PROCEEDINGS

Estonian Academy of Arts
Faculty of Architecture

I COST ACTION: WRITING URBAN PLACES. NEW NARRATIVES OF THE EUROPEAN CITY TRAINING SCHOOL: LOCAL STORIES AND VISUAL NARRATIVES

II CONFERENCE INNOVATION AND DIGITAL REALITY: IDEAS, REPRESENTATIONS/ APPLICATIONS AND FABRICATION

11–12/2023

PROCEEDINGS 11/12

I TALLINN: WRITING URBAN PLACES
II INNOVATION AND DIGITAL REALITY

Panu Lehtovuori is introducing the keynote lecturer Mark Gottdiener. Photo: Tiina Tammet

I TALLINN: WRITING URBAN PLACES

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COST ACTION "WRITING URBAN PLACES. NEW NARRATIVES OF THE EUROPEAN CITY" (WRITING PLACE)

TRAINING SCHOOL: LOCAL STORIES AND VISUAL NARRATIVES

15 – 16 September 2021
Tallinn, Estonian Academy of Arts

The training school focuses on the use of local stories in urban research, taking the city of Tallinn as an example. Participants will engage in site visits, analysis workshops, discussions and lectures. They will discuss historical, semantical and archetypal settings of the narratives.

The knowledge from the local stories will be compared with stories related to the knowledge and ongoing research investigations of participants.

Central to the training school is a reflection on Methods, Visuals and Stories.

TRAINING SCHOOL PROGRAM

Day 1, 15 September 2021

09:15 Opening of training school
Andres Ojari, dean of Department of Architecture, Estonian Academy of Arts (EKA)
Jüri Soolep, director of PhD programme, Department of Architecture, EKA

09:30 Introduction of participants.

09:45 Presentation: COST Action Writing Urban Places, urban research through narratives. Klaske Havik, Action Chair COST Writing Urban Places.

10:30 Introductory presentations to local stories: Old Man from Ülemiste Lake, Mart Bread, Bronze Soldier. Jüri Soolep and Estonian poet and thinker Hasso Krull.

11:30 Discussion and questions

12:30 Lunch

13:30 Field work with the locations of the local stories. Bus 13:30 – 15:30

17:00 Presentations and discussion: Methods, Visuals and Stories. Tasks for Day 2.

17:30 – 19:30 Keynote lecture: Postmodern Semiotics. Mark Gottdiener, professor of sociology at University of Buffalo, U.S.

Day 2, 16 September 2021

09:00 Analysis workshop of the stories. Historical, semantical and archetypal settings of the narratives. Comparison of local stories with stories related to the knowledge of participants.

10:30 Presentation: Urban Discourse. Analysing the Social Production of Space through Narratives. Panu Lehtovuori, professor of Urban Theory, Tampere, Finland.

12:00 Group work: Second analysis of workshop stories. Preparing presentations by participants.

13:00 Lunch

14:00 Presentation of PhD work by participants. Introduction to individual projects.

14:30 Work on individual projects. Consultation in small groups for individual projects.

17:30 Presentations and discussion

18:00 Round-up of local stories and individual projects. Discussion of publication. Scheduling and tasks. Closing of training school.

19:15 End of Day 2, tram tour and dinner

WRITING URBAN PLACES: THE TRAINING SCHOOL ON LOCAL STORIES, AND THE STORY OF THE HOME OF EKA

Klaske Havik
Action Chair COST Writing Urban Places

The training school at EKA in Tallinn was organised within the framework of the European COST Action *Writing Urban Places*, an international and interdisciplinary network that explores how narratives can offer tools and methods for urban planners and architects. It focuses particularly on the potential of narrative methods for urban development in European medium-sized cities. The COST Action forms an innovative research network of researchers and practitioners in urban planning, architecture, comparative literature and other fields investigating the use of narrative in the study of urban culture. The network studies how communities perceive their urban environment, how they find meaning in it, how they appropriate their environment and how different social groups can be integrated. Narratives can play a crucial role in understanding these intricate relations between communities and their urban places and understanding these narratives offers potential for socially inclusive and site-specific design strategies.

