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DRAWING IN ACTION

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DRAWING IN ACTION

For years, it has been a great pleasure to watch young creatives use drawing as a favorite means of expression, from spontaneous graffiti, sketches and conceptual notes to the realization of graduate projects. In teaching, from the basic study in the first year of undergraduate studies to the realization of doctoral studies, drawing is always present as the dominant art technique in the study of architecture. Various poetics of expression also bring an inexhaustible source of variations of its use, some of which are presented in this volume. In the *Architecture and Visual Language*, an elective course taught at the Faculty of Architecture in Belgrade, drawing is cultivated as a basic art discipline, where works worthy of exhibition in an art gallery are occasionally created. In this course, students are engaged in examining their relationship to

the border field of architecture and art, and the result of the work is always a realized project. Insisting on making an exhibition work is important because it completes the process of thinking from the idea and sketch to the project, which requires the study of art techniques and applications to the level of presentation. In addition to mentoring, the authors deal with topics related to their previous experience and interests, but in a form in which they have not had the opportunity to express themselves until then. This process is important because they master the methodology of making a work of art, which encourages them to expand their field of action, which often (significantly) affects their further work.

Observing, perceiving and experiencing various situations related to the real or imaginary space of the City is the topic / common denominator /, of all the works presented in the volume. Thinking about the work as a reaction to certain aspects of the experience of growing up and maturing in the space of the Faculty make this volume a kind of document of a certain moment.

The work of Ivan Šuletić, as the only original artist in this volume, clearly articulated and already well positioned, in the work on ambient drawings created by observing and studying the city and ambient units is an excellent counterpoint to other works that more or less deal with drawing as a purely artistic medium. . . Applying the method of repetition of motifs, deforming it in the game of two and three-dimensional representation, Suletić questions the rational way of perceiving space and finds an authentic artistic expression.

Miloš Kostić discusses the phenomenology of detailing in architecture. The research proposes a method for decoding both poetic and technical aspects of detail in architecture overcoming the conventional representation techniques and introducing the combination of methods of interpretative 3D modelling and digital assemblage.

Hristina Meseldžija, thinking about the relationship between the real and the virtual, is creating a hybrid model of painting - a combination of digital media and the intervention of free hand drawing, which examines her creative potential in the field of architectural education.

In translating spatial cognition into a clear graphic system that enables better communication and cooperation of related discipline, Vanja Spasenović challenges the potential of the diagram to become an active participant in the modification of the urban environment.

Intuitively rehearsing the process of framing and combining selected motifs, Đorđe Bulatović achieves the result of controlled editing of the image space, which with this procedure acquires a completely new quality - the loss of the representation of the real and the imaginary.

By understanding the mechanisms of action and the interrelation of hand and computer drawing, collage and computer images, Snežana Zlatković finds a characteristic way of transferring information from observation to realization. The combination of classical and computer drawing methods has created a universal language applicable in the analysis of both individual examples presented and any possible urban situation.

NOTE:

Since this publication is a special issue focused on drawing, out of the desire to give equal importance to textual and visual material within this issue, as well as to emphasize the importance and diversity of the drawings, all visual material is shown in a separate segment, following the textual material.

CITYSCAPES OF NON-PLACES

A B S T R A C T

This text will allow me to elaborate on the works I made in the past seven years, with specific focus on the drawings I made during that time. The paths which led to and from some of the drawings and works in other media seem crucial for better understanding of the logic of a specific work and their evolution, so those paths will be traced throughout the text in order to better explain some of the decisions I made in the process of their creation.

Cityscape series and #CFRP (Cities for Rich People) hashtag appeared as a commentary on the relation between the individual, the *human person*, and the urban space in contemporary context of mixed physical and digital reality. In the section ‘Superreality’ I will try to set the outline of the ideas behind the works in question, their interrelations and links to works by other artists and theorists.

In the section ‘Cityspace to Cityscape’ and its subsections, I will focus on El Greco’s View of Toledo, as an early example of depiction of *genius loci* in painting, Bernardo Bellotto’s views of Warsaw, and Bianka Bosker’s text about *duplitecture* in the recent Chinese architectural design. The questions about authorship, handwriting and labour will be elaborated in the sections ‘The Human Person’ and ‘The Handwriting’, as significant subtopics of my work.

KEY WORDS

LABOUR,
MANUAL DRAWING,
HANDWRITING,
AUTHORSHIP,
DEPERSONALISATION,
NON-PLACE,
JPEG,
URBAN DESIGN

INTRODUCTION

In May 2021 an exhibition *Stop Painting* was opened in Fondazione Prada in Venice. In the accompanying text on the exhibition webpage, the author of the exhibition, artist Peter Fischli identifies five radical ruptures caused by technological and social changes that marked artistic paradigm shifts through rejection and reinvention of painting.¹ The first rupture was provoked by the diffusion of photography. As underlined by Rosalind Krauss: ‘Photography calls into question the whole concept of the uniqueness of the art object, the originality of the author [...] and the individuality of so-called self-expression.’ This is the reason that led painter Paul Delaroche to exclaim for the first time around 1840 the famous and shocking sentence: ‘From today, painting is dead.’ The second crisis is represented by the invention of the readymade and the collage that pushed painting to extend itself and ‘move beside itself in space through objects,’ as noted by David Joselit.

The third one was provoked by the questioning of the idea of authorship, or as defined by Roland Barthes in 1968 ‘the death of the author.’ In any case authenticity and originality issues had been addressed by artists several years earlier. The fourth crisis can be identified with the critique of painting as a commodity because of its mobility, its symbolic value, and its easy preservation in the late 1960s. The fifth rupture focuses on the crisis of criticism in the so-called late capitalist society, as formulated in the seminal studies by Luc Boltanski and Eve Chiapello. ‘Since the 1980s the idea of an avant-garde became obsolete and dissolved and, again, the end of a critical position in painting was proclaimed,’ as noted by Fischli.²

Since 2015 my artistic practice evolved around the ideas and concepts of urban design though all of the works I made, which over time became a series that were realised in classical artistic media—painting, drawing, video or sculpture. This ongoing series of works was titled *Cityscape*, and later *#CitiesForRichPeople* (*#CFRP*). The five ruptures, pointed out by Peter Fischli, have involuntarily been the five pillars of basically all the artworks from the *Cityscape* i.e., the *#CFRP* series. Their aspects punctuate some of the key issues of the works and I will use these ruptures as anchor points for a more detailed analysis of the works in question.

The size and complexity of all the works from the *Cityscape* series varies, some works are large, but rather simple, others small in size but more complex. Also, the order in which the works were made, in most cases has its own reasoning,

even though much of the reasons became clearer after the works were made. The path which led to a single work, or from one work to another, will be traced in the following text in order to show the logic behind some of the decisions made in the processes of their making.

A solo exhibition I had in the gallery of the Belgrade Youth Center (Dom omladine Beograda) in 2015 may be pinned down as a formal beginning of the Cityscape series (Figure 1, p. 174-175). I titled the exhibition 'Cityscape' and that was the first time I used this word in connection to the works. Consequently, the singular works got labeled Cityscape I, II, III, etc. In Serbian, the title could be translated as *gradski pejzaž* (urban landscape), but I chose the English title because of its precision and simplicity. The exhibition was the result of my doctoral artistic research at the Department of Painting of the Faculty of Fine Arts, University of Arts in Belgrade. At the time, the 'Cityscape' exhibition seemed as a certain conclusion, but during the course of the following years, its position shifted, and now, after six years, that show can be interpreted only as a starting point of an ongoing research.

The works shown in the gallery of the Belgrade Youth Centre were large format paintings and small size drawings, in pairs, with each painting accompanying a drawing. The drawings were created after the paintings, serving as their *map*, a layout of painted areas. They were not about the image shown on the paintings, but about the paintings themselves. That said, it is important to emphasise that the drawings were never focused on reproducing the original image of a certain city view. The city view (the *citysample*) emerged through the process of their making as the drawings got finished.

The drawing process is machine-like, going from one step to the next. Every part of the drawings was hand-drawn, without the use of computers or robotic tools, but their character is deliberately made gestureless, as an attempt to make them free of *handwriting*. This ambiguity, of deliberate gesturelessness and insisting on hand drawing is an important element of these drawings. A parallel to the Jay Bolter and Richard Grusin's category of *retrograde remediation*³ can be drawn here, which Pavle Levi mentioned in his book *Cinema by Other Means* (Kino drugim sredstvima). The term *retrograde remediation* gives the character of the works a name, or rather, not the works themselves, but the process of their making. The character of the ambiances shown in my works is emphatically inhuman. Not only emptied of human presence, but designated to exist without humans. The decision to turn to 'handmade' media, such as painting and drawing, while working on this series of works was in large part made in an effort to find balance between the subject matter and myself, the author as a singular person.

The paintings and drawings alike were conceived as gridded structures of a 20 x 20 cm rectangle module. The module is a carrier of a sample - a hand-crafted image of a square shaped cutout from a found JPEG file format. The initial concept was based on contrasting contemporary urban structures of high-rise architecture as spaces of multitudes and my artistic practice of studio-based image making. This relation was from the beginning very challenging, and it opened questions about the position of the 'artist painter', about individuality, character and self-expression. The relation was even more extreme since the 'outside world' presented in my works was not the one I directly experienced, but it was its echo—the digital photos of mostly urban ambiences found through online searches. Each found JPEG used for the works, from the start of the cycle was a found one. Prior to the making of the paintings and drawings I never even had a personal tourist experience of the spaces whose images I used for my works.⁴ This decision did not come out from a protest of any kind, but from the conceptual decision to work on the relation with the image of the world, and not my personal experience of it.

Extracting a detail from the found JPEG formats and using it for the works is a procedure similar to sampling in electronic music. Taking a part of a found media work, and using it literally, or by manipulating its properties, is a practice which can also be found in photography or cinema. Photo and video editing, collage techniques, and various examples from the history of electronic music from the previous century could be used as illustrations here. Sampling in the Cityscape and #CFRP works is used as a procedure meant to create a link between me as the author and the subject matter. This link emphasises the relation of the artist-painter and contemporary outside world as I see it, a specific blend of 'real' and digital space, a specific form of a world as a non-place.

The square shaped cut-out extracts a sample from an image of an already existing structure, be it an urban or a natural one. This pre-existing structure is based on an internal logic, planned or spontaneous. The pre-existing logic of the photographed space disappears once the sample is cut. All the internal connections, urban planning, economic and social links get broken, and the cut sample serves as an independent basis for a new image created through repetition on an orthogonal grid. The gridded structure forms its own links, its own urbanism. The grid also made the surface of the works pattern-like, and introduced possible links to modernist theories of painting, and especially the ruptures which questioned the very possibility of painting in the last 150 years.

1. SUPERREALITY

The ‘old world’ looked something like this: ‘Our everyday life-world consists of concrete “phenomena”. It consists of people, of animals, of flowers, trees and forests, of stone, earth, wood and water, of towns, streets and houses, doors, windows and furniture. And it consists of sun, moon and stars, of drifting clouds, of night and day and changing seasons.’⁵ The internet changed all that. Of course that is an overstatement - and, for example, a century and a half earlier, photography introduced a completely novel elements into the world’s ‘realness’. But, the amount of digital imagery created, uploaded and shared only in the past decade and the way it blended with the ‘real’ world is radically new.

Digital images found on the internet do not get old. They do not fade, get torn or wrinkled. They do not have temporality in the ‘old world’ meaning of the word. Hito Steyerl⁶ defined this kind of files as poor images, as ‘copies in motion’. ‘The poor image has been uploaded, downloaded, shared, reformatted, and re-edited. It transforms quality into accessibility, exhibition value into cult value, films into clips, contemplation into distraction.’⁷ And since the social media platforms appeared, digital images, among other digital content, very quickly shifted their position from an add-on to the ‘real world’ to its almost natural component. What is more, they became a standard of what to expect from the ‘real world’, in many aspects, from everyday life to, for example, architectural design.⁸

Marc Augé first published his seminal book *Non-places – An Introduction to a Supermodernity* in 1992.⁹ His focus was on transitory places, hotels, supermarkets, subway stations, and hospitals in an attempt to define their alienated character and separate them from the real places. Since then, and the chain of landmark events which followed, the whole world started to look like a non-place.¹⁰

Since the appearance of social media¹¹ physical reality and digital world merged into a super-reality. The social dynamics and content sharing on social media have become an integral part of everyday life, no longer separable by the old-world standards. On another level, merging of technology and physical reality have introduced an idea much less theoretical, a *Society 5.0*.¹²

A daily input of textual, photo and video materials on the internet has been on the rise for years now. The number of photos taken throughout the world rises gently in the latter half of the twentieth century, after which it skyrockets. The number of photos taken since 2000 is incomparably larger than the total number

of photos taken since the discovery of a camera until the third millennium. This is explained by the rift between monetary and non-monetary economies. The traditional companies which stimulated the analogue photography, manufacturers of cameras and film, and shops that developed and printed the images dominated the field of photography in the twentieth century. Digital cameras which are now available in most of the gadgets people use in everyday life, and the pricelessness of the photography process in today's world made digital photography literally explode in numbers over the past decade.¹³ Digital images uploaded online firstly acted as the echo of the *real* world, but after the appearance of social media, the boundary between *real* and *virtual* became flexible, and in certain cases even permeable. This permeability between real and virtual is visible in all fields, from everyday life to contemporary architectural design.

More widely viewed, a non-place can be any place, in which the identity of an individual cannot be manifested, apart from the place's function. The architecture of planned functions gains a quality of a place only after a local identity gets built through long term series of personal interactions and experiences. Transplanting or imposing of a constructed identity on spaces only masks their true 'character of a non-place. Since the appearance of social media, the 'old world' notion of a non-place and contemporary endeavours to construct *genius loci* build highly complex relations, which hold an important place within the Cityscape series and #CFRP works.

2. CITYSPACE TO CITYSCAPE

'Landscape is a natural scene mediated by culture. It is both a represented and presented space, both a signifier and a signified, both a frame and what a frame contains, both a real place and its simulacrum, both a package and a commodity inside the package,' according to William John Thomas Mitchell.¹⁴

Landscape, as a culturally defined subject, has appeared rather late in western culture.¹⁵ The first independent images of landscapes started being produced in the decades around the year 1500. A geographer, Denis Cosgrove, saw the shift from 'feudal systems of land tenure' to 'early modern capitalism' as one of the crucial changes in social order which allowed for landscape as a subject to appear. He argued that for 'those for whom land is the fabric of their lives, for whom it is livelihood and home environment, do not see that land as landscape (my italics). [...] Landscape arises increasingly as land acquires capital value, becomes itself a form of capital – a commodity with little or nothing of the

personal value and “social meaning” it had for those for whom it was home.’ Cosgrove’s point was that the ‘outsider’s perspective’ was the one through which land becomes a landscape.

There are several artworks on the subject of landscapes which are promoted as the first ones in Western art. One of them is El Greco’s famous painting View of Toledo.

2.1. El Greco’s View of Toledo

El Greco’s View of Toledo (oil on canvas, 121.3 x 108.6 cm) is one of the two surviving landscapes by the author. It is dated c. 1599-1600¹⁶ and is kept in the collection of the Metropolitan Museum in New York, USA, on bequest of Mrs. H.O. Havemeyer since 1929.¹⁷

On the museum’s page it says the painting belongs to the ‘tradition of emblematic city views, rather than a faithful documentary description.’ The view of the city which the artist chose to paint is a depiction of Toledo’s *genius loci*, rather than the real cityscape. ‘It is a true expressionist work, a picture of El Greco’s own mood, which, by the time this picture was painted, had become so much involved with the character of his adopted town that we can understand how, for M. Barrès (the author of a book on El Greco), it seemed to represent the spirit of Toledo.’¹⁸ The layout of the city is not correct. For example, El Greco decided to put the cathedral to the left of the Alcazar, the royal palace, contrary to its real position.

Louisine Havemeyer, the collector who bequested the painting to the Metropolitan Museum of Art in New York, writes in her memoirs that ‘the high wind clouds gathered and rolled over the lofty city and darkened Alcázar, making its outlines sharp as a silhouette against the sky. Toledo looked to me just as it did in El Greco’s time, when he painted his only landscape which we own and which is called just Toledo.’¹⁹ Louisine Havemeyer’s impressions of Toledo were, in fact, impressions of searching for, and finding, El Greco’s painting in real life. This shift of looking for and finding an image in real life is an important reference to my Cityscape and #CFRP works.

We can also find a similar shift in another larger scale example. Bellotto’s paintings of Warsaw which never existed, at a certain historical point, became a reference point for its rebuilding.

2.2. Bellotto and the Post-war Reconstruction of Warsaw

Bernardo Bellotto (1720-1780), a Venetian born painter of urban views and cityscapes spent almost his entire career as a court painter in Dresden, Vienna and Warsaw. His paintings of Warsaw created under the service of Stanisław II August, the King of Poland, were painted from 1768 until 1780, the year of his death. Even though the style of these paintings is highly realistic, Bellotto added or removed certain architectural elements according to his own taste to make the paintings more appealing.

During World War II, Warsaw was systematically and almost completely destroyed. According to a German war plan, during the World War II occupation, from 1939 to 1945, 80%–90% of Warsaw's buildings were deliberately demolished.

After the war, starting from the 1950s, Warsaw, and especially its old city centre, was rebuilt by the Polish people with the support from the Soviet Union.²⁰ The surviving pre-war architectural plans were used in the process of the reconstruction as well as Bellotto's paintings. The post-war reconstruction process turned the Warsaw's (new) old city centre, in part, into the materialisation of Bellotto's artistic vision. This twist, accidentally, made way for today's world in which digitalised and virtual reality shape the creations in the material world.

2.3. Original Copies

Through these two examples, El Greco's View of Toledo and Bellotto's work, we can trace the establishing of the two-way connections between the space viewed and the image of the space. Coming close to our times, the number of such examples grew significantly, finally exploding with the internet communication, especially the social networks.

A whole series of urban spaces, designed and built according to an already existing squares, landmark areas or singular buildings were recently built in China. This phenomenon was in recent architectural theory labeled *duplitecture* and is predominantly linked to the contemporary Chinese practice of building *simulacrascapes*, 'striking both in the minuteness of its attention to detail and the ambitious scope of the replication.'²¹ This is, of course, linked to the growing of China's middle class' economic potential, and satisfying their economic, but also aesthetic needs. But for this text, the emphasis is on creating a double 'real' city-space, a real-life glitch.

Through vast construction undertakings, the suburban spaces of Chinese cities and towns (Beijing-Tianjin-Tangshan, Guangzhou-Hangzhou-Shenzhen, Anhui, and Sichuan, among many others) were partly transformed into a *simulacrascapes* of the St Mark's Square from Venice, Palace of Versailles or old English towns.

Similar to the use of Bellotto's paintings in the process of Warsaw's post-war reconstruction, Chinese western architecture copies are not one-to-one copies of the original models. They were adapted to fit local conditions – spatial configuration, commercial requirements and local culture. This contemporary architectural phenomenon problematises the notion of a non-place, manipulating some of the key elements of its structure.

2.4. The Drawings

Viewed as a whole, the Cityscape and CitiesForRichPeople (#CFRP) are the titles of a theme, a conceptual frame, regardless of media in which a specific piece was made. In most cases a work from one media led to the new work in a completely different media. For example, a painting led to a video, a drawing to a 3D print, and then back to the painting again. Although not easily separable from the whole, the drawings have their internal logic. They never had a function of a sketch or a preparatory drawing. Rather, they act as a map of the painting. Later, some of the drawings served as a bridge leading towards a spatial form, materialised as an SLS 3D print.

The Cityscape and #CFRP drawings can easily be separated in two groups. A dominantly larger number of drawings is parallel and conceptually similar to the paintings. The structure of those drawings is based on sampling, linear repetition, symmetry or rotation. The other category consists of a few of mostly smaller-size works, which are basically graphic visualisations of the drawing's structure, formal logic, and certain dilemmas which occurred in the work process.

The drawing process is very long, sometimes, on the larger sized drawings, lasting even several months. From the start, most of the drawings had a clear paper space around the drawn area, resembling the printmaking margin. This margin was a decision made in order to present the drawn area as least illusionistic as possible. The goal was to make the drawings not so much about what they show, but about the drawing practice itself and the drawings as products of labour. The focus was put on labour, the only element of singular 'human person'²² left. The drawing process starts and ends in clear processual

conditions. Each line, shape and structure was produced as a conscious act of labour, especially because it was repeated several times throughout the drawing. In order to keep my handwriting as obscured as possible,²³ they were made using Rotring Isograph drawing pens of same thickness, a drawing tool which does not allow much personalisation of the drawn lines.

The first (Citysample) drawings from this cycle were small in size, 25 x 25 cm (Figures 2 and 3, p. 176-177). First exhibited in the Cityscape exhibition in 2015, they were presented solely as reference points to each of the exhibited paintings. In time their production became a regular practice, and their size and complexity grew through a path of small steps. Each next drawing moved the boundary a half-step further and allowed for the next one to emerge. After the first small size drawings, their structure was expanded on the next drawings to two fields, and then to four fields. Those drawings allowed experiments with symmetry and rotation.

The work titled Morgenspaziergang followed the first small sized drawings, opening new paths (Figure 4, p. 178-179). Morgenspaziergang²⁴ is a six-piece drawing created in 2015, consisting of six almost identical pieces, 60 x 100 cm each. Each of the single pieces consists of repetitive structure of fifteen 20 x 20 cm squares, depicting a sample of a photo of the foliage of unidentified woods. The title of the work was borrowed from the homonymous song from Kraftwerk 1974 album Autobahn. The song evokes a pseudo-natural environment through the use of electronic sounds. The initial idea was to create a six-meter-long structured stripe, which could be walked by, a drawing – ambience, consciously limited by its size.

Morgenspaziergang was the first large format drawing I made in this series, the first drawing which depicted ‘natural’ environment, and the first drawing through which I openly questioned authorship. Even though the work is presented as a polyptych, essentially, I view it as both, a large format singular work and a cluster, consisting of six almost identical drawings. The six drawings, viewed separately, could be seen as copies, but put together, they act as ‘building blocks’. Also, this was the first work involving several people, who invested their time and energy in its drawing process.

The use of samples I previously used for the paintings was taken further by expanding the drawing format, and then to the point in which two or more samples were combined on the same drawing. That step, unlike the previous ones, was totally independent from the paintings, and introduced an autonomous path for the next drawings.

The subject of urban space is dominant throughout the series. The introduction of the Cities for Rich People hashtag (#CFRP in painting opened possibilities of juxtaposition. Similarly to rebuses, separate paintings made from different samples were put together, creating ambiances like Waterfront or Beach. This was inspired by the aesthetics of gated communities, closed areas built for wealthy people, designed to fulfil all the prerogatives of a posh environment. Luxurious apartment blocks built just across a sandy beach, palm tree groves planted just outside a high-rise architectural complex, moisty green fields stretching across the view from a generic looking residential towers – I shifted the focus from uniform architectural structures to imagined pattern- based ambiances.

In the #CFRP drawings the samples were combined, in pattern-like structures not through juxtaposition of separate drawings consisting of different samples, like with the paintings, but within a single work. The drawings like #CFRP River, #CFRP Beach or #CFRP Cloudcity were the results of such combinations (Figures 5 and 6, p. 180-181).

The mode I work in is in part self-centred. Works grow around other works. Process-led painting or drawing creates its own rules and by following these rules I make further decisions. But, in part it relates to a randomly formed constellation of sources. These sources appear suddenly sometimes, in the form of a fashion show, concert or a movie scene I just saw. For example, the music video for Roisin Murphy's song 'Ten Miles High' released in 2016, was a great inspiration for the symmetrical structures of the new drawings. Contemporary non-places in which Murphy dances and sings in the video, coincided with the subject of the cycle, and triggered the creation of several new drawings. Similarly, the mesmerising music video for Jamie xx's song Gosh, directed by Romain Gavras in 2016, was shot in a contemporary non-place, a simulacrascape in China.²⁵ It became an important reference point and a few years later, a direct inspiration for the What Are You Looking At? video.

3. THE HUMAN PERSON

All the Cityscape and #CFRP works, regardless of their medium, are positioned around the idea of questioning classical authorship, as formulated in Barthes' 1967 essay 'Death of the Author'. The position of the author in the modern sense was the one of the author as a human person, the author as a singular character. 'The author is a modern figure, a product of our society insofar as, emerging from the Middle Ages with English empiricism, French rationalism

and the personal faith of the Reformation, it discovered the prestige of the individual, of, as it is more nobly put, the “human person”. It is thus logical that in literature it should be this positivism, the epitome and culmination of capitalist ideology, which has attached the greatest importance to the “person” of the author.’²⁶

In all the works in the Cityscape series, and consequently in the drawings, I tried to leave as fewer personal marks as possible. The selected images, from which the process starts from are not personal photos from direct experience, but cropped details of the found JPEG files downloaded from the internet. While I was searching for adequate images on the internet, the search was more about the certain qualities of architecture and of the photo, and the least about the context the photo was taken in, or the author of the photo. The drawings I later made are colourless, without visible handwriting, having an aura of a technical product. The use of a technical pen, Rotring Isograph, is a calculated step towards a line which has no direct relation to the pressure of the hand, as would be the case with, for example drawing pens. Nevertheless, the ‘human person’ is built into them by hand-crafting through the labour of manual production. This labour leaves traces in the form of unwanted inaccuracies and irregularities. Unwanted, but inevitable inaccuracy became one of the key elements of these works.

On two occasions, in 2017 and 2021, I produced two animated videos by overlaying the squares, digitally cut from the drawings. The *animation* was the consequence and only possible because of the ‘human element’. The irregularities created in the drawing process generated a motion. Not so much a real motion more of a flickering. If the drawings were robotically made and faultless, the product of converting the drawings to a ‘motion picture’ would be a completely motionless picture.

4. THE HANDWRITING

Drawing process through which the Cityscape and #CFRP drawings are made is based on labour.²⁷ As Isabelle Graw wrote in her text ‘The Value of Liveliness’, in our economy, described as ‘network-capitalism’, *labour* is built into and stored in a work of art. A drawing, for example, has the capacity to ‘seemingly’ capture living labour. Graw adds: *seemingly* ‘to emphasise that the artist does not have to actually touch his or her canvas for this indexical effect to occur.’ This analysis of the ‘labour’ element in painting in her text is tightly connected to vitalist projections on painting (i.e. drawing), even in such practices, as she

writes, as Sigmar Polke's or Gerhard Richter's, which have an 'anti-subjectivist' and 'anti-vitalist' agenda.

The idea that a work of art, be it a painting or a drawing in this case, captures time and energy of its creator, leads to another problematisation of *handwriting*, or the 'human touch'.²⁸ In the example of Frank Stella's Black Paintings, Graw points out his break from the view of the artist as a 'terrifically sensitive person.'²⁹ 'Stella adopted the attitude and habits of an industrial worker,' Graw writes, 'and sought to free his work of "human touch".'³⁰ The conceptual basis and technical procedure for the making of Cityscape and #CFRP drawings to a large extent limit the expressions of my personality. The handwriting is almost totally cancelled, and the only visible traces of 'human touch' are the unwanted but inevitable errors. Calculating with how much errors is too much is also part of the artistic process, and some of the drawings I deliberately destroyed based on such criteria.

Another factor which adds to the problem of identity and authorship in my works is a specific kind of visual noise which occurs in repetitive structures. The patterns which emerged from the repetition, mirroring or rotation of the samples create such a noise. That noise distracts the viewer from the image of the drawings and underlines the facelessness of such urban or natural structures. Also, this noise acts as a filter which additionally conceals the author's handwriting.

4.1. The 3Ds

The grid, profusely used in the paintings and drawings, became a challenge with the first attempts to make 3D objects from the existing body of works (Figure 7, p. 182). The geometry of the gridded Cityscape structures, when analysed as spatial system, created blind spots and glitches, impossible for simple conversions into 3D works.

The renaissance concept of perspective, which projects the image of the world onto a flat plane, operates with three elements – picture plane, horizon and vanishing point. The space in classical perspective painting is shaped like a truncated pyramid laid on its side. The objects, further away from the painting they are the smaller they appear, but the size of the space gets bigger and bigger. Putting several square shaped images next to each other on the picture plane creates a gridded orthogonal pattern, but the space 'behind' the picture becomes problematic when imagined in Euclidean terms. The sides of the pyramids collide and create an overlap, so the path which led to the 3D works went in another direction.

Since the Cityscape exhibition in 2015, the open question lingered around the paintings and drawings on how to create 3D structures based on the premises derived from the 2D works. As with the relation between paintings and drawings, a certain logic had to be found in order to avoid the 3Ds being only about the spatial illustration of the paintings/drawings' image.

The flat plain of a painting contains a projection of an image. In the case of a classical painting, the projection, with more or less the accuracy similar to analogue photography, transfers the lines and shapes, shades and colour from the outside world onto the canvas. In the case of the Cityscapes, the grid creates a glitch in such projections. The 'lines' of the grid, dividing edges of the samples, bind them together in a way it is impossible to do in the physical space. This incompatibility created a puzzle which needed to be solved in order to transfer the 2D works into 3D forms. At the same time the 'grid problem' became a certain *raison d'être* for the 2D works from this cycle – those paintings and drawings could only exist in such a form.

The solution for creating the 3D forms was found in the drawings. Digitally converting them to vectors allowed for each shape to become a plane, and for each plane to become a form with a certain fixed thickness. In collaboration with a young Belgrade based architect, Luka Ilić, the first two 3D shapes were produced following certain predesigned limitations.

They were materialised as SLS prints of small size (Figures 8-10 p. 183-185). The first one, Cityscape XIII, Curved, was produced as a 3D print, and later casted in polyester and bronze. It was made following a painting Cityscape XIII, which had the same rotating sample structure. The rotating samples were introduced firstly in some of the drawings and then in the painting in order to create 'centres of gravity' within the image. Linear repetition from the earlier works created a continual endless structure, cropped by the physical edges of the painting or drawing. The rotations fixed certain points on the drawing and encapsulated their composition. This was a familiar but interesting experiment which, at the end, led to the 3D model of similar structure. During its making, the flatness of the model became an obstacle, and in the final version the model was curved in order to emphasise its three-dimensionality. The conversion of drawn shapes to thicker planes basically only fattens the drawing. Interestingly, the mild curving was possibly the only free gesture that I deliberately made in the entire series by that time.

The next 3D model was created almost a year later, in January 2021. The parameters of the first 3D shape were the same, but the shape itself was made

thicker and the curve was emphasised even more. The second 3D print was produced only as an SLS print, not being casted in other materials due to its complexity and the character of its surface.

CONCLUSION

The paths which led me from one work to the next were in most cases leading to the unknown, even when those paths were walked in small steps. The basis for the whole series was in painting, and all the decisions I made while working in other media were based on the logic principally established in the paintings. The drawings, which I primarily focused on in this text, were firstly made following the paintings, but in the process the drawings became an independent basis for 3D objects. In that sense, I see the Cityscape series as ongoing process-based research, with open possibilities on each side.

The complexity of the subject of urban environment leads me further to topics of another kind. The social relations in such environments and the relations between the positions of power and those of the exploited became my primary focus after the 'Waterfront' diptych (Figure 11, p. 186-187). Under the #CitiesForRichPeople hashtag I started exploring the possibility of juxtaposed images to capture those topics. I found the connections between the samples of urban and natural environments especially intriguing, becoming aware of an internal symbolism or a specific kind of meaning such links can create.

As with the urban samples, the natural ones are also devoid of direct human presence. The human presence is an element I took upon myself as a manufacturer of the works. The work process in the Cityscape series is an almost mechanical procedure with a precalculated minimum of my personal traces. It turns out, contradictory to my initial intention, that those traces are a crucial element of these works, the works about humans, without a single human in sight.

NOTES

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- 1 'Stop Painting, An Exhibition by Peter Fischli,' Fondazione Prada, accessed August 3, 2021 <https://www.fondazioneprada.org/project/stop-painting/?lang=en>.
 - 2 Fondazione Prada, 'Stop Painting, An Exhibition by Peter Fischli'
 - 3 'However, what interests me here is a peculiar version of this process - what may be termed "retrograde remediation": instances of remediation distinguished by some inherent discrepancy, by a pronounced practical/technological inadequacy of one ("older") medium to fully assimilate certain aspects of another,' Pavle Levi, *Kino drugim sredstvima*, (Muzej savremene umetnosti, Filmski centar Srbije, 2013), 66.
 - 4 In some cases, after the paintings were finished I got a chance to visit some of the cities I painted, and those experiences were very uncanny, and demand a separate elaboration.

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- 5 Christian Norberg-Schulz, *Genius Loci, Towards a Phenomenology of Architecture*, (Rizzoli, New York, 1979), 6.
- 6 Hito Steyerl, *The Wretched of the Screen* (Sternberg Press, 2012)
- 7 Steyerl, *The Wretched of the Screen*, 32.
- 8 James Parkes, 'Joris Laarman's 3D-printed stainless steel bridge finally opens in Amsterdam,' *Dezeen*, 19 July. 2021, accessed 20 July, 2021, <https://www.dezeen.com/2021/07/19/mx3d-3d-printed-bridge-stainless-steel-amsterdam/>.
- 9 'A world where people are born in the clinic and die in hospital, where transit points and temporary abodes are proliferating under luxurious or inhuman conditions (hotel chains and squats, holiday clubs and refugee camps, shantytowns threatened with demolition or doomed to festering longevity);' Marc Augé, *Non-Places, Introduction To An Anthropology Of Supermodernity* (London, New York: Verso, 1997), 78.
- 10 '[...] sometimes I think the world around us is generally reduced to just a handful of archetypal images: a rainforest, Eastern European city, Asian city, etc. Our world is built from stock photos: we repeatedly consume and reproduce the same dozen images.' Anastasiia Fedorova, M.E.S.H. 'The New Easthetic,' in *PSYOP: An Anthology*, ed. Karen Archey and Metahaven (Stedelijk Museum Amsterdam, 2018), 45.
- 11 MySpace was founded in 2003, Facebook in 2004, Twitter in 2006 and Instagram launched in 2010, just to mention a few. Source: Google search, 20 July, 2021.
- 12 'Through an initiative merging the physical space (real world) and cyberspace by leveraging ICT to its fullest, we are proposing an ideal form of our future society: a "super-smart society" that will bring wealth to the people. The series of initiatives geared toward realising this ideal society are now being further deepened and intensively promoted as Society 5.0.' An annotation explains the reasoning behind the term Society 5.0 as follows: '(Society 5.0 is) so called to indicate the new society created by transformations led by scientific and technological innovation, after hunter-gatherer society, agricultural society, industrial society, and information society.' Hitachi-UTokyo Laboratory, Society 5.0, A People centric super-smart society, (Springer, Singapore, 2020). <https://link.springer.com/book/10.1007%2F978-981-15-2989-4#editorsandaffiliations>, xi.
- 13 Hitachi-UTokyo Laboratory, *Society 5.0, A People centric super-smart society*, 126, 127.
- 14 Malcolm Andrews, *Landscape in Western Art* (Oxford University Press, 1999), 5.
- 15 Andrews, *Landscape in Western Art*, 20.
- 16 The Metropolitan Museum of Art's website, on the artworks' page dates the painting in 1599-1600, and the catalogue published in 2003, accompanying the exhibition El Greco at the Met and National Gallery in London dates it about 1597-1599, 233.
- 17 The Metropolitan Museum of Art, 'View of Toledo'. Accessed 20 July, 2021. <https://www.metmuseum.org/art/collection/search/436575>.
- 18 David Davies, ed., *El Greco* (National Gallery Company London 2003), 233.

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- 19 Davies, *El Greco*, 234.
- 20 Mikołaj Gliński, 'How Warsaw Came Close to Never Being Rebuilt,' *Culture*. pl, February 3, 2015. Accessed 20 July, 2021. <https://culture.pl/en/article/how-warsaw-came-close-to-never-being-rebuilt>
- 21 'Entire townships and villages appear to have been airlifted from their historical and geographical foundations in England, France, Greece, the United States, and Canada and spot-welded to the margins of Chinese cities.' Bianca Bosker, *Original Copies, Architectural Mimicry in Contemporary China*, (University of Hawai'i Press, Honolulu, Hong Kong University Press 2013), 2.
- 22 Roland Barthes, 'Death of the Author,' *The Centre For Programmes In Contemporary Writing*, University of Pennsylvania. Accessed July 20, 2021. <https://writing.upenn.edu/~taransky/Barthes.pdf>.
- 23 Isabelle Graw, 'The Value of Liveliness' in *Painting Beyhond Itself, The Medium In The Post-Medium Condition*, Isabelle Graw, Ewa Lajer-Burcharth (ed.), (Berlin: Sternberg Press, 2016), 79.
- 24 In 2015 I was invited to participate in a group exhibition titled *Ferne Nähe – Contemporary Art from Middle-Europe and Danube Countries*, curated by Carl Aigner, at the time, the director of Landesmuseum Niederösterreich. The theme of the exhibition was *A Walk Through Nature*, and the exhibition was meant to be an overview of artists positions towards natural environment. This invitation was the initiator for a large format drawing titled *Morgenspaziergang*.
- 25 'Gosh' video was shot in Tianducheng, a disused tower block estate at the edge of the Chinese city of Huangzhou. *The New Easthetic*, Anastasiia Fedorova, M.E.S.H., MetaHaven, 44.
- 26 Roland Barthes, 'Death of the Author,' *The Centre For Programmes In Contemporary Writing*, University of Pennsylvania. Accessed 20 July, 2021. <https://writing.upenn.edu/~taransky/Barthes.pdf>.
- 27 Graw, 'Painting beyhond Itself,' 82.
- 28 *The Force of the Impersonal Brush, Reflections of Frank Stella's Early Work, Anti-subjective Procedures and Self-Active Paintings*, Isabelle Graw, *The Love of Painting, Genealogy of a Success Medium* (Berlin: Sternberg Press, 2018)
- 29 Graw, *The Love of Painting, Genealogy of a Success Medium*, 89.
- 30 Ibid.

BIBLIOGRAPHY

- Graw, Isabelle and Ewa Lajer-Burchard, eds. *Painting beyond Itself, The Medium in the Post-medium Condition*. Berlin, Sternberg Press, 2016.
- Graw, Isabelle, Daniel Birnbaum, Nikolaus Hirsch ed. *Institut für Kunstkritik, Hochschule für Bildende Künste, Städelschule, Frankfurt am Main, Thinking through Painting, Reflexivity and Agency beyond the Canvas*. Berlin, Sternberg Press, 2014.
- Graw, Isabelle. *The Love of Painting, Genealogy of a Success Medium*. Berlin, Sternberg Press, 2018.
- Augé, Marc. *Non-Places, Introduction To An Anthropology Of Supermodernity*. London, New York, Verso, 1997.
- Andrews, Malcolm. *Landscape in Western Art*. Oxford University Press, 1999.
- Barthes, Roland. 'Death of the Author,' *The Center For Programs In Contemporary Writing, University Of Pennsylvania*, Accessed 20 July, 2021. <https://writing.upenn.edu/~taransky/Barthes.pdf>.
- Hitachi-UTokyo Laboratory. *Society 5.0: A People-centric Super-smart Society*, Springer Open, 2020. <https://link.springer.com/book/10.1007%2F978-981-15-2989-4#editorsandaffiliations>.
- Steyerl, Hito. *The Wretched of the Screen*. Berlin, Sternberg Press, 2012.
- Levi, Pavle. *Kino drugim sredstvima*. Beograd, Muzej savremene umetnosti, Filmski centar Srbije, 2013.
- Parkes, James. 'Joris Laarman's 3D-printed stainless steel bridge finally opens in Amsterdam,' *Dezeen*, July 19, 2021, accessed July 20, 2021. <https://www.dezeen.com/2021/07/19/mx3d-3d-printed-bridge-stainless-steel-amsterdam/>.
- Bosker, Bianca. *Original Copies, Architectural Mimicry in Contemporary China*. University of Hawaii Press, Honolulu, Hong Kong University Press, 2013.
- Davies, David, ed. *El Greco*, The Metropolitan Museum of Art, New York, National Gallery Company, London, 2003.
- Fondazione Prada. 'Stop Painting, Exhibition webpage,' Accessed 25 July, 2021. <https://www.fondazioneprada.org/project/stop-painting/?lang=en>.
- Gliński, Mikołaj. 'How Warsaw Came Close to Never Being Rebuilt,' *Culture.pl*, 3 February, 2015. Accessed 20 July, 2021. <https://culture.pl/en/article/how-warsaw-came-close-to-never-being-rebuilt>.
- Metropolitan Museum of Art. 'View of Toledo,' Accessed 19 July, 2021. <https://www.metmuseum.org/art/collection/search/436575>.
- Norberg-Schulz, Christian. *Genius Loci, Towards a Phenomenology of Architecture*. Rizzoli, New York, 1979.

POST-TECTONIC TRANSLATIONS: DECODING POETICS OF ARCHITECTURAL DETAIL

A B S T R A C T

The research discusses the phenomenology of drawing details in architecture, approaching the drawings as a medium that carries poetic and technical aspects of architectural design and building. With digital technology advancements, a whole new set of terms and practices appeared that can be related to the changed notion of detailing in architecture. Addressing the problem of translation of architectural concepts into material practice, the research proposes a method for decoding the aspects of poetics of construction by overcoming the conventional representation techniques related to construction drawing, and introduces the combination of methods of interpretative 3D modelling and digital assemblage.

By using tectonic theory as a theoretical framework, the research aims to define a new post-tectonic standpoint that can offer a unique perspective on the relation between design process, production and representation in architecture in the current moment. The new perspective outlines the poetical protocols in individual conceptual narratives of the selected authors, approaching the details in their work as a form of representational discursive images that could be interpreted as a microscale of macro ideas in the field of architectural design. The method of research is interpretative modelling that combines the analogue and digital techniques, and analytical drawings of the examples related to the discussed topic. By combining the digital and analogue approach, the aim is to offer a new perspective in the form of the dialectical model for interpretation of architectural detail that could offer new insights into contemporary tectonic discourse through which variant states of the poetical and technical design thinking could be decoded.

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INTRODUCTION

The attitude to the conditionality of parts and a whole is one of the dominant ontological and metaphysical definitions of details concerning the architectural idea, which extends through different periods and is still relevant in today's architectural discourse. This attitude arises mainly from the influence of Aristotle's philosophy of the whole which is greater than the sum of its parts. It could be also closely related to the notion of decor which is to be found in Vitruvius' theory that could be defined as an appropriate shape and the flawless appearance of the building, composed of parts that are properly selected.¹ For him, the principle of *décor*, which refers to the conformity of the form of a work of art with its meaning, and in this case it could refer to both the function and the symbolic position of the detail to the whole. The relationship between the whole and the parts can also be understood as a relationship between the symbolic and the constructive in Alberti's theory. The influence of Aristotle's philosophy is recognisable in the domain of the relationship between form and matter, where the former is understood as an object of thought through the concept of lineament, and the latter as a subject of practical craft work through material.²

This theoretical standpoint still dominantly forms the notion of the detail in the contemporary context. In the book 'Principles of Architectural Detailing,' the authors Stephen Emmitt, John Olie and Peter Schmid talk about architectural detail through analogy with natural phenomena, where smaller elements inevitably form a larger whole, and vice versa. The mutual integration of elements through changing sizes of parts, different types of connections between parts and different forms can be considered key to the structure and harmony of everything that exists, including architecture.³ Accordingly, the integrity and character of each major work is related to the quality and composition of its individual smaller parts. Here lies the crucial theoretical predisposition which this research aims to elaborate. If everything can be essentially reduced to identical parts that build the greater whole, then it is understandable that the whole known world is the result of different combinations of individual elements that are brought into specific relations that result in the overall diversity of the created image of nature. However, the built form of architecture is determined not only by the technological efficiency of the applied materials, but also by the specific choices of architects regarding the applied material system, which can be influenced by the virtual and actual characteristics of the immediate environment.

The potential of architectural details, as the subject of projected action, represents the moment where the architectural idea passes into the material reality of the constructed form.⁴ Although the design of details represents a technical and technological procedure, it does not imply exclusively working in the specifications of architectural elements and joints and defining the guidelines for actors in the building process, but also the act of selection and emphasis of a certain part of the architectural project. However, the design of details is inseparable from the reality of architectural practice, what distinguishes one practice from another is precisely the details to which architects choose to devote themselves. All other details that are not the subject of special design attention are most often details that are standardised in the construction industry, such as a section of plasterboard wall or sandwich panels, and therefore can be called ‘standard details.’⁵ As such, they have the same ways of making connections and combinations of materials, which is why they are taken over as catalogue solutions and standards.

