Art metal in the space of a modern city

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Abstract. The relevance of the topic follows the current revival and evolution of design and architectural application of some key decorative elements of the urban environment: the structural and the artistic metal fences, peaks and awnings, and also the popular forms of the traditional outdoor equipment (again widespread in the world of design practice). Old or renovated metal elements coexist with completely new designs and products in the cityscape, so the use of both traditional and new methods of metal processing is also fully enabled. The persistence of these developing design practices in the organization of the urban space is clear, but today the problem is not sufficiently investigated. Here, researchers provide content and context analysis of some artistic and architectural features of the organization of contemporary cities. A comprehensive examination of some design approaches and solutions is carried out in the paper, based on cases from selected cities of Eurasia. Hence, the authors conclude the development of particular utilities and decorative metal structures stays constant in time, and designers today use the flavour of visual, monumental and decorative citations of previously developed urban environment, or recreate the senses of game in the works.

1. Introduction
The Industrial Revolution itself, and the famous use of steel structures in the Crystal Palace of London (1851), the Eiffel Tower of Paris (1887), the mesh shells of V.G. Shukhov (1894), as well as in the (not so popular now) churches made of steel during all the 19th century, in Scotland, Russian empire, Istanbul [1] – all of these events and techniques changed the way architects, designers and even people perceived and used metal products. The new particulars of the artistic processing of metal, and the active use of this material in architecture and urban surroundings afterwards, were often investigated in details by researchers of the 20th century. The role, the semantics and the practices of metal works used in architecture had been completely re-evaluated, following at least two directions, in the period after the World War II. On first hand they evolved as reflection or/and mastering the industrial cast-iron technology and the builders’ use of steel structures. And on other hand they were accepted as part of the paradigm of synthesis between the art and architecture.

The publications on art metal of the 20th century were mostly dominated by technical, technological and stylistic analysis of key cultural and historical objects (N.N. Sobolev, E.N. Bubnov, S. G. Rosenblum, N. Ya. Collie, V. S. Ledzinsky, A. P. Marder) [2–9]. A study published in the 1980s (and significant of the researches in 20th century), of two Czech authors (G. Semerak, K. Bogman) [10], suggested a presentation of a historical and stylistic excursion in the development of artistic forged metal, and also traced the specifics of the forms processing. There, the two authors discussed...
an interesting problem – the role of the art metal in the formation of an “internal” (secondary) rhythmic structure of architectural objects or complexes.

The tendency to produce original, exclusive design is present now at the beginning of the 21st century, along with the ongoing ideas to restore the historical city blocks, and also the concepts of preserving the appearance of key architectural monuments. There is also an increased interest in researches on the full notion (image) of the city where various forms of architectural structures, elements and design co-exist and develop. Therefore, single, incompatible with the existing buildings metal products (“performance”) in the urban arrangements are usually criticized [11].

The paper is focused on repeating artistic metal patterns and elements (art metal) which are used to form and define the identity, scale and outlook of cities and streets. Yet, the now common industrial or commercial building metal cladding, as well as the already mentioned single pieces of metal art (mounted autonomously on some facades or streets) will not be investigated.

2. Methods of analysis of the urban environment

The shapes of carved or cast dominants in form of art metal decoration are now applied in new way in the contemporary surroundings of many Eurasian cities. At the same time, the very range of the outdoor equipment is getting quite diverse, but is still including traditional lanterns, benches, gratings of various fences, flagpoles. Along with other attributes of the urban environment, canopies and large covering extended to the borders of the streets have also appeared again. So, traditional decorative elements in conjunction with the new dynamic form of current buildings and cities require more clarification as representing an “another” environment - an environment of a different time period than the urban system itself. The specifics of the city spatial objects are also related to the aspects of synthesis and the dynamics of the processual perception of environmental objects and complex systems. The multilayered artistic styles are inevitably interwoven in the structure of urban historical quarters, which now leads to dialogue of cultures, where the emotional potential of perceiving the architectural surroundings increases.

Contextual analysis of design artifacts and their transformation in time and space is becoming increasingly relevant [12–17] in contemporary art criticism. The present study is dominated by the comprehensive analysis of chosen subject-spatial visual solutions that form the urban surroundings in different cultural and historical conditions.

3. Metal in shaping the image of the urban environment

Since nowadays, bearing and ornamental metal works, which served the purpose of support and of decoration at the same time, have been successfully used in architectural complexes.