At a theoretical and methodological level, the *Writing Urban Places* network connects ongoing investigations regarding new methodologies for architectural and urban research and design, developed by researchers, educators and practitioners who investigate narrative as a cardinal element in urban culture. Outcomes of these investigations include the *VADEMECUM 77 Minor Terms for Writing Urban Places* (2019)[1], a book harvesting a variety of intriguing theoretical concepts to discuss urban narratives, and the *REPOSITORY 49 Methods and Assignments for Writing Urban Places* (2022)[2] which brings together concrete methods and assignments to conduct fieldwork to unveil, understand and even create urban narratives. Further, the network has advanced discussions on narrative methods, on the notions of meaningfulness, appropriation and integration, on fieldwork and on the parameters of the mid-size European city in working group meetings and, in times of covid-19 pandemic, through online webinars. Academic articles deriving from these discussions have been collected in a series of issues of the Writingplace Journal for Architecture and Literature: Writingplace journal #5 *Narrative Methods for Writing Urban Places* (2020)[3], Writingplace #6 *City Narratives as Places of Meaningfulness, Appropriation and Integration* (2021)[4] and Writingplace #7 *Taking Place. Reflections on Fieldwork* (forthcoming 2022).[5]

On a practical level, the network participates in site-specific studies in European mid-size cities with local stakeholders as well as scholars and PhD students of architecture, urban planning, literary studies and other fields, testing the theories and methods developed in the network, while learning from the

1 Edited by Klaske Havik, Kris Pint, Svava Riesto and Henriette Steiner

2 Edited by Dalia Milán Bernal, Carlos Machado e Moura, Esteban Restrepo Restrepo, Klaske Havik and Lorin Niculae.

3 Edited by Lorin Niculae, Jorge Mejía Hernández, Klaske Havik and Mark Proosten

4 Edited by Soja Novak, Susana Oliveira, Angeliki Sioli and Klaske Havik

5 Edited by Slobodan Velevski, Luis Santiago Baptista, Aleksandar Stanicic and Klaske Havik

specificity of each city. Meetings, training schools and events have been held in Limerick, Almada, Porto, Tampere, Skopje, Osijek, Canakkale and Tallinn. This approach not only generates new insights regarding urban narratives and their role in creating meaning, appropriation and integration in urban projects but also makes it possible to conduct comparative analyses between different European cities.

The COST Action brings together different scientific disciplines that are involved in the investigation and development of future urban policies and inclusive development of medium-size cities. Based on a shared ambition to define the role of narrative in relation to urban processes, researchers interact in an inter-disciplinary debate that enables the transfer of knowledge and evolves new forms of expertise, enhanced by real-life experience. Early Career Investigators (ECI) are involved in all activities of Action, stimulating their creativity and increasing their knowledge and experience through a first–hand involvement in case studies and training schools. The close coordination and interaction of the fieldwork events and the Training Schools of the COST Action enables a fruitful integration of the scientific work and methodology into education and research carried out within academia.

The training schools have a particular character: they offer PhD students and early career researchers theoretical knowledge developed by the network, while simultaneously participating in site-specific studies, applying and testing appropriate instruments to understand and use urban narratives. The involvement of young researchers in the network is of crucial importance, because these are future practitioners, researchers and policy makers. They will address future challenges and research on urban narratives throughout Europe, in the acknowledgment of the importance of meaningfulness, appropriation, and integration of individuals and communities in relation to their built environment.

The Training Schools thus connect PhD researchers of the participating institutes through a series of workshops and peer reviews. The first training school of this COST Action Local Stories and Visual Narratives took place on Sept 15-16, 2021 in Tallinn, Estonia. Originally, it was planned in March 2020, but it was postponed due to the covid-19 pandemic and became the first activity after 1,5 years without any in-person meetings. The training school focused on local urban stories, taking the city of Tallinn as an example.