The issue of details in the design process is observed from one of the architects who very often denies the importance of details - Rem Koolhaas. Koolhaas states that the connection between the roof and the wall cannot be an architectural idea, and that two parts of an architectural object must not generate a third.⁶ For him, detailing in modern practice is a technical issue of joining, bending, assembling and gluing, which implies a sudden change of the constructive system. For Koolhaas, the detail represents a transmissive form of connection, which means that design on a larger scale is connected with the consideration of architectural elements (wall, floor, roof, ceiling, windows, doors, stairs, etc.) that conceal various changes and developments within the practice and as such affect the production of architecture.⁷ However, according to the description of the exhibition ‘Elements’ at the Venice Architectural Biennale in 2014 that Koolhaas curated, the architectural parts and fragments used to be ‘mute’⁸ and concealed the information architectural practice that can indicate ‘cultural habits’ that have been firmly formed around individual elements of architecture in space creation techniques.⁹ In this regard, Ford interprets this approach to detail as an invisible, seamless fusion and neglect of the importance of detailing, as remnants of the modernist pursuit of formal consistency, whose technical feasibility despite all innovations, remains questionable.

This being said, the following research tends to outline one of the possible alternative readings of the details, based on the theory of Edward R. Ford’s on the existence of the autonomous details and Manuel DeLanda’s interpretation of assemblage theory. The research also expands on the theoretical standpoints

stated in the second chapter of the doctoral dissertation of the author of this paper titled 'Architectural detail in contemporary tectonic practice: Methodological-interpretive model' in which the tectonic, methodological and interpretive aspects of architectural detailing are described in relation to the specific approaches to detailing in various contexts of creating architecture.¹⁰ For this paper and the thematic issue of the journal dedicated to the question of drawing in architecture, some of the statements are reconsidered and critically re-examined from the point of assemblage theory, offering one of the possible perspectives for understanding the detailing in the light of contemporary technologies. By combining digital and analogue techniques, the research proposes one possible drawing strategy to overcome the dominant whole-parts theory, and introduces 3D interpretative modelling, as the technical and poetic strategy of analysing the representation of drawings in architecture, and a method to decode the relations between the intuitive, innate and spontaneous aspects and rational, intentional and overt aspects of building.

1. INTERPRETATION OF DETAILING

Contemporary tendencies in terms of norms and standards impose rationality in dealing with different technical issues of building, such as of thermal expansion, insulation and static normative of the bearing structure, as well as the creation of thermal comfort with certain facade types.¹¹ Starting from Ford, who states that it is necessary to critically consider the idea of the whole as the dominant postulate in the process of detailing, and introduces the term 'autonomous detail,' it is stated that this idea of autonomy of details is a significant point for reimagining the whole-parts relation. The autonomy of detail refers to a detail or a building element that does not comply with the overall design concept, and even in some cases works as a subversive element to the main idea. With this in mind, it is necessary to offer a new area of reading the articulation and materialisation of architectural concepts by overcoming the strict limitations imposed by the rationality of architectural production and naivety of the design process, which juxtaposes the individuality of the parts in the name of the uniformity of the whole. However, the availability of technologies and financial resources influence significantly the decision-making process regarding solving of architectural details at the level of engineering and materialisation.¹² Designing details implies careful organisation, cooperation, exchange and coordination of all actors who participate in the process of building the facility through their professional contributions and skills if the intention is to materialise design ideas consistently and efficiently. Tensions between conceptualisation and realisation

of the idea most often occur in these relations, in which there is a break in continuity under the influence of modern ways of producing architecture and the complexity of the construction process, which reduces the role of the architect to conventions in the field of drawing. This consequently dismisses the idea of reaching the point of the wholeness of an architectural project, as the project as an object of design is never fully observed or examined as a whole on the level of architectural drawing. Thus, the absolute control of the main architect, master builder, is rendered as obsolete. This being said, we can observe two Deleuzian concepts on the social ontology that DeLanda expands somewhat in the field of architectural tectonics and assemblage theory.¹³ Even though their standpoints are related to the question of society and institutions, it is applicable in the domain of tectonics of architecture, as it is questioning the overall imposition of the order and organisation of the abstract ontological relations between the whole and its parts, actors and networks in the domain of the construction of an architectural object.

The first concept is ‘emergent properties’ described as the specific properties of the whole that are not present in the individual parts, which is also supported by the relations of exteriority and interiority.¹⁴ These relations determine the interaction between the parts, where the first retains a relative autonomy, and the second are parts which are solely defined as being parts of the greater whole. The degree and complexity of the interaction networks determine the coherence of the whole, and the ‘density’ is one of the emergent properties that could imply the level of indirect and direct relations among the parts.¹⁵ Deleuze and Guattari do not state that the entity of the whole exists on transcendental level above its parts, for example, the very term ‘individual’ is not bound by the scale in its very notion. DeLanda defines the character of individual as ‘any entity that is singular and unique’ and, as such, it has no ‘preferential affinity for a particular scale.’ The assemblage is, in that sense, ‘[...] a multiplicity which is made up of heterogeneous terms and which establishes liaisons, relations between them [...]’.¹⁶ The unity of the assemblage is based on co-functioning and sympathy and it could be parameterised, according to DeLanda, through the degree of the territorialisation and deterritorialization and the degree of coding and decoding. The first refers to the spatial boundaries of the whole and the degree of the homogeneity of the components. The members of this group impose local norms and rules that define the constraints affecting the level of autonomy of the parts. The second refers to language in fixing the identity of the social whole, or in this case, the tectonic whole. Based on those certain relations of exteriority can be noted that constitute three principles of association that form the subject - contiguity, causality, and resemblance.

Reflecting on the aforementioned concepts, the post-tectonic interpretation of the architectural detail could be interpreted as an attempt to demark the hidden codes embodied in the detailing of the specific authors. The design of details requires selectivity in the presentation of information in the process of solving numerous technical problems and requirements, where the solutions can be more or less visible. The invisibility of the way of solving technical problems at the project level is categorised by Ford as an ‘abstract detail,’ while the visibility of the elements is categorised as an articulated detail.¹⁷ Namely, what could be found in today’s practice is that most details are solved as abstract, as the question of the conventional catalogue solutions, while only a small number are articulated. It is this very observation that tells us that the process of selecting the details to design is not arbitrary. According to Ford, this approach to design is done to create a bigger narrative, that is, a ‘unity of vision.’¹⁸ Many of these narratives often hide programmatic, constructive or spatial aspects of the architectural idea, but the most important for understanding the architectural detail are those that recognise certain aspects of the assembly of an architectural object, further explaining the way of construction and relation of parts to the whole. Constructive elements are an inevitability of an architectural object, but their concealment is directly related to the creation of narratives about a certain context and tradition.¹⁹

2. SMALL-SCALE POETICS AND LARGE-SCALE NARRATIVES

Hiding the complex technical reality of the realisation of architecture is often conceptually motivated by the attitude towards technology and the ideology it implies. American-Iranian designer Nader Tehrani draws a parallel between linguistics and architecture, and believes that the distance between the designer of details and the process of realisation is similar to a writer who is allowed to use words that are not necessarily related to the alphabet that builds those words.²⁰ Similarly, Ford states that undoubtedly different approaches to detail, which existed in the history of architectural practice, were possible thanks to new technologies, but that they were not necessarily guided by this technological progress, and that they are more the result of aesthetic than technical characteristics. The difference between the process of drawing architecture and the process of building architecture caused the weakening of the architect’s influence on the execution process, where the detailer is in charge of drawing based on the precision of specifications and materialisation of the image. This separation consequently relativises the importance of details by contractors and other actors in construction. The changes and replacements

of materials and details are seen as triviality, as long as the effect achieved by applied techniques is close to the architect's intention, which neglects the importance of the tectonic thinking in architecture.

Tectonic concepts, in which the relations of construction, cladding and materials overlap with the architectural idea, overcome the simple utilitarian nature of the elements of the structure and give them a new meaning, which is especially noticeable at the level of scale of details. Together with the drawing as one of the methods of designing the details these specific types of architectural drawings can be understood as a type of trace, a visual representation of the author's imagination.²¹ It is a type of fragmented set of information which indicates the processes of disassembly and assembly of matter, with the idea that the imagined architecture is understood as a whole. Tectonic concepts overcome the simple utilitarian nature of the elements of the structure and give them a new meaning, which is especially noticeable when considering the scale of details.

As long as the image explains the character of the architecture, there are no restrictions on the themes used or the scale of their application. Thematisation, as a form of marking architectural objects can be caused by the social context or function of the object itself, and from their mutual relations arise three points by which iconography is understood as a strategy in signifying.²² 'Iconographic' detail is defined as ornamentality in the scale of architectural detail, which exceeds the rationality of its function, and the shaping of details takes on a narrative form whose goal is 'storytelling,' which is based on establishing more or less abstract references when designing space. The gap between architectural theory and practice is based on the different approach to representation and symbolic expression, and on the other side to the problem of applied techniques and notion of usefulness, hence the very materiality of detailing. This gap is most noticeable in the domain of the tectonics of the facade envelope,²³ which in contemporary architecture becomes a layer that builds communication with the environment and transcends the ontological idea of border between inside and outside.

There are no lines and two-dimensional surfaces in architecture, they are part of mathematical abstraction because architecture is always in itself spatial, that is three-dimensional, even when it comes to the thinnest layer of colour.²⁴ The absence of a clear imprint of the internal structure and accentuating its constructive order or static potential, that is, the post-tectonic approach to architectural details. It can be understood as information based on which it is possible to read the intentions of the designer, whose idea of coherence may be

outside the form as a whole, a whole as an exclusively related to one project, a whole as an idea related to a typology of forms or even discipline itself. Layering and uncovering the hidden similarities and approaches to detailing and tracing spatial and timely distribution of the built forms through drawings becomes not only a method of construction, but also an assemblage per se.

3. DIGITAL ASSAMBLAGE - IN SEARCH OF THE DETAIL PATTERNS

The gap between the drawing and the final realisation of the architectural object offers the possibility to observe the design of the architectural detail as a process of alternating deviation and respect for conventions, which in architecture represent a form of safety and support. Drawing as a representation of an architectural idea, regardless of the level of indirectness in the statement, always precedes what will be realised as an architectural object. Based on this, the architectural drawing of details can be observed through two representational strategies that Robin Evans connects with the process of translating through architectural drawing in general.²⁵ The first is the technical strategy, which strives for pragmatic and exact in design and refers to the tangible material side of the object of work. The second is a poetic strategy that strives for the creative and intuitive, and it refers to abstract intangible characteristics. One implies tangibility, involvement, content, presence, and direct action, while the other implies distance, concealment, abstraction, mediocrity, that is, distance in action towards the object of design. Both representational options offer opportunities to explore methodological approaches, where moving away from concretisation offers more manipulative space for research through the medium itself, and vice versa. The fluidity of this transition represents the potential for alternately establishing a set of information on the materiality, construction and character of details and exploring the spatial and form characteristics of the architectural idea at the level of the tectonic whole.

The design of details, therefore, is a tool for reasoning about complex techniques of making, materialising, and hierarchy of elements through the act of discovering, subtracting, adding, and formulating. These methodological approaches consequently form the 'poetics of artifacts,'²⁶ which is a synthesis between accumulated knowledge and skills in the domain of shaping and signifying matter. This notion of details as accumulated knowledge should be further developed with the idea of defining the detail patterns, which are regarded as universal rules composed of elementary principles based on the transfer of

practical and scientific knowledge about the design of details.²⁷ Detail patterns represent ‘collected centuries of knowledge’ that the architect learns through experience and intuitively applies in practice during the work on the subject of design, but also in the analysis and evaluation of already realised architectural objects.²⁸ In that sense, detailed drawings are not just mere representations or visualisations of the idea of an architectural object at the level of conventional drawings in project documentation, but epistemological evidence of a form of connecting different knowledge that reflects the cultural context of architectural practice.

Post-tectonic reading of the details can be considered not as an addition of a special (non-essential) element to the structure, but as decoding of its function in transmitting effects on a deeper level of architectural form. In their analysis concerning what can be understood as ornamental dimension of architectural detail, the act of detailing cannot be identified with a specific element, but with the practice of signifying an architectural object on several levels whereby formal coding of certain architectural elements is performed in different scales, at different depths and scopes, to achieve a certain sensation. This would mean that regardless of the limitations of the material and the functional goals, the symbolic motivation is in itself formative and is loaded into the matter by its very shaping by a detailer. Jörg Gleiter believes that certain architectural expressions become ornamental when they are technologically and functionally outdated, thus losing their symbolic function in the representation of progress.²⁹ This could be once again related to revisiting the concept of *décor*, and based on that, it can be established that the architectural detail acquires the meaning of the ornament when the previous rational and symbolic content is present at the level of the surpassed form, which simultaneously stands in ‘critical tension’ with the current symbolic meanings of the details. Therefore, we can talk about regimes of shaping the architectural form at the level of the territorialisation and deterritorialization of its parts and the whole, which do not strive for the functional justification of detailing, but its symbolic specificity and signification of the object of architecture.

Bearing in mind that the theory of assemblages questions the very notion of the whole, further research analyses a portfolio of seven architects published in the *Architectural Record* magazine in a series of articles between 1963 and 1966. These portfolios, which consisted of sixty details from various projects, are recognised as crucial in the work of the selected architects at the time, which was also marked by the changes in tectonic practice and representation of architectural detail as a theme in architectural circles.³⁰ Seven portfolios

of architects Mies van der Rohe, Marcel Breuer, Philip Johnson, Minoru Yamasaki, Walter Gropius, Gyo Obata, and Eliot Noyes were analysed based on the original material published in the mentioned series of scientific articles. The first iteration of modelling and analysis of individual approaches was done for the purpose of the aforementioned doctoral thesis, where the individual projects and authors' methodologies were thoroughly examined.

For the purpose of this thematic issue, the modelling strategies were revisited and re-examined once again, as a method to cross-reference the various methodologies of the architects and observe the portfolios through their synthesis. In relation to the previously defined aspects of assemblage and strategies for understanding architectural representation at the level of detail drawings, a presentation method in the form of digital assemblages is further defined as a method to decode the poetics and techniques of detailing, and map the autonomy in the design. As an instrument, the method of 3D interpretive modelling was used (Figure 1, p. 188), by which archival drawings of architectural details from selected portfolios were first digitised and then modelled in a 3D programme, and combined in order to map the possible overlapping on the poetic and technical level in space (different scale, types, material properties and scopes of published drawings was considered) and time (various periods and phases of the project realizations, both built and unbuilt projects were considered). In the next step, relations are established between the scale of the presented details and their relation to the representations of objects, with the help of which they are defined as fragments that speak in the absence of the whole. The whole in this case study emerges as a fluid notion, an emergent property, which is the result of the juxtaposition of parts different in scale, scope, and depth, and overcomes the level of the individual project by using the visual and spatial constellations to suggest variety of architects' approaches to detailing and imply certain autonomy of the form finding in the specific scale of design (Figures 2-8, p.189-195).

4. DISCUSSION

The decoding of the architectural idea through the tectonics of architecture takes place in changing conditions that impose the need for the constant decision making. It could be regarded as type of translation through which the definition of intentions on the manner, principles, and methods of realisation of architectural details in relation to technology takes place. The drawing of architectural detail has a special place in that translation because it is at the same

time a means of defining, elaborating, and perfecting the subject of architectural design, which directly communicates about the object that is composed, and the subject that composes. That is, the development of the design and building methodologies of setting the object into the reality. Here the three relations of exteriority of assemblage should be introduced, and those are contiguity, causality, resemblance, which represent a useful theoretical platform on the basis of which it is possible to research a methodological framework for the interpretation of architectural details. With this in mind, research, generation, and comparison of the development of detail patterns may indicate different methodological principles of detail design that have been applied or discarded in certain design approaches. The conclusions and the relations between assemblage aspects and the tectonic aspects of the interpreted details are combined and represented in the following table and are regarded as an outline to approach the interpretation of the drawings (Table 1, p.). These aspects are interchangeable and can be traced in each portfolio individually or can be used to compare the possible similarities and differences between the authors. The more detailed schemes could be developed, but regarding the scope of this paper, they are to be addressed in the future steps of the research.

Through the medium of drawing, the form of the whole is observed as a fluid thing, given representations at the level of assembly provide an opportunity to understand the new relations between individual parts beyond the idea of individual projects to which the details belong. The segments of different scales, bearing different abstract and exact information overlap in the virtual space, giving insight into similarities, repetitions, and differences that exist on the level of individual design approaches. Thus, on the basis of the degree of resemblance of the form language in a particular scale, depth, or scope, a certain level of homogeneity or heterogeneity emerges through the interactions among members constituting the tectonics of the details on the visual and technological level. The disintegration of the notion of the whole as a mediator between the architectural idea, the author, and the architectural detail throws a different light on the detailing, and it emerges as a form of material practice by which the meaning is imposed and disintegrated in the sense that the detail is no longer just a means for the realisation of architecture, but a mapping of poetics in a fluid state, in which the interactions of the assembled members follows the external appearance of the contiguity, causality, or resemblance. The column, window, beam, envelope, seam, or any other element of the tectonic narrative are fused together in the incoherent, and yet observable whole, while the digital environment allows the appearance to be stripped of the burden of gravity, pressure, tension, and scale.

These scaleless and forceless forms inform the observer of the potential of the theme as a method that ties different elements of various architecture projects together, revealing in that certain assembled way the representation of the unique design approach of the author. Thus, this method of post-tectonic drawing transcends its technical side and explores its potential in reading individual narratives as formless, or to be more precise, *wholeless* architectural languages. Observing its potential to act autonomously and subversively, and thus transcend the notion of the project as a whole, as a theoretical construct, the theory of assemblages translates into the subversive assembly of concrete particles in virtual space, consequently building new models as spatial, technological and poetic speculations. The exteriority of this *wholeless* speculations leads to a series of representations of details that reveal new materiality and post-tectonic structuring, which now resides in between virtual and actual, evident and concealed, concrete and intangible, pragmatic and intuitive, exact and abstract.

CONCLUSION

The notion of detail in this paper is presented on a semiotic level through narrative and signifying which are considered as design methods that form the theme as one of the main concepts that translate and transform the architectural concept and form a solid foundation in the context of a building. The interpretative 3D assemblages transcend the terms of ornament, symbol, texture, pattern, motif, iconographic and narrative detail, or technical and constructive drawing, and direct our line of thought towards its function of designating architecture in a specific scale. Decoding the details unrolls the influence of the communication factor in the domain of detailing, suggesting a return to the representative practice in design that revives the theme of *decor* through new concepts and thematization of architectural expression on a specific scale. This would mean that regardless of the limitations of the material and the functional goals, the symbolic motivation is in itself formative and is loaded into the matter by its very shaping by an architect, which the analysis of the portfolios showed in the most direct manner. Going back to Gleiter's thought that certain architectural expressions become ornamental when they are technologically and functionally outdated, the symbolic meaning of a tectonic group of elements constantly evolves regarding the scale and amount of their signifying by an author. Rational and symbolic content emerge at the level of the surpassed form, which simultaneously gives insight into the uniqueness of the applied design

methodology. Therefore, territorialisation and deterritorialization of the assemblage become the critical standpoint to reconsider the relationship between the parts and the whole, which do not strive for the functional justification of detailing, as predominant modernist thinking, but for its symbolic meaning and role in the changing notion of the whole and communication of architectural form in a wider context, overcoming the meanings of its own narration and storytelling. Detail drawings are consequently generative and analytical tools to understand and create the materiality of architecture and immateriality of the architectural concepts, as the translation of the virtual and actual is never fully perceivable and is often utterly contingent, regardless of the clear and conventional (rational) way of solving the technical side of the architectural detail. The advancement of digital technology and post-digital praxis of combining different approaches to media in design process and tools will only broaden the horizon of the possibilities that virtual materiality offers. This opens the various lines of thought to approach the topic of the changing materiality and representation techniques in architectural design of details. These are the potential new areas of research that will be one of the most challenging tasks to address, as the methodology of design becomes more inseparable from the very act of signification and demarcation of the material and immaterial, hidden behind the conventions and established forms of the representation within the architecture as a discipline.

NOTES

- 1 Vitruvije, *Deset knjiga o arhitekturi* (Beograd: Orion art, 2014)
- 2 Branko Mitrović, *Serene Greed Of The Eye: Leon Batista Alberti And The Philosophical Foundations Of Renaissance Architectural Theory* (Munich: Deutscher Kunstverlag, 2005)
- 3 Stephen Emmitt, John Olie, and Peter Schmid, *Principles of Architectural Detailing* (Oxford: Blackwell Publishing, 2004)
- 4 Ashley Schafer and Amanda Reeser, 'Defining detail.' *PRAXIS: Journal of Writing + Building* 1 (1) 2004, 4-6; Farshid Moussavi, *The Function of Form* (Barcelona: Actar, Harvard University Graduate School of Design, 2009)
- 5 Ibid.
- 6 Rem Koolhaas, *oma.com*. May 2014. Accessed September 2021. <https://www.oma.com/projects/elements-of-architecture>, according to, Edward Ford, 'The grand work of fiction: The detail as narrative,' *Architectural Design* 2014,2 6-35.
- 7 Ibid.
- 8 Koolhaas, *oma.com*.
- 9 Ivana Vingam, 'Detalji u arhitekturi: Arhitektura u detaljima,' in *Arhitektura detalja*, ed. Goran Vojvodić (Beograd: Univerzitet u Beogradu-Arhitektonski fakultet, 2019), 11-17.
- 10 Miloš Kostić, 'Architectural Detail In Contemporary Tectonic Practice: Methodological-Interpretive Model,' (University of Belgrade - Faculty of Architecture, PhD Thesis, 2021) 'Nacionalni Repozitorijum Disertacija u Srbiji.' <https://nardus.mpn.gov.rs>. September 30. Accessed December 15, 2021. <https://nardus.mpn.gov.rs/handle/123456789/18732>
- 11 Ford, 'The grand work of fiction,' 26-35.
- 12 Emmitt, Olie and Schmid, *Principles of Architectural Detailing*.
- 13 Manuel DeLanda, 'Deleuzian Social Ontology and Assemblage Theory,' in *Deleuze and the Social*, eds. Martin Fuglsang and Bent Meier Sorensen (Edinburgh: Edinburgh University Press, 2006), 250-266.
- 14 Ibid
- 15 Ibid
- 16 Ibid
- 17 Ford, 'The grand work of fiction,' 26-35.
- 18 Ibid
- 19 Emmitt, Olie and Schmid, *Principles of Architectural Detailing*.
- 20 Nader Tehrani, 'Foreword: A murder in the court,' in *Strange Details*, ed. Michael Cadwell (Cambridge, London: The MIT Press, 2007) vii-xii.
- 21 Miloš Kostić, and Vladimir Milenković, 'Contemporary Detail In Zoom-In-Zoom-Out Technique: God And Scale,' *Facta Universitatis* 15 (3) 2017: 307-316.
- 22 Michiel van Raaij, *Building as ornament: Iconography in contemporary architecture* (Rotterdam: na010 Publishers, 2014).

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- 23 Farshid Moussavi and Michael Kubo, *The function of ornament* (Barcelona: Harvard University Graduate School of Design, 2013)
- 24 Deplazes, Andrea. The importance of the material. In *Constructing architecture: Materials, processes, structures - A handbook*, edited by Andrea Deplazes, 19-20, Basel: Birkhäuser, 2005.
- 25 Robin Evans, *Translations from Drawing to Building and Other Essays* (London: Architectural Associations, 1997).
- 26 Marco Frascari, *Eleven Exercises In The Art Of Architectural Drawing: Slow Food For The Architect's Imagination* (Abingdon: Routledge, 2011).
- 27 Edward Allen and Patrick Rand, *Architectural Detailing: Function, Constructibility, Aesthetics* (Hoboken: John Wiley & Sons, Inc, 2016).
- 28 Ibid.
- 29 Jörg Gleiter, *Ornament Today: Digital Material Structural* (Bolzano: Bolzano University Press, 2012).
- 30 Miloš Kostić, 'Semiotics of architectural: Detail between rationalisation and representation of architecture,' *Serbian Architectural Journal* 10 (1) 2018: 59-70.

BIBLIOGRAPHY

- Allen, Edward, and Patrick Rand. 2016. *Architectural Detailing: Function, Constructibility, Aesthetics*. Hoboken: John Wiley & Sons, Inc.
- DeLanda, Manuel. 2006. 'Deleuzian Social Ontology and Assemblage Theory.' In *Deleuze and the Social*, by Martin Fuglsang and Bent Meier Sorensen, 250-266. Edinburgh: Edinburgh University Press.
- Deplazes, Andrea. The importance of the material. In *Constructing architecture: Materials, processes, structures - A handbook*, edited by Andrea Deplazes, 19-20, Basel: Birkhäuser, 2005.
- Emmitt, Stephen, John Olie, and Peter Schmid. 2004. *Principles of Architectural Detailing*. Oxford: Blackwell Publishing.
- Evans, Robin. 1997. *Translations from Drawing to Building and Other Essays*. London: Architectural Associations.
- Ford, Edward. 2014. 'The Grand Work Of Fiction: The Detail As Narrative.' *Architectural design*, 26-35.
- Frascari, Marco. 2011. *Eleven Exercises In The Art Of Architectural Drawing: Slow Food For The Architect's Imagination*. Abingdon: Routledge.
- Gleiter, Jörg. 2012. *Ornament Today: Digital Material Structural*. Bolzano: Bolzano University Press.
- Koolhaas, Rem. 2014. *oma.com*. May. Accessed September 2021. <https://www.oma.com/projects/elements-of-architecture>.
- Kostić, Miloš. 2021. 'Architectural Detail In Contemporary Tectonic Practice: Methodological-Interpretive Model.' University of Belgrade - Faculty of Architecture, PhD Thesis. 'Nacionalni Repozitorijum Disertacija u Srbiji.' <https://nardus.mpn.gov.rs>. September 30. Accessed December 15, 2021. <https://nardus.mpn.gov.rs/handle/123456789/18732>
- Kostić, Miloš. 2018. 'Semiotics of architectural: Detail between rationalisation and representation of architecture.' *Serbian Architectural Journal* 10 (1), 59-70.
- Kostić, Miloš, and Vladimir Milenković. 2017. 'Contemporary Detail In Zoom-In-Zoom-Out Technique: God And Scale.' *Facta Universitatis* 15 (3): 307-316.
- Mitrović, Branko. 2005. *Serene Greed Of The Eye: Leon Batista Alberti And The Philosophical Foundations Of Renaissance Architectural Theory*. Munich: Deutscher Kunstverlag.
- Moussavi, Farshid. 2009. *The Function of Form*. Barcelona: Actar, Harvard University Graduate School of Design.
- Moussavi, Farshid, and Michael Kubo. 2013. *The Function Of Ornament*. Barcelona: Harvard University Graduate School of Design.
- Pell, Ben. 2010. *Articulate surface: Ornament And Technology In Contemporary Architecture*. Basel: Birkhäuser.
- Picon, Antoine. 2013. *Ornament: The Politics Of Architecture And Subjectivity*. London: Wiley.
- Raaij, Michiel van. 2014. *Building As Ornament: Iconography In Contemporary Architecture*. Rotterdam: na010 Publishers.
- Schafer, Ashley, and Amanda Reeser. 2000. 'Defining detail.' *PRAXIS: Journal of Writing + Building* 1 (1), 4-6.

-
- Tehrani, Nader. 2007. 'Foreword: A murder in the court.' In *Strange Details*, by Michael Cadwell, vii-xii. Cambridge, London: The MIT Press.
- Vingam, Ivana. 2019. 'Detalji u arhitekturi: Arhitektura u detaljima.' In *Arhitektura detalja*. Ed. Goran Vojvodić, 11-17. Beograd: Univerzitet u Beogradu-Arhitektonski fakultet.
- Vitruvije. 2014. *Deset knjiga o arhitekturi*. Beograd: Orion art.

DISCOVERING THE HYBRID MODEL OF ARCHITECTURAL DRAWING AT THE BEGINNING OF THE XXI CENTURY

A B S T R A C T

Professional, as well as research framework of contemporary architectural design implies a field articulated by the development of information technologies. So far, it has represented an area of the most rapid exchange of opinions and ideas, being subjected to various interpretations and speculations in different phases of the architectural design process – from initial ideas to final architectural simulations and realisations. Radical changes in architectural thinking have directly reflected on the usage and ways of understanding architectural drawing in the architectural design process. Furthermore, this situation led to radical changes in the traditional process of designing the architectural space. In the context of understanding the relationship between the architect and the drawing as his/her only authorial work, this relationship is being usurped by the implementation of the computer software as an intermediary tool between the two. The introduction of software in the architectural design process influences the emerging forms of the architectural drawing, offering new possibilities such as direct, current and omnipresent manipulation, as well as a multitude of representational possibilities.

This paper problematizes the position of architectural drawing by examining its manifestations at the beginning of the twenty-first century as a consequence of the paradigmatic changes brought about by the digital revolution. Architectural drawing at the beginning of the century is disappearing in its traditional sense and is being replaced by different forms and roles in the architectural design process. Since the conducted research is observed primarily through the discipline of architecture, and more closely, through the field of visual arts, it will examine the role of drawing in the area of architectural representation. Additionally, the research results emerging in the form of a hybrid model of architectural drawing, will be discussed in terms of its creative potential and further explorative applicability within the field of architectural education.

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TWENTY-FIRST CENTURY,
DIGITAL PARADIGM,
VIRTUAL REALITY

INTRODUCTION

The emergence of information technologies in the 1990s has changed the way the work of art is being produced. This led to the creation of variable products and the use of parametricism in the architectural design process, which positioned the discipline of architecture within the digital framework and opened a spectrum of new possibilities in thinking about the visual language of architecture. The accessibility and variety of computer technologies have, once again, enabled to reconsider, reshape and expand the field of architectural design and research. This paper assumes that the drawing in the architectural design process, as a consequence of the digital shift becomes a versatile, multi-layered and hybrid tool, which has an increasingly important role in the field of architectural research. In the contemporary context shaped by the development of information technologies, the use of digital tools in architecture results in re-examining the creative relationship between thought processes that take place in the architect's mind and the material expressions produced by the architect's hand.

The initial hypothesis is that the digital technologies are influencing the way in which the architectural drawing participates in the design process and the process of representing architectural space by establishing different models of drawing. One of these models based on the methodology of transcribing the architectural space,¹ which includes the simultaneous use of drawing as a means of research and representation, develops a hybrid 'representationally-transcriptive' architectural drawing. Specified model combines the use of hand drawing techniques, everyday tools for documenting space and digital applications to simulate virtual reality experience used for perceiving the architectural space. In order to examine the relationship between traditional (analogue, manual, made by hand) drawing techniques and contemporary digital platforms, established methodology examines the possibility of creating a new visual language in architecture. The above-mentioned model of the architectural drawing is a result of a research art project developed in the Architecture and Visual Language postgraduate course during the 2016/2017 academic year. It has been further developed as part of the extracurricular course at the student workshop in Rijeka in 2018 and exhibited within the Modern in Belgrade (MuBGD) art and architecture project in 2019.

The first section of this paper will discuss the contemporary context of the architectural research and design practice with the focus on the role of the architectural drawing at the beginning of the twenty-first century shaped by the

development of information technologies and the use of digital tools. Furthermore, it will elaborate the consequences of the digital shift that took place at the end of the twentieth century, when numerous technological discoveries influenced the way of perceiving and understanding space as the basic architectural concept. Finally, this section will try to identify new ways of producing the architectural drawing and new, emerging roles of drawing in understanding and representing architectural space. The second section will present the established research methodology developed in the Architecture and Visual Language postgraduate course that shaped the hybrid architectural drawing that is being discussed, as well as its creative potential in the fields of research and exhibiting practice. The methodology will be explained within three phases of the project, describing the tools that are being used, drawing steps and final results, as well as possibilities of manipulating the obtained results. Additionally, it will focus on analysing the selected final drawing generated as a result of transcribing the interior of the National Library of Serbia in order to indicate the scope of its creative potential and explorative applicability. The third section of the paper will elaborate further the application of this methodology within the field of architectural education. Given that the entire process of architectural education can be considered as a particularly experimental procedure of mastering the skill of thinking about architectural space and using drawing as a tool for research and representation, this section will present a two-week student workshop in Rijeka in 2018. This implies a presentation and discussion on the workshop process and workshop results, focusing on the comparative analysis of three intently selected drawings produced by the students. The comparative analysis uses the selected cases that vary in subject, location of representation and technical virtuosity of drawing.

1. ARCHITECTURAL DRAWING AT THE BEGINNING OF THE XXI CENTURY: INFORMATION TECHNOLOGIES AND THEIR INFLUENCE ON THE VISUALITY OF THE ARCHITECTURAL LANGUAGE

Despite numerous technological discoveries and the rapid development of digital technologies in art and in different fields of architecture, the drawing remains the fundamental tool for communicating and representing crucial ideas and concepts in architecture. This implies not only its use in the architectural design process, but also its role in understanding and thinking about space. The long and rich evolutionary path of architectural drawings is closely related to the technological innovations that have changed the way of perceiving and understanding space as the basic architectural concept. Architectural drawing has always had several roles, three of which are dominant today. The first can

be named as the role of the informant, when the architectural drawing transmits information between different phases of design process and construction work. It can be thought of as a common language of all disciplines involved in the design and building process. The second role is the associative or collaborative role, when the architectural drawing embodies the thoughts of the architect and becomes an integral part of the design process, helping the architect to materialise all mental processes related to the design. The third role is the representational role, when the architectural drawing is a commercial product that follows the market needs and trends of design and building. As the focus of this paper is observed within the scope of architecture and visual arts, it will further discuss and examine the emerging representational role of drawing at the beginning of the twenty-first century.

For centuries the role of drawing as the architect's creative work had one aim, and that is to communicate the characteristics of the designed space. In that sense, during the twentieth century, drawing was dominantly used as the ultimate design product, most often taking the role of informant, and somewhat frequently the representational role. Until the paradigm shift, the research role of drawing was minimised to the initial conceptions of space which were presented and communicated in the form of the first drawings of space - sketches. With the development of society, its emancipation, the rise of avant-garde architecture, then the implementation of humanities and digital technologies into the discipline of architecture, the framework in which drawing plays a significant role is being expanded. The interweaving of digital and analogue tools, which can be classified as hybrid, emphasises research attributes of drawing - a shift in perceiving and using the drawing arises and accommodates it within the research corpus of architectural knowledge. From a historical perspective, in the greatest scope of its application, drawing represented a communicative apparatus between the architect and the builder, which has the role of transmitter of all the objective characteristics of the designed space that are necessary for its understanding and construction. Additionally, from the present perspective, it can be said that the relationship between the architect and the architectural space is not exclusively related only to the activity of designing a new or existing space, but also to the way of perceiving, understanding and representing it, that is, translating it into a visual expression.

At the beginning of this century, continuous emergence of new information technologies changed the position of architectural discipline, thus the use of drawing in relation to the digital tools. As a consequence of these changes, there is a re-examination of the creative psychophysical connection between

ideas as thought processes that take place in the architect's mind and their materialisation in the form of drawings produced by the architect's hand. Therefore, the presence of information technologies has influenced not only the way of producing and thinking about architectural drawings, but also the architect's position as the only author of his drawing.² In this sense, it is important to mention two fundamental paradigm shifts shaping the production of architectural drawings - from a construction site to paper in the fifteenth century,³ and from paper (manual or hand drawing) to computer drawing in the late twentieth century. The latter had two leaps at a decade's distance which are specifically important for understanding the present relationship between the architect, software, drawing and space.

The overture to the development of the digital shift in the early 1990s occurred as an extension to the rise and popularity of electronic media. The influence of digital tools in the architectural discipline began in an atmosphere of global fascination and inspiration with the new and yet undiscovered possibilities that these tools were offering. Remaining in close relationship with electronic media, digital tools anticipated the future of architecture with the transition to virtual space as an alternative to the real and physical space.

The first paradigmatic leap, which Mario Carpo discusses in detail in his book *The Alphabet and the Algorithm*, is characterised by the emergence of new software based on direct manipulation of curves constructed through vectors and points on a computer, and therefore of architects' pursuit of mastering them in order to expand the possibilities of drawing manipulation and then deriving certain, complex forms which were by the time unable to draw and build.⁴ In contrast to previous Cartesian understanding of space, this shift changed the way architectural objects are being built. The second digital paradigmatic leap, discussed by the same author in his later book *'The Second Digital Turn: Design beyond Intelligence'*, resulted in developing new models of processing and distributing information using artificial intelligence. Building on the previous shift, this one changed the way of thinking about architectural objects.⁵ The consequences of the second paradigmatic leap in terms of digital technologies resulted in changes that affected the visual perception, enabling quick and easy access to virtual space as a new spatial or architectural field of experimentation. Being introduced to new tools offering new perspectives of the world, present-day architect stands on the threshold between real and virtual, and the emergence of new tools, appliances and applications allows constant leaps from one field to another and the creation of combined, hybrid perspectives, as well as blurring the borders between architecture and its related disciplines, such as visual arts, illustration, graphic arts, etc.

2. IDENTIFYING THE HYBRID ARCHITECTURAL DRAWING: REPRESENTATIONALLY-TRANSCRIPTIVE MODEL

Before entering the process of searching for the hybrid model of drawing, it is necessary to narrowly profile the concept of the architectural drawing and to define the contemporary environment in which it emerges and establishes itself at the beginning of the twenty-first century. The first subsection searches for a position for architectural drawings between two standpoints – Robin Evans speculates about architectural drawings relying on the relationship between the architect as the author of the drawing and the drawing itself, whilst Marco Frascari distinctly separates two types of drawings, naming them both as architectural. The second sub-section explains how the use of digital technologies inspires and participates in experimenting with drawings today, introducing the first prototype of representationally-transcriptive model of drawing. Nonetheless, the third sub-section advocates for the established hybrid model of drawing, analysing its basic features and elaborating on concluding observations.

2.1 Between The Architect And The Architectural Object

Relying on Robin Evans' thesis, in which there is a connection with Alberti's statement that architects do not make buildings, but drawings of buildings,⁶ it can be said that drawing as an author's work has two original forms, when it is created before what it represents, most often an object of architecture, and is given the title architectural, that is, when it is created on the basis of an existing object or space, remaining in the domain of architecture but gravitating towards fine or visual arts.⁷ Another viewpoint refers to Marco Frascari's work 'Splendour and Miseries of Architectural Construction Drawings,' where he focuses on explaining the difference between drawings as carriers of ideas about architectural space and drawings as instructions for building an architectural object. Frascari writes about the insurmountable gap between two types of drawings that are equally present in architectural activity - architectural drawings characterised as being subjective and rather suggestive, and construction drawings as being objective and neutral.⁸

Relying on these two points of view, the architectural drawing in this paper can be positioned as a peculiar and idiosyncratic representation of ideas about physical space. This position frees the architect as the author of the drawing from determinants related to a certain space. At the same time, it allows him/her to step back from the physical space on the one hand, while, on the other hand, it brings him/her closer to it while affirming author's distinct and very

personal interpretation of space. Drawing as a medium of representation remains the subject of experimentation with tools that are increasingly coming from the domain of digital technologies. In this way, new technologies expand the creativity of architects by encouraging them to re-examine traditional techniques and tools and find their place in the contemporary architecture. As already mentioned in the previous section, the relationship between the architect and the architectural space can be further examined through the lens of understanding and representing the existing physical space using drawing as a representational tool.

2.2 Virtuosity Of (Going) Virtual

Virtual reality as one of the carriers of the second digital turn imposed itself as a new medium for experimentation in the domain of perception and representation of space. Additionally, with the development of smartphones, technology for this means of representation has become more available for everyone and is gaining popularity thanks to social media. Virtual panoramic images, as one form of commercialised or simplified illusions of virtual reality, are more often being used in architecture in communicating with clients for presenting a newly designed or existing space, depending on whether it is a conceptual solution or an already constructed object. Such virtual panoramas provide a full, spherical view of the documented space (360°x180°), where the perspective can be easily controlled and changed in all directions. Additionally, multiple panoramas can be combined into a unique virtual walk, which adds to the illusion of walking from one space to another, making the virtual tour appear less static. This way of presenting space is becoming an increasingly frequent way of communicating with the clients or the future users of the space.

In 2015, one of the largest technology giants Google launched a free application that enabled its users to browse 360°x180° panoramic images of every corner of the world. Additionally, each user is able to contribute to the entire public database of panoramic images, since the application enables not only to search for desired images, but also to create personal panoramic images by capturing the 360°x180° image using smartphone. Every captured photo can be viewed as a spherical image using this one or any other suitable application, or it can be downloaded and stored in the phone as an unwrapped two-dimensional image. This way, this kind of medium becomes easy to reproduce, hence, opening a spectrum of new manipulative possibilities in the fields of visual and fine arts and architecture.

The starting point for the project conducted in the Architecture and Visual Language postgraduate course in 2017 was to explore new possibilities for using digital tools in architecture, such as the mentioned application for making virtual panoramic images, in conjunction with architectural drawing, focusing on representing the existing physical space as an architectural object. The selected case study for the first drawing experiment was the interior of the Reading Room at the Faculty of Architecture University in Belgrade. It was important to build on the thesis of questioning the usability of traditional drawings in architecture, hence the methodology of manipulating the captured panoramic image concentrated on using various hand drawing techniques to explore the specific characteristic of the analysed space. Furthermore, experimenting with hand drawings shaped the whole process of the project, resulting in manually transcribing the captured panoramic image into a series of hand drawings, which were afterwards digitally processed and manipulated using computer-aided tools and finally presented as a virtual panoramic drawing (Figure 1, p. 196).

The applied methodology consisted of seven steps divided into three phases of pre-production, production and post-production that combine a myriad of analogue and digital tools such as photography, ink on paper, marker pens, technical pens, Photoshop CS editing. The pre-production phase involves capturing a 360x180° panoramic image of a chosen physical space, in this case the interior of the Reading Room (Figure 2, p. 196). The unwrapped two-dimensional image of the captured panorama is then used as the initial basis for the work. The production phase includes four groups of drawings done in different techniques - drawing on tracing paper using ink, technical and marker pens. The analysis of the obtained photographs determined four categories of space transcription that correspond to different layers of the spatial image, and which together, superimposed, give an abstract image of the same space. Each technique involves making 12 drawings which together form an image corresponding to the aforementioned unwrapped panoramic image. Each group of drawings represents one level of space transcription - edges, surfaces, light and shadows (Figure 3.1, Figure 3.2, Figure 3.3, and Figure 3.4, p. 197).

The post-production phase involves translating 48 drawings in total into digital form and assembling them into four corresponding spherical images. The obtained images are then being superimposed using computational tools, such as Photoshop CC 2015. As the final result, the obtained spherical image, must be added up with certain metadata, becoming suitable for wrapping back into the application as a new, transcribed, panoramic image or panoramic drawing.

The established drawing model resulted in four large-format hand drawings, i.e., 48 small-format drawings which were scanned, digitally post-produced, superimposed and merged into a single image. Finally, the two-dimensional image was made spherical using metadata and presented via the same application used for capturing the initial photo. The final result, a spatial drawing can be viewed by following the appropriate link⁹ which gives the observer the freedom to choose the vantage point and therefore, the most preferable fragment of the drawing as a separate image (Figure 4.1, Figure 4.2, Figure 4.3, and Figure 4.4, p. 198-199).

2.3 On Methodology: Drawing Before Analysis

Being a member of Modern in Belgrade group,¹⁰ which held several solo exhibitions during 2019, the last exhibition in the series served as a testing ground for further research on the topic of presentational possibilities of the established drawing model. The exhibited work for the exhibition titled 'Black on White,'¹¹ represented the second drawing experiment, the interior of the Reading Room at the National Library of Serbia.¹² The applied drawing methodology was repeated, following the example of the previous project – using four levels of spatial transcription (edges, surfaces, light and shadow). These levels correspond to the four stages of identifying the essential elements of space. While observing the drawing, the most dominant layer is recognised as the one representing the structural elements and the disposition of volumes in space presented with different nuances of drawn planes.

The second notion is the overlapping of two closely related layers – one representing light, and the other representing shades. Their superimposition gives life to the drawing as it seems to document one precise moment in time of the observed interior. Finally, the last layer, playing hide-and-seek with the observer's eye, reveals itself very discreetly, like the author's signature – present but gently hidden. It subtly emphasises sharp edges providing stability to the structural elements holding the interior space. Nevertheless, the theme of the exhibition conditioned the final drawing to be presented as a digital grayscale print, lacking colour (Figure 5, p. 200-201). Therefore, in addition to the link¹³ that provided visitors with a virtual experience of entering the drawing, the project was exhibited in the gallery space on a 200x100cm digitally printed poster and a video projection presenting fragments of virtual walks broadcasted in colour and overlapping with the poster (Figure 6.1, Figure 6.2, p. 202).

Repeating the established methodological steps once again, specified the basic features of the drawing, the usability of the hybrid model was confirmed and following observations were noted:

- The conducted drawing procedure focuses more on the development of the specific transcriptive technique than on the analysis of architectural space itself. Whilst the drawing process relies on the procedure, the analysis comes at the end. The drawing process in that sense becomes more artistic and less architectural.
- The three-dimensionality of the drawing and the use of virtual reality creates a twist in the context of image perception. It opens the possibility of viewing the represented space from infinite number of different angles and generates always new images of space, which makes reading itself an architectural experience.
- It can be said that a drawing refers to a specific moment in time in the life of an architectural object, showing it through the lens of the author's observation and virtuosity of drawing.
- Architectural drawing as the final result mostly relies on the traditional drawing techniques, and in that sense, is highly dependent on the author's sharp eye and skilful hand. On the other hand, the computer-aided manipulation generates a multitude of output images as final representations of the selected space. This gesture creates a scale of different levels of abstraction of selected viewpoints - from unrecognisable images composed, it seems, only with a few hand strokes, to detailed, precise documentations contained in several layers of spatial transcription.