Decorative components in the urban public structures of the 1970-80s had an important functional, and compositional justification. Combinations of various modules of art casting allowed designers to create original decorative compositions of architectural and public elements, that were meant to serve as landmarks, or known zone markers. Along with this, the repeating presence of decorative and bearing metal elements completing the image of the architectural ensembles was also forming structures of linear rhythms (as kind of bigger patterns) in the cityscape. The urge for reconstructing historical objects also has led architects to recreate harmonious images of open spatial environments, the peculiar leitmotif of which was the art metal decoration. Former merchants' mansions regain the elements of traditional completion in the form of canopies and awnings. Sometimes these elements serve like a powerful compositional accent of urban space, as in the case of organizing entrances of restored historical objects and the additions of new functions of restaurants, cafes, hotels, banks. On the other hand, the use of metal canopies is expanding once more towards new objects – there are now frame carports for cars, the so-called car canopies with expressive ornamental patterns. The traditional shaping of the metal decor is often enriched with new linear rhythms that reflect the spirit and plasticity of the continuous shaping of the postmodern era. Today, the question of formation of not only the image of a single taken architectural object as a valuable, self-contained organism, but also the creation of an indivisible, holistic image of the urban environment is being raised.
The architectural and design model of the evolution of the contemporary city is bi-directional. On the one hand, with the development of “personalization” in building processes, there is a reappearance of highly individual projects, and also of the use of hand forging. On the other, molding techniques are expanding, methods for chemical, electrical and laser processing of materials are improving, and computer modeling and design technologies are now widely used, which makes the metal products cost-effective and mass.

The historical quarters of many European cities usually are accepted as urban cores of low-rise buildings. The contemporary inclusion of metal elements in the structure of older edifices offers a new compositional openness to the environment in which they are involved. In turn, ornamented metal elements are then mirrored in the glass surfaces of shopping windows and in the glazed surfaces of high-rise objects that inevitably also appear in the cultural and historical core of the city. Thus, the surroundings are enriched in multidimensional, dialogical way. An attractive graphic line of cast-iron lace, which is usually presented in the shapes of portals, curb and balcony grilles, fences, lamps and other forms of street and urban designs becomes also a peculiar leitmotif of the urban space. All this indirectly forms rich, continuous visual rhythms and develops a complete, harmonious and detailed organization of the urban environment.

The linear rhythms of the open space of the pedestrian street of the historical quarter of the Ural city – Chelyabinsk leads through the underpass to the complex of the Drama Theater (1982), the entrance portals of which were made in cast-iron decorative techniques. A team of architects, including V.L. Glazyrin and B.A. Baranov (Chelyabinsk), and the sculptor Yu.V. Alexandrov (Moscow) – who had established himself as a talented master of architectural and decorative artifacts, had worked on the project. According to the memoirs of B. A. Baranov, the original idea of designing three portals of the theater building with traditional Kasli cast-iron elements belonged to Yu.V. Alexandrov (who is a graduate of the Moscow Higher Industrial School / and the Academy named after S.G. Stroganov). Sculptured models of the multi-figured facade composition were firstly made in the workshop of Aleksandrov with the participation of talented Kaslin masters in the artistic processing of metal – A.S. Gileva and V.N. Klevtsova.

The decorative composition embodies the sculptured forms of famous Russian writers: A.S. Pushkin, I.A. Krylova, A.M. Gorky, V.V. Mayakovskiy. Scenes from theater performances were depicted in the middle tier of the high-relief compositions; portrait bas-reliefs of eminent Russian theater figures were placed in the oval frames of the upper tier. The portals of the main facade of the building looked like a form of stage box, decorated with embossed relief molding and the sculptures – thus creating a unique showy atmosphere. The upper part of the portals was organized by round cell wreaths with lamp shades mounted in them. In addition, the structure of the facade elements, set into tiers, and also the architectonicity of the portals resemble the renowned cast-iron Kasli pavilion of the 1900’s exhibition in Paris [18]. These visual impressions are evident of the continuity of the development of the metal-work artistic traditions. And the chosen combination of openwork iron castings with the snow-white marble planes filled the final image of the building with solemn monumentality and at the same time mild, human scale decorativeness, theatrical effect (the sense of theatrical stage) and expressiveness (figure 1).

![Figure 1](image-url)
The edifice had a difficult fate, but the design idea was successfully put into practice. Perhaps one of the comparable original designs erected in close decades was the building of the Chelyabinsk Fashion house (architect E.V. Aleksandrov, 1973, Chelyabinsk, Russia). The facade of the building is now, unfortunately, irretrievably lost. Still, the creation of this public complex marked a key stage in the processes of cultural and historical interactions between plastic arts and formed a new direction in architectural design art (figure 2).