Tallinn with its intriguing political history and geographic position was an appropriate city to discuss this theme, the local stories related to different eras and different social and spatial questions. From the medieval story about the lake, laying focus on Tallinn's geographical conditions and the idea of the city that is never finished to the story of the Bronze Soldier that laid bare delicate social and ideological contradictions in the way in which Tallinn's history is seen from the point of view of different communities. Departing from such local stories, presented through a number of lectures, participants engaged in site visits, analysis workshops and discussions on historical, semantical and archetypal settings of the narratives. As the next step, knowledge from the local stories was compared with stories related to the knowledge and ongoing research investigations of participants.

The department of architecture of EKA was an excellent host for this event, providing knowledge and space encouragement. Also the school itself is full of spatial stories related to the local architects who have taught and practiced architecture during different societal models and related to the very building of the school. While earlier, EKA, the Estonian Art Academy, was located near Viru Square, one on the main squares in what is now the commercial centre of the city, but also the square that saw one of the first modern high-rise buildings in Soviet times, Viru Hotel. In the early years of the 21st century, the area around the school transformed drastically. High-rise buildings grew like mushrooms, the concrete facades of Soviet buildings were covered with shiny glass facades and the empty square became filled with a bus station and shopping mall. Meanwhile, an ambitious international competition was held for the new building for the Estonian Art Academy, at the same site. The existing building was demolished, but the new building that came out of the competition was never realized due to many controversies. EKA moved to the Old Town, where the Art Academy originated in 1914, in the medieval

building of Kanuti Guild. After decades of neglect, the historical Hanseatic city centre had now, in the years since Estonia regained independence, been re-appreciated and carefully restored – almost to the extent that it has become an open-air museum. The move of EKA to the Old Town gave a bit of life back to this this beautiful but somewhat deadened city centre – the art and architecture students sitting in the windowsills of the Kanuti Guilt building, at times presenting art works on the doorstep, roaming the streets and frequenting local bars made the Old Town more inspiring and more alive. Only recently, the Art Academy relocated to a new building of its own, somehow following the interest of the artistic scene to Kalamaja and Telliskivi – two quickly developing neighbourhoods on the edge of which the new EKA is located. The former textile factory Suva, renovated by KUU architects (former students of the school), became the new EKA home, suitable for a school that includes fashion design and architecture. In this way, the story of EKA's building is a local story, related to a particular community, to particular sites and to particular conditions of government and urban development over several periods of time. And that is but one of the many intriguing stories that Tallinn has to offer.

STORIES OF PICTURES AND PICTURES OF STORIES

Jüri Soolep
Head of PhD School, Faculty of Architecture,
Estonian Academy of Arts

The title image of this presentation comes from the Campidoglio Hill in Rome. It is the sculpture of the river god Nile. The sculpture is made sometime around 160 AD and it comes from the vast stores of the Pope. Michelangelo set it up there around 1536. It has several attributes and interests us because the river Nile is all about the flood.

He is reclining on the statue of Sphinx, thus decrypting his essence and name. He has a smart clay tablet in one hand, looking after the geometry that is to be used to revive the markers for the fields after the annual floods of the Nile. It looks almost like a contemporary flip phone. In his other hand, the river god holds *Cornu Copiae* – the Horn of Plenty – which by yet another chance also reminds us of a modern mobile 3D printer, which can print whatever one wishes. So we see the devastation and plenitude in one dialectical twist.

I have been working recently with dynamic meanings of poetic images. It seems there can be found certain persistent meaning cores that migrate through different images and now with the development of digital networks, the number of images has ballooned manifold. I have called them meaning cores as certain visual, conceptual or even formal elements constitute a traceable historical shadow behind the images. The Horn of Plenty is one of these images that very often migrate through the whole European culture and fine arts as well as architecture but we are not going to talk about that in this presentation.