Bringing several viewpoints together and comparing them as a set of fractions of one space, the proposed methodology has the potential of upgrading the experience of understanding architectural space with its visual and aesthetic qualities. It can be noticed that digital technologies not only expand the architectural creativity, but they also upgrade the utilisation of traditional drawing techniques, and broaden the presentational practice of displaying the work of drawing through different media.

3. CASE STUDY: EXPERIMENT AND RESEARCH IN THE SCOPE OF ARCHITECTURAL EDUCATION

Considering the changing climate of architectural education across the world based on the rise of digital tools, this section encourages further research and implementation of the established hybrid model of drawing within the scope of architectural education. By extending the familiar computational driven researches carried out at the University of Belgrade and presented as part of the publication ‘Architectural Education in the Post-digital Age,’¹⁴ it tries to broaden the scope of Research by Design within the field of architectural design, and beyond the Faculty of Architecture in Belgrade. Therefore, the first sub-section explains the extracurricular environment of an international two-week workshop which proved to be a suitable ground for further research of the established drawing methodology. The second sub-section then presents the comparative analyses of selected workshop results and elaborates on its concluding observations.

3.1 Augmenting The Methodology

Architectural education primarily implies mastering the skill of thinking about physical space as a mental process, and the skill of representing it in the form of drawing as a practical process. The entire process of architectural education can be considered a particularly experimental procedure of ever-developing the skill of conceptualising physical space and using architectural drawing as a tool for expressing ideas and exploring spatial relationships in the architectural design process. Therefore, the presented workshop is used to survey the established model of architectural drawing in the field of architectural education.

The ‘Augmented Experience’¹⁵ is a two-week workshop tutored together with architect and colleague Nikola Milanović at the 2018 European Architecture Students’ Assembly RE:EASA 2018 in Rijeka, Croatia.¹⁶ The workshop methodology relied on the above mentioned projects developed during the postgraduate studies. The aim of the workshop was to explore the potential of combining analogue and digital techniques of drawing and the possibilities of using virtual reality infrastructure in architecture, as well as offering the residents of the city of Rijeka a whole new perspective of some of the important and well-known locations in the city focusing mostly on the industrial heritage. The workshop consisted of three parts. The first part referred to the urban and historical context of the city of Rijeka. During the first part, the participants’ task was to explore the city’s built heritage and to choose the location for their project.

The second part of the workshop focused on exploring and experimenting with drawing techniques, mostly using hand drawing tools such as pens, marker pens, watercolour, ink, crayon, collage, et cetera. This part was conducted as a series of drawing exercises, done individually and in groups, involving discussions on the subject of combining digital and analogue tools in contemporary drawing practice and in the post-production process of manipulating with hand drawings. Drawing exercises included quick small-format drawings done on tracing paper using various techniques that were used to represent the explored sights during the previous part of the workshop (Figure 7.1, Figure 7.2, Figure 7.3, and Figure 7.4, p. 202). These exercises were especially important as they were relaxed from the final outcome and were, therefore, focused solely on the act of drawing and on studying the methodology of transcribing physical space. The third part of the workshop was done individually and it synthesised the previous work resulting in one spherical drawing done by each of the participants. The participants were free to choose techniques for each methodological step of their own preferences. Therefore, the final results varied in presentation and visual language as they were produced using different tools – some were done exclusively by hand using one or several drawing techniques (Figure 8. Figure 9. p. 203); some were combining hand and computer drawing, making an analogue-digital collage (Figure 10. p. 204) ; ultimately some were done solely using the computer (Figure 11, p. 204). One of the main characteristics of the produced results is that they can be presented and exhibited in manifold forms – in situ and online, in real and in virtual space. The final results of the workshop were presented at the workshop site¹⁷ showing drawings done on tracing paper, and online, displaying the digital collage viewable using virtual reality glasses (Figure 12, p. 205). All photospheres were uploaded online and linked together¹⁸ in order to form a virtual walk through nine carefully chosen sites in Rijeka.

3.2 On Results: Analysis Before Drawing

The given results varied in terms of students' engagement, skills and affinities. Although the methodology of work was determined and the same for each student, it can undoubtedly be noted that the results displayed an exceptional diversity in individualistic approaches. The following examples were carefully chosen and elaborated based on three criteria – theme and characteristics of the chosen location, technique(s) of drawing and visuality of the drawing.

The first case entitled *Export Drvo* (Figure 8. p. 203) seems to be closest to the former projects described in the previous chapter. Chosen location was the

entering staircase into one of the Export Drvo's halls where the workshop took place. The similarity with the previous works appears in the close relationship between the author and the selected physical space, considering that it was used on a daily basis during the workshop. The urge to choose this kind of space was familiar for the suggested methodology of drawing. Selected drawing techniques were also manual, using hand drawings that are digitally post-produced. The focus of the transcriptive process in this work is on emphasising the structural characteristics of space. Dealing with strong contrasts, the relationship between closed/open and different levels of transparency, distinctly stand out. The clarity of the spatial representation is based on the use of one colour with a profound play of contrast between light/dark (Figure 8. p. 203). What leaves room for unexpected ambiguity is the computational superimposing of hand drawings that create spatial distortions, which, apparently by mistake, reveal the current state of the Export Drvo interior (Figure 8. p. 203).

The second case entitled *Abandoned House* (Figure 9. p. 203) refers, as the title suggests, to the space of an abandoned building. What is interesting in framing the drawing is its position - on the threshold between interior and exterior of the building. This decision consciously sets the task of encoding the relationship between inside/outside, open/close and most importantly, natural/built environment, which are in both cases are aged and neglected. The transcription process is accomplished by computational manipulation of hand drawings with the techniques of digital collaging. Hand drawing is used for an authentic distribution of lines to identify the architectural elements, while a digital collage of lines, planes and hatches is used to show the naturalness of the environment in which this architecture is found (Figure 9. p. 203). The thorough detailing that this drawing embeds, attracts the observer to navigate through the drawing in all directions and through different depths, changing its scale and dimensions of space, thus revealing abstract but imposing representations of the selected coastal surrounding (Figure 9. p. 203). In that sense, the question arises whether this representation is architectural, and if so, is it because of the spatial elements that can be seen in some places of this journey through drawing or because of the seductiveness of spatial depths that are so convincing?

The last selected case entitled *Train Station* (Figure 10. p. 204) deals with the representation of one of the platforms of the train station in Rijeka. In this selected example, unlike all the previous ones, the transcription process is mostly digital. The only analogue step is a line drawing representing structural and spatial elements. The treatment of surfaces is transcribed with the technique of digital collaging, which is characterised by precise fitting into the boundaries

set by the hand drawing (Figure 10. p. 204). The drawing is simple and, at first glance, completely legible. On the second reading, the author's attitude towards the architecture of the chosen space and the desire to communicate that intention with those who are familiar with the selected space is revealed. The decision of the author to play with different levels of transparency in the treatment of architectural elements is quite clear to someone who knows that these giant silos are blocking the vast view to the open sea (Figure 10. p. 204). In this sense, the architectural drawing communicates things above the architecture of the place, and that is the desire for that architecture to become something else.

Given the comparative analysis of the students' projects, the following observations were made:

- The conducted drawing procedures, unlike the one discussed in the previous chapter, focus more on the analysis of architectural space, using drawing as an expressive tool for representing spatial observations. Careful and peculiar treatment and concern for *genius loci*, together with an equal selection of both the digital and traditional drawing techniques, reveals the analytical approach that this methodology can put forward.
- This particular model of drawing questions the relationship between the author of the drawing, the analysed space and the author's drawing skills.

CONCLUSION

The applied hybrid model of the drawing brings two specific characteristics, one referring to the research, and the other to the presentational attributes of the presented methodology. One part of the methodology relies on the absence of digital technologies in the process of drawing, which therefore emphasises the presence of the author. Traces of manual work embodied in lines and surfaces of the hand drawing suggest to the unavoidable presence of the author which lies in every single stroke of the pen. Unforeseen mistakes made in the transcribing process become uncontrollable but unique expressions, impossible to produce digitally. Withdrawing from the conventional precision still further leads to the uncontrollable aesthetics of the handwritten mistakes rather than computational glitches. Additionally, digital space offers infinite possibilities in perceiving the work of drawing and finally emphasises the presence of the viewer offering him numerous different perspectives. In this way, the precision of drawing distributed with the use of software is avoided, which is bounded

by the excessive limitation and control of each author's specific gesture, always present when using digital tools. However, in the context of its presentation, it offers a myriad of possibilities embodied in different mediums, as well as infinite observing possibilities. In this sense, digital surrounding presenting the final image highlights the presence of the observer by offering him the freedom to find his own vintage point and experience the same image each time differently. In this way, the user is being placed in a partially authorial position as the creator of different, always new, worlds inside the given image.

It is been concluded that digital space offers flexibility in the phase of post-producing the final drawing as it can easily be accommodated to different scale, format and/or media. Finally, the anxiety about the future of traditional drawing techniques in architecture is reduced as the analysed cases underline the hypothesis that the emergence of digital technologies has emphasised and upgraded the old architectural tools, objecting them to constant development. It can also be noted that digital tools have, and still are, expanding the creative potential of architectural drawings as research tools in the process of architectural education. Therefore, the presented hybrid model of drawing offers a vast development potential that is yet to be discovered and explored. The conducted analysis within the scope of architectural education only paves the path to related research by design subjects and encourages the development of similar models of drawing. It is noticed that the established, representationally-transcriptive model of drawing is limited on its' two iterations and needs further application and confirmation within different fields and environments of architectural design. Nevertheless, it is advised to deepen the research carried out within the field of architectural education. As the pedagogical environment offers numerous practical alternatives and easily involves a range of participants from different ages, skills and educational background, it can efficiently provide a variety of output results suitable for further development.

NOTES

- 1 This methodology will be explained further in this paper.
- 2 This issue has been the topic of numerous professional discussions organised in the past decade. The thematic issue of the journal *Architectural Research Quarterly* from 2006 is dedicated to the new use of the traditional medium of architectural drawing. Symposium *Is Drawing Dead?*, held in 2012 at the Yale University, raised the question of the future of architectural drawings in the age of digital production. The *Drawing Futures* conference held in 2015 at Bartlett School of Architecture raised the same question, but it also offered answers about the possibilities of new roles and positions of architectural drawing relying on new technologies.

- 3 The changes that preceded the development of architectural drawing at the beginning of the last century were debated and discussed in relation to the changes that shaped the art and visual culture of the twentieth century, discussed by Mario Carpo in his book *Architecture in the Age of Printing: Orality, Writing, Typography, and Printed Images in the History of Architectural Theory*.
- 4 Mario Carpo, *The Alphabet and the Algorithm* (MIT Press, 2011).
- 5 Mario Carpo, *The Second Digital Turn: Design Beyond Intelligence* (Cambridge, Massachusetts: The MIT Press, 2017).
- 6 Leon Battista Alberti, *On the Art of Building in Ten Books* (Cambridge, Mass. [etc.]: MIT Press, 1988).
- 7 Robin Evans, *Translations from Drawing to Building and Other Essays* (London: Janet Evans and Architectural Association Publications, 2003), 156.
- 8 Frascari, Marco. 'Splendour and Miseries of Architectural Construction Drawings,' *Interstices: A Journal of Architecture and Related Arts*, Vol. 11, 107-113, 108.
- 9 Project is available at the following link: <https://roundme.com/tour/167963/view/425790/>.
- 10 The Modern in Belgrade (MuBGD) project, established in Belgrade, Serbia in 2018, brings together a group of architects (Iva Bekić, Petar Cigić, Dalia Dukanac, Stefan Đorđević, Irena Gajić, Mirjana Ješić, Hristina Stojanović, Snežana Zlatković) who share a particular interest in architectural illustration, graphic design and fine arts. Together, they launched the MuBGD platform as a means of promotion, but also critical analysis of Belgrade's architectural heritage within the field of visual representation.
- 11 Exhibition 'Black on White' at gallery O3one Art Space, Belgrade, Serbia (29 November-05 December 2019).
- 12 National Library of Serbia (1966-1973) architect Ivo Kurtović, interior reconstruction by architect Zoran Radojčić.
- 13 Project is available at the following link: <https://roundme.com/tour/523469/view/1734841/>.
- 14 Đorđe Stojanović, 'Intro: Architectural Education in the Post-Digital Age,' *Serbian Architectural Journal* 5 (2), 2013, 90-91.
- 15 Augmented (adj) - made greater, larger, or more complete.
- 16 This subject was also elaborated in the paper by Stojanović, Hristina and Nikola Milanović, 'Recent Transformations of the Drawing into Virtual Space by Using Analogue Techniques,' *21st International Congress of Aesthetics: Possible Worlds of Contemporary Aesthetics: Aesthetics Between History, Geography and Media* : book of abstracts. (University of Belgrade – Faculty of Architecture, Belgrade: 2019), 451.
- 17 The workshop was held in the Export Drvo Hall in Rijeka, a storage facility for the timber export business.
- 18 Virtual tour is available at <https://roundme.com/tour/295957/view/940380/>.

BIBLIOGRAPHY

- Bnin-Bninski, Anđelka and Dragišić, Maja. 'Scale on paper between technique and imagination: Example of Constant's drawing hypothesis,' *Serbian Architectural Journal* 8 (3), 2016: 322-339.
- Carpo, Mario. *Architecture in the Age of Printing: Orality, Writing, Typography, and Printed Images in the History of Architectural Theory*. Cambridge (Mass.): MIT Press, 2001.
- Carpo, Mario. *The Alphabet and the Algorithm*. MIT Press, 2011.
- Carpo, Mario. 'The digital: From complexity to simplicity: And back,' *Serbian Architectural Journal* 6 (3), 2014: 256-265.
- Carpo, Mario. *The Second Digital Turn: Design beyond Intelligence*. Cambridge, Massachusetts: The MIT Press: 2017.
- Stojanović, Đorđe. 'Intro: Architectural Education in the Post-Digital Age,' *Serbian Architectural Journal* Vol. 5 (2), 2013: 90-91.
- Evans, Robin. *Translations from Drawing to Building and Other Essays*. London: Janet Evans and Architectural Association Publications, 2003.
- Frasconi, Marco. 'Splendour and Miseries of Architectural Construction Drawings,' *Interstices: A Journal of Architecture and Related Arts* 11 (2010): 107-113. <https://interstices.ac.nz/index.php/Interstices/issue/view/27>.

COGNITION OF URBAN PLACES: TRANSLATING THROUGH DIAGRAMS

A B S T R A C T

The continuous theoretical development of the research area of spatial cognition is not accompanied by the practical application of the set postulates. Research challenge is recognised within the development of an appropriate way to translate the conclusions and relations of spatial cognition into a clear graphic system that enables better communication and cooperation of related disciplines. The hypothesis of the paper is that the theoretical conclusions of the analysed concept can be translated into space through visual reinterpretation – graphic processing used as a tool for review and translation. The research is conducted in two parts - the first analyses the historical development of theoretical thought about the relationship of spatial cognition and diagrams in architecture, while the second segment explores contemporary theoretical standpoints through six characteristics of schematic reasoning and validates them through relevant case study. This research aims to examine and define the process of conceptualisation of diagrams in the context of assessing cognitive variables of space. The diagram develops from a simplified graphic indication of space into an active participant in the modification of the urban environment. Research outcome is the definition of four schematisation principles, which describe concise cognitive potentials for illustrating the impact of space on the user.

SCHEMATIC REASONING,
SPATIAL COGNITION,
VISUAL INTERPRETATION,
ARCHITECTURAL DRAWING,
PERCEPTION

INTRODUCTION

Research Motivation

Intangible elements of urban surroundings have a great impact on the overall experience of space, but are difficult to precisely define and utilise due to the subjectivity of spatial experience and the complexity of physical processes that define them.¹ Schematisation of space allows the author to include various exploratory categories, such as space, time, object, senses or materiality in one spatial discourse, making it a quality tool for critically (re-)examining space. Representing urban environment through schematisation visually defines sets of transformable relations between built structure, observed context and the user. The focus of this paper is not on presenting the initial research problem and the end goal, but on illustrating the process through which specific patterns of analysis are formed in order to identify the driving potential of the diagramme. The premise of the research is defined through examining the instrumentalisation of diagrams in architecture in order to recognise specific conditions in the abstraction of the urban territory. Diagrammatic representation of space emphasises architecture as a transdisciplinary field, because it adopts knowledge and methods of related disciplines into its own research methodology. Diagram expands from a simplified scheme of space into a research hypothesis – trigger of urban context transformation.

The Scope Of The Research

The analysis focuses on understanding diagrammes as a generator of spatial knowledge within the field of spatial cognition. The research within this paper is based on the topic of schematic reasoning, i.e., understanding diagrams as a mediator between theoretical conclusions in the field of spatial cognition and architecture design praxeology. While visual representation through diagrams mediates data and knowledge, diagrammatic reasoning uses them as a tool of direct thought manipulation, guidance, hierarchy and means of interference.²

The analysis is conducted in two parts: the first presents a historical overview of the use of diagrams in spatial analysis, with an emphasis on its' instrumentalisation, while the second segment is based on contemporary use of diagrams in spatial research observed through aspects of schematic reasoning. In order to test the theoretical conclusions of spatial cognition in a real environment, the second part of the paper will focus on a case study conducted through diagram as a primary tool. The topic of the case study will

analyse the street front as the first perceptual contact of users with space in a dense urban context. Through the case study, micro-ambiences that participate in the observer's perceptive experience are singled out and processed based on the recognised building elements of space perception, thus opening a polygon for further context research.

Research Design

Relevant aspects of schematic reasoning are based on the work of Sybille Krämer and the author's definition of six basic aspects of schematic reasoning that shape the relationship between urban space and the author of the diagram. The aim of the research is to recognise the patterns of spatial conceptualisation process, when approaching the problem with the diagram as a primary aid in reasoning. Assuming that diagrams play a key role in illustrating theoretical conclusions, schematisation is seen in this paper as a tool for visualising relations and theoretical knowledge and translating them into the urban environment. The outcome of the research is to define specific directions and recommendations to the author of the diagram in aiding the transfer of theoretical conclusions of spatial cognition into real space. The set hypotheses will be tested through a case study of Kosančičev Venac, more precisely its street front - silhouettes observed from the river. The area was chosen because it represents a complex environment – layered heritage, form and ambient. Moreover, it participates significantly in forming a recognisable urban silhouette of the capital.

1. THEORETICAL FRAMEWORK: SCHEMATISATION OF SPACE

Visual interpretation of environment experience allows us a clearer understanding of the observed form or spatial state. The diagram defines sets of discontinuous relationships that are an indication of spatial potentials that can be activated.³ It can be concluded that the interpretation of space through a diagrammatic environment representation focuses on the topics of continuity and interaction. The methodology of environment schematisation strives to achieve a better relationship between users and its surroundings and has the potential to transform architectural practice and the way we think and interpret the urban environment. The initial research focus on the topic of attention and spatial cognition is attributed to Cartesian learning, which emphasises that the user's spatial knowledge is based on the purity and clarity of the perceived stimuli.⁴

Defining the schematisation of space and diagrams as tools for interpreting the relationship between users and space was established in the 1920s within the framework of Gestalt theory.⁵ The key figures in defining the Gestalt school and

theoretical standpoints are Kurt Koffka, Max Wertheimer and Wolfgang Köhler.⁶ The theory of visual interpretation of the environment is defined as an attempt to recognise clear patterns within the set of unorganised stimuli received from the environment that build the user's ability to acquire and understand a meaningful perception of urban conditions.⁷ The role of architecture within the presented theory is recognised through understanding science as a product that seeks to improve the relationship of users with the environment. Gestalt school students, such as Christian Norberg-Schulz, point out that the relationship between theory and practice in architectural research needs to be improved in order to understand the relativity of user-space relationship.⁸

The Gestalt theory had a strong influence on the discussion of the visual interpretation of space in the 1960s.⁹ Christian Norberg-Schulz officially establishes the term schematisation of space, defining it as a way in which the user perceives and interprets the environment, as well as constructs a mental image of the urban structure.¹⁰ Schematisation of the environment, i.e., diagrammatic representation of recognised spatial determinants is defined as an interdisciplinary phenomenon relying, apart from architecture, predominantly on semiology and psychology. The Norwegian architect points out that research through diagrams helps achieve a clearer understanding of the concept of architectural totality from the construction, scale, detail or context point of view.¹¹

A new perspective in the interpretation of spatial analysis develops during the 1970s and introduces phenomenology to architecture and related disciplines.¹² Norberg-Schulz announces a turning point in the way we interpret visual perception, defining it as a concretisation of the patterns and spatial interrelationships we observe from the environment, making them an integral part of the observer's everyday life.¹³ Furthermore, the phenomenological perspective of presenting the relationship between users and space is also introduced into geographical analyses of the environment. Geographer Edward Relph defines the uniqueness of the environment as a persistent unambiguity and identity that allows one space to be different from others.¹⁴ Relph emphasises the importance of spatial identity through the interpretation of the environmental uniqueness that allows the user to distinguish one territory from another. In his theory of spatial identity, established in 1976, he dissects the phenomenon into

- (1) the physical environment,
- (2) activities, ambiances, and events, and
- (3) individual and collective meanings created through experience and intention.¹⁵

Contriving an idea of space in the domain of geographical research is important because it emphasises the relevance of studying the unique notion of space, as well as the physical manifestations that dictate that impression.

Literature overview concludes that schematisation as a tool abstracts space, representing the urban environment through its key characteristics. In addition to Relph's research, conceptual thinking about space through its building factors from the aspect of the experience of space is predominantly represented in architectural research. Concepts that abstract the environment in various ways enable its schematisation and pattern forming as a way to use diagrams in architectural research of spatial cognition. Kevin Lynch's theory of spatial identity defines a unique image of the city through five basic elements of space:

- (1) path,
- (2) edge,
- (3) district,
- (4) node, and
- (5) landmark.¹⁶

Edward Hall defines cultural space through

- (a) fixed elements of space - boundaries and barriers,
- (b) semi-fixed elements - programme settings and events within space, and
- (c) informal space - cultural patterns.¹⁷

Gordon Cullen in his book *Townscape* describes the foundation of space perception as

- (1) optics - the way we see the environment,
- (2) space – our relationship to the environment, and
- (3) content - the 'fabric of cities': colour, texture, scale, style, character, personality, and uniqueness.¹⁸

The presented architectural theories originated from 1960 to 1970s and illustrate the need for a discussion of the experience of space and the potential for implementing the knowledge of spatial cognition in architectural discourse. Defining the building elements of spatial experience opens the possibility for its diagrammatic presentation with the aim of translating theoretical conclusions into spatial plan.

Researchers that shape the theoretical discourse of the 21st century continue the work of their predecessors, focusing on the formal illustration of intangible variables of space. Contemporary research paths emphasise the driving potential of space schematisation, believing that the definition of graphism as static completely limits its catalytic character. Architect Sean Lally presents, interprets and produces the atmosphere through recognising, controlling and directing atmospheric spatial qualities. As one of the basic limitations of the progress of modern thought on the practice of translating the intangible into space, he cites the use of digital tools which are widely applied to optimise and improve the shape of the object without regard to other spatial elements; advances in the visualisation and simulation of atmosphere, energy, heat, are usually reduced exclusively to design optimisation.¹⁹ Lally points out that these spatial variables should not be neglected, but used as catalysts for spatial change.

Architect Marc Schoonderbeek examines the potential for the application of drawing techniques, such as diagrams, sketches, and maps in architecture. He believes that the schematisation of space is no longer considered as a tool for documentation (i.e., an indicator of development), but becomes an instigator of future action (i.e., an initiator of development).²⁰ Schoonderbeek points out that architectural design processes would benefit greatly from breaking down the cultivated mysteries of our surroundings into basic elements that are understood as an activation of the drawing, making it easier to achieve this demystification.²¹

1.1. Exploring Diagramme As A Contemporary Architecture Tool

Contemporary theoretical foundation that explores the transformative potential of diagrams in architectural discourse is recognised in the work of architects Peter Eisenman and Stan Allen. Their work is significant because it uses the diagram as an aid in reasoning. Diagrammatic reasoning involves the use of diagrammatic representations to assist information processing; distinguishing internal use of a diagram (visual imagery) and external use of a diagram (diagram drawing as an aid to reasoning).²² Architect Eisenman defines the diagram as a tool through two modalities:

- (a) the diagram as an analytical tool with the aim of presenting the architectural work through new types of observations and
- (b) the diagram as a generative tool participating in the creation process and a catalyst for defining architectural intervention.²³

Generative diagrams encourage the author to look at graphical information and complex processes through problem abstraction. The role of diagrams in the creative process of architectural intervention is to deviate from the obvious solution. If we look at the diagram as a tool in the presented context, it can be concluded that the role of the diagram is to interpret and improve the established and limiting design patterns. Eisenman points out that the generative potential of the diagram is also reflected in the ability to ‘separate shape from function, form from meaning, and architect from process.’²⁴

Similarities with the theoretical basis of Eisenman can be recognised in the research work of Stan Allen. Allen additionally affirms the diagram as a tool for interpreting and defining architectural work, emphasising that its potential is in the possibility of abstracting author’s spatial reasoning. He distances the diagram from spatial schemes and graphics, but underscores the catalytic role of potential formal configurations.²⁵ Allen points out that although a diagram can serve a structural or programmatic purpose, its primary role is recognised in overcoming organisational problems.²⁶ He defines the instrumentalisation of diagrams in the context of architectural research as a programmatic disposition in space that is deprived of the established dilemmas of the relationship between form and function and form and content.

2. DIAGRAM INSTRUMENTALISATION

Allen’s work has contributed to the development of critical thought on the topic of diagrams as a research instrument in the second half of 20th century. The author points out that the operational use of diagrams does not represent an illustration of geometry or form, but becomes a mediator between idea and realisation.²⁷ Diagram defined in this way examines the essence and potential for further interpretation of the initial idea into material and geometry. The focus of the analysis through the diagram is on the process of conceiving and abstracting the spatial intervention, not on the final product.

The process of thinking through diagrams represents a link between abstraction and the concrete, i.e., theory and practice. The interaction between points, line and shape defined through schematisation on a two-dimensional surface serves both as a medium for representation and as a tool for exploring theoretical structures created by graphical or mental operations.²⁸

2.1. The Basic Thesis Of Diagrammatic Cognition

Researching diagrams as a tool for a better understanding of space from the aspect of spatial cognition interprets them not only as a set of symbols, but a unique visual language system with its own spatial logic. Certain aspects of the drawing can be described orally, but by no means fully understood without visual conceptualisation. Through theorising of diagrams with the purpose of scientific knowledge, Sybille Krämer's classification clearly shows how diagrams form the semiotic basis of human cognition.²⁹ Krämer defines six characteristics of diagrammatic cognition, conceptualisation and inference, on which the methods and principles of research through drawing are based (Table 1, p. 206).³⁰

3. REFLECTION ON DIAGRAMMATIC REASONING: A CASE STUDY

The presented characteristics of schematic reasoning define the way in which diagrams are used as a tool in interpreting and analysing urban structure. As the focus of this paper is on observing diagrammatic reasoning as a process that translates theoretical conclusions of spatial cognition into practice, this chapter will present a case study with a focus on validating the contribution of diagrams in implementing spatial cognition conclusions in the design process.

Kosančićev Venac is recognized as a spatial, cultural and historical entity of the old city centre, which largely participates in the detection of the unique city silhouette through its prominent physical and cultural position in the heart of Belgrade. Viewed in this way, the Kosančićev Venac's urban ensemble participates in the formation of a modern identity through the gathering of the multi-layered character of the environment into a single urban zone.

Criteria for the analysis of the quality of perceptual experience will be defined through the translation of theoretical conclusions of spatial cognition into appropriate geomorphological, functional, ambient and formal values. The basic parameter in the interpretation of the experience of space is defined through examinations of the intensity of sensory experience when perceiving the characteristics of the environment. In accordance with the previously defined, the examination of objective characteristics of perception can be performed by analysing:

- (1) the volume of objects defined by influencing the perceptual sequence of perception;
- (2) the distance of perception through the formation of specific relationships of observed elements; and
- (3) function of objects – factor that affects the overall appearance and expected urban composition.

The case study examines the assumption that our perception of space in the urban environment is based on a sensory encounter with the boundary of perception - the street front of the built structure. By placing the facade of the building as an object of research, it leads to the recognition of physical manifestations of the intangible elements of our impression of space. Abstracting the street front through a diagram leads to the recognition of impalpable and physical environment within a common research apparatus. By objectifying the process of perception within tangible spatial characteristics, it can lead to the translation of theoretical conclusions of spatial cognition into the physical environment. With focusing on three physical characteristics of space that represent real interpretations of intangible sensory experience –volume, distance, and programme, we can form a unique two-dimensional drawing hierarchy that focuses the diagrammatic analysis on set task.

Examining the street front through the three previously defined parameters of perception allows us to clearly map the existing environment with a focus on its sensory characteristics (Figure 2, p. 207). The analysis of space with the focus on the perceptive character of the physical environment translates the intangible into objective and proportionate spatial categories. Investigating the hypothesis within the heterogeneous context of the capital opens the possibility for further application of the formed research model in different contexts. In the graphic overlap of the intangible, certain zones stand out - micro-ambiences that are subject to further interpretation and analysis. Defined micro-environments are: (a) dominant zone - spaces of prominent spatial, programme and communication values presented through a line as a graphic expression; (b) activity zone - cultural-historical units that build layers of the observed context, visually represented through overlapping surfaces and textures; and (c) pauses - spaces without significant spatial or programme values represented through voids in the street front.

Next chapters will focus on decomposing the final drawing into key stages of the mental and drawing process in order to illustrate the path from theory to practical manifestation in space.

3.1. Forming Spatial Concepts Through Two-Dimensionality

Perception of two-dimensional shapes and symbols conditioned through a clear graphic expression could be used as the basis for interpreting the urban environment. Rudolf Arnheim argues that in the perception of form lies the beginning of spatial concept definition.³¹ Diagrams that strive to adequately represent the cognitive aspect of spatial comprehension focus on sensation, perception, and experience. The presentation of these qualities through visual language is not only based on the scope of the presented intervention, but also on the effect or impression that analysed study should achieve on the user of the space.

The first step in the graphical interpretation of the visually perceived is to translate the spatial scope into a two-dimensional representation. At this stage, information from the environment is already being filtered, but no selection is made in relation to the thematisation of the diagram itself. Within the analysed case study, the two-dimensional representation includes a drawing of the urban front - the visual boundaries of the Kosančičev Venac perception.

3.2. Directionality: Urban Continuity

The representative character of diagram is oriented towards the topology of drawing and enables orientation; thus it is part of the epistemic drawing function.³² Directionality in the process of forming diagrams implies the selection of relevant spatial aspects in relation to the set research topic. It is very important to establish an adequate hierarchy of research criteria, which will be transferred to the drawing hierarchy – separating the important from the insignificant.

The case study was themed in accordance with the set research criteria:

- (1) volume,
- (2) distance, and
- (3) programme.

The manifestation of these categories in the real environment is graphically presented through volumetric analysis of the built structure, graphic analysis of the city silhouette, and programme analysis of set location (Figure 3, p. 207).³³

3.3. Graphism: Visual (Con)Sequence

The process of defining diagrams and interpreting the perceptual process of the user has a clear graphical (con)sequence, which explores several variables in order to define the optimal final product. Empirical differences between real spatial distances, complexity of objects and their conditional relationships are not significant, as they are reinterpreted in the graphical and mental process of diagram formation. After setting a clear direction for graphic analysis, the next step is to present the diagram in a way that adequately illustrates set criteria. Graphism implies finding a sufficient visual language that unequivocally indicates the set research topic. The analysis of Kosančićev Venac was defined through two types of graphic expression, combining the criteria of volume and distance into one category due to the similarity of the elements of analysis established in the previous step (Figures 4 and 5, p. 208).

3.4. Diagram As Spatial Syntax

The syntactic nature of the diagram is reflected in its ability to convey a message and communicate clearly with the observer. The choice of an adequate visual language for presenting the analysis greatly influences the way in which it is perceived. Graphic inscriptions are also often part of diagrammatic thinking - any narrative located in a limited area can carry the characteristics of diagrammatic thinking. The overall syntactic nature of the diagram is reflected in its ability to turn words into a visual language that unambiguously communicates with the interlocutor (Figure 6, p. 209). This step in the process of conceptualising the diagram allows us to critically observe the environment through debate and exchange of opinions on a graphic polygon that is clear and usable to all.

During the case study, analysis criteria were formed based on the previously observed building elements of space perception. These criteria find their analogies in the physical environment and thus become tangible elements of spatial analysis. Although the syntactic nature of the diagram is closely related to graphism and requires comprehensive readability and comprehensibility, it was necessary to categorise theoretical conclusions in order to clearly direct the other points of the diagrammatic process.

3.5. Referentiality

Diagrams are not self-referential, but always touch on certain elements from the environment - context, object, event, and concept. The analysis touches on the

set assignment or given spatial or theoretical framework and largely participates in the formation of the diagram topic - the research task. Reference is important because it defines a well-founded theme of analysis through schematisation. In addition, it helps form a research hierarchy by filtering key and relevant research parameters. The reference of the case study is reflected in the first part of the paper - a historical and theoretical review of the relationship between the theory and practice of spatial cognition in architecture. Through the graphic analysis of the selected space, the set hypothesis is tested in a real environment, creating a basis for further research and verification.

3.6. Operability

Diagrams have a specific function, whether it is practical, theoretical or ideological. They do not objectively illustrate a given object or process, but present it in a way that allows for its additional interpretation. The diagram can be operationally related to aspects that are outside its current field of interest and thus cover a wide range of research topics. Therefore, diagrams can carry different degrees of abstraction, scale, and detail.

The final diagram in the process - the silhouette of Kosančićev Venac is graphically interpreted with the focus on volumetric analysis, distance between spatial elements and programme disposition (Figure 7, p. 209). The diagram is operational for further research because it allows the author to critically evaluate the existing space with reference to the historical layers of cultural heritage. Presenting the past and present through a graphical representation makes the diagram operational for future interventions based on the theory applied in the physical environment.

CONCLUDING REMARKS: SCHEMATIZATION PRINCIPLES

Visual tools of modern spatial research must be transformed in line with new paradigms. Despite the rapid development of the theory of spatial schematisation from the 1960s to the present, the diagram as a tool experienced a developmental delay conditioned, among other things, by the development and improvement of technological resources that have further expanded the scientific field with new theoretical questions. Furthermore, the task of structuring uniform theoretical questions in relation to the referenced research problem became more difficult. Schemes, diagrams and maps have to some extent been transformed into graphisms of infinite possibilities of representation, which deviate from the

initial goal.³⁴ The outcome of the research in this paper are key principles and recommendations, derived from the simultaneous analysis of theoretical foundations and practical use of diagrams with the aim of defining cognitive potentials and the impact of space on the user.

- (1) Schematisation of the atmosphere through two-dimensional diagrams enables space, built structure, context and atmosphere to be viewed equally within a single spatial narrative;
- (2) The diagram represents the beginning of concept formation;
- (3) The diagram as a tool enables visual consistency of the observed information that is then available for further interpretation;
- (4) Diagram as a tool in architecture allows us to synthesise the past, present and future. The graphic representation of the existing context represents all the layers of the past frozen in the contemporary moment. This schematisation of space opens the possibility for critical re-examination and discussion, after which we create a vision for future intervention and interpretation. Static representations of space that build the various phases of diagrammatic thinking become only segments of the dynamic tool that makes up the diagram.

These key principles and recommendations represent the basis of formalising spatial experience in architecture. Further applicability of these postulates depends on overcoming three identified research limitations: imprecision, subjectivity, and the problem of generality. The process of articulating multi-dimensional elements into a two-dimensional plane carries the potential for inaccuracy. Future utility of the presented process must also examine the influence of subjectivity on the relationship between a diagram's creator and diagram's user – the diagram has to be the objective mediator. The generality problem is reflected in the amount of information that can be examined within the diagram; it is an advantage, but also a limitation through the possibility of overly simplifying the processed variables, thus creating a general image of space.

Future research trajectories will focus on testing and examining the application of cognition in architecture in order to confirm the relevance and applicability of this method, with a focus on design praxeology. The potential of diagrams as a tool is reflected in the ability to illustrate different spatial and functional information in an abstract and structural way. The obtained material can thus be interpreted, redefined, mapped and coded in order to be instrumentalised in the further work process. The process of instrumentalisation represents a qualitative

and visual manipulation of graphically illustrated information in search of a new formal input. An overview of the development and complexity of research through a diagram in the last 30 years illustrates its transformation from a still image of the environment into a driving research tool that is recognised as a catalyst for spatial interventions.

NOTES

- 1 Andela Karabašević. Atmospheric Dimensions of Architecture. *Serbian Architecture Journal* 8/2 (2016), 180.
- 2 Dragana Ćirić. 'Relational Logics and Diagrams: No-Scale Conditions.' *Serbian Architecture Journal*, 8/3 (2016), 400.
- 3 Marc Schoonderbeek. *Place-time discontinuities: Mapping in architectural discourse*. (Delft: TU Delft, 2015), 109.
- 4 Vasilije Gvozdenović. *Vizuelna pažnja*. (Belgrade: University of Belgrade, 2011), 16.
- 5 Liangliang Nan, et al. 'Conjoining gestalt rules for abstraction of architectural drawings.' *ACM Transactions on Graphics*, 30.6 (2011), 1.
- 6 James Brennan, Keith Houde. *History and Systems of Psychology*. (Cambridge: Cambridge University Press, 2017), 259.
- 7 Kurt Koffka. *Principles of Gestalt psychology*. (London: Kegan Paul, 1935), 265.
- 8 Christian Norberg-Schulz. 'The phenomenon of place.' in *The urban design reader*, eds. Michael Larice and Elizabeth Macdonald. (London: Routledge, 2013), 272.
- 9 Julian Hochberg, ed. *Perception and Cognition at Century's End: History, Philosophy, Theory*. (Amsterdam: Elsevier, 1998), 49.
- 10 Christian Norberg-Schulz. *Intentions in Architecture*. (Cambridge: MIT Press, 1968), 41.
- 11 Ibid., 104.
- 12 Elie Haddad. 'Christian Norberg-Schulz's Phenomenological Project in Architecture.' *Architectural Theory Review*, 1 (2010), 92.
- 13 Christian Norberg-Schulz. *Existence, Space and Architecture*. (New York: Praeger, 1971), 7.
- 14 Edward Relph. *Place and placelessness*. (London: Pion, 1976), 43.
- 15 David Seamon, Jacob Sowers. 'Place and Placelessness,' in *Key Texts in Human Geography*, ed. P. Hubbard, R. Kitchen, G. Vallentine. (London: Sage, 2008), 46.
- 16 Kevin Lynch. *The Image of the City*. (Cambridge: Massachusetts Institute of Technology, 1959), 145.
- 17 Edward Hall. 'Proxemics.' *Current Anthropology*, 9 (1968), 91.
- 18 Gordon Cullen. *Concise townscape*. (London: Routledge, 1961), 9-11.
- 19 Sean Lally and Jessica Young. *Softspace: from a representation of form to a simulation of space*. (London: Routledge, 2006), 1.
- 20 Marc Schoonderbeek. *Place-time discontinuities: Mapping in architectural discourse*. (Delft: TU Delft, 2015), 259.
- 21 Ibid., 6.
- 22 Zenon Kulpa. 'Diagrammatic Representation and Reasoning.' *Machine GRAPHICS & VISION*, 3 (1994), 90.

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- 23 Peter Eisenman. *Diagram Diaries*. (London: Thames and Hudson, 1999), 28.
- 24 Ibid., 28.
- 25 Maja Dragišić. *Identifikacija projektantske strategije topološkog metoda u savremenoj arhitekturi*. (Belgrade: University of Belgrade, 2017), 86.
- 26 Stan Allen. 'Diagrams matter'. *ANY: Architecture New York*, 23 (1998).
- 27 Stan Allen. *Points and lines: Diagrams and projects for the city*. (Princeton: Princeton Architectural Press, 1999), 50.
- 28 Sybille Krämer and Christina Ljungberg. 'Thinking and diagrams—An introduction.' *Thinking with Diagrams* (2016), 15.
- 29 Ibid., 15.
- 30 Sybille Krämer. Operative Bildlichkeit. Von der ‚Grammatologie‘ zu einer ‚Diagrammatologie‘? Reflexionen über erkennendes ‚Sehen‘. Transcript -Verlag, 2015.
- 31 Rudolf Arnheim. *Visual Thinking*. (Oakland: University of California Press, 1997), 27.
- 32 Jan Bovelet. 'Drawing as epistemic practice in architectural design.' *Footprint* (2010): 78.
- 33 *Categorisation Of Immovable Cultural Property* taken from the Institute for the Protection of Cultural Monuments of the City of Belgrade, <https://beogradskonasledje.rs/mapa-stari-grad>
- 34 Stefano Milani and Marc Schoonderbeek. 'Drawing Theory. An Introduction.' *Footprint* (2010), 3.

BIBLIOGRAPHY

- Allen, S. 'Diagrams matter'. *ANY: Architecture New York*, 23 (1998), 16-29.
- Allen, Stan. *Points and lines: Diagrams and projects for the city*. Princeton: Princeton Architectural Press, 1999.
- Arnheim, R. *Visual thinking*. Oakland: University of California Press, 1997.
- Bovelet, Jan. 'Drawing as epistemic practice in architectural design.' *Footprint* (2010), 75-84.
- Brennan James, Houde Keith. *History and Systems of Psychology*. Cambridge: Cambridge University Press, 2017.
- Cullen, G. *Concise Townscape*. London: Routledge, 1961.
- Dragišić, M. *Identifikacija projektantske strategije topološkog metoda u savremenoj arhitekturi*. Belgrade: University of Belgrade, 2017.
- Eisenman, P. *Diagram Diaries*. London: Thames and Hudson, 1999.
- Gvozdenović, V. *Vizuelna pažnja*. Beograd: Univerzitet u Beogradu, 2011.
- Haddad, E. 'Christian Norberg-Schulz's Phenomenological Project in Architecture.' *Architectural Theory Review*, 1 (2010), 88-101.
- Hall, E. 'Proxemics.' *Current Anthropology*, 9 (1968), 83-108.
- Hochberg, Julian, ed. *Perception and Cognition at Century's End: History, Philosophy, Theory*. Amsterdam: Elsevier, 1998.
- Karabašević, Andjela. 'Atmospheric Dimensions of Architecture.' *Serbian Architecture Journal*, 6/2 (2016), 179-192.
- Koffka, K. *Principles of Gestalt psychology*. London: Kegan Paul, 1935.
- Krämer, Sybille, and Christina Ljungberg. 'Thinking and diagrams – An introduction.' *Thinking with Diagrams*. De Gruyter Mouton (2016), 1-20.
- Krämer, Sybille. Operative Bildlichkeit. Von der ‚Grammatologie‘ zu einer ‚Diagrammatologie‘? Reflexionen über erkennendes ‚Sehen‘. Transcript - Verlag, 2015.
- Kulpa, Zenon. 'Diagrammatic Representation and Reasoning.' *Machine GRAPHICS & VISION*, 3 (1994), 77-103.
- Lally, Sean and Jessica Young. *Softspace: from a representation of form to a simulation of space*. London: Routledge, 2006.
- Lynch, K. *The Image of the City*. Cambridge: Massachusetts Institute of Technology, 1959.
- Milani, Stefano, and Marc Schoonderbeek. 'Drawing Theory. An Introduction.' *Footprint* (2010), 1-8.
- Nan, L. et al. 'Conjoining gestalt rules for abstraction of architectural drawings.' *ACM Transactions on Graphics*, 30.6 (2011), 1-10.
- Norberg-Schulz, C. *Existence, Space and Architecture*. New York: Praeger, 1971.
- Norberg-Schulz, C. *Intentions in Architecture*. Cambridge: MIT Press, 1968.
- Norberg-Schulz, C. 'The Phenomenon of Place.' in *The Urban Design Reader*, edited by Michael Larice and Elizabeth Macdonald, 272-284. London: Routledge, 2013.
- Relph, E. *Place And Placelessness*. London: Pion, 1976.

-
- Schoonderbeek, M. G. H. *Place-Time Discontinuities: Mapping In Architectural Discourse*. Delft: TU Delft, 2015.
- Seamon, D. Sowers, J. 'Place and Placelessness,' in *Key Texts in Human Geography*, ed. P. Hubbard, R. Kitchen, G. Vallentine, 43-51. London: Sage, 2008.
- Ćirić, Dragana. 'Relational Logics and Diagrams: No-Scale Conditions.' *Serbian Architecture Journal*, 6/3 (2016): 388-425.

