underground facilities and until 1991 the main project organisation with branches in Kiev, Kharkov, Tashkent, Baku, Minsk, Nizhny Novgorod and Samara. Due to the outstanding contribution to the history of metro construction, technological achievements,[15] development of state standards for metro design and estimate documentation, 'Metrogiprotrans' can be considered a national patrimony. The main creative leaders of the Institute in different periods were well-known metro architects Samuel Kravets, Alexei Dushkin, Konstantin Ryzhkov, Alexander Strelkov, Yuri Vdovin, Nina Aleshina. Nikolai Shumakov is still the head architect.

This unique institution has influenced and participated in the design and construction of metros far beyond the country,

including post-war Eastern Europe, Asia, Africa and Latin America. Thus, technical assistance in design, construction and expert opinions was given in Beijing (1949–63), Warsaw (1951–87), Cairo (1966), Prague (1967–68, 1971–74), Budapest (1972–86), Calcutta (1972, 1975, 1978), Sofia (1976), Bangkok (1985), Lima (1986), Bratislava (1986), Istanbul (1989), Algeria (1992–93), and Tehran (1998). In 1990, the project of the Mosca station in Rome (N. Shumakov, N. Alyoshina) was carried out, and the stations Prazhskaya (E. Kyllar, V. Cheremin et al., 1985) and Rimskaya (L. Popov et al., 1995) were built in Moscow in collaboration with foreign colleagues, as well as the station Moskovskaya (now Anděl; L. Popov, M. Davidová et al., 1985) in Prague.

Instead of an epilogue

Recommendations on the inclusion of the Moscow metro in the World Heritage List came from ICOMOS International (1996), TICCIH (2003), the Russian State Duma (2010). In 2006, within the framework of a Heritage at Risk conference, the first international round table 'Moscow metro as a cultural heritage' was held in Moscow. In 2007, an international conference was held in Berlin which considered the potential of 20th century heritage for inclusion in the World Heritage, including the subways of Berlin, London, Paris and Moscow. In 2016, support came from the Shchusev Museum of Architecture, which held the anniversary exhibition, presented materials on the design of the Moscow metro and published a fundamental catalogue for the first time. Simultaneously, the expert community, responding to the call to expand the Russian presence on the World Heritage List, which was made at the presidential level, offered the Russian Ministry of Culture the nomination 'Moscow metro' as one of the candidates from the 20th century.

However, presently only 15 stations of the 1930s–50s in Moscow are listed as monuments, and only at the regional level. The other 32 stations of this period are only 'identified' objects of cultural heritage, also under the protection of the law. Dozens of valuable stations built after the 'typified' construction revolution remain completely defenceless, although the best stations that have existed for 40 years are now being disfigured. Presently, reconstruction/renovation projects aimed at upgrading the transportation systems are threatening the stations' authenticity and integrity. The trend is obvious – the famous architectural brand is blurred by ordinary high-tech. An infrastructure business project is being implemented very far from promoting the ideas and philosophy of underground space, which originally brought Soviet metro design to such a high level worldwide. Against this background, the experience in restoring the metro is gaining strength, but, unfortunately, with failures and mistakes.

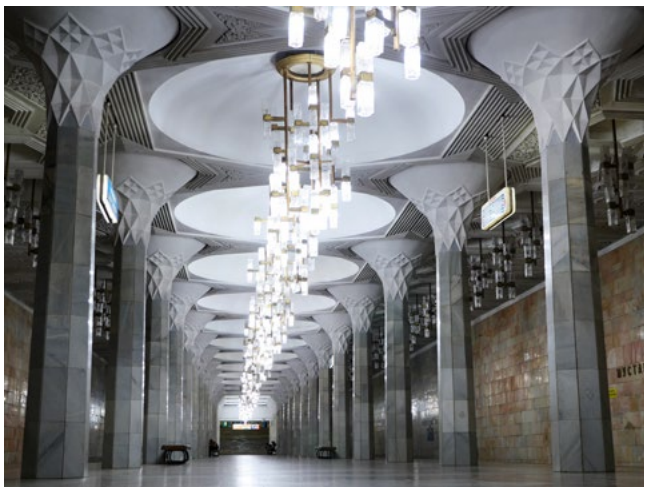

Fig. 10: Former Lenin Square station, presently Mustagillik Maydoni by L. Adamov, L. Popov et al., Tashkent (Uzbekistan), 1977; it interprets the architectural richness of the Muslim East. Recent photo