There are some other local stories for this masterclass. In Tallinn we also see some meaning cores that are quite persistent and have stayed with us for a long time. The first story is about the Old Man from the Lake Ülemiste. The second story is about the Town Hall Square pharmacy and the pharmacist's able apprentice. It is a modern fairy tale of medieval Tallinn by the scholar Jaan Kross. And the third story is about the communist monument that was removed in 2007 and caused civil riots of Russians in Tallinn. I am not going to look into the politics of these events, although you cannot avoid it, really. We will be looking at these meaning cores that can still be seen coming out from several images concerned.

As the Old Man from the lake and the Bronze Soldier are such depressing stories, I put in between them the fairytale which has all beautiful illustrations by Estonian artist Edgar Valter. He has been one of my favourite illustrators and artists from my childhood. To brighten up the darker side of Tallinn.

So let us start with the Old Man from the Lake Ülemiste. Here on the Google map, we can see the lake quite near Tallinn Old Town but accidentally quite high on the limestone cliff running along the northern coast of Estonia. It has several stories connected to it, but most of these are really about the godly figure that looms in the lake and emerges from the water at unknown intervals. He comes down to the city and asks anybody he meets, "Is the construction of Tallinn completed?". It also goes that everybody knows what they should say. The answer is, "It is not ready yet!". Otherwise, the Old Man from the lake will drown the city with the flood from Ülemiste.

These flood stories, of course, are quite common nowadays, there are several websites already and it is probably connected with climate change. It looks like

the world is out of control. On top of that, the flood is a universal archetype. There is the Egyptian mega flood with the revenge of Goddess Hator who turned into a lioness and killed most of the people. The Sumerian flood and water epics, and of course the Biblical legend with biblical consequences as Noah's Ark.

In Sumer, the fundamental element of starting the world and life is depicted as water. In the second figure from the right-hand side of the signet roll, we can see water flowing out of his shoulders. The water is full of fish and water god Ea is reaching for the bird – an eagle who stole the tablets of destiny.

Here in the Book of Genesis, the beginning of everything starts with the creation of empty space that somehow is parallel to the primordial waters. "Darkness upon the abyss" and "Spirit of God bore upon the water". And then the first element or water is introduced in the world – "parting between water and water". It is worth mentioning that in this Greek text, it is not water but moisture that follows primordial water. In Berlin, we can see a huge basin, with the main god depicted in the centre, the waters emerge out of his shoulders enjoyed on both sides by priests, probably disguised as fish. The basin also reminds us of the baptizing basins where one was submerged in the water and risen as reborn into Jesus. The original baptizing process being full body submersion, it is the symbolic death and rebirth.

The story of the Old Man from the lake was first recorded by Friedrich Reinhold Kreutzwald in 1866. The story is an older myth but made into a modern fairy tale by Kreutzwald. There are also other morbid stories of people who go across the ice or are stuck in the ice of the Lake Ülemiste and have to make a deal with the Old Man or otherwise simply drown. So the lake has sacred allusions connected to it. In the final version, the old evil guy comes from the lake to find out if Tallinn is ready and everybody needs to answer that it is not. The story did not have any illustrations. Much like the Vitruvius book on building that had no illustrations, so every generation again and again did the illustrations anew.

Here we have the illustrations to the Ülemiste legend from 1946. It was actually published a bit later (Vaarandi 1952). The story here has been made into a poem by Debora Vaarandi, a long poem of the Old Man from the lake and young communist builder. It is illustrated by Asta Vender and Olev Soans. The next edition was published in 1970s and illustrated by Viive Tolli. A completely different mood and graphic signature. And then, quite recently a whole novel was made out of the legend and lavishly illustrated by Jaan Tammsaar (Valton 2008).