SUPERPOWERS OF MONTAGE: A DESIGN-DRIVEN RESEARCH EXPERIMENT

A B S T R A C T

This paper presents one segment of a multi-part essay that investigates the ‘superpowers’ of montage. The main goal of the essay is to thoroughly examine the uncharted territories in the interspace between various disciplines - mainly architecture, but also film and other visual arts, in which montage as a technique has taken remarkably diverse forms. The aim of this particular paper is to present an interdisciplinary design-driven research experiment, which used montage technique as a design research tool. In this experiment, montage was not only used as a representation technique, rather it was employed as a main compositional and logical principle in the creative process. Therefore, this paper aims to define and describe in detail seven fairly distinct phases of design-driven research experiment. This interdisciplinary research attempts to contribute to the ongoing discussion on montage in architectural design and research, as well as to the recently established design-driven research field, which focuses on valuation of design thinking, design research methodologies and knowledge contributions made possible by design.

**MONTAGE,
IMAGES,
DESIGN-DRIVEN RESEARCH,
RESEARCH BY DESIGN,
ARCHITECTURAL RESEARCH METHODS,
DESIGN RESEARCH TOOLS**

INTRODUCTION

This interdisciplinary research was conducted during an elective course *Architecture and Visual Language* led by professor Branko Pavić at the University of Belgrade, Faculty of Architecture. The aim of this manuscript is to present a design-driven research experiment that was developed during the course. As the very name of the course suggests, this research did not build its position exclusively from the architecture discipline, just as the results of this research are not solely architectural. Rather, this research built its position from the interdisciplinary framework that consists of film theories and practices of artistic production from the beginning of the 20th century, and contemporary architectural historiography.

As it can be seen from the number of publications and exhibitions,¹ montage is an omnipresent topic in contemporary architecture. In architectural historiography, montage first appeared in the late 1960s and early 1970s in the work of Italian historian and theoretician - Manfredo Tafuri.² As Buckley notes: ‘A concern for montage was key to Tafuri’s influential critique of the historical avant-garde, initially advanced in his 1969 essay [...] where he asserted that a “law of montage” was essential to the avant-gardes.’³ From then onwards, a vast number of articles, essays and books have been published about this topic within the architectural discipline.⁴ In 2018, art and architecture historian Martino Stierli published a book ‘Montage and the Metropolis: Architecture, Modernity, and the Representation of Space’ in which he demonstrates the application of this interdisciplinary technique in architectural theory and practice. Stierli concentrates on the history of photomontage practices in visual arts and architecture, Sergei Eisenstein’s essential montage theory, spatial experiments of Mies van der Rohe and Rem Koolhaas’s use of literary montage in his well-known book ‘Delirious New York.’

Another remarkable book on this topic was published in 2019 by Craig Buckley, assistant professor at the Department of the History of Art, Yale University. Unlike Stierli, Buckley concentrates on experimental architecture practices from the 1950s through the early 1970s that include montage as a form of producing architecture. Besides Stierli and Buckley, numerous essays, book chapters, articles and papers about montage were published by distinguished scholars like Georges Didi-Huberman, Beatriz Colomina, Neil Levine, Luca Galofaro and others that considerably enhance this theoretical framework. However, even though ‘montage has been widely employed and theorised along with practices of artistic production (both visual and nonvisual) that compose works from

heterogeneous elements, yet the use of montage in architecture and architectural representation has been given relatively little attention.⁵

Therefore, this research aims to contribute to the ongoing discussion on montage in architectural design and research. More precisely, this research attempts to share new insights about montage thinking in the architecture discipline, which are slightly different from the ones that are established in the previously mentioned literature. This research aims to show that montage is not merely a representational technique, rather it can be used as a main compositional and logical principle in the creative process.

1. DESIGN-DRIVEN RESEARCH

The relationship between design and research is a lively debate in our discipline. Design has been considered as separate and different from research since the beginning of time. However, from the middle of the 20th century, we can identify various attempts to unify the two fields within the architecture discipline. One of those attempts is design-driven research.

Design-driven research is a newly formed field of study in research by design community, which focuses on the research strategies that are based on design procedures. Currently, this field is a focal point of *CA²RE* or *Community for Artistic and Architectural Research* - a joint platform for research of architecture, design and arts. *CA²RE* in which number two stands for the two A's of 'architectural' and "artistic" research, has been in development since 2017 through several international conferences, that have been organised by partner institutions – nine outstanding European Universities.⁶ With the support of *ARENA* (*Architectural Research European Network Association*), *EAAE* (*European Association for Architectural Education*) and *ELIA* (*European League of Institutes of the Arts*), *CA²RE* and *CA²RE+* projects aim to support early-career researchers and PhD students in the fields of architecture and the arts to improve the quality of their research. Furthermore, this community tends to build a design-driven research framework that will present a foundation for future investigations in this field.

The conception of design-driven research is similar to Linda Candy's practice-based research definitions. Candy distinguishes two types of practice related research: practice-led, which is research that primarily produces new knowledge about practice, and practice-based, which always has a creative artefact as a

basis of the contribution to knowledge. Practice-based research is defined as ‘an original investigation undertaken in order to gain new knowledge partly by means of practice and the outcomes of that practice.’⁷ Moreover the ‘claims of originality and contribution to knowledge may be demonstrated through creative outcomes which may include artefacts such as images, music, designs, models, digital media or other outcomes such as performances and exhibitions, while the significance and context of the claims are described in words, a full understanding can only be obtained with direct reference to those outcomes.’⁸

Design-driven research teaches us how to value design thinking and design methodology as research and represents the combination of intuition and science, as Kieran underlines: ‘Research brings science to our art [. . .]. To move the art of architecture forward, however, we need to supplement intuition with science.’⁹ Furthermore, the biggest advantage that newly formed design-driven research field offers is the synthesis of generative processes with analytical and systematic processes.

As already mentioned in this paper, this manuscript aims to present a design-driven research experiment which employs montage technique as a research tool. Montage is used to deliver answers in the same way as any classical analytical method would. This research could not be conducted without two equally significant parts – an experiential design process, which included artefacts – images, and substantial contextualisation of that creative process through text – this paper. Therefore, this research produces new knowledge by employing two different media – text and drawings. As Alessandro Rocca states, ‘We can find the research’s true architectural essence and quality in the tension between the two different media: the text and the drawing.’¹⁰

2. HEGEMONY OF THE IMAGE AND THE DOMINANCE OF THE VISUAL WORLD

This interdisciplinary research deals with the question of images in the architecture discipline and contemporary culture in general. In today’s world of mass consumerism and globalisation, images represent a fundamental and extremely influential aspect of our culture. According to Mark Linder: ‘Today, the status of images is greater, and different, than ever before. If ever there was a subject in need of theorisation and application, images are it. Now is the time for images.’¹¹ We are constantly producing images for purposes of information, education, entertainment and all other segments of everyday life. The rapidly

developing imaging technologies and image industries have made images ubiquitous in contemporary culture and available to anyone. Therefore, our post-modern, mass-media culture, or as Rolan Barthes calls it 'the civilization of the image,' has to react and evolve in relation to this phenomenon.

Images are an intricate and rapidly evolving phenomenon of modern society and they have a perpetual influence on the evolution of human cognitive capacity. In his widely acclaimed essay, Walter Benjamin notes: 'During long periods of history, the mode of human sense perception changes with humanity's entire mode of existence. The manner in which human sense perception is organised, the medium in which it is accomplished, is determined not only by nature but by historical circumstances as well.'¹² Although all of our senses have an impact on perception of the world around us, remarkably 80% of our perception is based on the information we receive from the sense of sight. Much like the hegemony of the word and language that unconsciously emerged from the traditions of Western culture and thought, since the ancient Greeks, the hegemony of vision has been dominating the realms of our senses.¹³

The democratisation of photography, which started at the beginning of the 20th century as a consequence of various emerging technologies that were used to create and reproduce images, completely changed the way we experience the world. Instead of being representations of reality, images today create a new reality that is often more 'real' than the existing physical and human worlds.¹⁴ In these new 'realities', the images we are surrounded by and the ones we encounter in our daily activities, manipulate our perception and our understanding of the world around us. Therefore, it is necessary to conceive new ways and new methodologies that will take advantage of this situation.

3. CONFLICTS AND COLLISIONS - EISENSTEIN'S MONTAGE THEORY

This research follows up on the montage theory that was mainly developed by one of the key figures of this discourse, the renowned Soviet film director and film theorist, the pioneer of modern cinema, Sergei Mikhailovich Eisenstein. Eisenstein considered montage as a process that operates according to the dialectical materialism, a theory which was developed upon the Hegel's dialectics by Karl Marx and Friedrich Engels. The theory of dialectical materialism or Marxist dialectics is a way of looking at human history and experience as a perpetual conflict between two forces - thesis and antithesis, which in collision

produce a completely new phenomenon, that is not the sum of these two, but something greater and different from both of them - synthesis.¹⁵ Furthermore, Eisenstein argues that in cinema, the meaning is never a product of one element, rather it arises from collision or conflict of two or more heterogeneous elements. Therefore, the main argument of Eisenstein's montage theory is that the conflict is the fundamental principle of every work of art and every art form.¹⁶

In 1923, Eisenstein published his first theoretical manifesto entitled *Montage of Attractions* in the avant-garde literary journal LEF (ЛЕФ, "Левый фронт искусств" – 'Levy Front Iskusstv'), which was edited by his colleague from Proletcult Theatre, Vladimir Mayakovski. Under the significant influence of his mentor Vsevolod Meyerhold and his method called 'bio-mechanics',¹⁷ in this article Eisenstein examines the psychological effects of combined aesthetic experiences on the viewer and therefore marks the beginning of his lifelong theoretical concern - the question of which combination of aesthetic stimuli will produce which responses in the perceiver under which conditions.¹⁸

In his theoretical work, Eisenstein defined five distinct types of montage: metric, rhythmic, tonal, overtone, and the one that is particularly important for this research - intellectual montage. Eisenstein defined intellectual montage as 'montage not of generally physiological overtone sounds, but of sounds and overtones of an intellectual sort: i.e., conflict-juxtaposition of accompanying intellectual affects.'¹⁹ Additionally, intellectual montage is the most sophisticated kind of this technique, and it is not only strongly connected to the cinema and cinematography like other types of montage, but it also has a special relationship with architecture discipline.

Unlike other forms, which encourage physiological and emotional reactions in the viewer, intellectual montage excites the psychological reaction and directly stimulates the viewer to create visual meanings by connecting, at first glance, unrelated sequences into one concept. Consequently, the emphasis in the intellectual montage is not in the characteristics of the sequence as such, but in the intellectual process that happens within the viewer, which means that the meaning of the sequence depends on the viewer's experience. As Manfredo Tafuri underlines: 'The principle of montage had always been linked to the theme of activating the public.'²⁰

4. RESEARCH METHODOLOGY - CONTEXTUALISATION OF THE DESIGN PROCESS

This design-driven research experiment was conducted through seven interdisciplinary phases which altogether formed a creative process that is the subject matter of this paper. The presented research would not be accurately described by the images alone. Therefore, all seven phases of this research are constructed out of text and images and presented as separate parts. The process of creating by employing different operations are parallel with the process of writing this research. By doing these procedures simultaneously, the substantial conversation between the text and the images was maintained.

4.1. Atlas

The aim of the first phase of this research was to collect as many images as possible that were in any way related to the research topic. It included images from different disciplines, different periods, different sources, authors and formats, images in colour or monochrome, images of images, images of drawings, diagrams, buildings, cities and landscapes, images with different meanings. All these images put together formed an atlas – an atlas of the research (Figure 1, p. 210-11). Building an atlas is a creation process. The process of archiving images goes parallel with the process of creating images – the process of producing new meanings. Therefore, the constructed digital atlas of the research was then printed in black and white in various formats, and prepared for the second phase of this research – photomontage.

4.2. Photomontage

Because of its mathematical reasoning, perspective played an important role in establishing architecture as an exact science. Architecture could be scientific only to the extent that it was mathematical.²¹ However, at the beginning of the 20th century, revolutionary artists wanted to go beyond perspective's fixed point of view, which they considered scientific but also limiting. These artists wanted to surpass art's traditional role of interpreting the world to imagine an art capable of constructing new worlds.

The second phase of this research included the process of creating a composite image (Figure 2, p. 212) by employing the technique of montage. Although montage is considered a film technique nowadays, it emerged out of the avant-garde artistic practices in the first decades of the 20th century. After the end

of the World War I, a group of young artists Richard Huelsenbeck, Raoul Hausmann, Hannah Höch, George Grosz, John Heartfield, and Johannes Baader - Oberdada, gathered in Berlin and formed a group later known as the Berlin Dada. Radical in their idea to change the bourgeois society and the inherited, traditional, established art forms of that society, torn between the communist East and the capitalist West, the Berlin Dadaists developed a new aesthetics based on dialectics, fragmentation and juxtaposition, in which techniques such as montage and collage played a fundamental role. Besides Berlin Dada, another avant-garde practice operated with montage – Constructivism in the USSR. Montage experiments of El Lissitzky, Alexander Rodchenko, Gustav Klutis and other constructivists attempted to merge the formal discoveries of Constructivism with the great potential of photography and cinema to reach a mass audience in order to fulfil the political imperatives of an industrialised society.²²

The main goal of this phase was to construct the new composite image out of the collected images. In atlas, the images are static, they are not opening a debate – they are not able to produce knowledge or new meanings. Therefore, by working on images through the technique of montage – by resizing, erasing, cutting, tearing, glueing and superimposing these images – the new composite image was created. The montage process can hardly be better explained than by Dziga Vertov in his renowned work ‘Kino-Eye’: ‘I am kino-eye, I created a man more perfect than Adam, I create thousands of different people in accordance with preliminary blue-prints and diagrams of different kinds. I am kino-eye. From one person I take the hands, the strongest and most dexterous; from another I take the legs, the swiftest and most shapely; from a third, the most beautiful and expressive head – and through montage I create a new, perfect man.’²³ It is important to underline that the technique of montage produces meaning by combination and juxtaposition, or in other words, in the process of montage, meaning resides in the way the elements are brought into relation with each other.²⁴ In addition, all operations in this process were completely intuitive, which recalls the idea of Luca Galofaro who underscores that the images we choose or extract from an archive or atlas, are nothing more than the screens on which we project our identity and memory, things we are made up of.²⁵

4.3. Zooming and Framing

In his renowned and what would later become his most influential essay ‘The Work of Art in the Age of Mechanical Reproduction,’ Walter Benjamin examines the impact of mass production and mechanical reproduction on the

work of art. In this essay, Benjamin introduces the concept of aura – ‘the unique phenomenon of a distance, however close it may be,’ which withers in the age of mechanical reproduction.²⁶ However, Benjamin is not only interested in what is lost as a result of this phenomenon, but also in what we get as a society. Firstly, Benjamin underlines that the cinema has revolutionary functions because it presents the common ground for science and art. Secondly, he points out that the mechanical reproduction of the work of art has not only changed the way art was developed or distributed, but also the very definition of what art was. Finally, with the mechanical reproduction of the work of art, we have started to focus on how things are framed and rearranged, on montage, on cut, on text, on image, and how things are manipulated, which is of great importance for this research.

The third and the fourth phase of this research also included the process of creating images. In the third phase 40, and in the fourth phase 48 new images were created only by zooming and framing the existing composite image (Figure 3 and 4, p. 213, 214-215). Although the processes in these phases were based on the same methods – zooming and framing - the obtained results are significantly different. These procedures were one of the most valuable experiences that emerged out of this research, because they highlighted the power of the frame. Also, it turned out that it is crucial for these procedures to be done by hand, not digitally. In that way, intuition plays an important role again directly affecting several elements of every image.

However, in comparison to the previous step of this experiment which employed a technique that is similar to photomontage, these phases were based on the principles of cinematic montage. According to Stierli, who defines montage as heterogeneity or plurality of the image, montage can be either spatial – when this plurality applies to work on a single sheet, like in photomontage, or temporal – when this plurality applies to a sequential work, as we can see in film.²⁷ Therefore, at the end of the third phase of this research, under the major influence of Eisenstein’s montage theory, produced images were placed in continuity and hence formed a representation of a film sequence (Figure 5, p. 216-217).

4.4. Hand-colouring / Overpainting

The fifth phase of this research was in many ways different from the others. Unlike the previous phases, especially second and third, which are, according to the methods that were employed and the nature of certain procedures, typical

for the period in which montage as form of production emerged, this phase is totally displaced from that theoretical and practical framework. This phase recalls earlier period in history – the mid- to late 19th century when hand-coloured photographs appeared. Hand-colouring or overpainting is a method which was developed before the invention of colour photography, with the aim to heighten the realism of the black and white photographs.

Therefore, in the fifth phase of this research, 20 images were selected and hand-coloured in the process similar to overpainting (Figure 6, p. 218-219). By introducing colour into this research, this phase tried to evoke several latent layers of the material - those layers that were hidden deep in the diversified elements of these images. As it is mentioned before, hand-colouring, when it emerged, was a method which aimed to heighten the realism of the monochrome photographs. On the contrary, this research used this technique to blur and obfuscate the meanings which reside in these images. Also, as the colouring was done by hand, with a brush and watercolours, this phase was completely analogous as well.

4.5. Collage

The penultimate phase of this research was quite similar to the second phase. However, even though the design process in these phases included the same methods - cutting, tearing, glueing, superimposing and so on, there is a substantial difference between the two processes and the two phases, as it can be seen from obtained results. The first one is defined as montage while the second one is collage. In general, as Stierli highlights, many fail to make a clear distinction between montage and collage, although the terms signify two different things.²⁸ As it is already mentioned in this paper, montage originates from the circle of Berlin Dadaists after World War I, while collage emerged around 1910 with *papier collé* and is closely linked to painters such as Pablo Picasso and Georges Braque. Although both of these techniques operate with heterogeneous elements, the dialectical juxtaposition is typical only for montage.²⁹ Moreover, Buckley argues that the main difference between montage and collage is in the elements they are composed of. Montages are composed out of ‘photomechanical elements of diverse origins’ and collages are composed from ‘nonphotographic elements such as coloured paper, printed matter, or wallpaper, and were conceived as unique works concerned with composition, texture and form.’³⁰

Following the research of Buckley and Stierli, the result of the second phase of this research can clearly be defined as montage because the composite image was created out of photographic representations – images that were collected during the first phase. On the other hand, the result from this phase of research (Figure 7 and 8, p. 220,221) is defined as collage because it is composed primarily from the images that were considerably altered – they were framed, zoomed twice and coloured during the previous phases, and therefore their old meaning is lost - they became abstract compositions.

4.6. Spatiotemporal Montage

In comparison to the other phases, the last phase of this research was quite simple. In this phase, two composite images that were created through the process of montage in the second phase, and the process of collage in the sixth phase were superimposed digitally. By digitally overlapping these images, new hidden layers emerged. Therefore, these images represent the final phase of this interdisciplinary research experiment and the example of spatiotemporal montage, a montage that addresses both spatial and temporal qualities of the image and is able to present depth, transience and other intangible layers of an image. Furthermore, as it can be seen from figures 7 and 8, spatiotemporal montage aims to present one topic or research framework in a single multi-layered image (Figure 9 and 10 p. 222-223). All of the elements represented in these images are depicted as individual objects seen from their respective points of view - the ones that will create new meanings and knowledge in juxtaposition with other elements, and thus contribute the most to the research. As already mentioned in this paper and as Georges-Didi Huberman emphasises: ‘Imagination is not a withdrawal to the mirages of a single reflection, as is too often thought. It is instead a construction and a montage of various forms placed in correspondence with one another.’³¹

CONCLUSION

This paper aimed to present a design-driven research experiment, which was developed through the interdisciplinary research on the elective course Architecture and Visual Language at the University of Belgrade Faculty of Architecture. More precisely, this paper aimed to define, and describe in detail seven fairly distinct phases of design-driven research experiment. In order to produce new knowledge, seven phases were systematically analysed and illustrated in this paper. These phases, altogether, present a creative process that

thoroughly works with images and establishes montage as a main compositional and logical principle.

Additionally, the goal of this manuscript was to introduce a new seeing of the montage technique, in architectural design and research, which is based on an interdisciplinary framework - mainly architecture, but also film and other visual arts. As already highlighted in this paper, in contemporary architectural historiography there are two types of montage. Photomontage, which deals with space and is increasingly common in architecture, and cinematic montage, which deals with time and is typical for film and cinematography. By experimenting with several different techniques and methods, this research proposed an altered reading of the montage technique – spatiotemporal montage. Spatiotemporal montage is a montage that addresses both spatial and temporal qualities of the image and is able to present depth, transience and other intangible layers of an image. Consequently, spatiotemporal montage is able to present one topic or research framework in a single multi-layered image, which allows extensive reading of that topic.

In this research, montage has played a role of an analytical method. This research approach was based on the design-driven research field - a recently established field of study, which aims to strengthen the confidence in using design as a research methodology. However, in order to produce new knowledge and new meanings, this research had to focus on dialectics between two media – text and drawings. Therefore, the conducted design-driven research experiment only represented the first part of this research. The second, equally important part of this research is this manuscript, which includes a substantial textual contextualisation of the experiment’s creative process. In order to fully understand the significance of the creative process outcomes, this text had to constantly make references to the specific parts of that process. However, as the aim of this research was not to create meaningful images, but to conduct a design-driven research experiment, this manuscript along with images presents the final output of this research.

In conclusion, the significance of this research does not lie in the valuation of the last image created in this design-driven research experiment. Its significance does not lie in the proposed innovative reading of spatiotemporal montage. Rather, the true significance of this research is in the presented process - architectural and experiential creative process which was motivated by the idea of employing the montage technique as a design research tool. Continuously coquetting between two fields, architectural montage has proven that the newly formed field of study – design-driven research calls for reconceptualisation and redefinition of both design and research tools.

NOTES

- 1 See: Martino Stierli, *Montage and the Metropolis: Architecture, Modernity, and the Representation of Space*; Craig Buckley, *Graphic Assembly: Montage, Media, and Experimental Architecture in the 1960s*; Anthony Vidler, *The Eisenstein Effect Architecture and Narrative Montage in Sergei Eisenstein and Le Corbusier*, Luca Galofaro, *On the Idea of Montage as Form of Architecture Production, Inside: A Grammar of the Image*; Charlotte Bundgaard, *Montage Revisited: Rethinking Industrialised Architecture*; Cruz Garcia & Nathalie Frankowski, *Narrative Architecture: A Kynical Manifesto*; Stan Allen, *Practice: Architecture, Technique + Representation*.
- 2 See: Manfredo Tafuri, *Teorie e storia dell'architettura* (Theories and History of Architecture) and *La sfera e il labirinto: Avanguardie e architettura da Piranesi agli anni '70* (The Sphere and the Labyrinth: Avant-Gardes and Architecture from Piranesi to the 1970s).
- 3 Craig Buckley, *Graphic Assembly: Montage, Media, and Experimental Architecture in the 1960s*. (Minneapolis: University of Minnesota Press, 2019), 10.
- 4 See: Stierli, Buckley, Galofaro, Garcia and Frankowski, Bundgaard, Vidler, Beatriz, Pallasmaa, Allen, Levine, Tschumi, Bruno, Rowe and Koetter, Didi Huberman.
- 5 Martino Stierli, *Montage and the Metropolis: Architecture, Modernity, and the Representation of Space* (New Haven & London: Yale University Press, 2018), 4.
- 6 University of Ljubljana (Ljubljana), Aarhus School of Architecture (Aarhus), KU Leuven (Ghent), Politecnico di Milano (Milano), TU Berlin (Berlin), COFAC - Lusofona University (Porto), HafenCity University Hamburg (Hamburg), Norwegian University of Science and Technology (Trondheim), and TU Delft (Delft).
- 7 Linda Candy, *Practice Based Research: A Guide*, CCS Report: 2006-V1.0 November, University of Technology, Sydney, 2006, 1.
- 8 Linda Candy, 3.
- 9 Stephen Kieran, 'Research in Design: Planning Doing Monitoring Learning,' *Journal of Architectural Education* (61) 1 (September 2007), 31.
- 10 Alessandro Rocca, 'Research vs. Design: A Favorable Conflict' in *CA2 RE | CA2 RE+* Online Conference for Artistic and Architectural Research Book of Proceedings, 28th-30th October 2020, Milano.
- 11 Mark Linder, 'Images and Other Stuff,' *Journal of Architectural Education*, Vol. 66, No.1 (2012), 3.
- 12 Walter Benjamin, *The Work of Art in the Age of Mechanical Reproduction* (New York: Schocken Books, 1968), 5.
- 13 Juhani Pallasmaa, *The Embodied Image: Imagination and Imagery in Architecture* (West Sussex: John Wiley & Sons Ltd, 2011), 10.
- 14 Pallasmaa, 16.
- 15 David A. Cook, *A History of Narrative Film* (New York: W. W. Norton & Company, 2016), 105.

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- 16 Sergei M. Eisenstein, 'A Dialectic Approach to Film Form,' in *Film Form, Essays in Film Theory*, edited and translated by Jay Leyda (New York and London: Harcourt, 1949), 46.
- 17 Vsevolod Meyerhold was a Soviet theatre director and actor who developed a specific acting method throughout his career, which he called bio-mechanics. This method synthesises two seemingly contradictory artistic approaches - rigorous systematisation and spontaneous improvisation and aims to systematically condition spontaneity.
- 18 Cook, 101.
- 19 Sergei M. Eisenstein, 'Methods of Montage,' in *Film Form, Essays in Film Theory*, edited and translated by Jay Leyda (New York and London: Harcourt, 1949), 82.
- 20 Manfredo Tafuri, 'The Historicity of the Avant-Garde,' in *The Sphere And The Labyrinth* (Cambridge, Massachusetts: The MIT Press, 1987), 59.
- 21 Stan Allen, *Practice: Architecture, Technique + Representation* (Abingdon: Routledge, 2009), 9.
- 22 Matthew Teitelbaum, *Montage and Modern Life: 1919-1942* (Cambridge, Massachusetts: The MIT Press, 1992), 28.
- 23 Dziga Vertov, *Kino-Eye: The Writings of Dziga Vertov*, ed. Annette Michelson (Berkeley: University of California Press, 1984), 17.
- 24 Stierli, 5.
- 25 Luca Galofaro, 'Inside: A Grammar of the Image,' *Villardjournal* 02 (2020), 65-70, 67.
- 26 Benjamin, 5.
- 27 Stierli, 4.
- 28 Ibid., 18.
- 29 Ibid.
- 30 Buckley, 6.
- 31 Georges-Didi Huberman, *Images in Spite of All: Four Photographs from Auschwitz* (Chicago: The University of Chicago Press, 120).

BIBLIOGRAPHY

- Allen, Stan. *Practice: Architecture, Technique + Representation*. Abingdon: Routledge, 2009.
- Benjamin, Walter. *The Work of Art in the Age of Mechanical Reproduction*. New York: Schocken Books, 1968.
- Buckley, Craig. *Graphic Assembly: Montage, Media, and Experimental Architecture in the 1960s*. Minneapolis: University of Minnesota Press, 2019.
- Candy, Linda. *Practice Based Research: A Guide*, CCS Report: 2006-V1.0 November, University of Technology, Sydney, 2006.
- Colomina, Beatriz. *Privacy and Publicity: Modern Architecture as Mass Media*. Cambridge, Massachusetts: The MIT Press, 1996.
- Cook, David A. *A History of Narrative Film*. New York: W. W. Norton & Company, 2016.
- Eisenstein, Sergei M. 'Methods of Montage.' In *Film Form, Essays in Film Theory*, edited and translated by Jay Leyda, 72-83. New York and London: Harcourt, 1949.
- Eisenstein, Sergei M. 'A Dialectic Approach to Film Form.' In *Film Form, Essays in Film Theory*, edited and translated by Jay Leyda, 45-63. New York and London: Harcourt, 1949.
- Galofaro, Luca. 'Inside: A Grammar of the Image.' *Villardjournal* 02 (2020), 65-70.
- Galofaro, Luca. *On the Idea of Montage as Form of Architecture Production*. Proceedings 2017 (870), 1-9, 2017.
- Huberman, Georges-Didi. *Images in Spite of All: Four Photographs from Auschwitz*. Chicago: The University of Chicago Press, 2008.
- Kieran, Stephen. 'Research in Design: Planning Doing Monitoring Learning.' *Journal of Architectural Education*, Vol. 61, No. 1 (2007), 27-31.
- Linder, Mark. 'Images and Other Stuff.' *Journal of Architectural Education*, Vol. 66, No.1 (2012), 3-8.
- Pallasmaa, Juhani. *The Embodied Image: Imagination and Imagery in Architecture*. West Sussex: John Wiley & Sons Ltd, 2011.
- Peder Pedersen, Claus. 'Nested Perspectives on Design-Driven Research' in *CA2 RE | CA2 RE+ Hamburg: Book of Abstracts*.
- Rocca, Alessandro and Postiglione, Gennaro. 'Caring about Design-Driven Research' in *CA2 RE | CA2 RE+ Online Conference for Artistic and Architectural Research Book of Proceedings*, 28-30 October 2020, Milano.
- Rocca, Alessandro. 'Research vs. Design: A Favorable Conflict' in *CA2 RE | CA2 RE+ Online Conference for Artistic and Architectural Research Book of Proceedings*, 28-30 October 2020, Milano.
- Stierli, Martino. *Montage and the Metropolis: Architecture, Modernity, and the Representation of Space*. New Haven & London: Yale University Press, 2018.
- Tafuri, Manfredo. *The Sphere and the Labyrinth*. Cambridge, Massachusetts: The MIT Press, 1987.
- Tafuri, Manfredo. *Theories and History of Architecture*. London: Granada Publishing, 1980.
- Teitelbaum, Matthew. *Montage and Modern Life: 1919-1942*. Cambridge, Massachusetts: The MIT Press, 1992.

Till, Jeremy. 'Three Myths and One Model,' **Building Material** Vol. 17 (Dublin: 2008), 4-10.

Vertov, Dziga. *Kino-Eye: The Writings of Dziga Vertov*, ed. Annette Michelson Berkeley: University of California Press, 1984.

Vidler, Anthony. 'The Eisenstein Effect Architecture and Narrative Montage in Sergei Eisenstein and Le Corbusier.' In *The Moving Eye: Film, Television, Architecture, and the Modern*, ed. Edward Dimendberg, 57-76. New York: Oxford University Press, 2019.

DEVELOPMENT OF DRAWING AS A TOOL FOR *READING* THE CITYSCAPE THROUGH THE EXPERIMENT ON BLOCK 30 IN NEW BELGRADE

A B S T R A C T

The purpose of this paper is to identify the intersection point in the process of *the building of the drawing* as a methodological tool that occurred during PhD research, as well as to demonstrate the subsequent development of drawing experiments concerning the turning point for methodology. In the first part of the paper, we will try to explain why cityscape transformations are the subject of research. Through a brief historical analysis, we will point out the basic characteristics of the transformations of the space of Block 30. After that, we will cross the drawing as a methodological tool with the polygon for the experiment, i.e. with Block 30, and slowly start showing the steps that took place during the study on the elective course Architecture and Visual Language. The selected experiment aims to shed light on the turn that happened at that time for the methodology itself, but also to further point out the potential of contemporary drawing through layering and the connection between differently positioned architectural tools. In the final sections, we will discuss methodology reversal by examining current drawing experiments to see if it allows methodology to be constantly transformed and drawing to move from its static role to dynamic tool development. In this way, the drawing is enabled to include and follow contemporary currents in the design process at a higher level, as well as to move towards one that can respond to the speed and density of spatial changes that occur and provide innovative knowledge.

FIRST LINES OF METHODOLOGY

We believe that today's architectural and urban design frameworks are challenged by increasingly complex issues, and that these frameworks might sometimes indeed seem too flimsy. Architects could give up their position as saviours of the world and not limit their roles to only making design proposals to change the real world. Then they might find that their capabilities naturally expand towards more extensive work.

Very often, architects consider themselves as professional elites who know better than other people how to make a better world. They tend to believe that their design proposals for making a physical building or environment are ultimate solutions to urban issues. But we don't think such design proposals can solve problems. They have limits, and there are far more other factors to consider in complex urban issues. One alternative method is for architects to observe and represent the phenomena of the city so as to raise awareness and inspire other people. This could also be an important role for architects to play for the world.

In many cases, cities need expression rather than design. Cities have their own lives and inner logics. Because they allow scope for the continuous creation of wonders, they are the perfect stage for the expression of strong desires.

Many exceptional spaces are not designed by architects but created by average people who use them. We shall just represent those naturally grown spaces, not try to design them.¹

The research starts from the assumption that *reading* of the cityscape can contribute to the improvement of drawing as a contemporary methodological tool. We recognize the understanding of complex spatial changes that are reflected and shifted through the cityscape as those that can reveal values for future design processes through drawings. In this research, we will consider drawing as one through which an architectural structure can be generated, through a series of experiments through which various transformations, alterations, reshapes of the built space are recorded. We start from Paul Virilio's interpretation of built space, which is not just a material structure, but a set of spatial and temporal changes that form special aesthetic images of space in each individual moment.²

The instability of the elements that drive space is observed as a potential that can reveal new meanings for the design process. The mutual permeations of the

plane, at the same time multi-layered viewing and comparison, start from the fundamental elements of architecture, such as openings for windows and doors. The window represents the micro atmosphere of the cityscape that brings to life the impression of scale, rhythm and ambience.³ Their sum, or multitude, makes up the macro atmosphere of the cityscape. The research focus is to deal with the interrelationship of micro and macro atmospheres, regardless of whether they are directly *readable*, or are placed in such a way as to form a more complex structure that is more difficult to *read* - the construction of layered spatial situations begins with them. Exploring the movement relationships of space from inside to outside is indispensable for the *reading* process to be complete.

In this paper, the quest is whether and how drawing as a methodological tool can follow and analyze the speed of changes that occur in front of us, primarily in the extreme density of the building structure, but also through the ephemerality of elements that change in the appearance of the city. The problem itself includes the question of the appropriate tool technique to answer, finding its place between the greatest period in the history of architectural drawing, which is analogue, and the future, which is inseparable from several computerized techniques of the digital world. The special interest is the place where drawing is drastically transformed and whether there is an unexplored research point on that historical boundary of the technological turn of architectural tools that has lasted for the previous three decades or the undiscovered potential of drawing as a tool to act between all the qualities of analogue thinking with all the advanced features provided by digital tools. This specific position in which something disappears from previous techniques, while something else arises, needs to be examined within the very space that carries with it the highest degree of perceptual complexity, and that is, according to our assumption - the cityscape.

Initiation for research was deposited through a previous interest in New Belgrade during undergraduate and master's academic studies at the University of Belgrade - Faculty of Architecture, both for its history of origin and for its changing character that is reflected in the contemporary moment.⁴ During that period of education, I created numerous photographs of the cityscape during the last year of my bachelor's and two years of master's academic studies, which mostly recorded residential buildings with special attention to the space in which a person lives and what people discover through transparent parts of the building. Later, clearer insights were gained in the ways of forming the theoretical setting of the research, but perhaps even more importantly, a return to what was essentially the subject of interest in identifying the problem and perceiving it through a new degree of rationalization and systematization. The research by design methodology is thought to be one in which we can observe the

entire process through the product (in our case, drawing) and reach values from the identified problem related to a specific fragment of reality. The drawing was developed as a form of thinking, as one that tried to analyze and generate the architectural structure of the above-mentioned transparent and dynamic parts of collective housing in New Belgrade. Two types of answers were simultaneously developed: one in the form of written form and the formation of the theoretical setting of the work, the other, the experimental part of monitoring and maturing creative thinking through hand drawing of space. The drawings record fragments of New Belgrade, each a document of a specific moment, in which the inner experience of the human body is examined concerning the image of a fragment of the cityscape. The special importance of the research is pointed out in the very process of mental images and experiments that perception carries with it as a procedure. The main goal of the first experiments was to strive to achieve conceptual values in the images of fragments of the cityscape that are rich in visual complexity, from the identification of the problem, through the potentials and aspects we find in it. The fragment of reality was viewed as a creative situation that was reduced to a basic partition, to what was essentially visible, and that was the static and dynamic parts of the object.

In that way, in the period from 2013-2016, *Maps of Methodology* were formed as the Books of Hand Pencil Drawings that represent the first phase of research through drawing (Figure 1, p. 226).⁵ The Books of Hand Pencil Drawings (2013-2014) begin with two basic scales: static and dynamic; static refers to a physically closed, material structure, whereas dynamic refers to a moving, immaterial, *indoor landscape*.⁶ The two basic scales (static and dynamic) are two books of hand pencil drawings; each book contains one hundred drawings made in the pencil (0.07mm) technique, in a format of 29.7cm x 42cm. They treat only one half of the drawing paper, while the static one occurs even in the lower half in a monochrome repetitive expression. The dynamic one fills the whole half, appearing in the tonality of red, blue, and pink, which are defined as extremes of colour in a specific part of the day. Their interrelation tries to include all the subtleties of the atmosphere of the *indoor landscapes*, but also to reduce them to a basic element for the sake of future communicativeness. One of the important conclusions of these series is that documenting and analysing fragments of reality can't be determined by a precise number of drawings, but that they should be created through *serial vision*.⁷ Only in this way can a range of different insights be provided, which in their sum can be more valid for further research.

The methodology created a series of hand drawings that deal with the interrelationship of the two scales on selected fragments of the cityscape

by crossing these two scales. The sum of all the drawings builds a *Map of Methodology*, based on which they are further applied to the next series of photographs of certain fragments of the cityscape. Through the case study of Block 30, we will show how the *Maps of Methodology* were applied, but also how the specific micro-atmosphere influenced the shift of the methodology itself and its use at the macro level. Based on the initial experiments, the fragment of reality is perceived as one that allows us to perceive the essential facts for the process to which we aspire. It is a living form, whose dispersion of atmospheres seduces and produces as much expansion of the senses as possible, and which should be carefully studied, abstracted, and introduced through the following design processes. We do not necessarily choose the spaces in which we live, but we establish our own vision of them, and we choose whether we can move our own boundaries of perception and understanding towards different representations of physical space.

TRANSFORMATION OF NEW BELGRADE: THE CASE OF BLOCK 30

At the first level of checking the theoretical setting and the *Maps of Methodology*, we will determine certain historical facts that led to the spatial transformations of New Belgrade, so that through the next levels on the specific polygon of Block 30, we can fully apply the methodology we proposed (previous part). The permanently modified image of the once imagined modern, the capital city of the Socialist Federal Republic of Yugoslavia,⁸ through the continuous process of its development, led to the study of the causes of these changes in a selected fragment of New Belgrade. In each of the blocks, one local community was planned, which can function on its own. In addition to housing, the plan also included all the appropriate capacities needed for everyday life, such as supplies, social contacts, craft services, primary education, institutions for preschool children, recreation for children, youth, and adults, vehicle accommodation, and more. If we talk about the approach to resolving housing, it was approached integrally, from the smallest levels to the picture of one whole. With the introduction of the industrial method of construction, residential buildings were made by a prefabricated process, a series of prefabricated elements with the use of natural materials in their basic form. The unification of the elements was supposed to achieve unity and rationality, while at the same time avoiding monotony and uniformity.⁹ It arose from a schism between two ideologies: political and urban. It was not completely subject to the paradigm of International style or the paradigm of socialist realism, but the concept was essentially reduced and tended to become different.¹⁰

After the unfinished plan¹¹ of the imagined administrative modern city, housing becomes the dominant function of space, with the most pronounced collective

type.¹² In the 1990s, they began to get their manifestation through physical space as well. The criticized modern movement is not subject to a thorough re-examination of the realized state of the concept, but to a turn towards the occupation of space. A new, specific period of forced attitude towards architectural discipline, leads to filling the spatial field. The consequences of such approaches remain visible to this day. This situation directly affects the housing units, all the way to the whole that they form with other buildings. In other words, the period of uninterrupted struggle for space can be seen not only through the morphological transformations of the city itself, but also through special, individual cases that say what its inhabitants ask of it (the question of the distance of fragment analysis). The place where one can react is precisely that which is already largely “allowed” or left “freedom”. The post-socialist period marked the beginning of a series of transformations, from an economically unsustainable system to a strong market economy manifested by spatial disorder and degradation, commercialization, and illegal and unplanned construction caused by privatization.¹³

The population is establishing its needs according to the new conditions of (non)urbanization in the dominant objects of modernism. The concept of a modern city that each building brings with it individually, at least in memory, is slowly becoming more and more left to individual requirements and interests. The question is how does a collective housing facility affect morphological transformations today and how does it, as such, reflect on the cityscape? It can be said that in the history of the existence of buildings, they are actually more subject to individualistic, subjectivist struggles for space, than the one that was established by the plan. *The aesthetic representation of contemporary space* is characterized by the struggle for new and new physical interventions and the *multiplication of special impressions*. On the other hand, is it about the fact that the concept’s firmly established structure with stands all the attacks of the diversity of requirements?

Most of the changes in the objects of modernism happen according to the needs of the inhabitants, where the exterior suffers from the needs of the interior. In that way, if a resident estimates that he needs a couple of square meters more, and sees the terrace of his apartment as non-functional, he changes its purpose, increases the square footage, but also permanently changes the external image of the building. The greater the number of those who interpret the situation in the same way, the greater the number of newly formed different surfaces, which, in turn, are reflected on the exterior, so the interior determines the new exterior. The heterogeneity of the situation emerges from the set simplicity, and in a sense, it should be understood as a certain speech of the population. The

degree of reaction is constantly growing. Can architectural discipline neglect a general attitude, which in the end indirectly sends inputs to what the inhabitants themselves are looking for? Faced with a criticized lack of identity, changes in the use of residential buildings have reached a level where each apartment becomes a “separate plot”.

CHECKING THE MAPS OF METHODOLOGY ON THE EXAMPLE OF BLOCK 30 IN NEW BELGRADE

An open block in a modern city such as Block 30 does not relate to the street in the way that a traditional city block does, but his idea was to be open on all four sides so that the city could expand. At the beginning of the period “towards filling the field”, each of the blocks suffers from new commercial content and business facilities without a relationship to the plan and its plan of new content. Block 30 is just one of the blocks in the central zone of New Belgrade, which is dealing with all the transformations that have taken place. What sets it apart from other blocks (e.g. block 21 - extremely high degree of transformation) is that those objects that emerge in the period after the construction of a block of modernism have two important characteristics for our research. The first is that the newly created buildings use reflective transparent materials, which have developed the atmosphere from *the outside to the inside*, and with such set *material transparency* on their very surface, they create many different architectural images that we face. It is this “conflict” that becomes the subject of our research, the place where we develop a methodology for discovering the *immaterial*, the *materiality* that dissolves the unity and rationality of objects of modernism. The homogeneity that was in principle set in the visual expression in each of the blocks of the central zone of New Belgrade could hardly survive as such. Our research is focused on what remains of this morphologically transformed image. Secondly, it is significant that all the new buildings outside the modernist plan were built along the street (boulevard), which closed the open block, formed the *boundary*, and, paradoxically, provided a *different view*. Through reflection (Figure 2, p. 227) the block exists where it does not, and brings us back to a different *reading* of what is real for the sake of the next careful design process.

The observed complexity with a series of contradictions, ambiguities, and irony, is primarily characterized by the transformation of one model into another with the abandonment of space to social actors. As the meaning of the collective implies a collective name, where all people are indebted to something that is the same, common, and includes the notion of association, it remains questionable at what point and why the resident loses a sense of community and relates to the space in which he lives as something which excludes the care of the collective

object. Under such thinking, we do not ignore systemic issues but try to find a common social factor and thus establish an additional analogy with individual cases. The struggle for every square meter continues to establish its regime of space use every day and is permanently reflected in the architectural concept and image of the city. Individual interventions have reached an extremely high level of transformation, where the conquered living space seems to be increasingly asking if there is a way to find a measure of harmonization. The aforementioned uniformity exudes entirely new images of atmospheres and shifted housing boundaries. Today, the open block is painted along its block boundaries by the following buildings that close that same block, through its mutated image on reflective facades. We documented such spatial moments through photographs of fragments of Block 30 in different weather conditions and observed them as a phenomenon in themselves.

Further research checked the *Maps of Methodology* on the recorded photographs through an experiment conducted on the elective course Architecture and Visual Language in the second year of doctoral academic studies.¹³ Through the diagram, the basic terms are set that are separated from the theoretical setting and selected fragments of reality: *space, time, transparency, reflection - trace, trim, rhythm, action*. In *Figure 3* (p. 227) we can see how the Books of Hand Drawings, two basic scales (static - M1 and dynamic - M2) were established with the selected terms, how they were applied to each fragment, as well as how they developed their rhythm. R1, R2, R3 ... Rn). The application of the *Maps of Methodology* was performed from the photographs of the fragments, through the reduction of the photography to the basic geometry shown through the first phase of the analytical drawing, to the concrete application of the scales shown in *Figure 4* (p. 228).