In the design of Chelyabinsk Fashion house, the architects visualized the concept of an open book using the unified means of space-planning composition, as well as the artistic structure of the plane of the facade of the building. A symbolic accent of the decorative design of the main facade, facing the border line of the avenue, was the openwork cast-iron grate of the famous Ural brand of Kasli casting. It was a special architectural and artistic element that represented the face of the city on a large scale. The complex fit into the boundaries of the city ensemble, where the modern building of the Public Library was also included. We could see there a bright, large-scale sample of the experimental model of the 1970s, where superimposed graphic structures made of metal were used in an architectural object in a strikingly contemporary method. (The innovative parametric concept has quite little parallels in the world architecture of the period.) The composition of the cast-iron decorative panel consisted of a set of different modules ("Cedar", "Flower": artist A.P. Rakov) depicting the Ural flora and fauna, and looked like a holistic art structure; the large-scale metal art application also introduced an element of originality and novelty into the city architecture.

The concept of functionalism pushed the limits in art and architecture in one more direction, and allowed the use of elements which are both in large-scale decorative patterns, and impressive in size. And now, we are facing the result of the reconciliation of these metal formations and a new approach to the realization of the creative idea – an updated organization of combining structural and decorative systems. Designers develop the fluid interaction of the heterogeneous plastic arts to their synthesis and achieve an impressive perspective and emotional impact on the building outlook of in the urban environment. While maintaining the static character of architectural shaping, the dynamism of the perception by the audience is now evident.

Thus, styles that can simultaneously appear just in the meaning of the method (of constructivism / functionalism) now acquire also the effect of superimposed decoration, which was so long and stubbornly abandoned in the architectural practice of the middle of the 20th century.

The criteria for the artistry of an architectural object are such principles of organization as compositional unity and harmony, a high degree of volumetric and spatial imagery, expressive surface
and texture properties of the used materials, the integrity of shaping and the restrained monochromatic color scheme.

There are no full standards of the architecture and its quality in the postmodern era, but the use of art metal today is a vivid model of transferred (and translated) artistic concepts from the past. The worldview codes of the time were once re-read, and in the case of the Chelyabinsk Drama Theater, the tradition and the scale of implementation had been preserved, connecting with the 1900’s Kasli cast iron pavilion at the Paris World Exhibition. Later on, in a second stage these concepts were adopted and redeveloped in the contemporary elements of perforated or laser cut decorative panels. An elite example, following the same artistic culture is the design of Station "Novoperedelkino" Kalinin-Solntsevskaya line of the Moscow Metro, 2018.

Following the historical coherence we consider, that architects of the 1970s-80s translate (convert) the expressive capabilities of the plastic arts cores, including the metal-art, into the field of a design-architectural object, making it as attractive as possible for visual perception and vividly completing the linear-graphic organization of the city ensemble, in the according late modern of high-tech stylistics.

The raised attractiveness of the traditional vision (for the artistic processing of cast iron) now (some decades later) is making it possible again to emphasize the decorative concept, but with new tools. So, today designers continue to recreate similar (beloved) decorative forms, but without the use of the old unique, crafted metal texture, playing with the scales and the shapes of the patterns. The image of the urban environment is again following the used objects and elements and does not go beyond their boundaries into open space. An interesting early example of this way of thinking is one other Paris edifice – the reconstruction of the Ministry of Culture, done by Francis Soler [19]. In time designers digitally simplify more and more the fabrication process, and, in parallel complicate, accelerate and expand the mounting of the metal plastics and their structural sets, in a specific postmodern game.

Currently, for the design of city squares, parks, artists offer a wide range of landscape, park or manor iron castings (benches, fountains, landscape gardening sculpture, furnishings). Projects like the reconstruction of the sports complex (Yekaterinburg, Russia 2018), metal decoration of the embankment of the Historical Square, Dendrological Park (Yekaterinburg 2011) – convinces us once more of a competent design solution for the architectural environment (figure 3).

Of course, same design processes of acquiring and rethinking iron-cast techniques in facades take place globally, although there are differences in the metal work traditions and ornamental motifs. In Bulgaria for example were done some facades interpreting national embroidery patterns. And in many cases the increasing presence and the vision and texture of metal art are some of the factors that alter as a whole the outlook of the cities in Bulgaria in 21st century [20] (figure 4).

![Figure 3. Stop complex, city of Yekaterinburg, Russia.](https://www.buildingoftheyear.bg/en/buildings/view/1123/Center-of-culture-Stara-Zagora.html)
4. Conclusions
The processes of design development and the visual manifestation of cast iron products, as well as their regular inclusion in the forms of current urban environment were revealed in the paper. (The content and the context analysis methods were used in our artistic and architectural research). Here, we conclude, that the architectural design, as a peculiar translation method of design practices, reruns in the decades of 20th century and precedes the method of similarity described in the products of deconstructivist styles the 1990–2000s. It comes back one more time now, due to the development of “game” and “theatricalization” as the core of postmodernism.

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