Back to the young city builder of the communist era. This is the perfect imagination of communist propaganda begun immediately in 1945 after the second Soviet occupation of Estonia. The young guy is in a uniform and we can see this on the cover illustration. The evil old guy has lost its visual mythical and malicious character and reminds us of a nice old man talking to the youth.

The builder wears a military uniform. But in the transformation of the communist society, all people, including school children, university students, pioneers etc. had to wear uniforms. When I started school in 1970, the uniform was there, but it had been tailored to look more like for the civil society. Only the red flag and red neck scarf remained from the communist organisation. But in 1972 they have already changed that too. So it took about 20 years for the military iconography of clothes to disappear. I think that the actual illustrations of 1952 book depict the uniform of Tallinn Technical Railway School. There had been a school there in Tallinn since 1880 and it was taken over by soviets as the railway school. The railway remained the main military infrastructure until the end of the soviet regime.

In the communist poem by Debora Vaarandi, the Old Man from the lake is transformed into a comical figure, re-educated into the communist utopia of a future city and state. Even the strategic question of the readiness of the city is forgotten to be asked. Eventually the Old Man disappears as if the communist propaganda had dissolved the evil myth.

Then in 1975, the whole imagery has changed, although the text remained the same and was used for a new publication. Also the story from 1866 was included. It looks as if the whole venture was

started in order to publish the new illustrations by well-known graphic artist of that time Viive Tolli (Vaarandi; Kreutzwald 1975). Viive Tolli had worked with the Ülemiste story for at least 10 years before the opportunity must have come to use these illustrations in a book.

Some of these preparatory sketches are extremely interesting as they depict Tallinn Old Town on the shore of the lake or around the lake and on both sides of the lake. It could be the sublimation of the closed seashore of Tallinn in the soviet times, but we do not know actually.

The illustrations in the book use the juxtaposition of the old and the new. On pages 16-17, the Old Town is not reconstructed yet, but on pages 22-23, the parts are all ready and festive-looking. The communist propaganda of Debora Vaarandi's text disappears and becomes just a background for the illustrations.

The last story of the Lake Ülemiste, as said, comes from contemporary writer Arvo Valton, who created a medieval story of Vambo. He is a fisherman and lives in a small shed by the lake. Vambo, as his father, now drowned, has an agreement with the Old Man from the lake for a good fishing luck. But eventually he also has to become a resident of the lake. There is a love story with a young noble lady from the city who is saved by Vambo from drowning. The story with obstacles between the lovers is set in medieval Tallinn. The story ends with the euphemistic collective suicide.

The second theme in our presentation is another modern fairy tale of medieval Tallinn. It is by Jaan Kross, the writer of several historical novels, among them "Between Three Plagues". The book "Mardileib" is richly illustrated by Edgar Valter, a celebrated artist and illustrator. The illustrations work in the way that the images transform the story into a graphic novel. The book was first published in 1973. It is a story about Mart, an apprentice in the pharmacy. The pharmacy situated on the Town Hall Square is still there today from the year 1422. The story also has another layer suggesting that we walk the same streets hundreds of years, and we are connected through that common space which has had good times and bad times. The story is about the love between Mart and the daughter of a *bürgermeister* who is sick. Mart has to help with the medicine as the pharmacist cannot do it himself. Instead of using awful drugs, Mart resorts to the ingredients of marzipan and everybody is eventually happy. Mart and marzipan.

Here we could also look at another largely graphic story by Edgar Valter. This is a poem by Ellen Niit, published in 1971. It is about the world that is without any colours. Suddenly a hippy-like painter appears and starts to give colours to everything. Only now, a long time since my childhood, I see the political connotations hinted by the illustrations. The family sitting around the table with nothing to eat, the bleak look of the city in shades of grey as it was in the soviet times. Then of course the great artist comes with colour and gayness and a happy new world is born.

The third theme is more radical and into the politics again, it is called the story of the Bronze Soldier.