The first phase of the application the *Maps of Methodology* was examined through six equal samples. The samples were selected as excerpts from the author's photographs of Block 30. The photographs were taken during the entire spring semester of the 2014/2015 school year when the elective subject Architecture and Visual Language was offered. They were created in different weather conditions so that the reflection of Block 30 had as many mutated representations as possible. The selection of photographs was approached to the previous research of architectural photographs from artistic practice, which recorded at least relatively similar spatial phenomena, and to the respect for the very character of Block 30 in New Belgrade. Each sample should have had enough similarities and differences with the one that precedes it and with the one that follows it. The conclusion that was drawn for the *Maps of Methodology* itself was also valid for the drawings that were created from the

selected samples, and that is the *serial vision*. Static and dynamic scales (M1, M2) were applied in architectural analytical drawings in a slightly more twisted form in relation to how they were set. Such a decision arose from the very logic of the mutated image. The first disorder of order that occurred in this way in the application of the *Maps of Methodology* will contribute to the later series of decisions in the construction of drawings. The final concept of the elective course Architecture and Visual Language was designed to contain ten drawings of fragments of Block 30 (dimensions 42cm x 150cm) which were previously examined through the mentioned six samples. According to the previous archiving practice, the first drawing was scanned and, as such was used for further comparison with samples. The format of the drawings of the final work differed from the samples, which had its own graphic impact on the density of the lines. Comparing the samples and experimenting with the plan of other drawings from the series, a collage is created in *Figure 5* (p. 229).

It has been observed that what happens in the very nature of the mutated image can be applied as a further course of image transformation. If we analyse an image that has already changed, a greater degree of distortion and fragmentation of the same image leads to the extreme of examining such spatial phenomena. When fragmenting, we started with the basic dimension of the line and the way it disturbs the image. In *Figure 5* (p. 229) we have selected a photograph of the fragment according to which the drawing was made and the drawing in its last phase of the experiment to show the difference that occurs through the procedure, but also to recognize the starting points in the drawing itself. The decomposition of the mutated image through the collage technique helped us as an experimental conclusion to introduce the transformation into the drawing process. In this way, a turnaround occurred in the very procedure we talked about in the introduction to this paper, a turnaround that an experiment can lead to, due to the process itself, which carries unexpected discoveries through a series of trials. The change that took place in the first drawing for the final exam on the elective course changed its further development. The other nine drawings were made according to the same procedure, and not according to the original plan, and then the collage of hand drawings became the basic thread of the methodological tool (Figure 6, p. 229).

REFLECTION OF THE EXPERIMENT ON BLOCK 30 ON THE FURTHER DEVELOPMENT OF DRAWING AS A METHODOLOGICAL TOOL

In the previous section, we singled out the terms *space, time, transparency, reflection - trace, trim, rhythm, and action* as seen in the diagram showing

the *Development and application of the Maps of Methodology* in Block 30. For the turn that happened for the methodological tool, the notion of *trim* is specifically important. It is among other concepts and has a cause-and-effect relationship when analysing a fragment of reality. The very trace that occurs on the reflection of transparent materials separates one layer of information. The sample is then also formed by *cutting off* and focusing more precisely on what is supposed to carry spatial potential. Analytical drawing also cuts unnecessary parts and highlights primary ones. Next, the procedure of application of the *Maps of Methodology* separates the value of the phenomenon of space. In that way, a field was slowly opened towards loading the previously performed steps, which were further implemented through the turn we talked about. The *trim* is applied to the drawing of Block 30 and opens up the possibility that the already disturbed image is undergoing new transformations. As we talked at the very beginning of this paper about the transformations of the cityscape and their degree of perceptual complexity, our aim was that the experiment we conducted on Block 30 could be further applied. From that moment on, the *Maps of Methodology* became the basis for future experiments.

They are no longer just hand drawings created in series like books M1, M2, M3 ... Mn, but an archive of phenomenological notes that are useful for future works. M1, M2, M3 ... Mn through its scanned form of hand drawings, becomes a digital archive. This form of the digital database has been used as a kind of palette when analysing various fragments of the cityscape from 2016 until today. The manual drawing used the technique of repeating the thin line at 0.07mm, which is also mentioned in this paper, to give an accurate reflection of the impression at the time of documenting. The line is constructed with a ruler tending towards vertical expression. It is important to note that the strictness of the expression of the line was preceded by the phase of freehand drawings, which were also created in the series. It was difficult to understand what was *meant* through the cityscape and to express it through a reduced drawing. The first works also decomposed fragments and dealt with dissecting one's own impressions, but through the organic form. Through the analysis of my own works, I concluded that there is a lack of architectural precision in the drawings and that the intention to reflect the cooperation of various elements, and their potential to function as a whole, is not achieved, despite the multitude of values and impressions.

It was through this procedure of objective reality, on the one hand, and subjective associations, on the other, those drawing experiments were purified, but also more precise features of methodology were obtained. In the process, we kept coming back to what we were *reading* and how to reduce the perceptual complexity of the urban dynamics we see. The drawings we mentioned that were

created through organic form were in one colour, while the ruler as a tool made it possible to feel that valerians can be introduced through two more colours that will not disturb the unity of methodology but will bring the exact change of impressions we face when perceiving. In certain places in the drawing, only one colour will react, then two, and then all three, until we return to one, where a series of works will present the accuracy of the reflection we talked about. The dilemma that was constantly posed before the process of *reading* is how and whether it is possible to completely abstract the *indoor landscapes* that we analyse. The multitude of impressions they carried with them seemed possible either to draw as accurately as possible and realistically confront all forms of everyday space (which we can see in the practice of the Drawing Architecture Studio) or to single out another state. The problem was also seen in the fact that the process of abstraction may prove to be inexpedient for the issues we are dealing with, i.e. that they may lead us to a reduction in which we may not pay enough attention to some factors. However, exactly what we mentioned earlier is that the drawing experiment essentially brings something unexpected where we test with all the previously known tools that we think can be useful for the problem we are dealing with.

Although at the beginning of the methodology there were only basic elements on the table, such as line, colour, and the ruler that organized them, fine differences were introduced through the process of abstraction, which helped to overcome the complexity of spatial situations we analyze. The collage, which is further used as a computerized technique, introduces a degree of rationalization into the process itself, although in its end it completely disrupts the image of space. Mapping, transforming, and dissecting hand drawings through collage leads to a new complexity of expression. What was reduced through hand drawing is confronted with it again and is redefined, used for the newly designed spatial situation. It is not about something that can be separated from what it is created from, that is, from a fragment of the reality of the urban landscape, but the drawing intends to shed light on a different spatial situation through the methodology we propose. As we seek a hidden order in the existence of the spatial disorder of the city, with this procedure we lead it to the extreme limits, in which it essentially returns to its complex state, but in a completely different form.

The next phases of research through drawing dealt with the application of such a developed methodological tool and its role in contemporary architectural practice through a series of drawing competitions that were important for the development of methodology, and took place in the period from 2016 to today (*Drawing Futures*) Bartlett School of Architecture), *Drawing of the Year 2016*

(Aarhus School of Architecture), RIBA Eye Line Drawing Competition 2017 (RIBA Journal & AVR London), KRob 2019 (Ken Roberts Memorial Delineation Competition), One Drawing Challenge 2019 (Architizer), etc. Some of the competitions have a long tradition of testing drawings as tools, while others turn to thematic issues for the current year. Common to all competitions and drawing practices is the role of drawing in the digital age and understanding analogue techniques concerning new circumstances. Every year, international competitions do not bypass the topic of drawing, and new categories are often introduced (e.g. *Emerging Technologies*, KRob 2017) as well as those that raise the question of the relationship between hand and digital drawing (*Digital / Mixed / Hand*). For our research, it was important to apply the methodological tool in parallel through competition practice and in that way to check drawing experiments. As the methodology itself was examined through a large number of competitions, it faced different requirements of competition tasks that were often extremely important in understanding the applicability of the methodology. It is especially important to understand the twists and turns in the competition when it comes to architectural drawing. Understanding these differences makes us try to find those who are really focused on problem analysis in the whole variety of architectural expressions. We would like to single out one example to illustrate what we are talking about: the *Drawing of the Year 2016* competition, when we first applied for it, introduced digital drawing in the 2016 competition call. It was possible to interpret the concept of digital drawing on the one hand only as one that is created with the help of digital techniques, but also as one that combines analog with digital, which in the context of our methodology coincided exactly with the time the tool was developed.

The submitted drawing *Cityscape Transformation Habitation* (Figure 7, p. 230) mapped the wider scope of the blocks in New Belgrade and their border relationship with neighboring estates, which differ in typology about the collective, mass housing. The *Drawing of the Year 2016* competition was preceded by the competition for the book *Drawing Futures* on the occasion of the 175th anniversary of the Bartlett School of Architecture, for which experiments were conducted for the first time as drawing collages on fragments of larger blocks in New Belgrade. It is important to note that this competition followed after the drawings for Block 30 in New Belgrade were completed within the elective course Architecture and Visual Language. As we mentioned earlier, the shifts that took place in the elective course actually established a drastic leap in drawing practice. The series of collages sent to the competition for the Bartlett School of Architecture represented a visually large difference compared to previous works but were based on carefully examined elements of the procedure. At the time, it was challenging and perhaps impossible, to

predict how much collage could progress in the future and how many variables the methodology itself could handle, while bringing a whole new kind of transformation (Figure 8-10, p. 231-233). In a sense, we could say that all the tests on the elective course have become a fundamental preparation for the further progress of drawing. The book *Drawing Futures* was focused on the issues of the present and future of drawing and coincided in time with all the dilemmas we went through in the context of refining our own methodology in the digital age. Working on an elective course shattered the advantage of one technique over another, and the process itself would lead to doubts about previously conceived and planned steps, which in our case proved to be crucial.

Freedom of expression has been developed under previously strictly examined conditions, which can be questioned over and over again, and thus actually leaves space for the methodology itself to always continue to emerge - which is especially important within the sensitivity of the phenomena we examine. Based on the received works that represent an overview of an architectural drawing of contemporary practice, the editors of the book and conference *Drawing Futures* singled out four categories of drawings: *Augmentations*, *Deviated Histories*, *Future Fantasticals*, *Protocols*.

The most important for our research is the last (*Protocols*), because it raises the question of how we can encode new data and transform information through drawing, and what new types of drawing practice need to be invented, to be able to *read* spatial changes in a world surrounded by data.¹⁵ In that way, the change that was examined at the micro-level of Block 30 in New Belgrade became a model according to which future drawings were developed, which also dealt with macro changes. More precisely, they marked the wider framework of cityscape transformations. It was difficult to check whether the setting of the methodology itself was flexible enough to be applied on a drastically different scale. Initially, the drawings of Block 30 served as a test model to experiment on a series of drawings. However, what happened in the procedure on that test through the selected above-mentioned notions of *space*, *time*, *transparency*, *reflection - trace*, *trim*, *rhythm*, *action* continued to multiply on a macro level. The drawings that we stated that we examined through the competition practice included a multitude of micro situations.

The drawing process of analyzing macro situations was not linear, nor was it about mapping a simple sum of micro situations, but about a new transformed image. Even though the following series of drawings were significantly more complex, in moments of confusion and difficult mapping, they always returned to the elementary parts of the procedure brought to us by Block 30.

The competition practice served as a series of additional tasks by which the boundary points of the methodology were examined. We could also say that these are approximately two time-equivalent processes, more precisely that the process of establishing the methodology itself is almost the same as the process of verifying the methodology itself. Both the first and the second involved several years of work, and in a sense required gradualness that at times seemed slow, but in fact, the phases of the work confirmed that the method was the right one.

TOWARDS A SYNTHESIS

The case of Block 30 that we presented in this paper revealed the gradualness that the methodology itself went through, but also the basic levels of the *building of the drawing* that will be developed in the coming years. Based on the conducted experiments, we would single out the levels through which the research resulted. The first level refers to the abstraction of mental images of the cityscape that we have perceived and from which the Books of Hand Pencil Drawings (static and dynamic scale) have emerged, based on which the *Maps of Methodology* have been established. The second level returns to the fragment of reality and confronts the previously established *Maps of Methodology* with a new and isolated complex spatial situation, which in most cases is a photograph of a specific part of the cityscape. At the third level, mapping and decoding of a fragment of reality is carried out about Books of Hand Pencil Drawings, i.e. *Maps of Methodology*, so it is an applied aspect of previously discovered elements which, according to its technique, becomes a collage. The fourth level reverses the current situation through a new type of transformation that multiplies at this level until it achieves a greater degree of distortion of the image of the cityscape as an extreme display of complexity that we face in space, but do not distinguish. In this part of the process, the collage previously formed at the third level is subject to a new phase of layering and potential image mutation. Through an extremely high degree of transformation, with a combination of analogue maps, the drawing redefines the spatial image and creates a newly designed situation. The fifth level introduces a hidden order into the thus redefined image of the fourth level by introducing a raster as a new metric layer of the drawing. It is at this level that another return to the test experimented on Block 30 in New Belgrade is taking place. The precise repetitiveness and metrics that exist in the basis of the projected Block 30 as part of a modern city were distorted through photographs that documented the same block in its reflection. In that part of the process, the raster and regularity were disturbed, to which we return at the very end, introducing it as a new layer

in the drawing. Thus, what has changed from the tests of Block 30 to *another image* is re-established as a new layer that introduces *systematic thinking* about drawing and thus completes the process of *the building of the drawing*.

The turn that happened during the experiment on Block 30 led to the key result of *the building of the drawing*. The analysis of micro atmospheres established the basic patterns according to which each subsequent macro atmosphere was examined. Drawings of macro atmospheres became a check for previous micro atmospheres. A series of hand drawings of the fragment of Block 30 led to the transition of the manual mapping technique itself to disassembling and decomposing it through digital tools. The process that was developed in such a way enabled *the building of the drawing* to develop in levels, but also for each subsequent level to move the drawing in its transformation. The combination of analog-digital mapping of micro and macro atmospheres creates new specific layers of space whose deposition creates excess that shifts the drawing from its static role to dynamic tool development, one that creates a *different image* of the city, and which can be useful for future design processes.

NOTES

- 1 "Architect as Urban Ghostpainter," in *Drawing Futures: Speculations in Contemporary Drawing for Art and Architecture*, eds. Laura Allen and Luke C. Pearson, pp. 135-138. (London: UCL Press and Bartlett School of Architecture, 2016).
- 2 Virilio, Paul. "Predugo eksponirani grad". In *Teorija arhitekture i urbanizma*, eds. Petar Bojanić, Vladan Đokić, p. 296 (Beograd: Univerzitet u Beogradu, Arhitektonski fakultet, 2009).
- 3 Pallasma, Juhani. *The Embodied Image: Imagination and Imagery in Architecture*. Chichester: John Wiley & Sons, 2011, p. 124.
- 4 New Belgrade has previously been researched from various aspects in several subjects in undergraduate and master's academic studies, but we would like to single out the master's student research that will later serve in doctoral academic studies as a basis for further research. During the school year 2010/2011, the central zone of New Belgrade was studied in the elective course

Contemporary Architecture: Modernism in Serbia (the head of the course was Prof. Dr. Ljiljana Blagojević, the associate in the course was then Dragana Ćorović, today Associate Professor at University of Belgrade - Faculty of Forestry). The work “Complete dossier on the urban plan of the central zone of New Belgrade” fully followed the form for the national section of the International Working Group for “Documentation and Conservation of buildings, sites and neighborhoods of the MODern MOVement” - d o . c o , m o . m o _ . It was also formed as a Report to be submitted for selection, and to a large extent, due to all the developed criteria required in the Report, it influenced the thoroughness and rationality of the previous research on New Belgrade. The section concerning evaluation especially meant to single out the values of the urban whole, such as the central zone of New Belgrade, which we will see especially during the retrospective of our research in doctoral academic studies. The part “Summary of important changes after the completion of works” dealt with the types of changes with very precisely listed buildings that were built after the open blocks 21, 22, 23, 28, 29 and 30. Blocks 24, 25 and 26 were treated separately, because the regulation plan of New Belgrade from 1962, which was designed by arch. Uroš Martinović and arch. Milutin Glavički stopped serving as a base in the 1980s. The center of suburban significance, i.e. the monumental zone of the center of New Belgrade, was annulled by the construction of residential block 24. After the systematic documentation of spatial changes, there was a basis for further research of spatial phenomena concerning our everyday life.

- 5 We have published more detailed steps of the theoretical setting and research in doctoral academic studies, with a summary in which the drawing stands out as the basic methodological tool for reading the cityscape through articles: (1) “Phenomenon of Transparency: Cityscape Transformations Mapping,” in *Drawing Futures: Speculations in Contemporary Drawing for Art and Architecture*, eds. Laura Allen and Luke C. Pearson, pp. 269-271. (London: UCL Press and Bartlett School of Architecture, 2016), (2) Snežana Zlatković, “Phenomenon of Transparency: Cityscape Transformations Mapping Research Issues”. In *Serbian Architectural Journal*, pp. 295-308. (Belgrade: University of Belgrade, Faculty of Architecture with The Centre for Ethics, Law and Applied Philosophy, 2016), (3) Marija Milinković, Snežana Zlatković, “Behind the Glitch: Research by Digital Drawing in Contemporary Architectural Education”. In *Arhitektúra & Urbanizmus: Journal of Architectural and Town-Planning Theory*, pp. 198-209; (Bratislava: Historický ústav SAV, 2018).
- 6 Cullen, Gordon. *Gradski pejzaž*. Beograd: Građevinska knjiga, 1990, p. 28.
- 7 Ibid., p. 7.
- 8 Благојевић, Љиљана. *Нови Београд: оспорени модернизам*. Београд: Завод за уџбенике: Архитектонски факултет Универзитета у Београду: Завод за заштиту споменика, 2007, p. 248.
- 9 The derived conclusion on the overall approach to solving the urban plan, as well as architectural concepts was set after a detailed analysis of the documentation that can be found in the journals: *Urbanizam Beograda*, No. 25(1973), pp. 14-21, *Urbanizam Beograda*, No. 30 (1975), pp. 27-34, *Arhitektura urbanizam*, No. 74-77 (1976), pp. 51-53, 54-56, 57-59, and together with the already mentioned book *Нови Београд: оспорени модернизам* (Ljiljana Blagojević), as well as a book *Iskustva prošlosti* (Miloš Perović) issued in Belgrade by the Institute for Development Planning of the City of Belgrade (1985). An extension of the opinion can also be gained through the following: Бркић, Алексеј. *Знакови у камењу*. Београд: Савез архитектата Србије, 1992; Маневић, Зоран. *Лексикон српских архитектата XIX и XX века*. Београд: Грађевинска књига, 2000.
- 10 Благојевић, Љ. *Нови Београд: оспорени модернизам*, p. 247.
- 11 Ibid., p. 249.

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- 12 Petrović, Mina. "Istraživanje socijalnih aspekata urbanog susedstva: percepcija stručnjaka na Novom Beogradu." *Sociologija* No. 1 (2008), p. 62.
- 13 Благојевић, Љ. *Нови Београд: оспорени модернизам*, p. 251
- 14 The head of the elective course Architecture and Visual Language in the second year of doctoral academic studies at the University of Belgrade - Faculty of Architecture was Prof. Branko Pavić, MA.
- 15 During the competition for the book *Drawing Futures: Speculations in Contemporary Drawing for Art and Architecture*, it was necessary to choose one of the four mentioned categories within which the work is submitted. The Protocols category was assessed as the one that would best suit the developed research through drawing. The paper and drawings were selected and published: Snežana Zlatković, "Phenomenon of Transparency: Cityscape Transformations Mapping," in *Drawing Futures: Speculations in Contemporary Drawing for Art and Architecture*, eds. Laura Allen and Luke C. Pearson (London: UCL Press and Bartlett School of Architecture, 2016), 269-271.

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- Allen, Laura., Pearson, Luke C., eds. *Drawing Futures: Speculations in Contemporary Drawing for Art and Architecture*, London: UCL Press and Bartlett School of Architecture, 2016.
- Благојевић, Љиљана. *Нови Београд: оспорени модернизам*. Београд: Завод за уџбенике: Архитектонски факултет Универзитета у Београду: Завод за заштиту споменика, 2007.
- Cullen, Gordon. *Gradski pejzaž*. Beograd: Građevinska knjiga, 1990.
- Han, Li., Yan, Hu. *A Little Bit of Beijing: Nan Luo Gu Xiang*. Shanghai: Tongji University Press, 2017.
- Han, Li., Yan, Hu. *A Little Bit of Beijing: San Li Tun*. Shanghai: Tongji University Press, 2018.
- Han, Li., Yan, Hu. *A Little Bit of Beijing: 798*. Shanghai: Tongji University Press, 2018.

- Hill, Jonathan. *Immaterial Architecture*. London: Routledge, 2016.
- Jacques, Herzog., de Meuron, Pierre. *Treacherous Transparencies: Thoughts and Observations Triggered by a Visit to Farnsworth House*. Chicago, New York: IITAC Press, Actar Publishers, 2016.
- Koolhaas, Rem., Foster, Hal. *Junkspace with Running Room*. London: Notting Hill Editions, 2013.
- Marija Milinković, Snežana Zlatković, "Behind the Glitch: Research by Digital Drawing in Contemporary Architectural Education". In *Architektúra & Urbanizmus: Journal of Architectural and Town-Planning Theory*, pp. 198-209; (Bratislava: Historický ústav SAV, 2018).
- Pallasma, Juhani. *The Embodied Image: Imagination and Imagery in Architecture*. Chichester: John Wiley & Sons, 2011.
- Petrović, Mina. "Istraživanje socijalnih aspekata urbanog susedstva: percepcija stručnjaka na Novom Beogradu." *Sociologija* No. 1 (2008).
- Snežana Zlatković, "Phenomenon of Transparency: Cityscape Transformations Mapping Research Issues". In *Serbian Architectural Journal*, pp. 295-308. (Belgrade: University of Belgrade, Faculty of Architecture with The Centre for Ethics, Law and Applied Philosophy, 2016).
- Virilio, Paul. "Predugo eksponirani grad". In *Teorija arhitekture i urbanizma*, eds. Petar Bojanić, Vladan Đokić, p. 290-299 (Beograd: Univerzitet u Beogradu, Arhitektonski fakultet, 2009).

Guest Editor: Branko Pavić

DRAWING IN ACTION: FIGURES



CITYSCAPES OF NON-PLACES

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Fig. 1. The *Cityscape* exhibition, gallery view, Belgrade Youth Centre, 2-14 June, 2015.



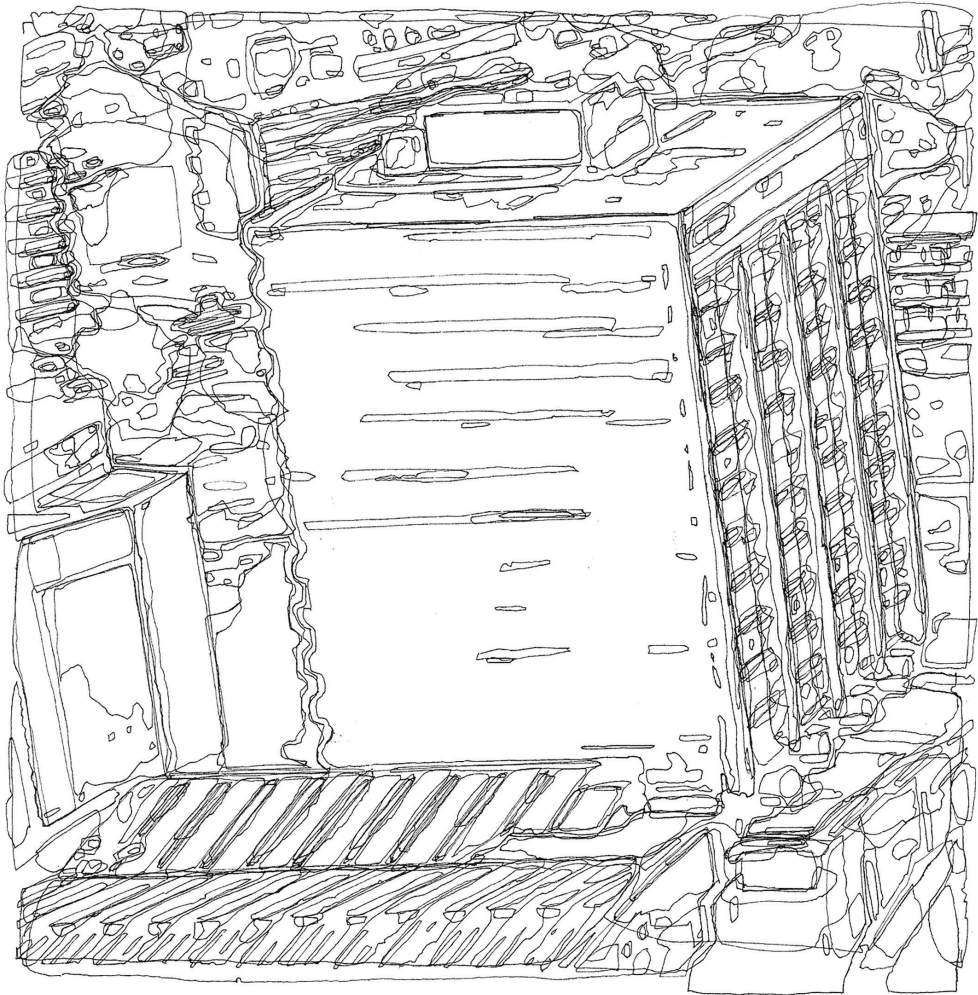


Fig. 2. Citysample II, 2015, India ink on paper, 29 x 29 cm.

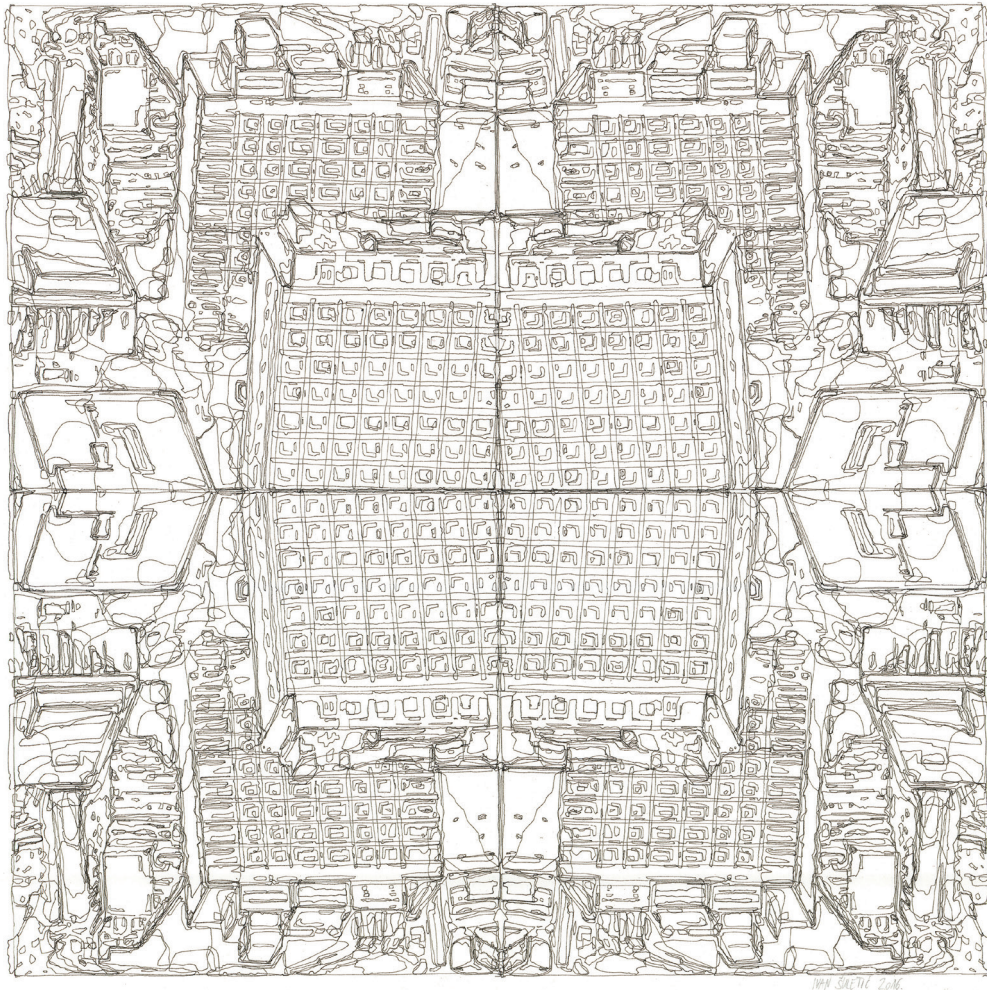
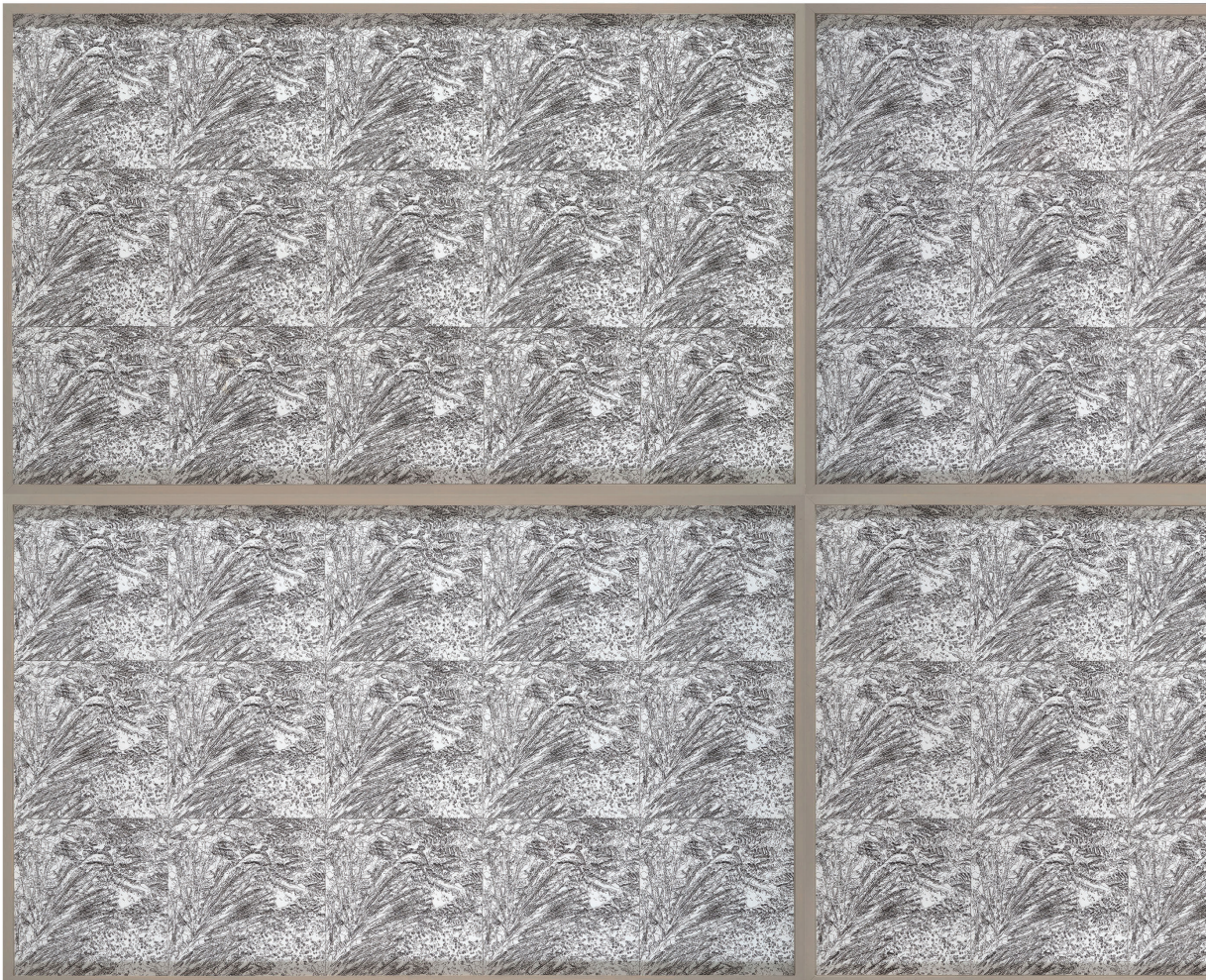


Fig. 3. Cityscape I, 2016, India ink on paper, 50 x 50 cm ..

DOWN: Fig. 4. Morgenspaziergang, 2015, India ink on paper, 6 x 60 x 100 cm.

RIGHT: Fig. 4.1. Morgenspaziergang, 2015, India ink on paper, 6 x 60 x 100 cm.





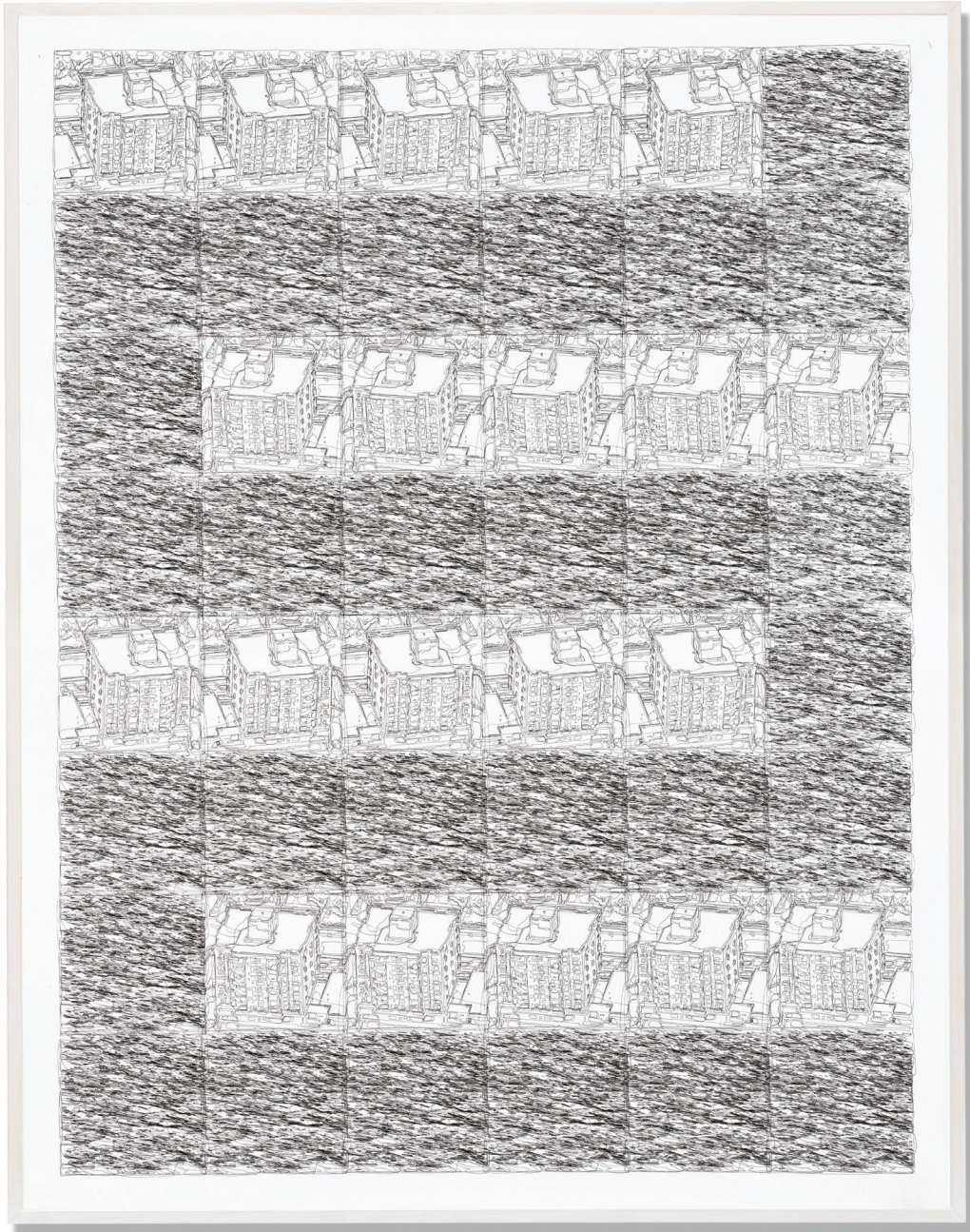


Fig. 5. #CFRP River, 2019, India ink on paper, 178 x 138 cm.

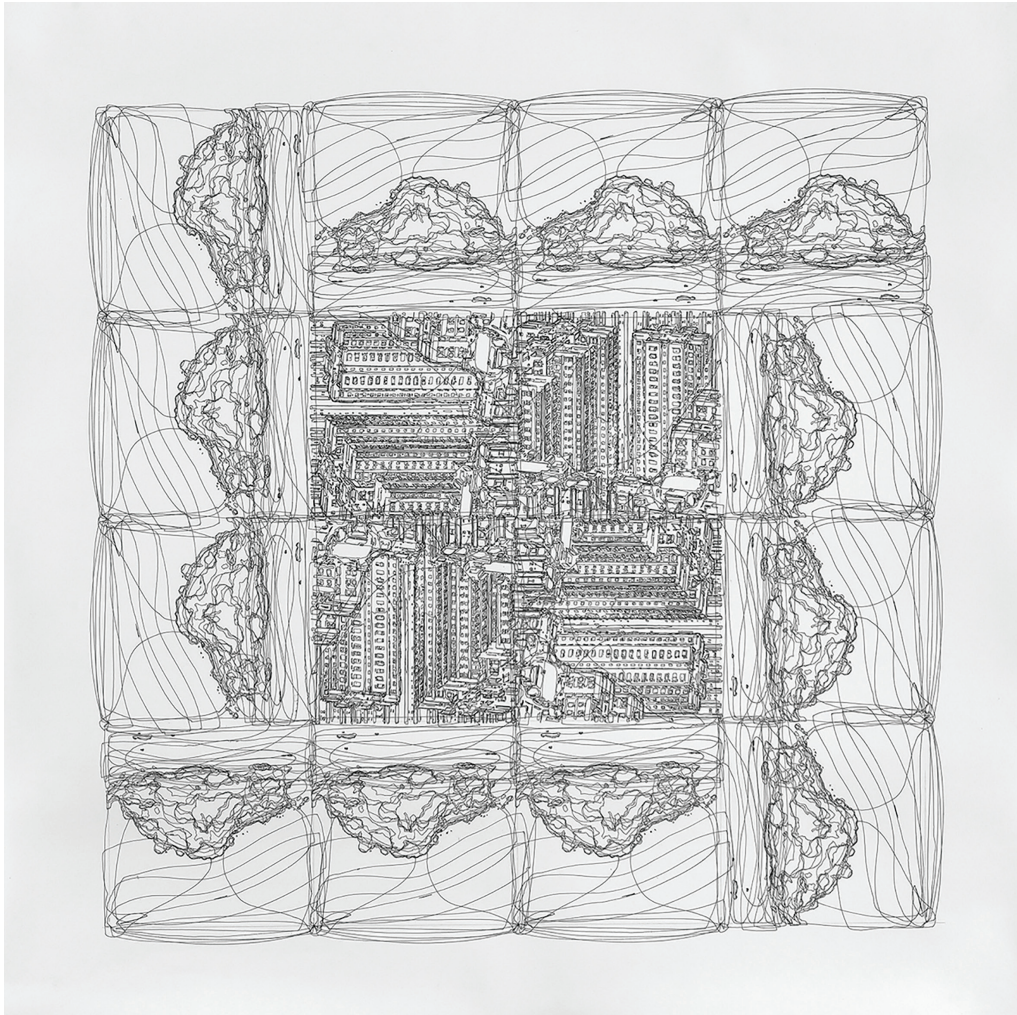


Fig. 6. #CFRP Cloudcity, 2019, India ink on paper, 98 x 98 cm.

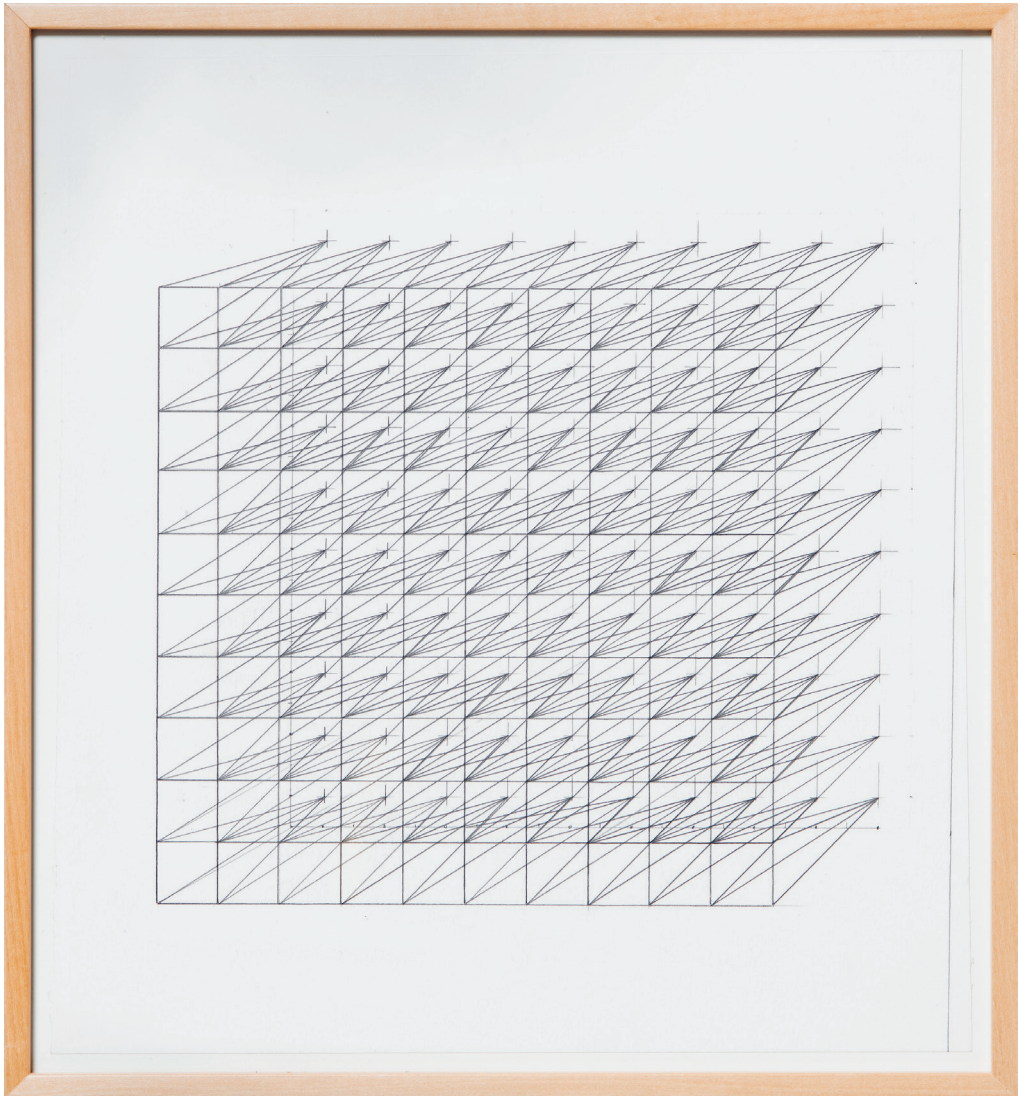


Fig. 7. Grid, 2018, pencil on paper, 32 x 30 cm.

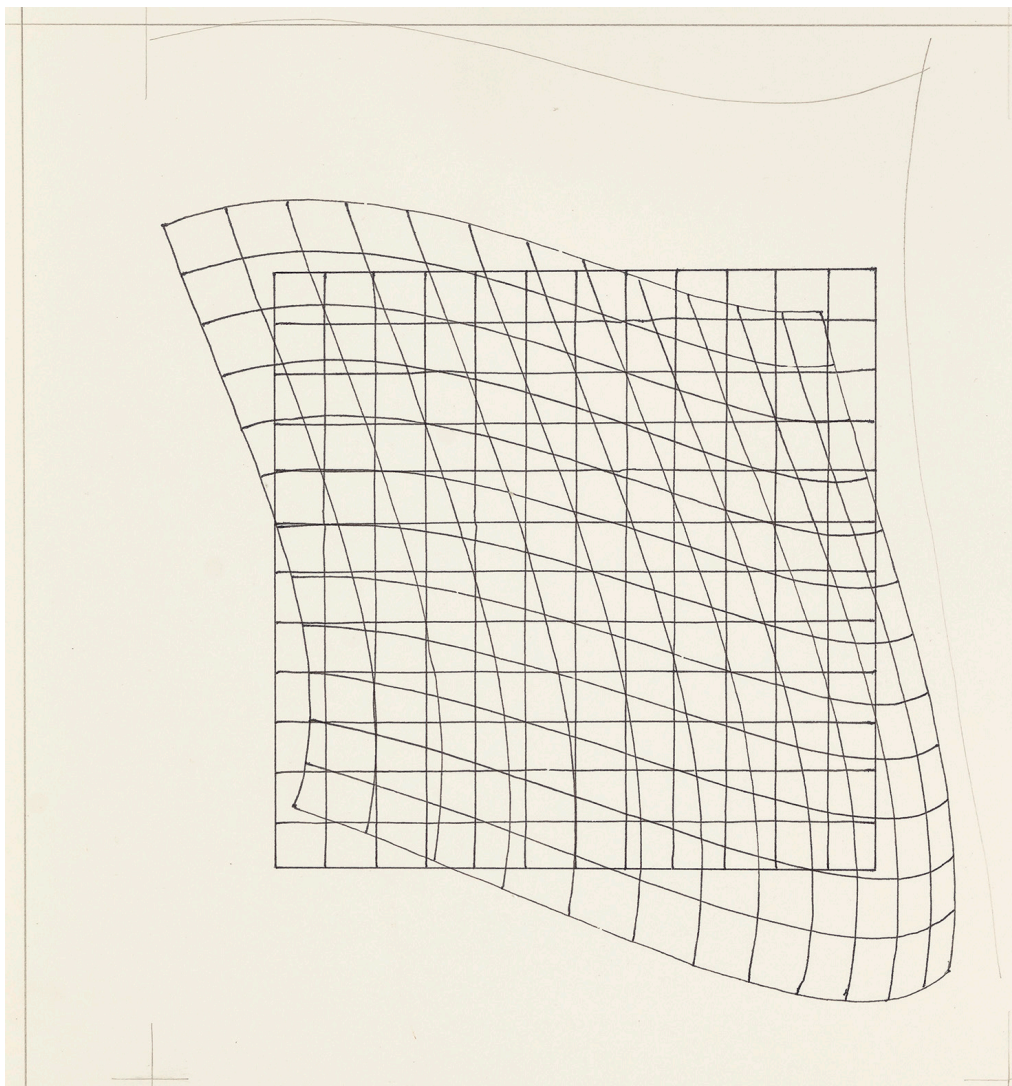


Fig. 8. Curve (sketch), 2019, India ink on paper, 30 x 30 cm.