Fig. 11: Kosmonavtlar station by S. Sutyagin, S. Sokolov in Tashkent (Uzbekistan), 1984, is dedicated to space exploration from Ulugbek to Gagarin. Recent photo

Fig. 12: Kosmonavtlar station by S. Sutyagin, S. Sokolov, Tashkent (Uzbekistan), 1984. Detail, recent photo

Die Nachkriegs-Metro in Moskau und in der ehemaligen UdSSR. Werte und Bedeutung

Das sowjetische U-Bahnsystem wurde als strahlender Gegenpol zum Westen errichtet, indem künstlerisch bedeutsame unterirdische Räume geschaffen wurden. Technische Stereotype wurden aufgegeben und durch funktionale Räume, die in die Formen der „hohen Künste" gekleidet wurden, ersetzt; es entstand ein

spezifisches Architekturkonzept für die Schaffung des unterirdischen Raums. Die Moskauer Metro (1935) als Ausgangspunkt dieses neuen Städtebautyps stellt ein herausragendes Beispiel in der Geschichte der Architektur, des Ingenieurwesens und der Hydrogeologie dar. Ihre Stationen aus den 1930er bis 1950er Jahren sind ein wichtiger Bestandteil des baulichen Erbes des 20. Jahrhunderts, das durch hohe historische, technische, architektonische, künstlerische und kulturelle Qualität gekennzeichnet ist. Die Planung und der Bau der Stationen wurden nicht einmal während des Zweiten Weltkriegs unterbrochen. Mitte der 1950er Jahre wurde mit dem politischen Wechsel der Kurs der stalinistischen Nachkriegsarchitektur mit ihrem großartigen „Triumphalismus" durch die typisierten Entwürfe der Chruschtschow-Ära ersetzt. Aber auch in den Bahnhöfen der 1960er Jahre mit all ihrer Standardisierung in den Fertigbaukonstruktionen und künstlerischen Techniken war es möglich, hochwertige öffentliche Räume zu schaffen. Klassische Proportionen und eine neue modernistische Ästhetik wurden mit der Logik der industriellen Produktion verknüpft. Die 1970er bis 1980er Jahre stellten eine Rückkehr zu einem vereinfachten „Monumentalismus" dar. In der Nachkriegszeit wurden in Leningrad (1955), den Hauptstädten der Unionsrepubliken, d.h. in Kiew (1960), Tiflis (1966), Baku (1967), Taschkent (1977), Eriwan (1981) und Minsk (1984), und in anderen Städten der ehemaligen Sowjetunion U-Bahnsysteme realisiert, die jeweils regionale Besonderheiten widerspiegelten. Gegenwärtig bedrohen Umbau- und Renovierungsprojekte, die auf eine Modernisierung der Verkehrssysteme abzielen, die Authentizität wertvoller historischer Bahnhöfe.

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[1] Bouvard, Le Métro de Moscou, 2005, p. 9.
[2] As of 30.12.2018 http://mosmetro.ru/press/digits/ (26.9.2019).
[3] For Moscow metro lines from 1935 to 2023 see https://stroi.mos.ru/metro (26.9.2019).
[4] In more detail: Dushkina, The Moscow Metro, 2008, pp. 128–134.
[5] Dushkina (ed.), Alexei Nikolayevich Dushkin, 2004, p. 14.
[6] Ryzhkov, Moscow Metropolitan, 1954, pp. 45–52.
[7] Moscow Government Resolution No. 316, 25.04.2000.
[8] Allenov, Evidence of Systemic Absurdism, 2003, p. 8.
[9] Ibid., p. 92.
[10] Bronovitskaya, Malinin, Architecture of Soviet Modernism (Russian edition), 2016, p. 308.
[11] Tatarzhinskaya, Founder of the National Metro, 2004, pp. 62f.
[12] Kuznetsov, Zmeul, Kagarov, Hidden Urbanism (Russian edition), 2017, pp. 222f.
[13] Hatherley, Herwig, Soviet Metro Stations, 2019, pp. 6–30.
[14] Metrogiprotrans, 2003, pp. 167–183.
[15] In St. Petersburg there are eight stations under protection, in Kiev five stations. Considerable changes are underway in the subways of Baku and Tashkent.