In April 1945, at the end of the Second World War, soviet soldiers and officers were buried on Tõnismäe Hill. Their dead bodies were brought together from many different places. The reason and time of their death have remained obscure. There were 12 bodies in total. The circumstances of their deaths are unclear and in this context they are not important either. It is quite likely that they did not perish in active combat.

In May 1945, a competition was announced for a monument and the surrounding area at Tõnismäe, which was to be called "Liberators' Square". The initial plan was to erect the monument on Victory Square, the present-day Liberty Square, where the sculpture of Peter the Great had been removed after Estonia gained its independence. The new plan for the monument was prepared according to the drawings by architect Arnold Hoffard-Alas and the sculpture for the monument was made by Enn Roos in 1947. As Hoffard-Alas's student Tõnu Virve wrote, the conceptual basis of the monument is the portal to the realm of the dead. Indeed, persons familiar with the history of architecture see the characteristic portal known as pylon in front of Egyptian temples in the proportions and pilasters of the limestone abutment.

In 1964, a so-called eternal flame was added to the monument. A short gas flame rose from a small angular pit in the middle of a bronze five-pointed star as the base of the flame. The vegetation and the landscaping around the monument have changed several times throughout the course of its existence. Only the evergreen trees have retained their initial position.

The liberators' monument was an obligatory urban altar in all soviet cities. Its supposed meaning as stated in the conditions of the competition was: in its essence, the monument has to represent the growth of patriotic sentiment in the Estonian people and their battle against German fascists. The monument must represent the friendship of different nations and the memory of the brave sons of the homeland who gave their lives in battle against the enemy (Kaasik 2006).

Regardless of the apparent atheism of the soviet regime, the square was a highly charged sacred space. This became particularly apparent after the eternal flame was added. The eternal flame is one of the oldest metaphors for remembrance of war in Indo-European culture – "inextinguishable honour" – kleos aftiton (Lotman 2007) and originally, a composition with five-pointed stars and the eternal flame was on the back of the pylon as a bronze relief. The ritual of the place itself was connected to the compulsory political liturgy on 9 May and on 22 September (the official date of the end of WWII in the USSR and the official anniversary of the capture of Tallinn respectively).

In 2003-2007, the forgotten monument was gradually energized again. It was seen as a fort-post of soviet propaganda of the Victory Day, militarism and occupation of Eastern Europe. Meetings of war veterans at Tõnismäe began gathering steam again in 2003. This came to be referred to as the strengthening of the Russian identity, one part of which was hostility towards the Estonian state. These gatherings had grown quite large by 2006 and had clearly become opposed to the independence of Estonia. The gatherings took place under the Soviet red flags and the imperial Russian flags.

Apparently in fear of the potential for a demonstration arising from the commemoration of victory in 2007, the Estonian government dismantled the monument in April and reburied or sent to Russia the remains of the 12 soldiers and officers found. The monument itself was taken to a military cemetery less than two kilometres away.

The defenders of the monument led by the Night Watch organised a demonstration in Tallinn Old Town and Tõnismäe, which boiled over into mass unrest and violence that lasted for two nights. The group *Night Watch – Nochnoi Dozor* – was the organised activator of the iconic space of the Bronze Soldier[1]. It is quite probable that this name is taken from the film *НОЧНОЙ ДОЗОР – Night Watch* – by Timur Bekmambetov.[2] Let us consider what kind of iconography their self-identification is founded on.

Bekmambetov's film *НОЧНОЙ ДОЗОР* was completed in 2004 at the Pervyi Kanal film studio, owned by the Russian government. The film was based on the book of the same title by Sergei Lukyanenko. Both the film and the book proved to be very popular in Russia and abroad.

The story of the film is set in contemporary Moscow, which is a battleground in the struggle between good and evil. The film is made in the particular style of "magical realism" where everything seems to be common and ordinary, yet events themselves are totally unreal. To a certain extent, it resembles the film language of Andrei Tarkovsky's film *Stalker*, where everything is ordinary and at the same time has also acquired an unworldly meaning, or the atmosphere of Mikhail Bulgakov's novel *The Master and Margarita*.