Fig. 9. Cityscape XIII, Curved, 2020, Polyester, 38 x 38 x 6 cm.



Fig. 10. Cityscample XII 3D, 2021, SLS print, approx. 20 x 20 x 20 cm.

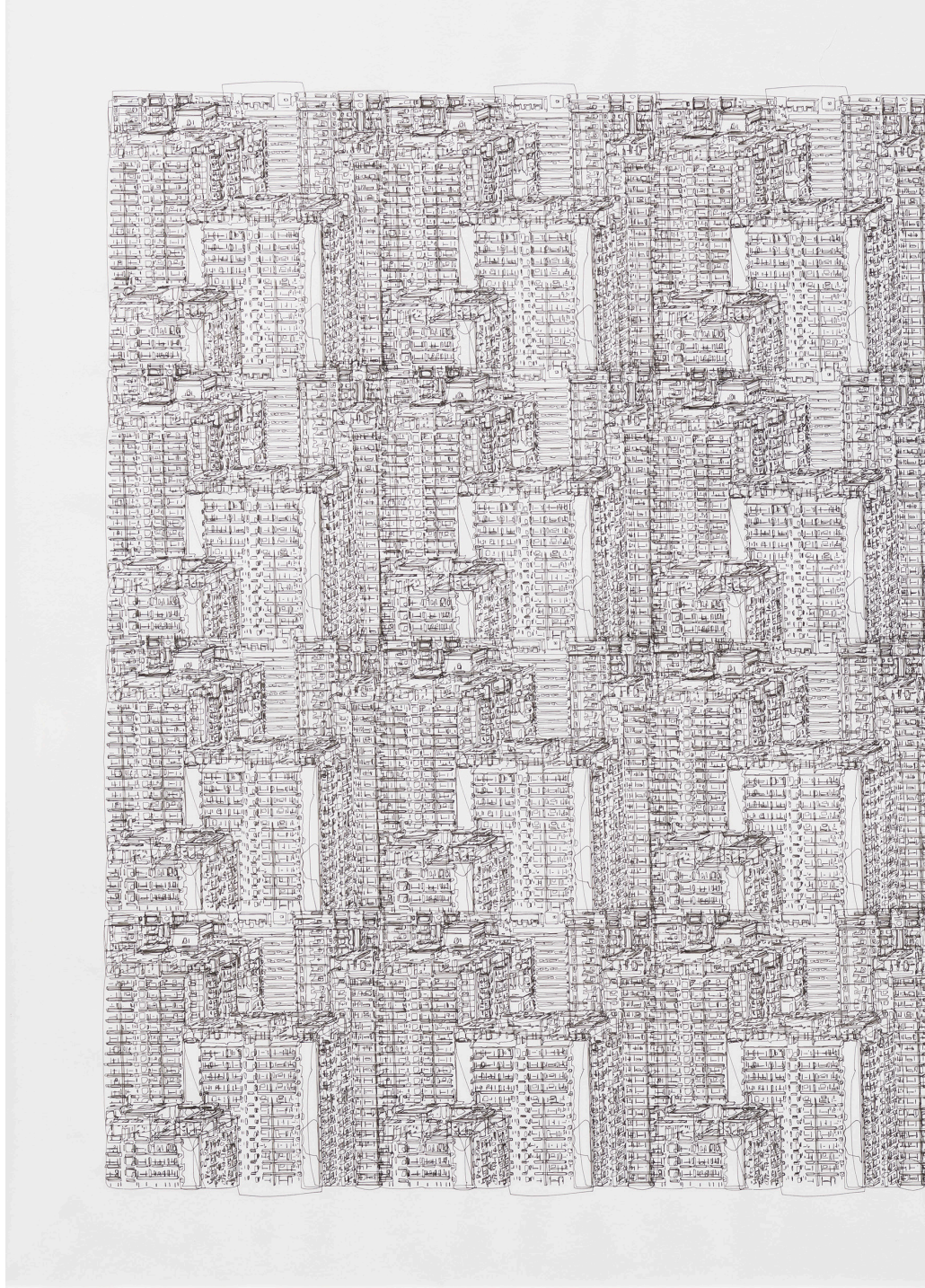
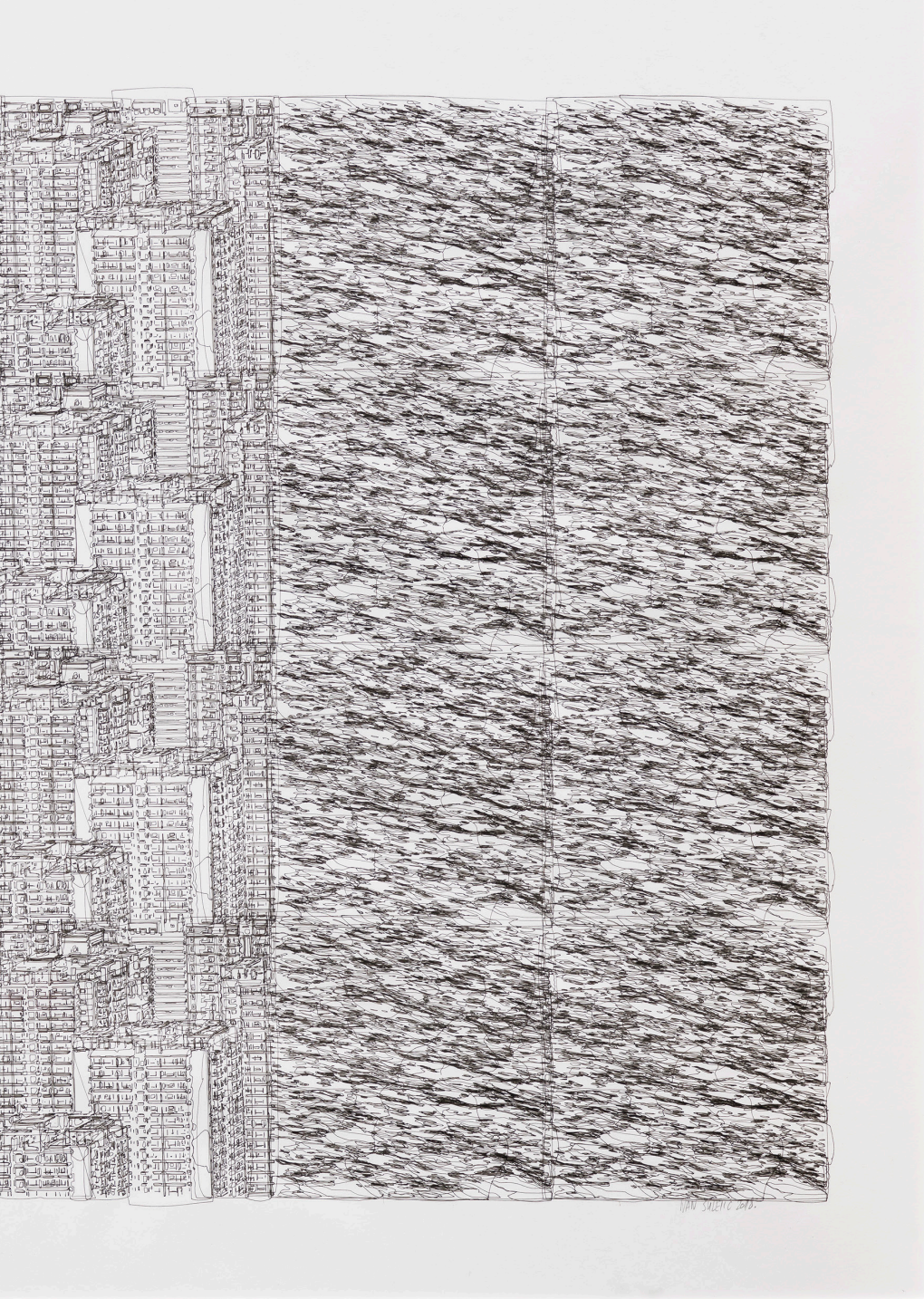


Fig. 11. Waterfront, 2018, India ink on paper, 100 x 140 cm.

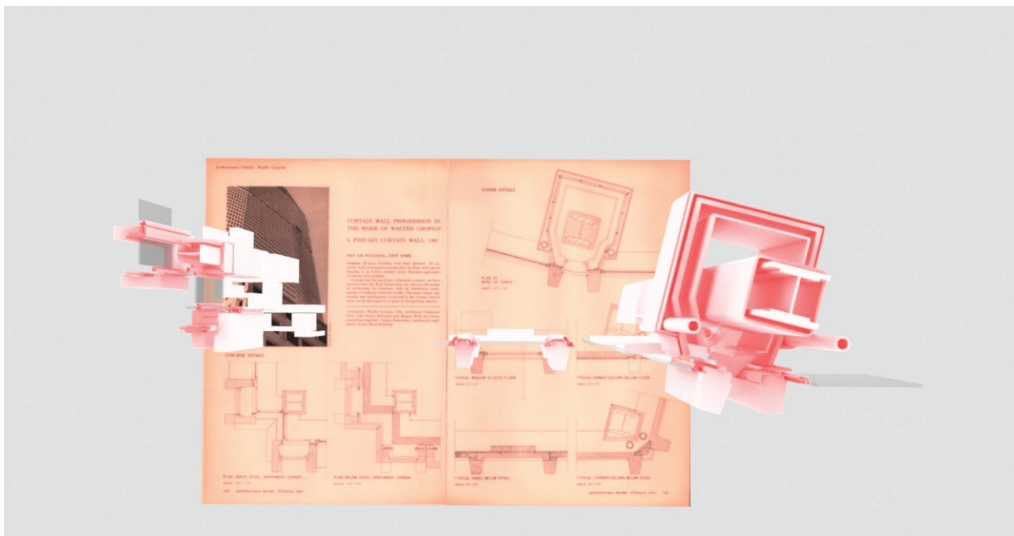
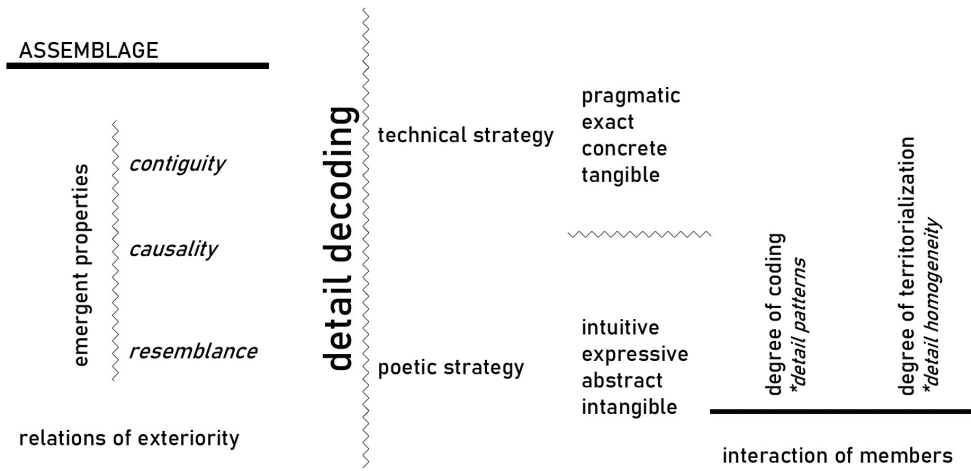


POST-TECTONIC TRANSLATIONS: DECODING POETICS OF ARCHITECTURAL DETAIL

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UP: Table. 1. Methodological overview of decoding detail drawings.

DOWN: Fig. 1. Digitisation and interpretive 3D modelling following different scope, depth and scale.

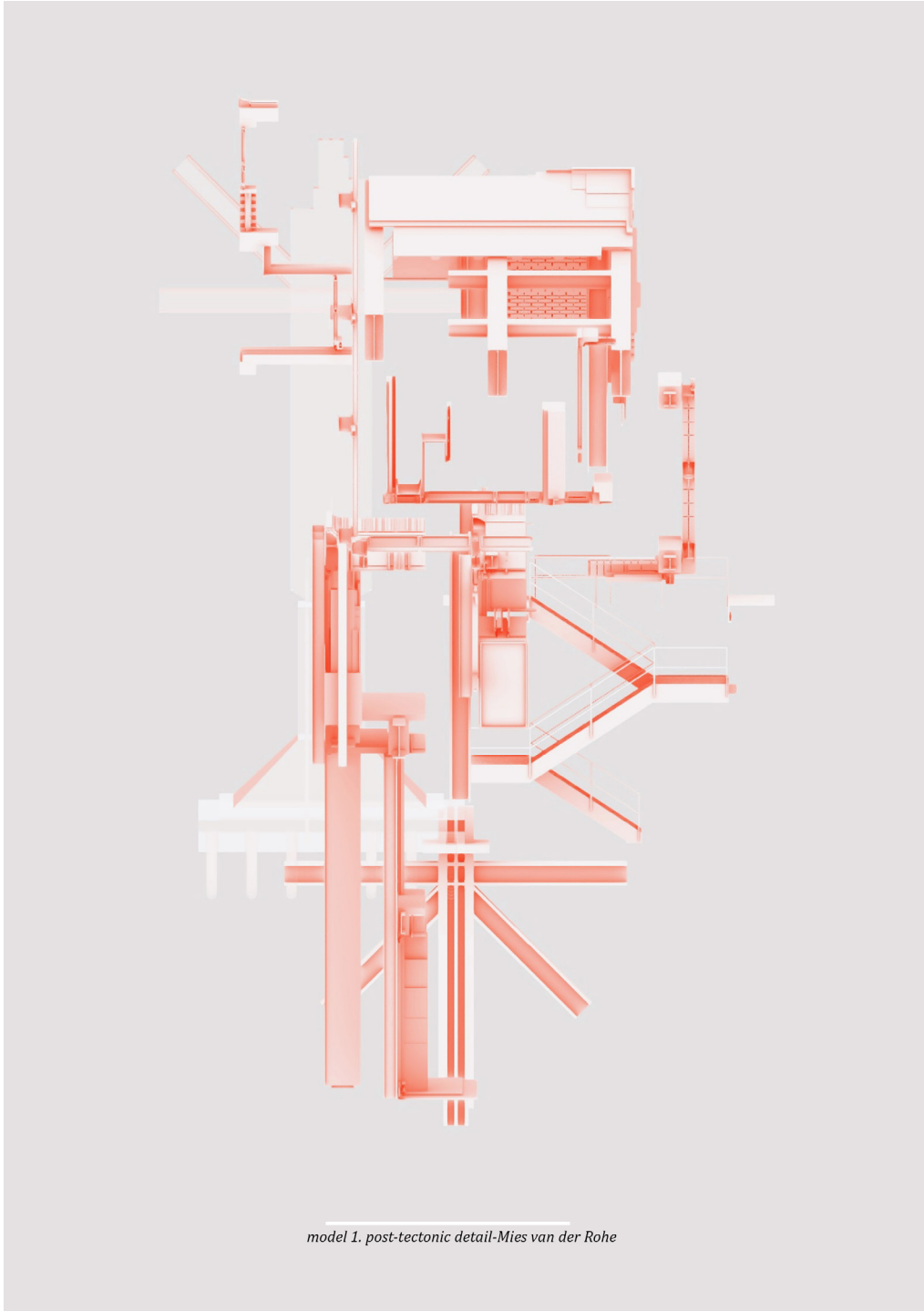


Fig. 2. Decoding the details – a case study: Mies van der Rohe.

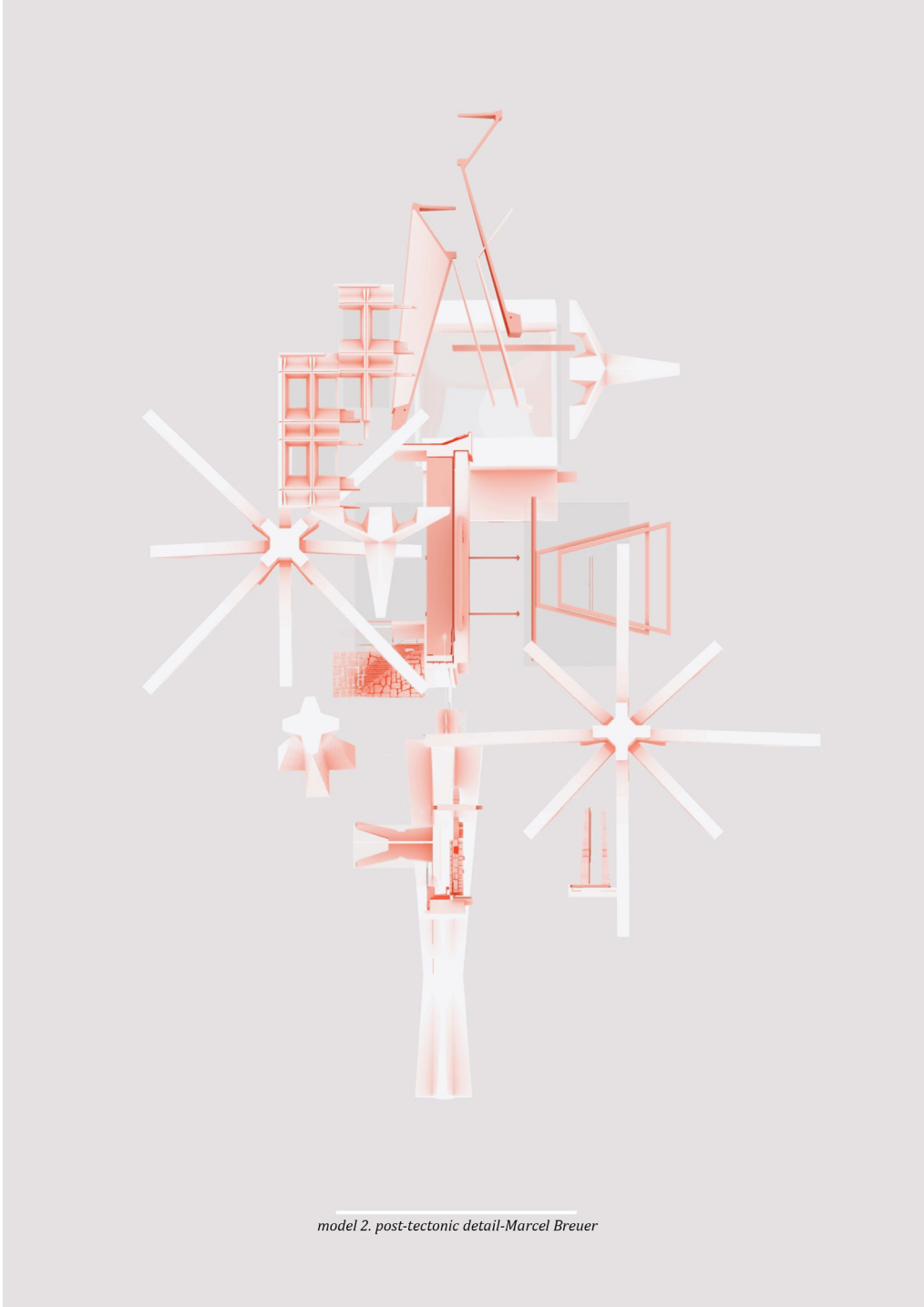


Fig. 3. Decoding the details – a case study: Marcel Breuer.

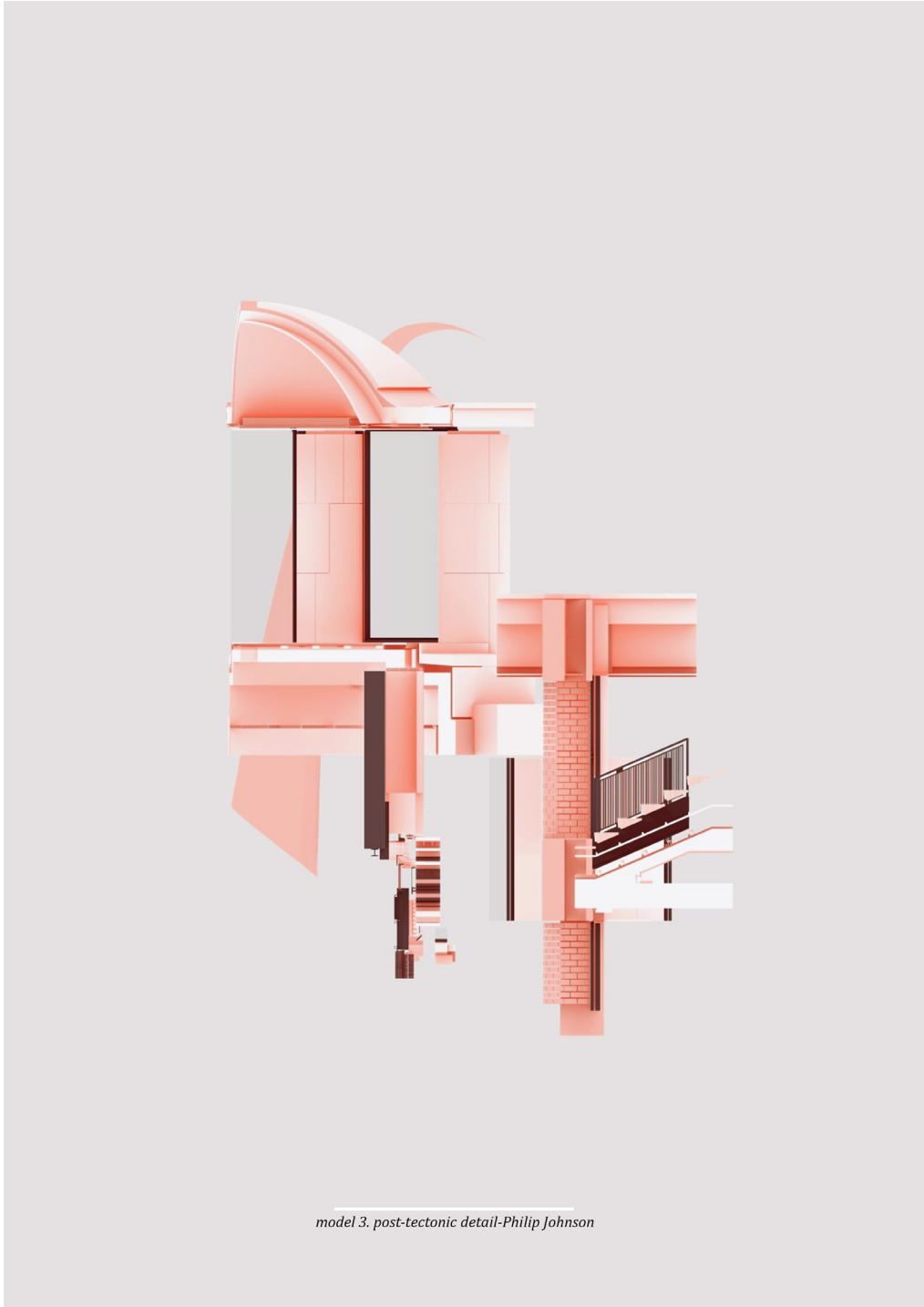
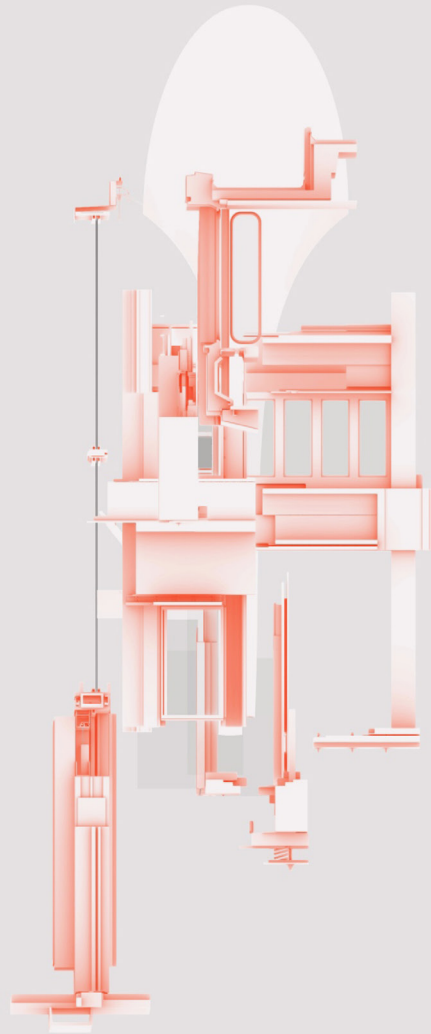


Fig. 4. Decoding the details – a case study: Philip Johnson.



model 4. post-tectonic detail-Minoru Yamasaki

Fig. 5. Decoding the details – a case study: Minoru Yamasaki.

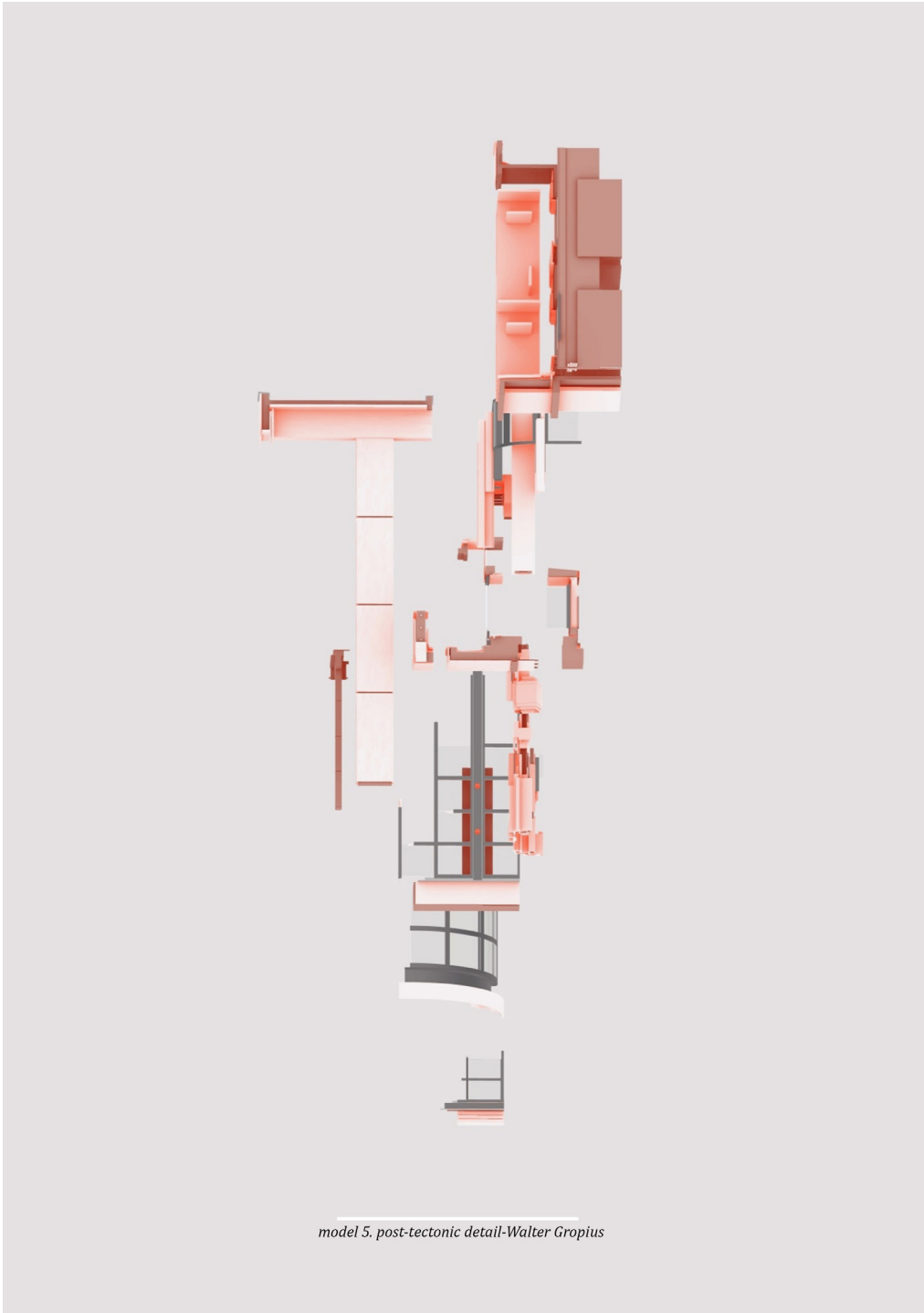
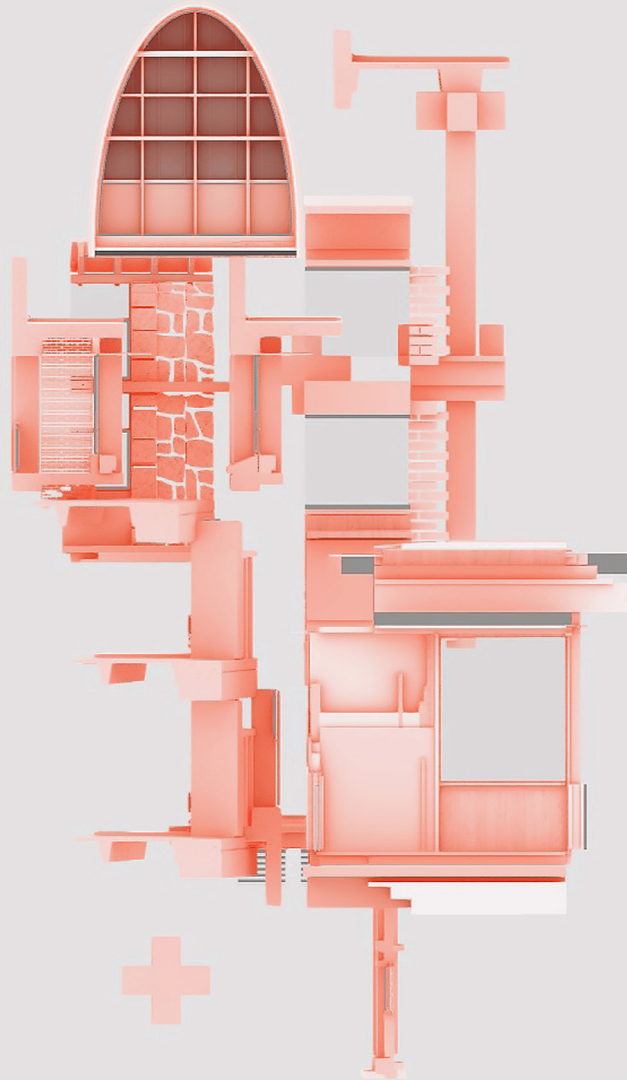


Fig. 6. Decoding the details – a case study: Walter Gropius..



model 6. post-tectonic detail-Gyo Obata

Fig . 7 . Decoding the details – a case study: Gyo Obata.

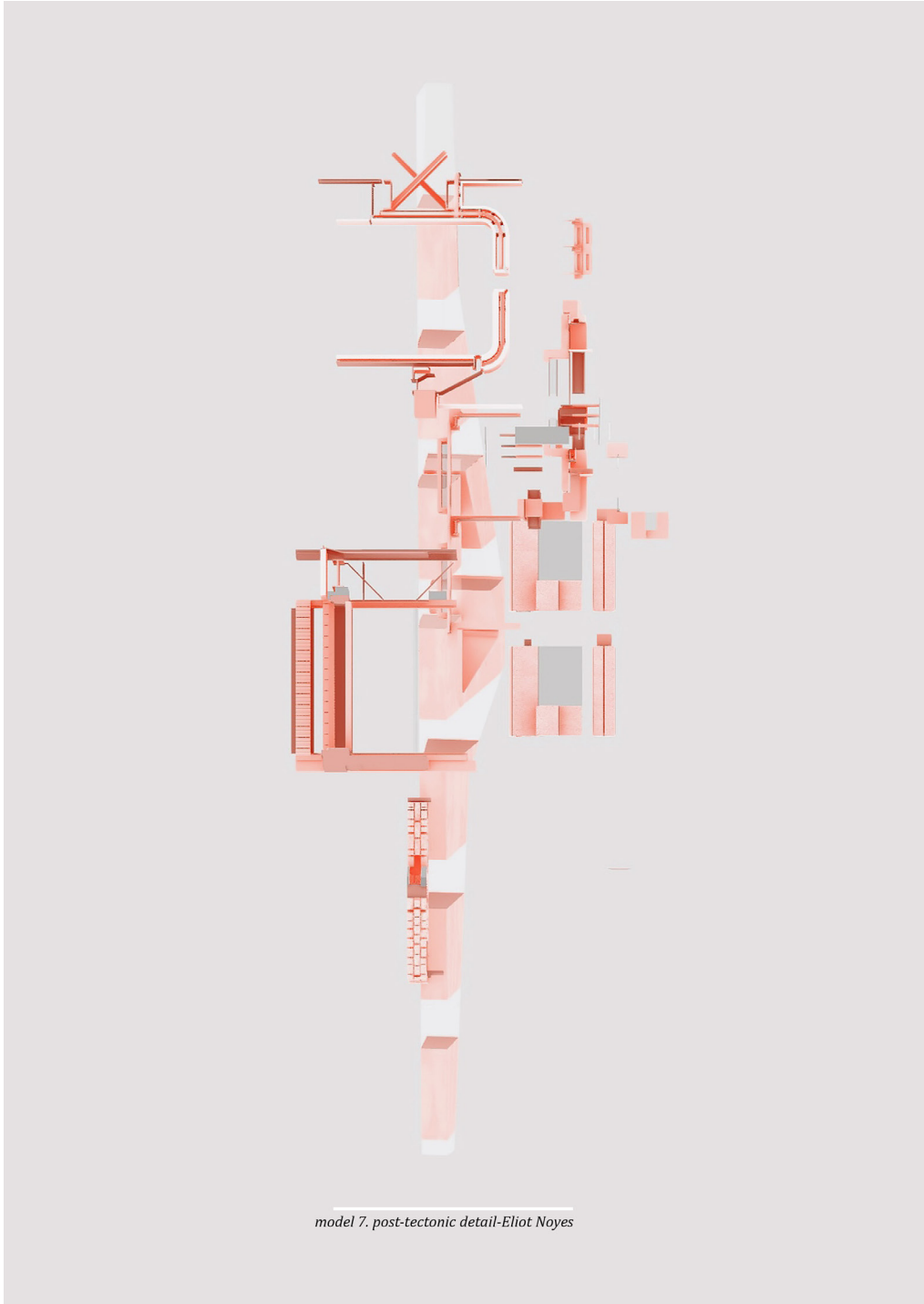


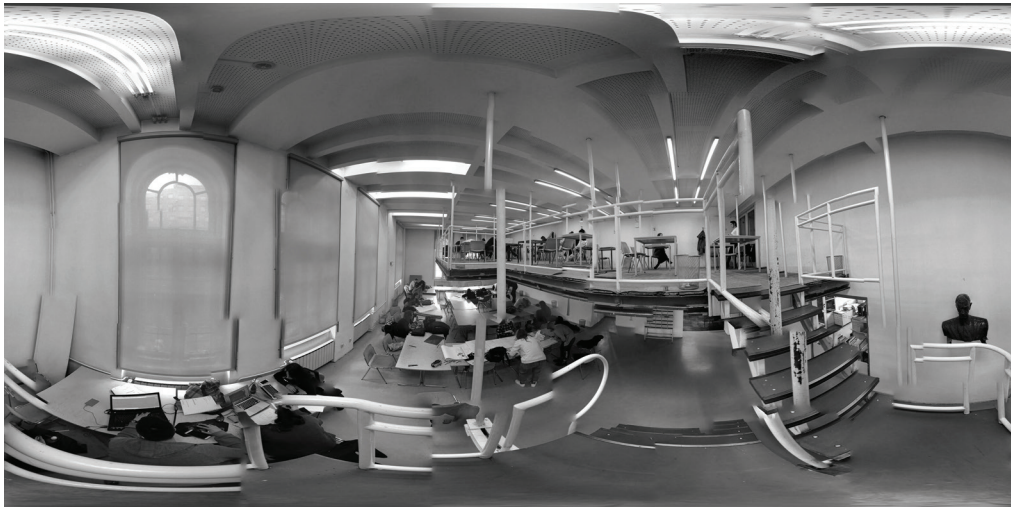
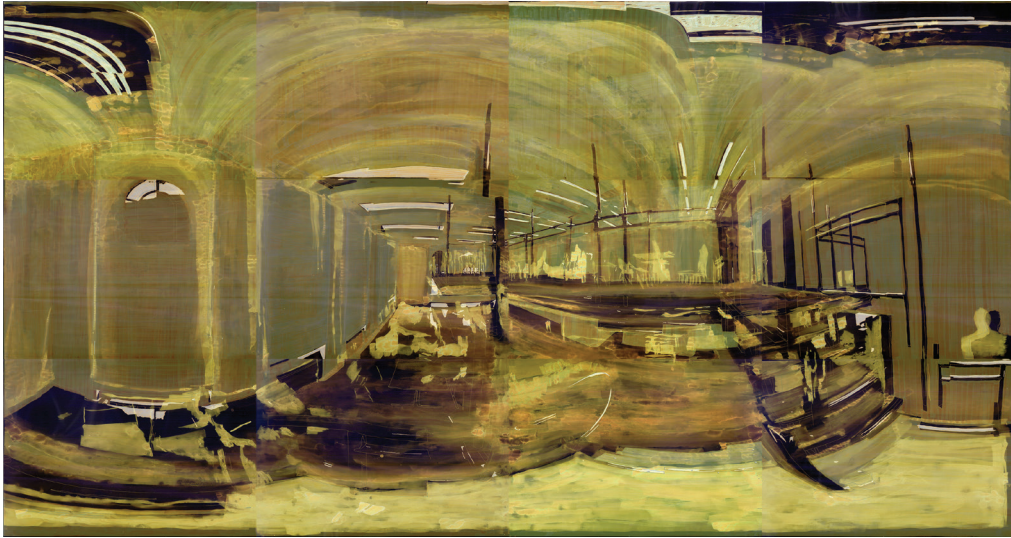
Fig. 8. Decoding the details – a case study: Eliot Noyes..

DISCOVERING THE HYBRID MODEL OF ARCHITECTURAL DRAWING AT THE BEGINNING OF THE XXI CENTURY

Hristina Meseldžija

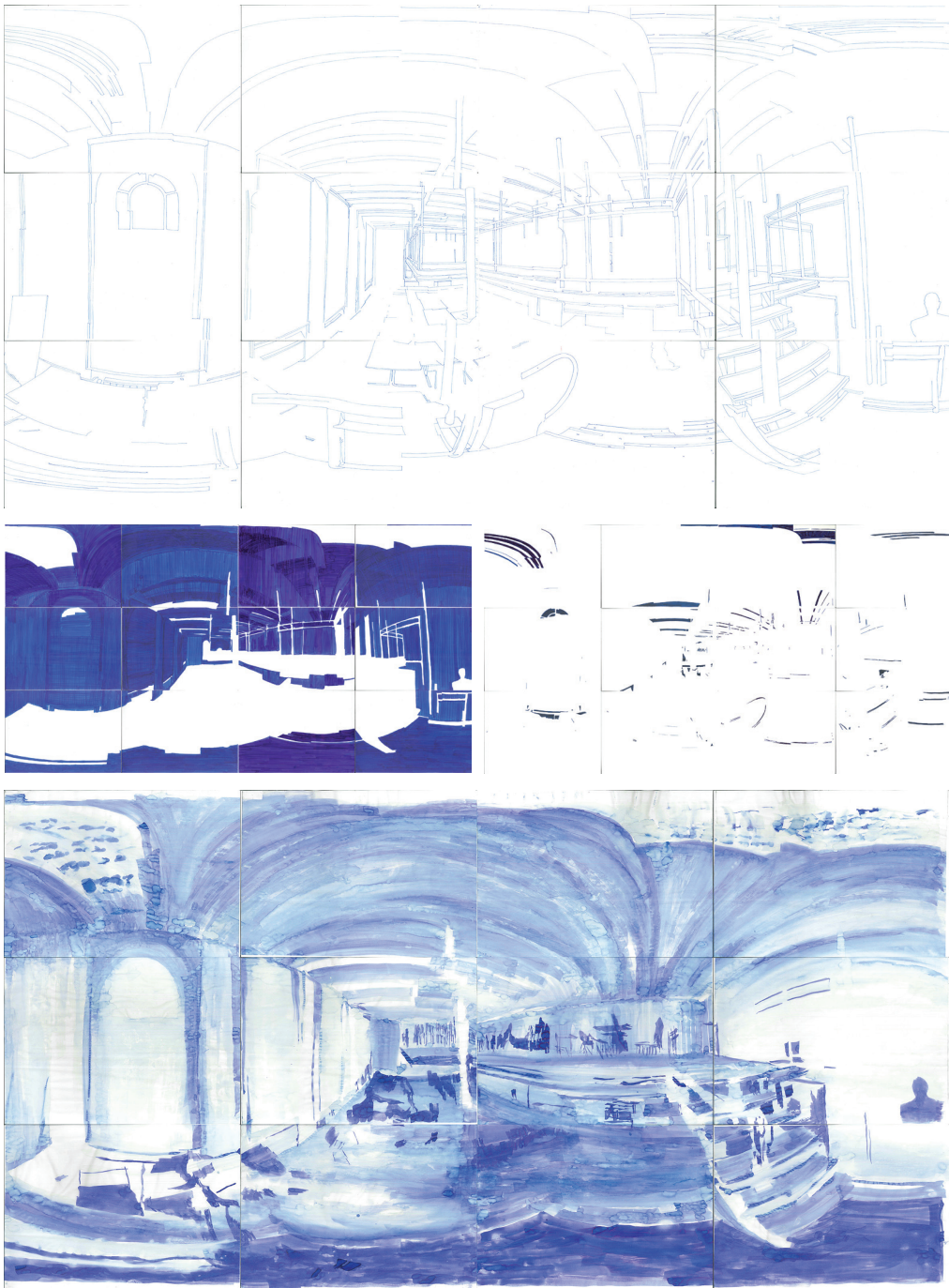
University of Belgrade – Faculty of Architecture

hristina.stojanovic@arh.bg.ac.rs



UP: Fig. 1. *Interior of the Reading Room at the Faculty of Architecture University in Belgrade, Digital collage, 2017, 162x82cm, HS.*

DOWN: Fig. 2. *Interior of the Reading Room at the Faculty of Architecture University in Belgrade, Photo, 2017, 162x82cm, HS.*

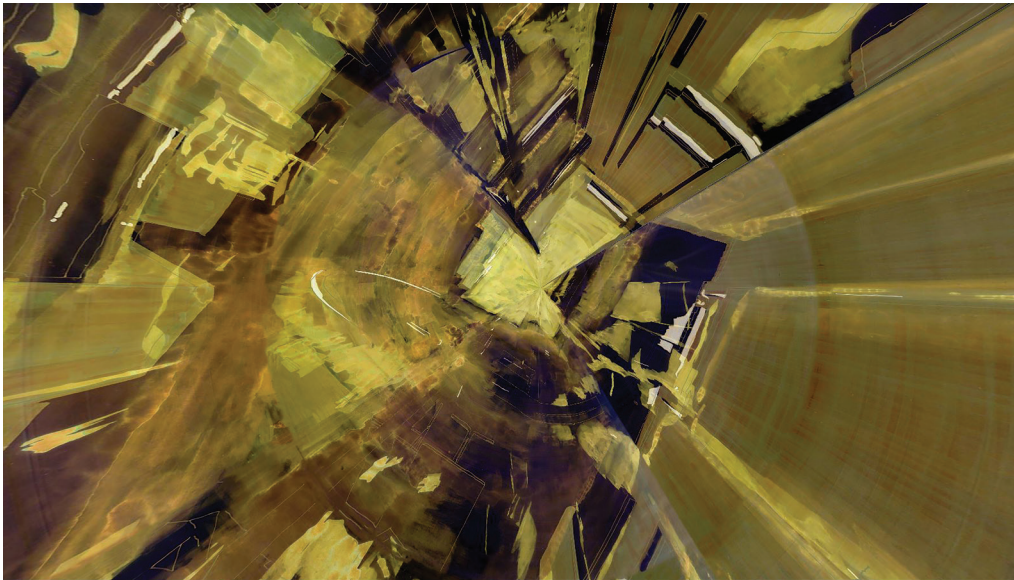
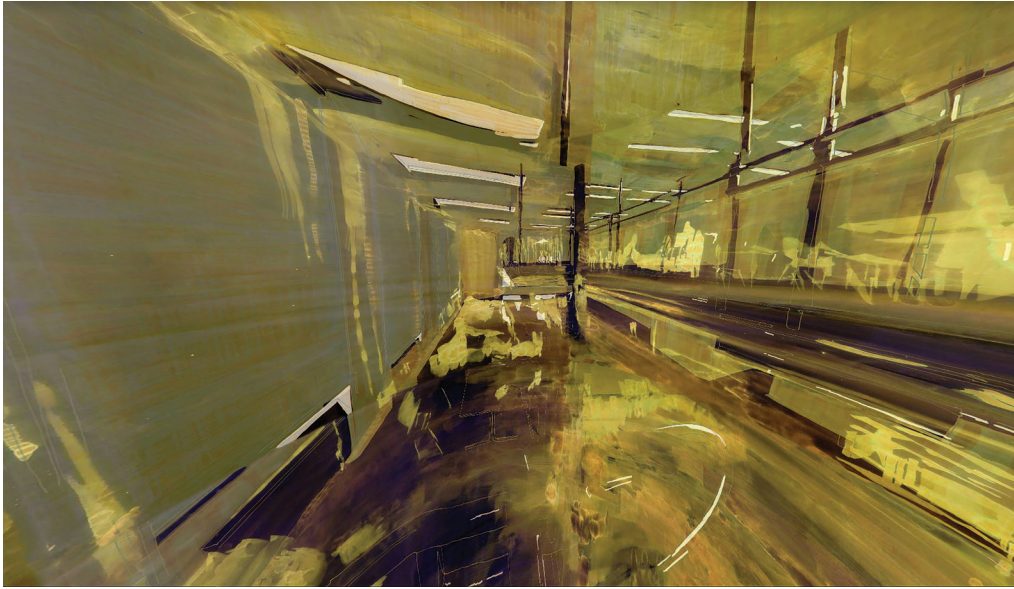


UP: Fig. 3.1. *Interior of the Reading Room at the Faculty of Architecture University in Belgrade* - Edges, Technical pen on tracing paper, 2017, 12 drawings 42x29.7cm, HS.

CENTRE LEFT: Fig. 3.2. *Interior of the Reading Room at the Faculty of Architecture University in Belgrade* - Surfaces, Marker pen on tracing paper, 2017, 12 drawings 42x29.7cm, HS.

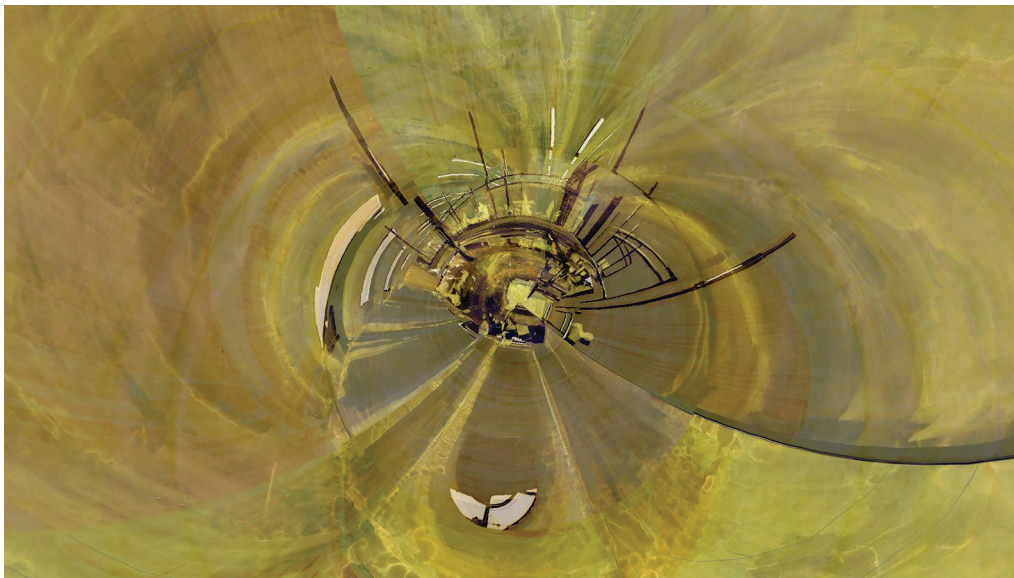
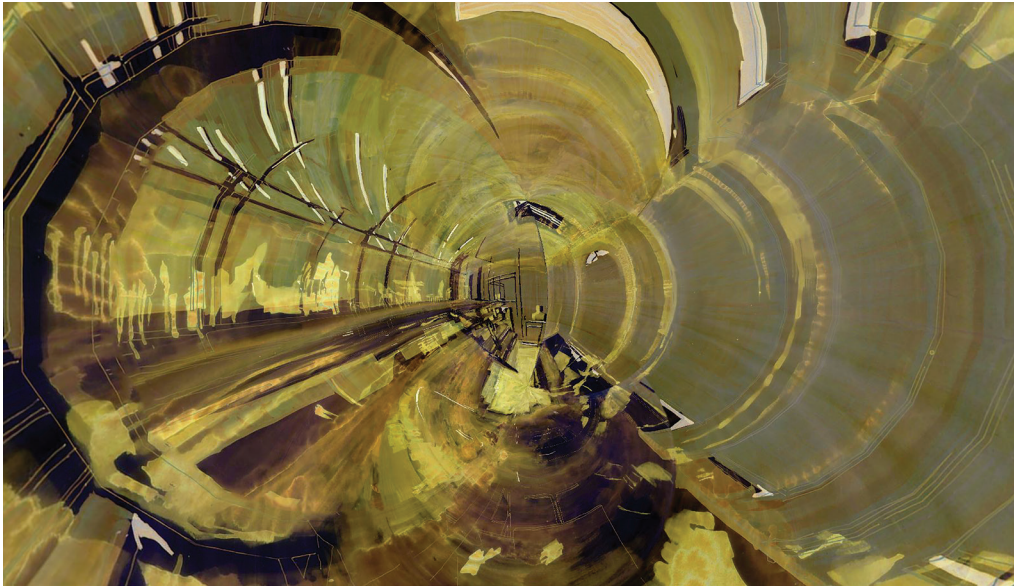
CENTRE RIGHT: Fig. 3.3. *Interior of the Reading Room at the Faculty of Architecture University in Belgrade* - Light, Marker pen on tracing paper, 2017, 12 drawings 42x29.7cm, HS.

DOWN: Fig. 3.4. *Interior of the Reading Room at the Faculty of Architecture University in Belgrade* - Shadows, Ink on tracing paper, 2017, 162x82cm, HS.



UP: Fig. 4.1. *Interior of the Reading Room at the Faculty of Architecture University in Belgrade*, Virtual tour screenshot (Projection: Architectural), 2017, HS.

DOWN: Fig. 4.2. *Interior of the Reading Room at the Faculty of Architecture University in Belgrade*, Virtual tour screenshot (Projection: Fisheye), 2017, HS.



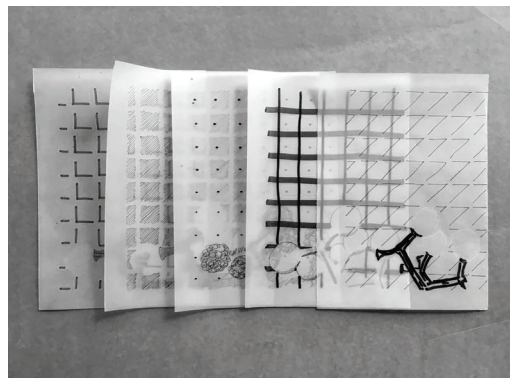
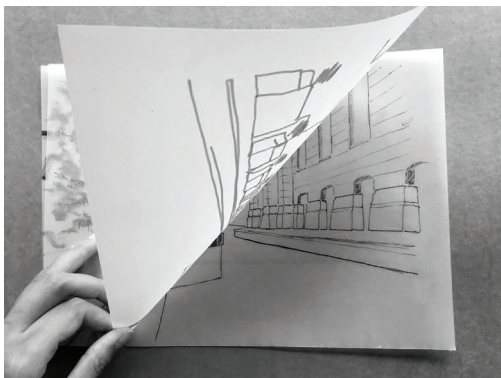
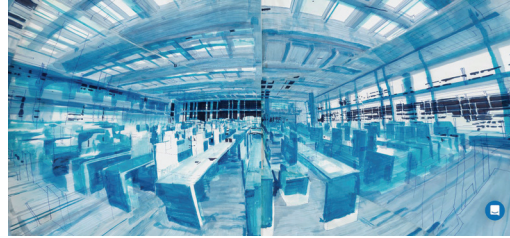
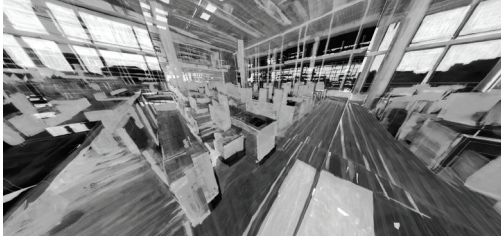
UP: Fig. 4.3. *Interior of the Reading Room at the Faculty of Architecture University in Belgrade,* Virtual tour screenshot (Projection: Little Planet), 2017, HS

DOWN: Fig. 4.4. *Interior of the Reading Room at the Faculty of Architecture University in Belgrade,* Virtual tour screenshot (Projection: Stereographic), 2017, HS.



Fig. 5. Interior of the Reading Room at the National Library of Serbia, Digital collage, 2019, 200x100cm, HS.

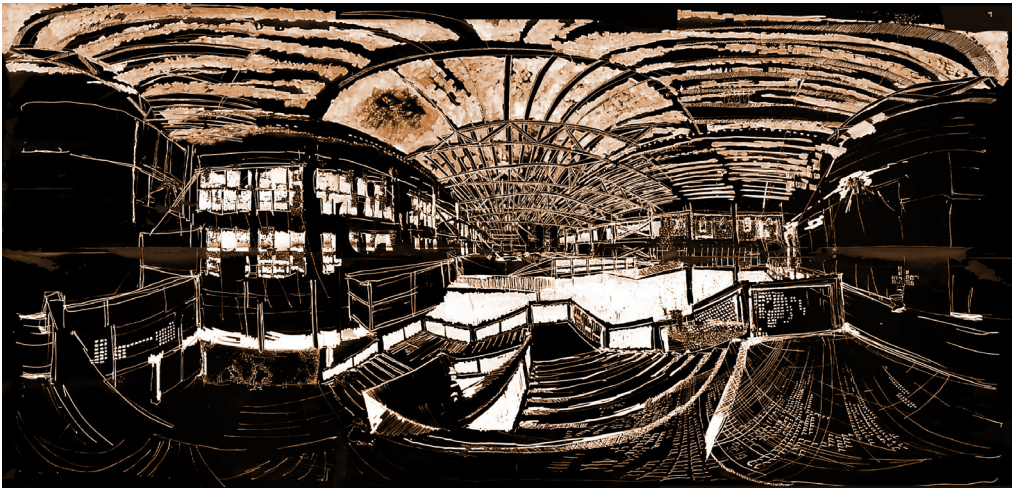




UP LEFT: Fig. 6.1. *Interior of the Reading Room at the National Library of Serbia*, Virtual tour screenshot (Projection: Architectural), 2019, HS.

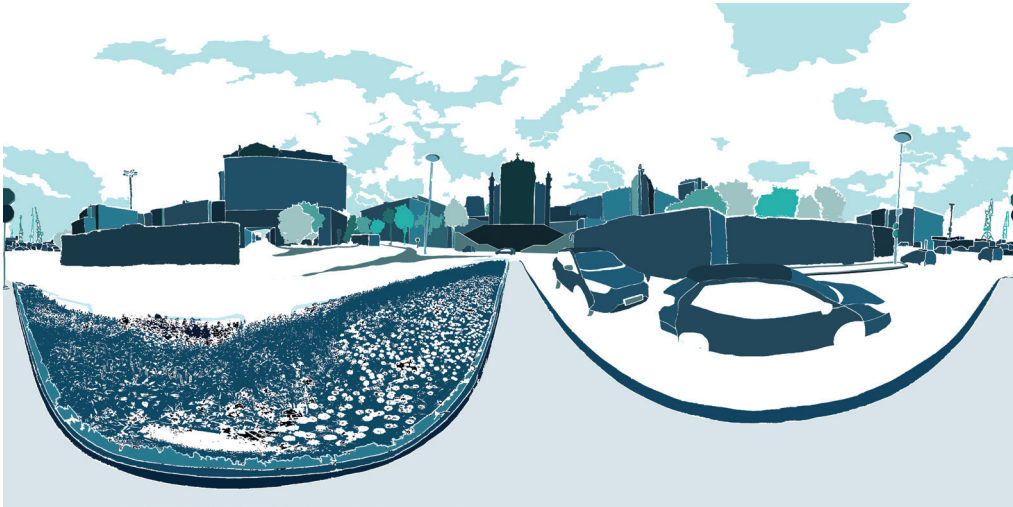
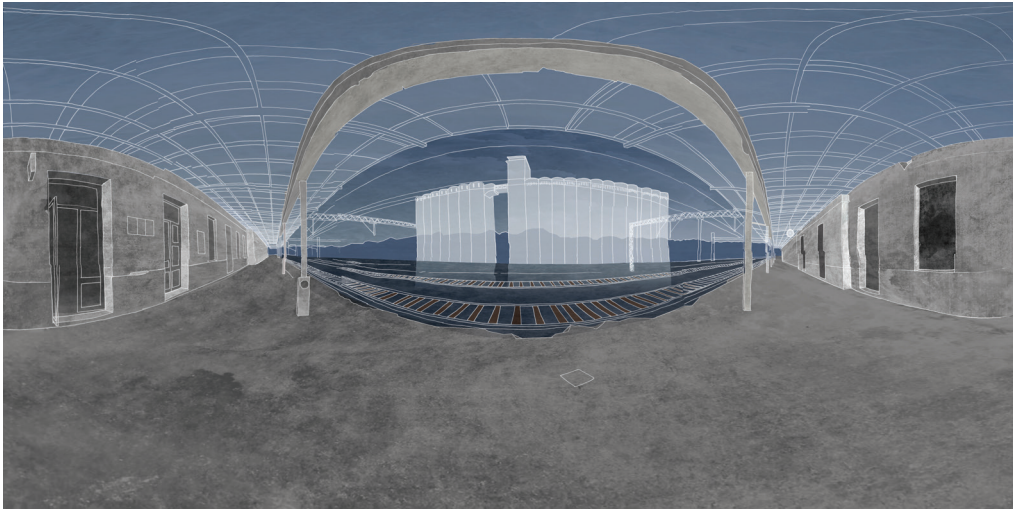
UP RIGHT: Fig. 6.2. *Interior of the Reading Room at the National Library of Serbia*, Video screenshot (Projection: Architectural), 2019, HS.

CENTER/DOWN: Figs. 7.1. - 7.4. Photos by HS.



UP: Fig. 8. Marte Aateigen Marum, *Export Drvo*, Virtual tour screenshot, 2018.

DOWN: Fig. 9. Hilda Uusitalo, *Abandoned House*, Virtual tour screenshot, 2018.



UP: Fig. 10. Natalia Drożdżowska, *Train Station*, Virtual tour screenshot, 2018.

DOWN: Fig. 11. Aniruddh Sharan, *Bus Station*, Virtual tour screenshot, 2018.



Fig. 12. Photo by HS.

COGNITION OF URBAN PLACES: TRANSLATING THROUGH DIAGRAMS

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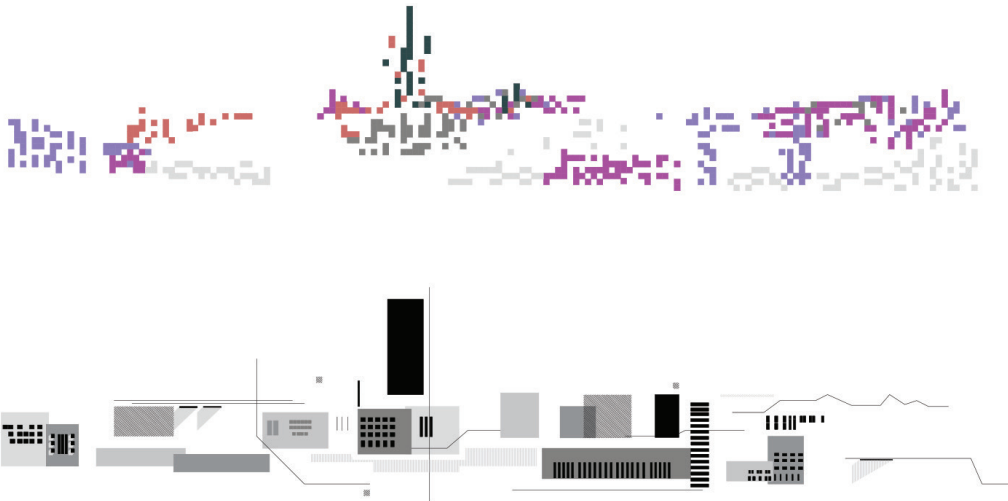
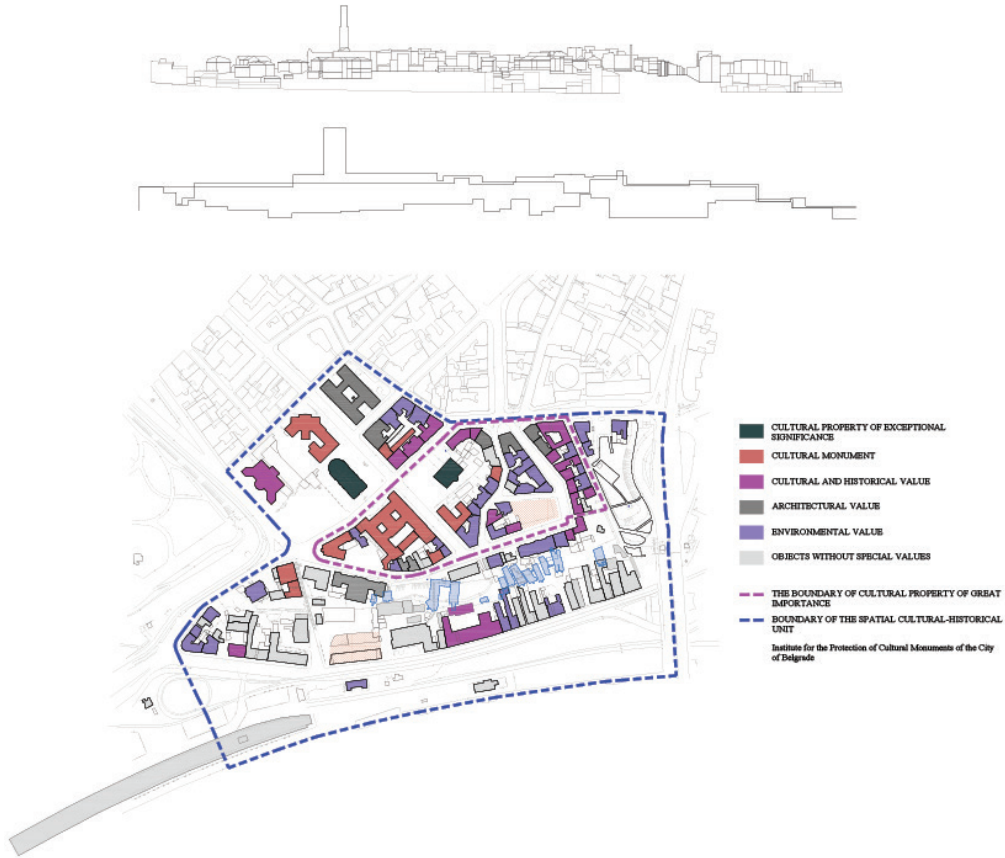
CHARACTERISTICS OF DIAGRAMMATIC COGNITION	DESCRIPTION
Two-dimensionality	The diagram is not based on time conditioning, but on a hierarchy of spatial factors. While the other senses receive stimuli as successive sensations, the eye perceives multiple spatial elements simultaneously. This simultaneous presence, which is unique to seeing, has epistemological weight. The potential lies in recognizing relationships, proportions, and patterns in an abundance of multiplicity. Visual perception analyses our cognitive power through insight.
Directionality	The position of the body in space provides an elementary orientation in the environment, creating a basic structure of relations directing user up and down, in front of and behind, inside and outside, which establishes universal relations of order. The renunciation of the depth dimension, namely the reliance on the two-dimensionality of the surface for order and arrangement, enables the clearer formation of the basic schemes of what can be topologically connected.
Graphism	Lines form an archetypal definition of clear outline and justification of form. The line represents the foundation of operational images.
Syntacticity	Diagrams are not just static representations of the environment, but require additional interpretation and reading. We cannot simply see the diagram as a drawing, but interpret it as the result of a clear process.
Referentiality	Diagrams also represent the relationships between facts, whether of an empirical or theoretical nature, and detect their meaning. Reference is the foundation from which "visual claims" are defined.
Operationality	Signs, graphs and maps are not just a representation, but a space for interpreting, observing and exploring what is represented. Diagrams are not only a visual medium, but also a tool and instrument of reflection.

UP: Table. 1. Characteristics of Diagrammatic Cognition.



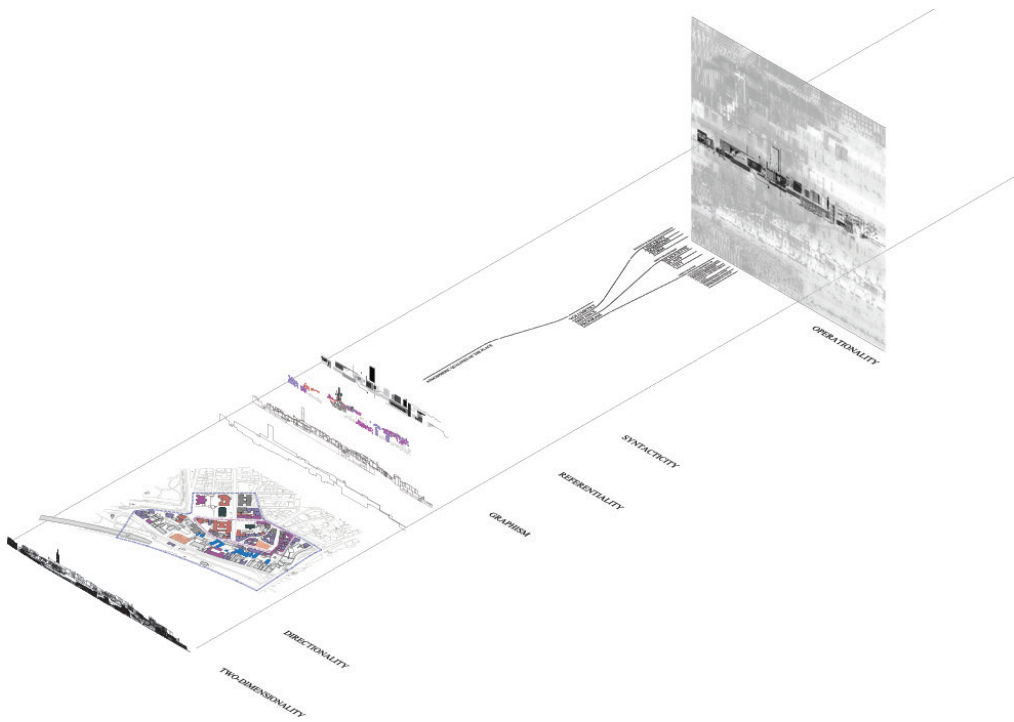
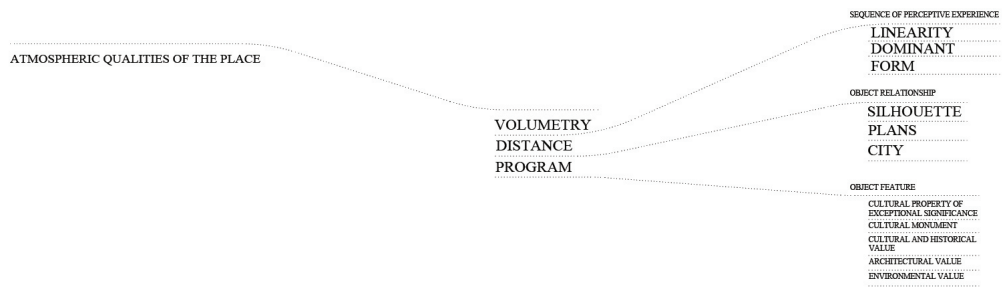
UP: Fig. 2. Diagram analysis of the street front of Kosančičev Venac.

DOWN: Fig. 3. Kosančičev Venac elevation.



UP: Fig. 4. Kosančićev Venac: graphic analysis.

DOWN : Fig. 5. Kosančićev Venac: forming the visual language.



UP: Fig. 6. Theoretical standpoints and their analogies in physical space
DOWN: Fig. 7. Synthesis diagram

SUPERPOWERS OF MONTAGE: A DESIGN-DRIVEN RESEARCH EXPERIMENT

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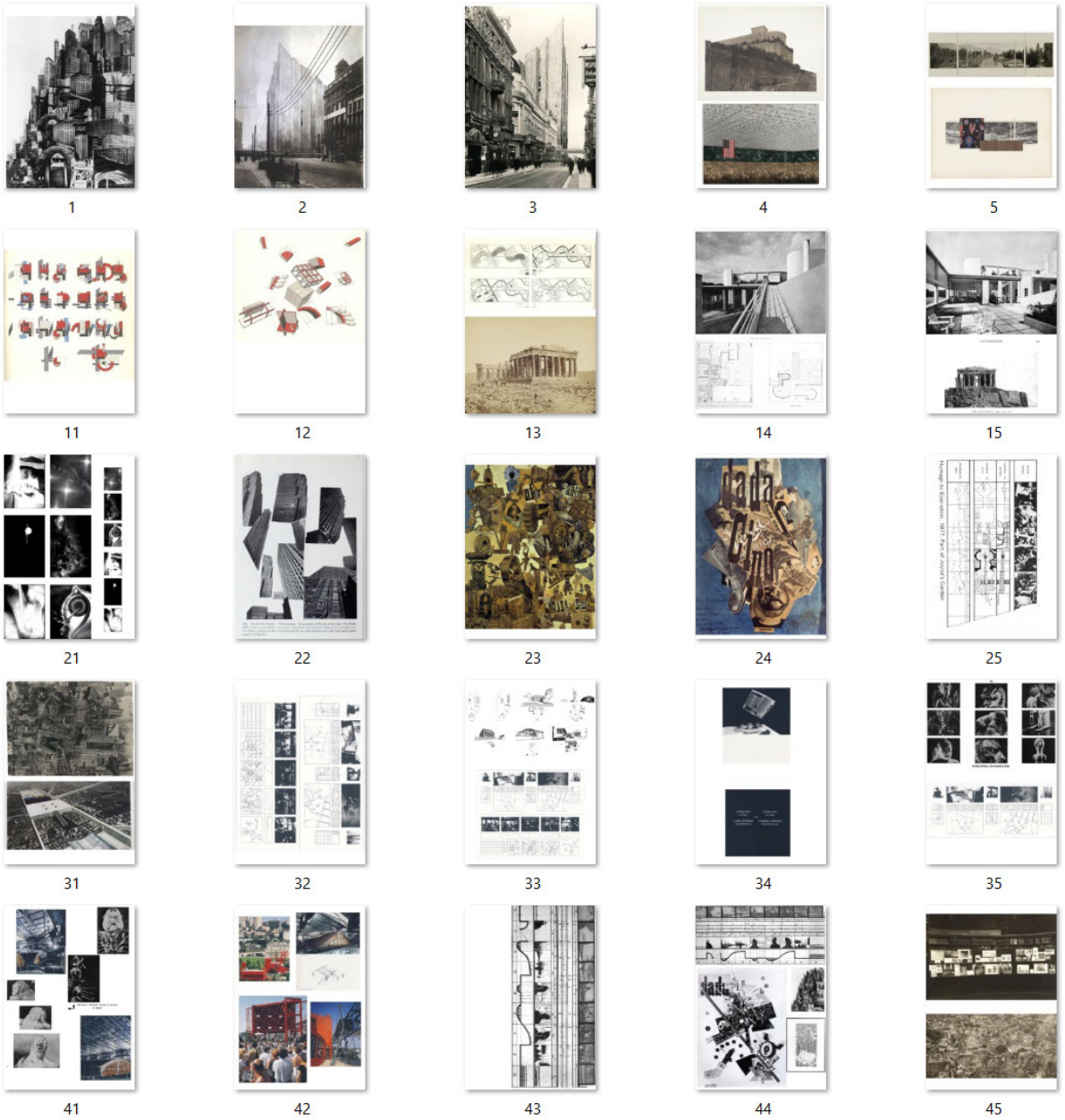


Fig. 1. Phase 1 - The Atlas of the Research.



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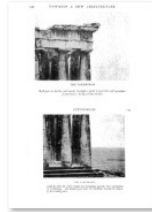
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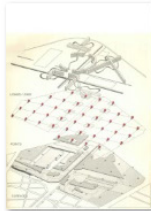
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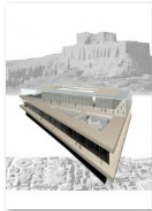
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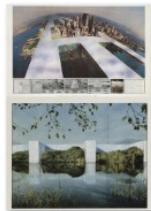
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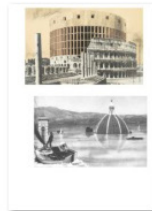
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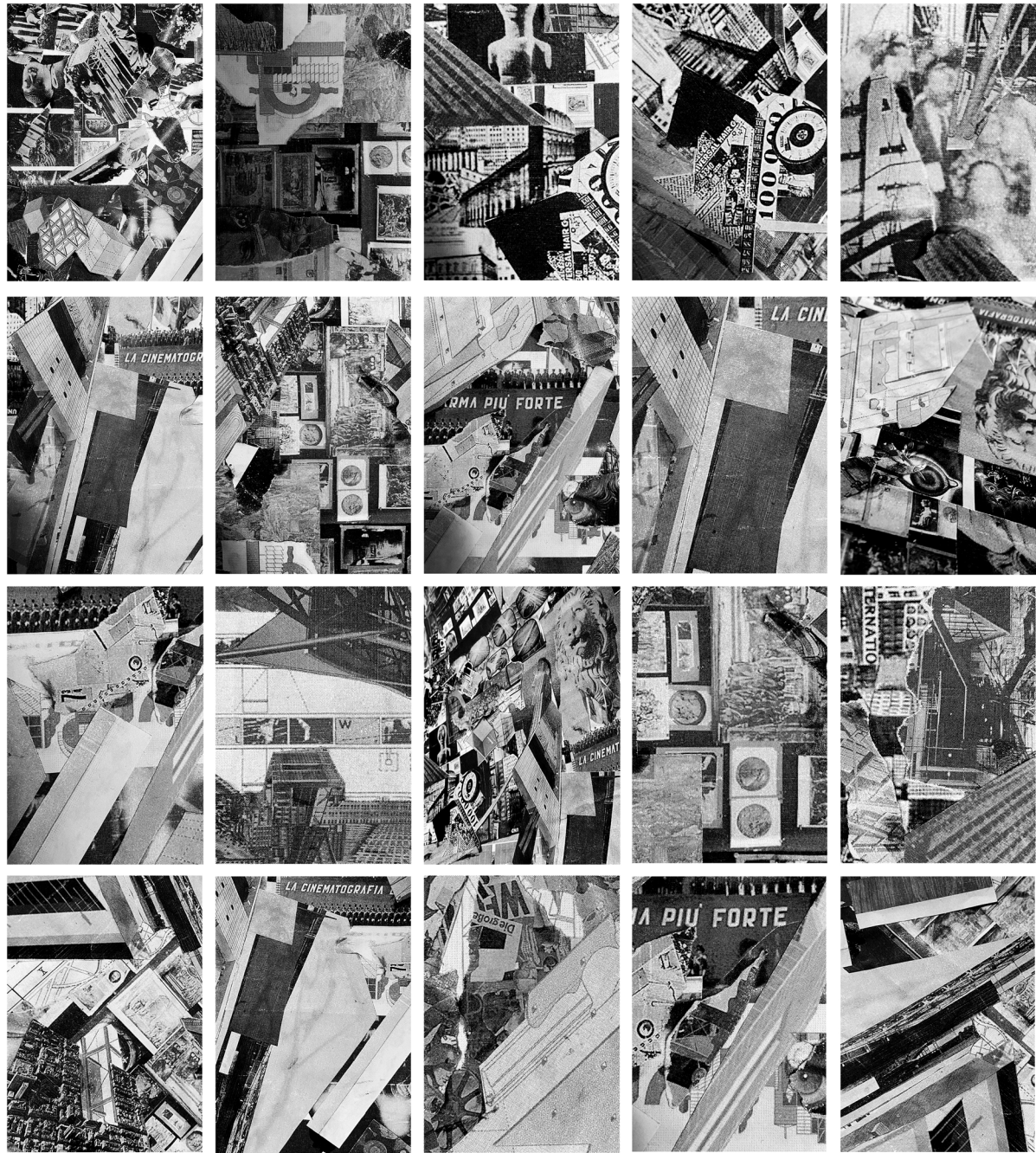
50



Fig. 3. Phase 3 - Zooming and Framing.



Fig. 4. Phase 4 - Zooming and framing 2



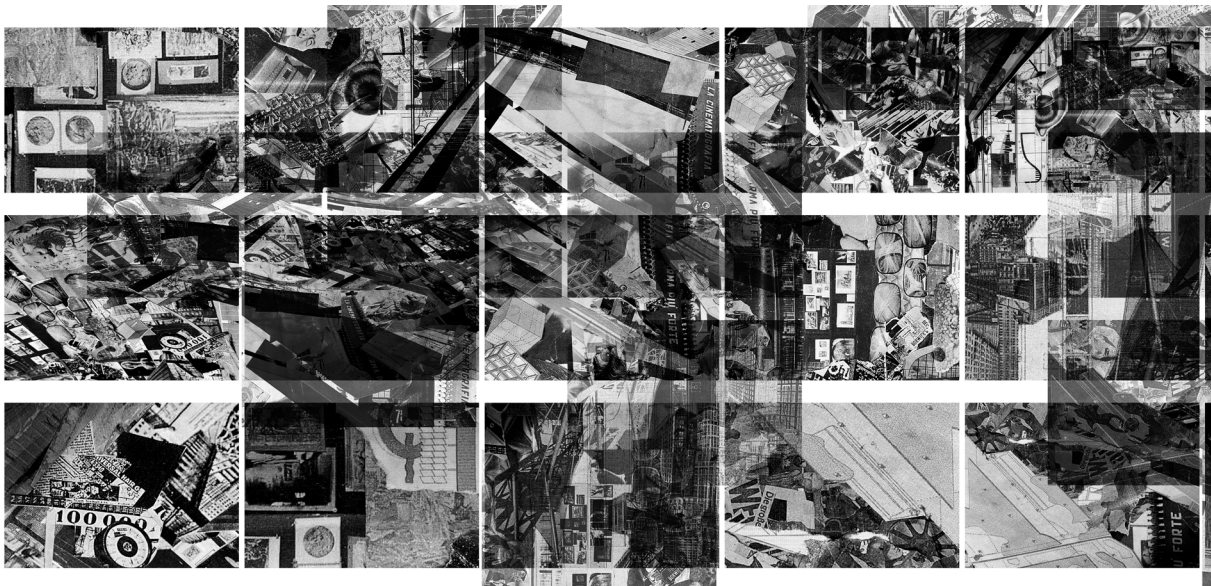
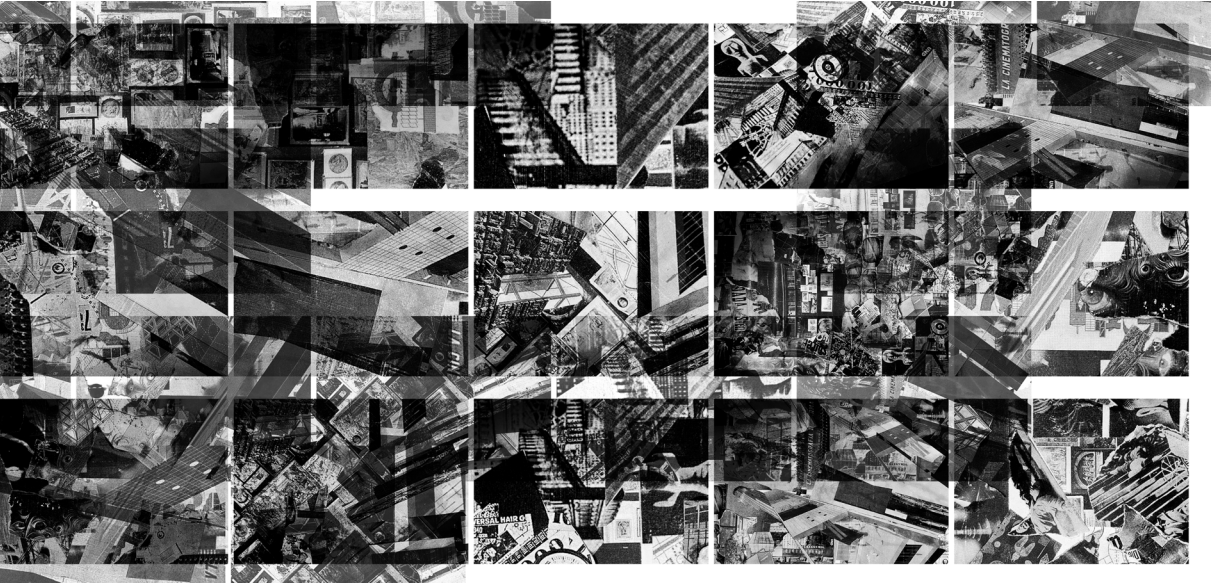


Fig. 5. Phase 4 - Cinematic Montage..



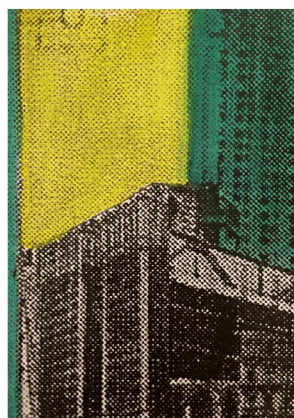
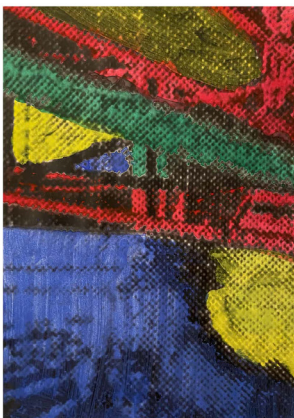
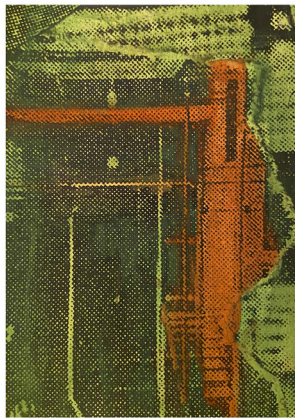
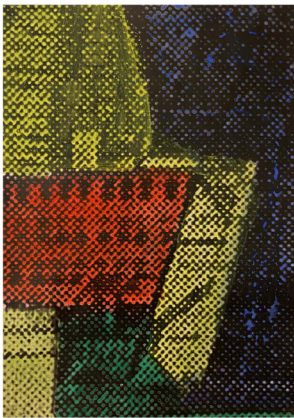
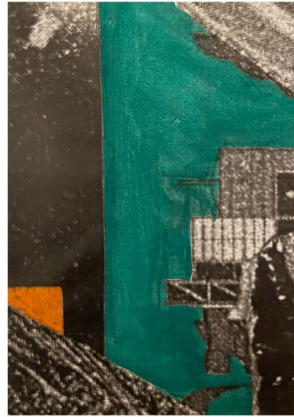
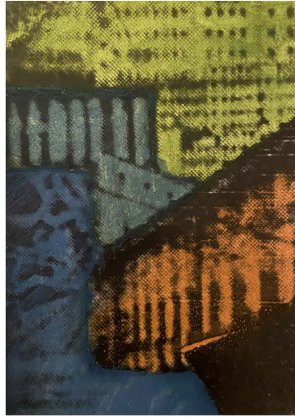
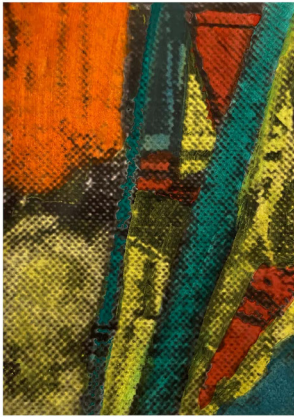


Fig. 6. Phase 5 - Hand-colouring Overpainting.

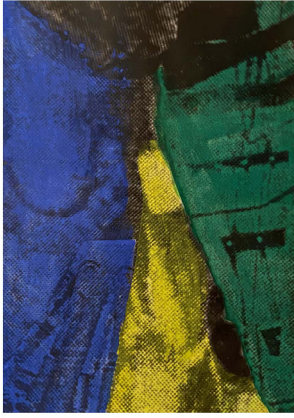
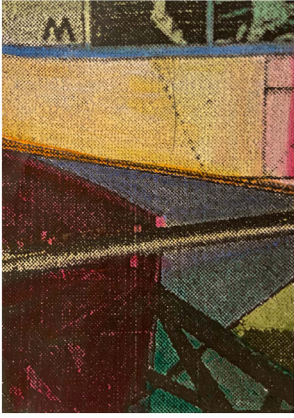
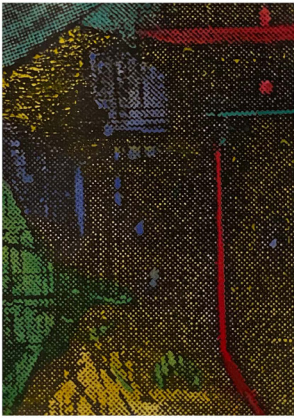
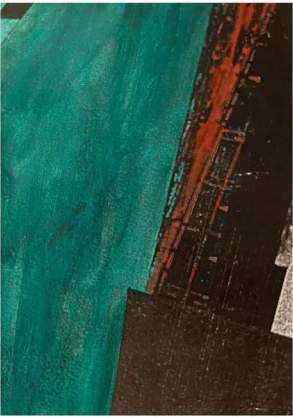
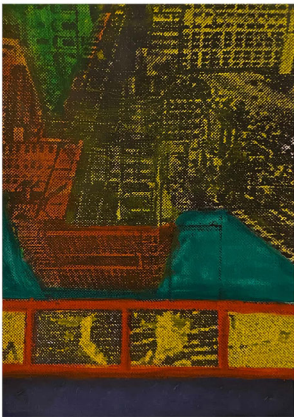
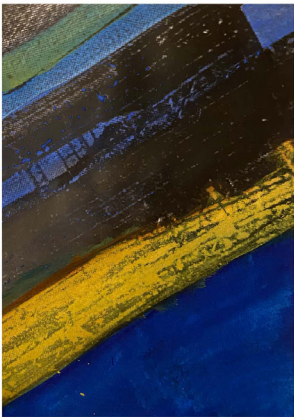




Fig. 7. Phase 6 - Collage.



Fig. 8. Phase 6 - Collage.



Fig. 9. Phase 7 - Spatiotemporal Montage.