1 Editing the texts now fifteen years later, we can find the main organisers of the unrests in active imperial policy of Russia again: Dimitri Linter visited Riga in 2014 as an official assistant of Vladimir Medinsky – Russian minister of culture. A month before that he visited Crimea and participated in the conference with spiritual leaders of the unrests in Eastern Ukraina: Sergei Glazyev, Alexander Dugin and Igor Strelkov. Dimitri Linter was presented as a member of Novorossia (http://rus.delfi.ee/archive/print.php?id=69994159).

2 *НОЧНОЙ ДОЗОР* (Notshnoi Dozor). Bekmambetov, Timur. OAO Pervyi Kanal 2004.

The plot of the film is quite simple: it is the personal drama of Anton, the main character, in the struggle between good and evil. The Day and Night Watch have agreed on a temporary truce but it is ruined when the Great Prophet is born – the Other. He is Anton's unborn son Yegor, whom Anton is willing to sacrifice in order to win back his unfaithful wife. Things go wrong at the end of the film and his son joins the forces of evil. In the second part, the entire process is taken back to the beginning.

The plot and adventure are not so important from the point of view of this lecture. Rather, the way Good and Evil are presented and the imagosphere is depicted in the film are much more interesting. I presume that this is probably rather difficult to decipher for people who have not come across the soviet sign system. Let us consider it more closely.

The dichotomy of good and evil is expressed in everything visible. Firstly, the location. The forces of evil reside and operate in *Kosmos Hotel*, which was a gathering place for high-class prostitutes already in the soviet era. Luxurious banquets and receptions take place in the hotel. The female hero of the forces of evil performs there at a huge rock concert. The headquarters of the forces of good are in an official office building with a granite sign on the door reading *ГОРСВЕТ*. Above the name is the Russian coat-of-arms with the two-headed eagle, which connects its image with the state. *Gorsvet* is an abbreviation of the Russian expression *gorodskoi svet* – the light of the city. It is just one letter away from the former term *ГОРСОВЕТ* which means gorodskoi sovet – city council. This is the Soviet-era municipal government which carried out the administration of the city in accordance with the general guidance of the city's communist party committee. Thus, the headquarters of the forces of good has multiple meanings and is simultaneously the municipal government, a public bureau, and a state structure. In addition, it is also a "closed type of joint stock company". The municipal administration office has its own "information centre" that watches tomorrow's news (via website Regnum.ru – one of the most reactionary news agencies, later on bought by the Russian state) and prevents accidents. The office of the leader of the forces of good is recognisably similar to the office of a soviet director. There is a set of telephones on a long T-shaped meeting table. Everything is a bit worn but prominently "soviet chic". At the same time, the chief of the forces of evil sits in the hotel playing video games and doing business by satellite telephone.

The leader of the forces of good Geser (evidently an allusion to the name Caesar, tsar) is dressed in a white shirt and a suit. His nemesis Zavulon (with a biblical allusion to the Jewish patriarch or ruler Zabulon who operated in the vicinity of Nazareth) wears an undershirt and a woollen cap (like petty criminals of the soviet era working as dealers and illegal money changers – *fartshovshiki*) or the opposite – a designer suit of a high-class businessman. We also find out from the end credits that Geser had been a deputy minister of the USSR (*zam-ministra pri CCCP*).

The dichotomy continues in automobiles, women and clothing. The women of the forces of good are homely, dressed in simple clothing or work clothes. Olga, for instance, has been an owl for 100 years and does not know how to dress in modern clothes. The women of evil, however, are unattainable sex idols in short skirts and high heels, *femme fatales* with satanic faces.

The forces of good go about in wadded jackets and overalls with the name of their firm *ГОРСВЕТ* on their backs. They are clearly the lower working class – *vatniki*. The evil guys wear designer clothes or expensive sports brands.