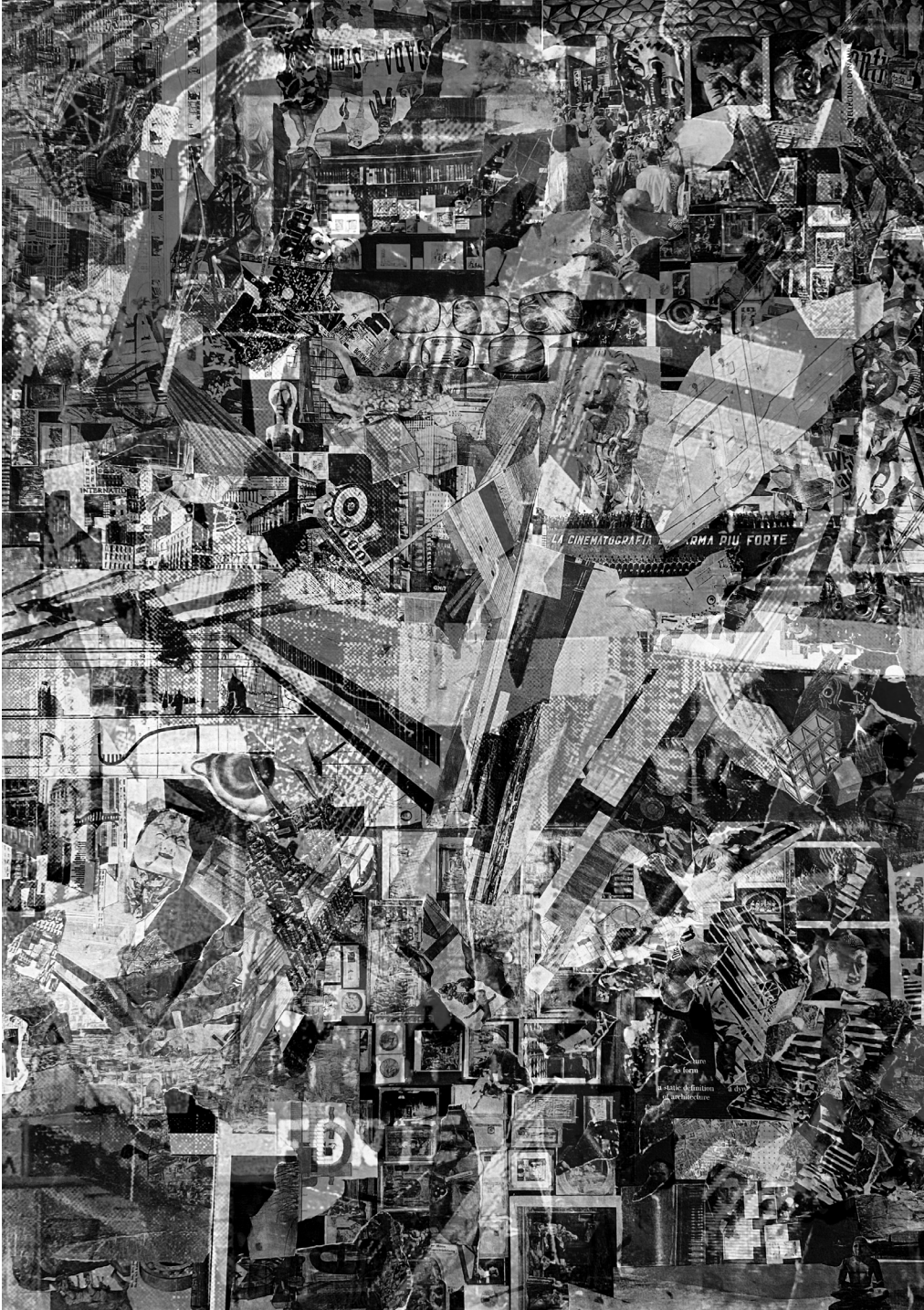


Fig. 10. Phase 7 - Spatiotemporal Montage

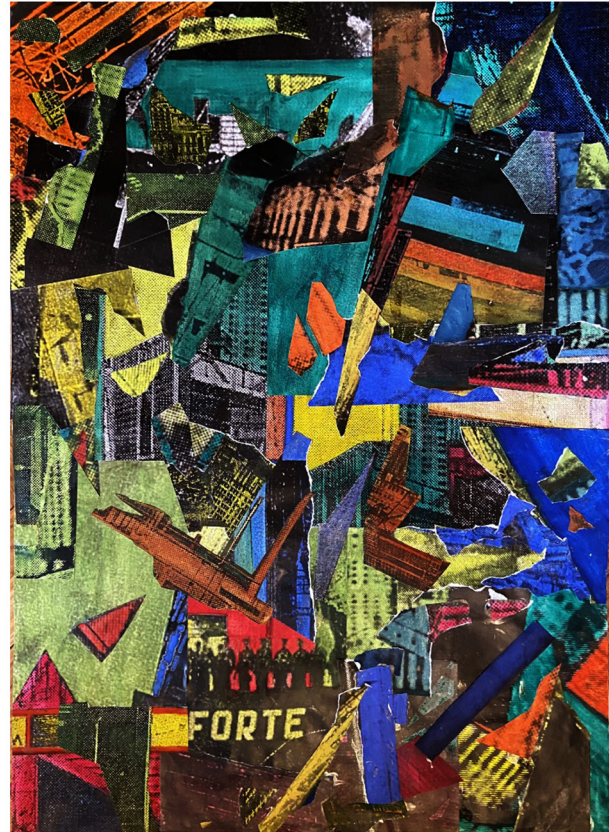
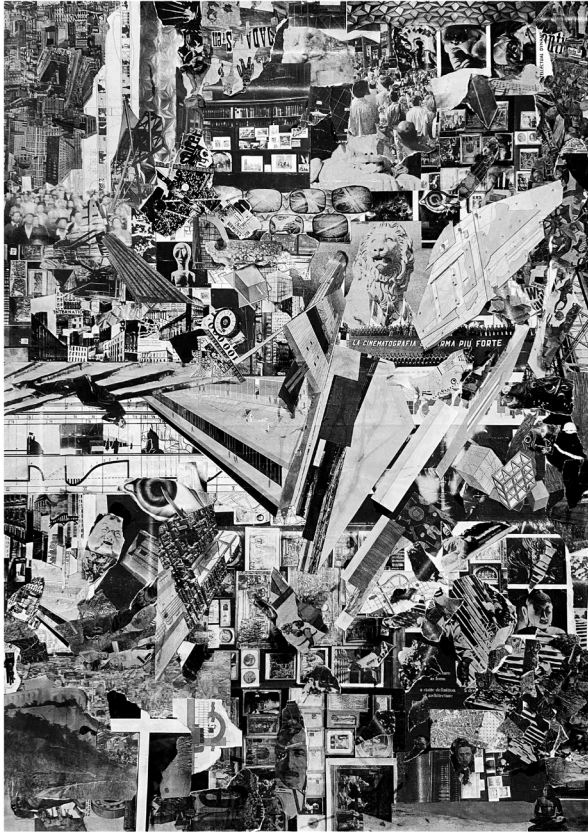


Fig. 11. Phase 7 - Superpowers of Montage.



DEVELOPMENT OF DRAWING AS A TOOL FOR *READING* THE CITYSCAPE THROUGH THE EXPERIMENT ON BLOCK 30 IN NEW BELGRADE

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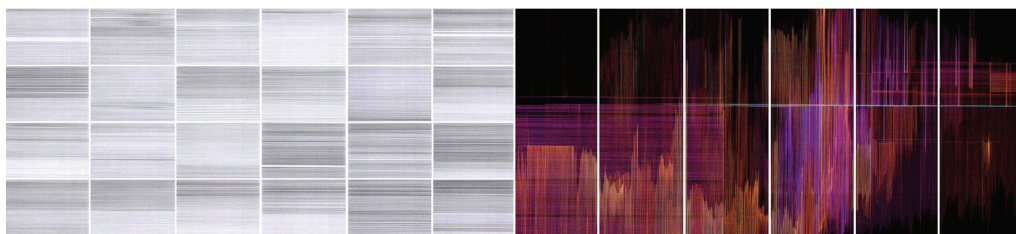
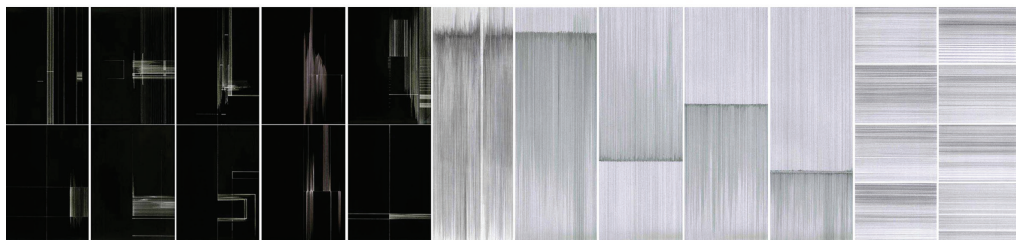
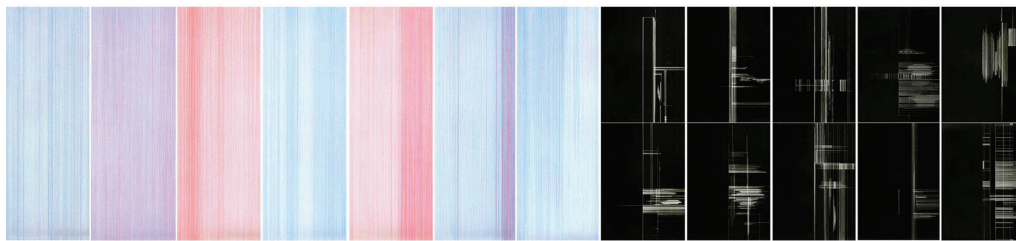
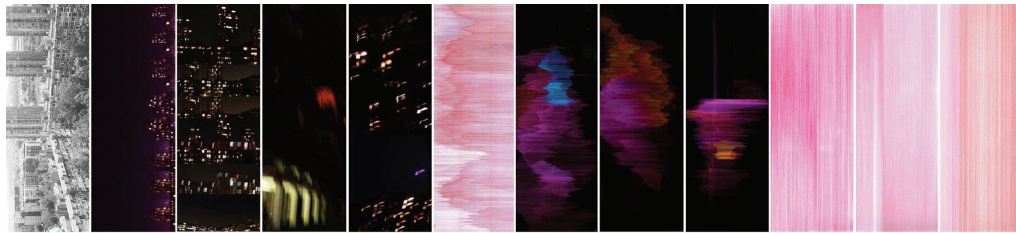
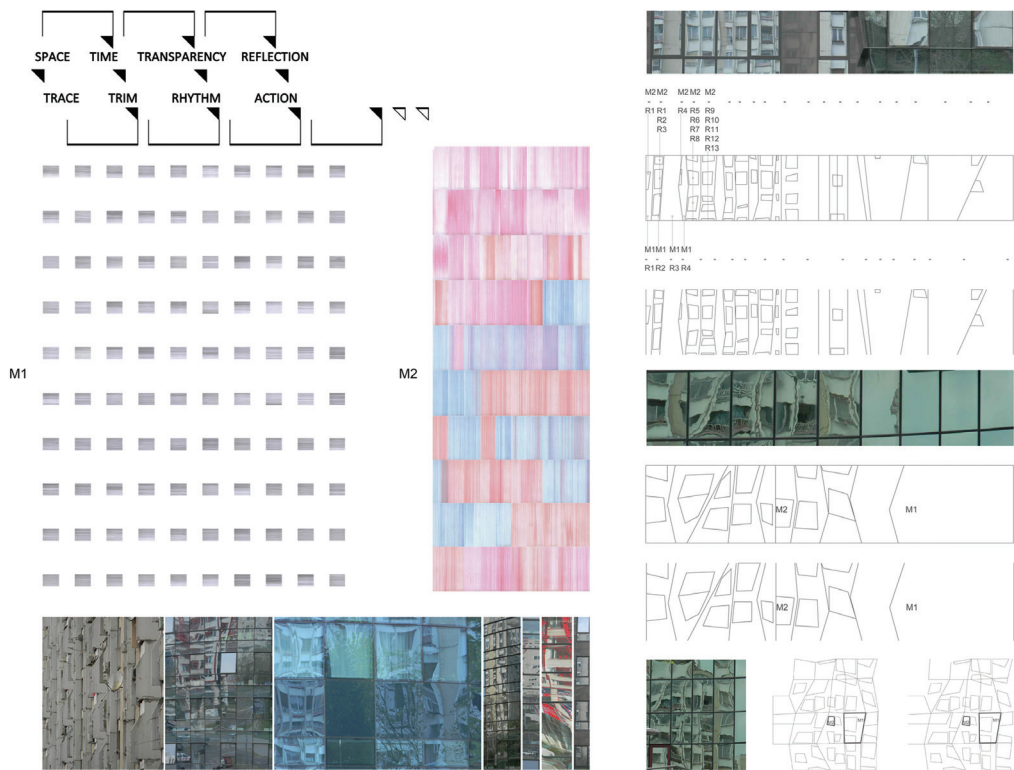


Fig. 1. Forming the Maps of Methodology



UP: Fig. 2. Fragments of Block 30 in New Belgrade - the phase of documenting through photography, 2015

DOWN: Fig. 3. Development and method of application of the Maps of Methodology on Block 30, 2015

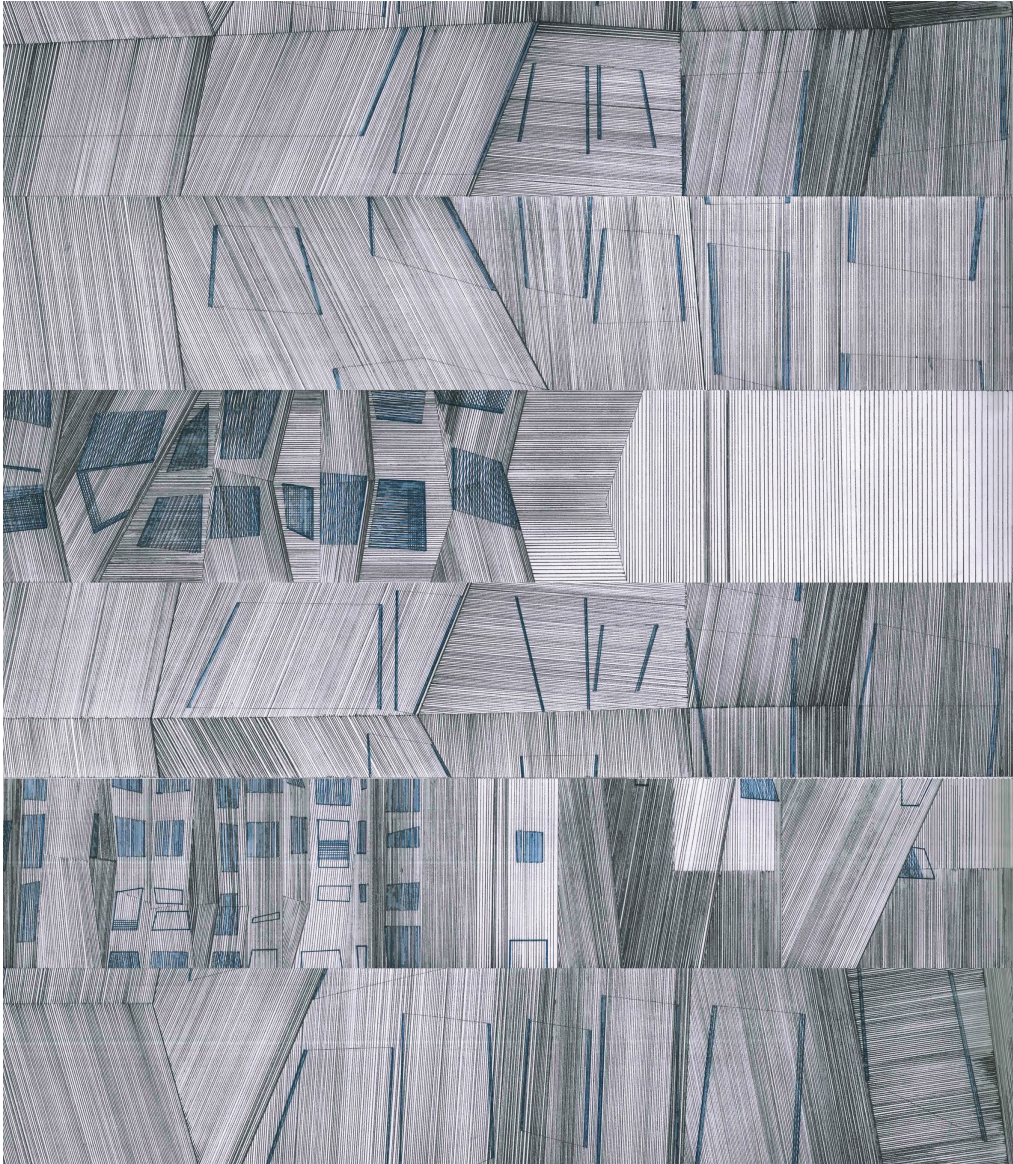
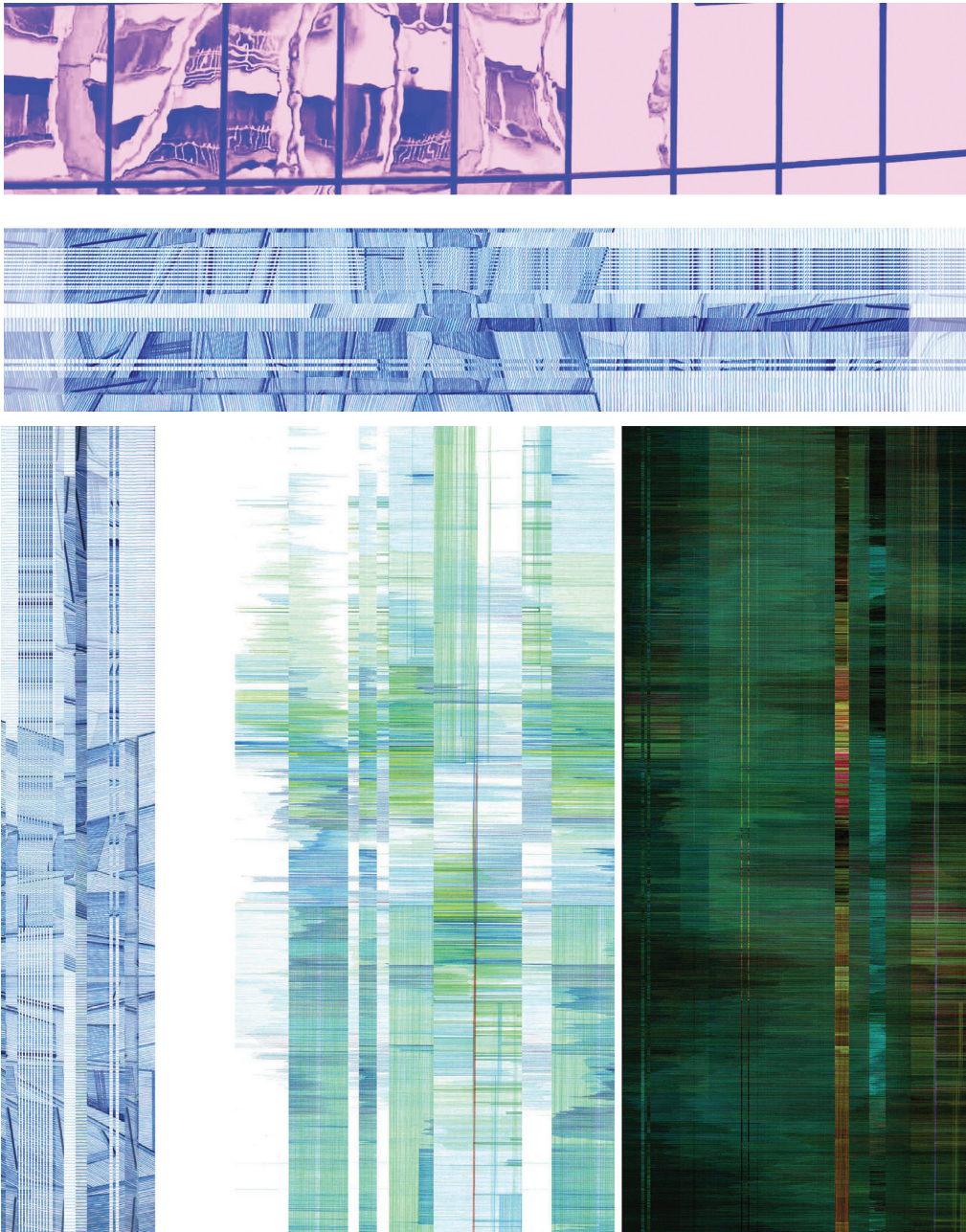


Fig. 4. Application of the Maps of Methodology on block 30 - first six samples, 2015



UP: Fig. 5. Application the Maps of Methodology on Block 30, 42cm x 150cm, 2015

DOWN: Fig. 6. Turn of drawing process - a collage of hand pencil drawings

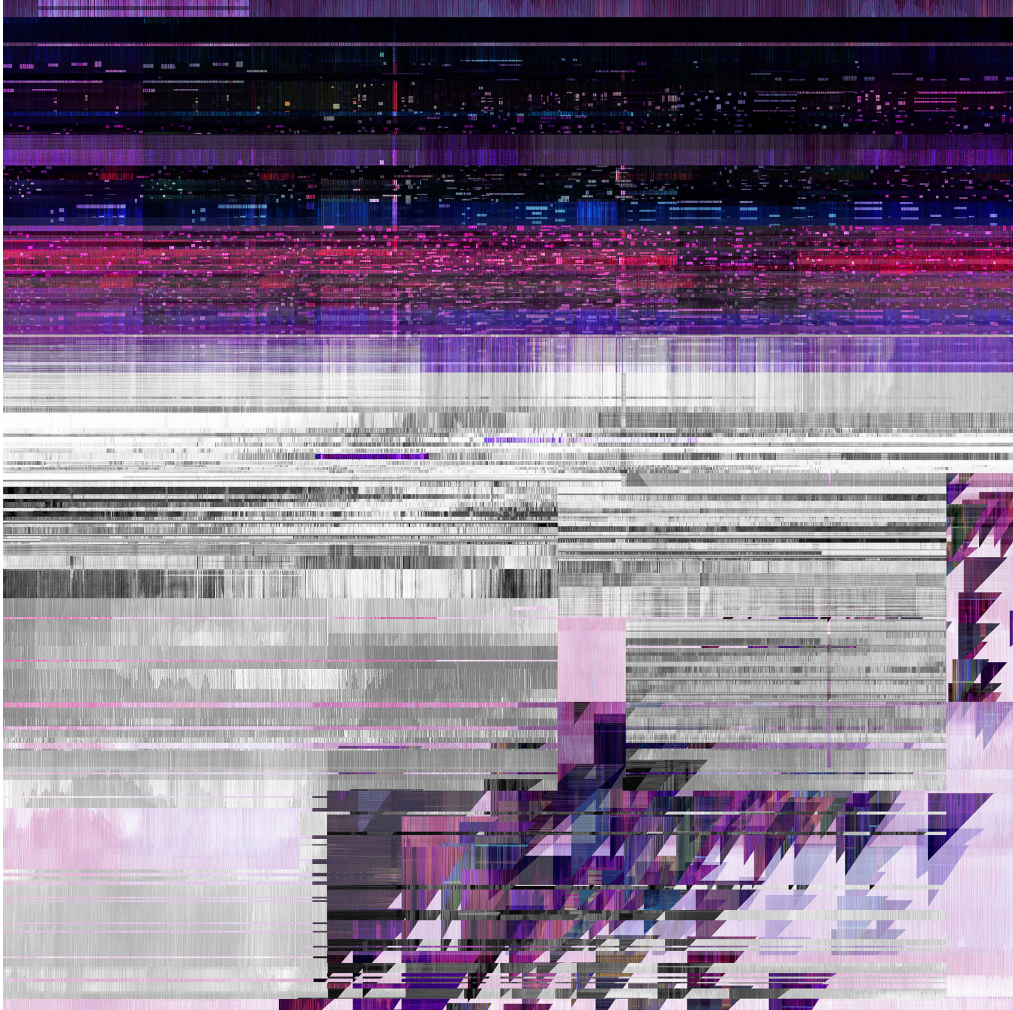


Fig . 7 . Cityscape Transformation Habitation, Drawing of the Year, 2016

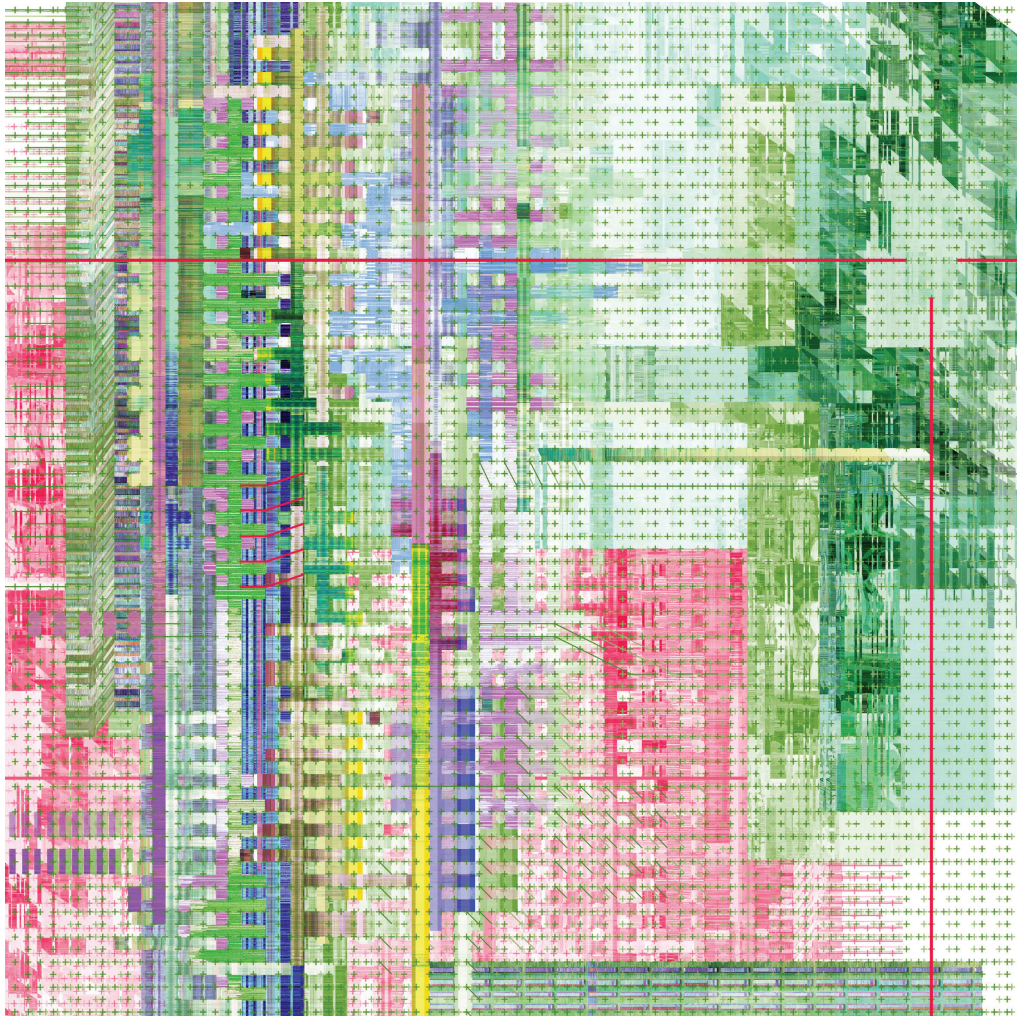


Fig. 8. Methodology variables - a new type of drawing transformation, 2019-2020

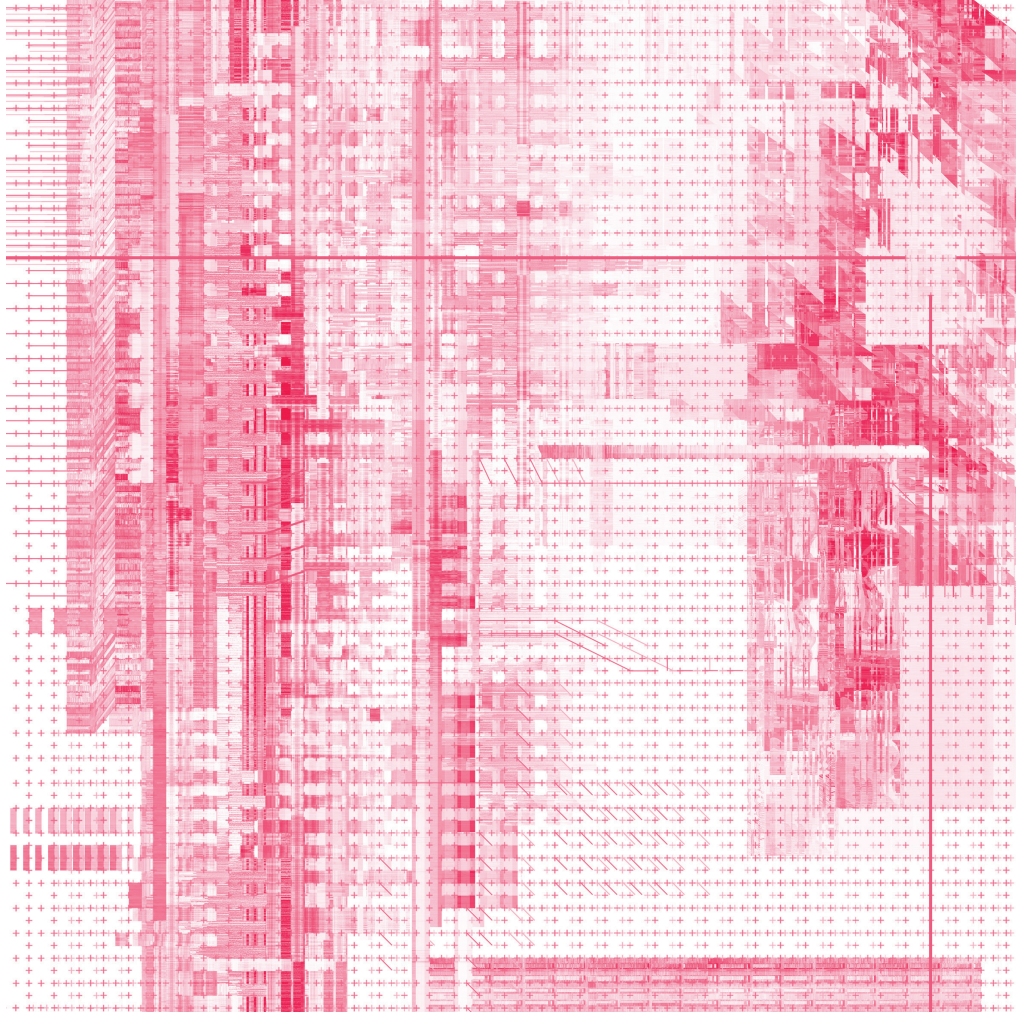


Fig. 9. Methodology variables - a new type of drawing transformation, 2019-2020

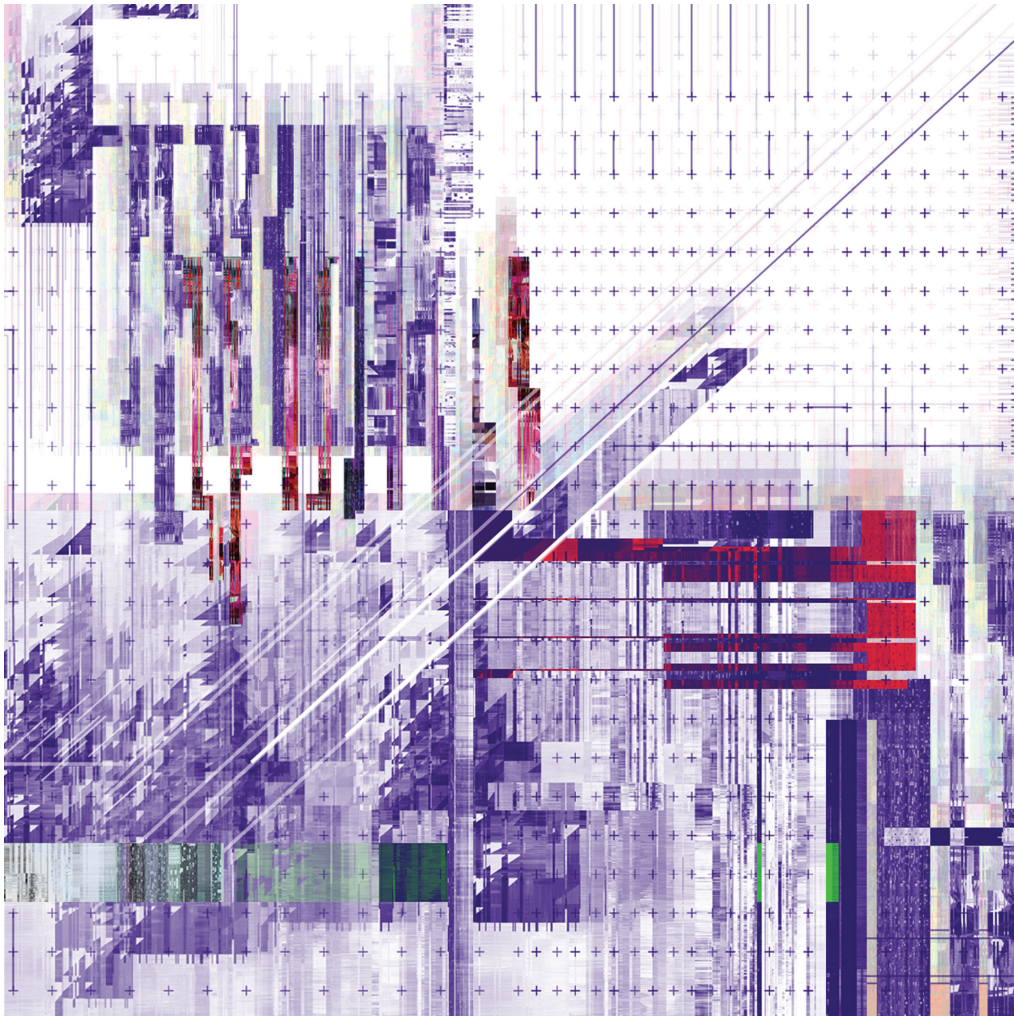


Fig. 10. Methodology variables - a new type of drawing transformation, 2019-2020

PEJZAŽI GRADOVA NE-MESTA

Ivan Šuletić

Ovaj tekst će mi omogućiti da predstavim radove koje sam napravio u proteklih sedam godina, sa posebnim osvrtom na crteže sačinjene za to vreme. Čini se da su putevi koji su vodili do i od nekih crteža i radova u drugim medijima ključni za bolje razumevanje logike konkretnog dela i njihove evolucije, pa će ti putevi biti trasirani kroz tekst kako bi se neke od odluka, načinjenih u procesu njihovog stvaranja, što bolje objasnile.

Seriya Citiscape i #CFRP (Gradovi za bogate ljude) pojavili su se kao komentar na odnos između pojedinca, ljudske ličnosti i urbanog prostora u savremenom kontekstu pomešane fizičke i digitalne stvarnosti. U segmentu „Superrealnost” pokušaću da postavim nacrt ideja iza dotičnih dela, njihove međusobne veze i veze sa delima drugih umetnika i teoretičara.

U poglavlju „Gradski prostor do gradskog pejzaža” i njegovim segmentima, fokusiraću se na El Grekov pogled na Toledo, kao rani primer prikaza genius loci u slikarstvu, poglede Bernarda Belota na Varšavu i tekst Bianke Bosker o dupltekkturi u novijem kineskom arhitektonskom projektovanju. Pitanja o autorstvu, rukopisu i radu biće razrađena u segmentima „Ljudska ličnost” i „Rukopis”, kao značajnim podtemama mog rada.

KLJUČNE REČI: RAD, RUČNO CRTANJE, RUKOPIS, AUTORSTVO, DEPERSONALIZACIJA, NE-MESTO, JPEG

POST-TEKTONSKI PREVODI:

DEKODIRAJUĆI POETIKE ARHITEKTONSKOG DETALJA

Miloš Kostić

Ovo istraživanje razmatra fenomenologiju detalja crteža u arhitekturi, pristupajući crtežu kao mediju koji nosi poetičke i tehničke aspekte arhitektonskog projektovanja i građenja. Sa napretkom digitalne tehnologije, pojavio se čitav novi skup termina i praksi koji se mogu povezati sa promenjenim pojmom detalja u arhitekturi. Baveći se problemom prevodenja arhitektonskih koncepata u materijalnu praksu, istraživanje predlaže metodu dekodiranja aspekata poetike građenja prevazilaženjem konvencionalnih tehnika predstavljanja u vezi sa građevinskim crtežom i uvodi kombinaciju metoda interpretativnog 3D modeliranja i digitalnog asamblaža.

Koristeći tektonsku teoriju kao teorijski okvir, istraživanje ima za cilj da definiše novo post-tektonsko stanovište koje može ponuditi jedinstvenu perspektivu na odnos između procesa projektovanja, proizvodnje i reprezentacije u arhitekturi u aktuelnom trenutku. Nova perspektiva očitava poetičke protokole u pojedinačnim konceptualnim narativima odabranih autora, pristupajući detaljima u njihovom stvaralaštvu kao obliku reprezentacionih diskurzivnih slika koje bi se mogle tumačiti kao mikroskala makro ideja u oblasti arhitektonskog projektovanja. Metod istraživanja je interpretativno modeliranje koje kombinuje analognu i digitalnu tehniku i analitičko crtanje primera koji se odnose na razmatranu temu. Kombinovanjem digitalnog i analognog pristupa, cilj je da se ponudi nova perspektiva u vidu dijalektičkog modela za tumačenje arhitektonskog detalja koji bi mogao da ponudi nove uvide u savremeni tektonski diskurs kroz koji bi se varijantna stanja poetskog i tehničkog dizajnerskog razmišljanja mogla otkriti dekodirano.

KLJUČNE REČI: ARHITEKTONSKI DETALJ, POST-TEKTONIKA, POETIKA KONSTRUKCIJE, DIGITALNI CRTEŽ, DIGITALNI ASEMBLAŽ, INTERPRETATIVNO MODELOVANJE

OTKRIVANJE HIBRIDNOG MODELA ARHITEKTONSKOG CRTEŽA NA POČETKU XXI VEKA

Hristina Meseldžija

Stručni, ali i istraživački okvir savremenog arhitektonskog projektovanja predstavlja oblast artikulisanu razvojem informacionih tehnologija. Do sada, ovaj okvir je predstavljao područje najbrže razmene mišljenja i ideja, podvrgnuto raznovrsnim tumačenjima i spekulacijama u različitim fazama procesa arhitektonskog projektovanja – od početnih ideja do finalnih arhitektonskih simulacija i realizacija. Radikalne promene u arhitektonskom razmišljanju direktno su se odrazile na upotrebu i načine razumevanja arhitektonskog crteža u procesu arhitektonskog projektovanja. Štaviše, ova situacija je dovela do radikalnih promena u tradicionalnom procesu projektovanja arhitektonskog prostora. U kontekstu shvatanja odnosa između arhitekta i crteža kao njegovog jedinog autorskog dela, ovaj odnos se uzurpira implementacijom kompjuterskog softvera kao posredničkog alata između njih dvoje. Uvođenje softvera u proces arhitektonskog projektovanja utiče na pojavu oblika arhitektonskog crteža, nudeći nove mogućnosti kao što su direktna, aktuelna i sveprisutna manipulacija, kao i mnoštvo mogućnosti predstavljanja.

Ovaj rad problematizuje poziciju arhitektonskog crteža ispitujući njegove manifestacije na početku dvadeset prvog veka kao posledice paradigmatičkih promena koje je donela digitalna revolucija. Arhitektonski crtež na početku veka nestaje u svom tradicionalnom smislu i zamenjuju ga različiti oblici i uloge u procesu arhitektonskog projektovanja. Pošto se sprovedeno istraživanje posmatra prvenstveno kroz disciplinu arhitekture, a bliže, kroz oblast vizuelnih umetnosti, ispitaće ulogu crteža u oblasti arhitektonskog predstavljanja. Pored toga, rezultati istraživanja koji nastaju u vidu hibridnog modela arhitektonskog crteža, biće razmatrani u smislu njegovog kreativnog potencijala i dalje istraživačke primenljivosti u oblasti arhitektonskog obrazovanja.

KLJUČNE REČI: ARHITEKTONSKI CRTEŽ, VIZUELNI JEZIK, REPREZENTACIJA, DVADESET PRVI VEK, DIGITALNA PARADIGMA, VIRTUELNA STVARNOST

SPOZNAVANJE URBANIH MESTA: PREVOĐENJE KROZ DIJAGrame

Vanja Spasenović

Kontinuirani teorijski razvoj istraživačke oblasti prostorne spoznaje nije praćen praktičnom primenom postulata. Istraživački izazov je prepoznat u razvoju odgovarajućeg načina da se zaključci i odnosi prostorne spoznaje prevedu u jasan grafički sistem koji omogućava bolju komunikaciju i saradnju srodnih disciplina. Hipoteza rada je da se teorijski zaključci analiziranog koncepta mogu prevesti u prostor vizuelnom reinterpretacijom – grafičkom obradom koja se koristi kao alat za pregled i prevođenje. Istraživanje se odvija u dva dela – prvi analizira istorijski razvoj teorijske misli o odnosu prostorne spoznaje i dijagrama u arhitekturi, dok drugi segment istražuje savremena teorijska stanovišta kroz šest karakteristika šematskog rezonovanja i validira ih kroz relevantnu studiju slučaja. Ovo istraživanje ima za cilj da ispita i definiše proces konceptualizacije dijagrama u kontekstu procene kognitivnih varijabli prostora. Dijagram se od pojednostavljene grafičke indikacije prostora razvija u aktivnog učesnika u modifikaciji urbane sredine. Ishod istraživanja je definisanje četiri principa šematizacije, koji opisuju sažete kognitivne potencijale za ilustraciju uticaja prostora na korisnika.

KLJUČNE REČI: ŠEMATSKO REZONOVANJE, PROSTORNA KOGNICIJA, VIZUELNA INTERPRETACIJA, ARHITEKTONSKI CRTEŽ, PERCEPCIJA

SUPERMOĆI MONTAŽE: ISTRAŽIVAČKI EKSPERIMENT VOĐEN DIZAJNOM

Dorđe Bulajić

Ovaj rad predstavlja jedan segment višedelnog eseja koji istražuje „supermoći” montaže. Glavni cilj eseja je da se temeljno ispituju neotkrivene teritorije u međuprostoru između različitih disciplina – uglavnom arhitekture, ali i filma i drugih vizuelnih umetnosti, u kojima je montaža kao tehnika dobila izuzetno različite oblike. Cilj ovog rada je da predstavi interdisciplinarni istraživački eksperiment vođen dizajnom, koji je koristio tehniku montaže kao alat za istraživanje dizajna. U ovom eksperimentu montaža nije korišćena samo kao tehnika reprezentacije, već je korišćena kao glavni kompozicioni i logički princip u kreativnom procesu. Stoga, ovaj rad ima za cilj da definiše i detaljno opiše sedam prilično različitih faza istraživačkog eksperimenta vođenog dizajnom. Ovo interdisciplinarno istraživanje pokušava da doprinese tekućoj diskusiji o montaži u arhitektonskom projektovanju i istraživanju, kao i nedavno uspostavljenom istraživačkom polju vođenom dizajnom, koje se fokusira na vrednovanje razmišljanja o dizajnu, metodologije istraživanja dizajna i doprinosa znanju koje je omogućio dizajn.

KLJUČNE REČI: MONTAŽA, SLIKE, ISTRAŽIVANJE ZASNOVANO NA DIZAJNU, ISTRAŽIVANJE DIZAJNOM, METODE ARHITEKTONSKOG ISTRAŽIVANJA, ALATI ZA ISTRAŽIVANJE DIZAJNA

RAZVOJ CRTEŽA KAO ALATA ZA ČITANJE GRADSKOG PEJZAŽA KROZ EKSPERIMENT NA BLOKU 30 NA NOVOM BEOGRADU

Snežana Zlatković

Osnovni cilj ovog rada je da ukaže na presečnu tačku u procesu građenja crteža kao metodološkog alata koja se desila tokom doktorskog istraživanja, kao i da prikaže dalji razvoj crtačkih eksperimenata u odnosu na prelomni trenutak za metodologiju. U prvom delu rada pokušaćemo da objasnimo zašto su predmet istraživanja transformacije gradskog pejzaža. Kroz kratku istorijsku analizu, ukazaćemo na osnovne karakteristike transformacija prostora bloka 30. Nakon toga ćemo ukrstiti crtež kao metodološki alat sa poligonom za eksperiment, odnosno sa blokom 30 i polako pristupiti prikazivanju koraka koji su se dešavali tokom rada na izbornom predmetu Arhitektura i vizuelni jezik. Izdvojeni eksperiment ima za cilj da osvetli obrt koji se u tom trenutku desio za samu metodologiju, ali i da dalekosežnije ukaže na potencijal građenja savremenog arhitektonskog crteža kroz slojevitost i spregu između različito pozicioniranih arhitektonskih alata. U poslednjim delovima, ispitivanjem kroz tekuće crtačke eksperimente iznova ćemo pomenuti obrt metodologije sa namerom da otkrijemo da li je upravo on omogućio da se i sama metodologija konstantno transformiše i da crtež iz svoje statične uloge pređe u dinamički razvoj alata. Na taj način crtež se osposobljava da se na višem nivou uključi i prati savremene tokove procesa projektovanja, kao i da se pomeri ka onome koji može da odgovori na brzinu i gustinu prostornih promena koje se dešavaju i da pruži inovativna znanja.

KLJUČNE REČI: CRTEŽ, METODOLOŠKI ALAT, EKSPERIMENT, TRANSFORMACIJA, NOVI BEOGRAD - BLOK 30



PRIVACY STATEMENT

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