The automobiles used by the forces of good are especially nostalgic and patriotic. They are soviet lorries made (presumably) from converted GAZ-53 vehicles with magical powers to leap and accelerate to the maximum. The lorries are painted yellow like the soviet gas emergency vehicles used to be. Even the number on the side of the lorry resembles the word GAZ and connects them in spirit with the Russian government's media and economic giant *ГАЗПРОМ* – Gasprom. The forces of evil drive only expensive Western European sports cars.

All of this looks at the background of the Ukrainian invasion as a mild mythopoetic experiment and

Estonia just got away with a slight uncomfortable surprise, but actually this was a deliberate policy and testing of countermeasures to see how far the global community allows Russia to move. It was soon complemented by the invasion of Georgia in 2008 and later of Crimea and Donbas in 2014. After the Ukrainian invasion, everybody understood that the answer to the pictures and stories of Russia was non-existent and led to real wars and loss of life.

These were the local stories of pictures and pictures of stories in Tallinn.

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Figure 1. River God Nile. Photo: Jüri Soolep.

Figure 2. Tallinn and Lake Ülemiste. Screen shot, Google Maps.

Figure 3. Greenstone seal of Adda. Screen shot, The British Museum, CC BY-NC-SA 4.0.

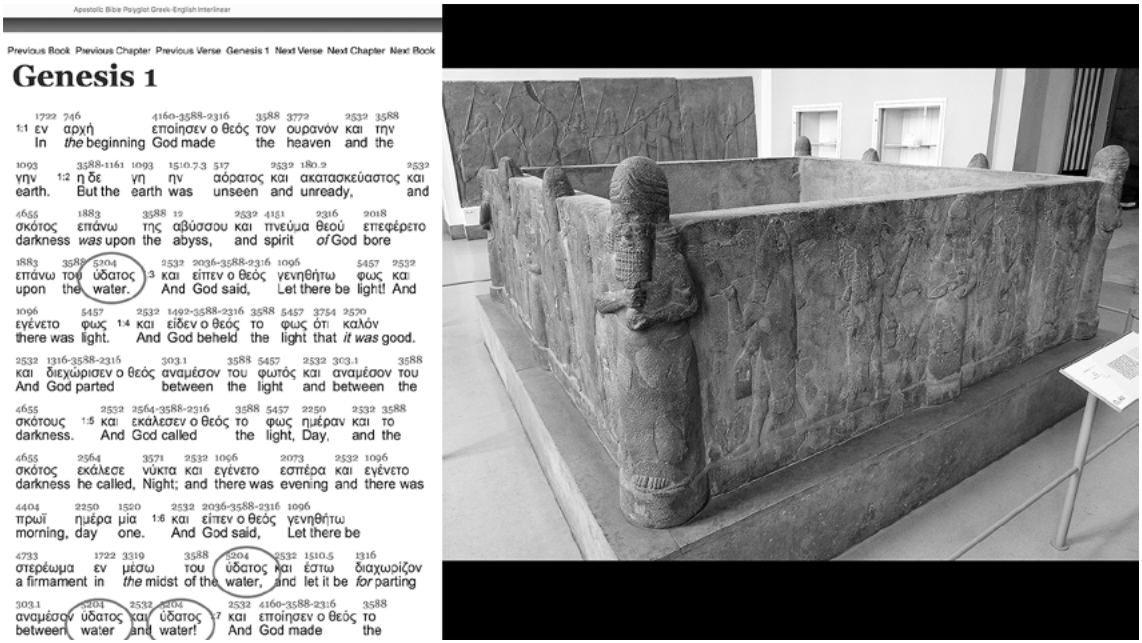


Figure 4. Sacred Sumerian basin in Altes Museum. Screenshot, photo: Jüri Soolep.

Figure 5. The book by Debora Vaarandi 1951. Photo: Jüri Soolep.

Figure 6. The spread from the book by Debora Vaarandi 1951. Photo: Jüri Soolep.

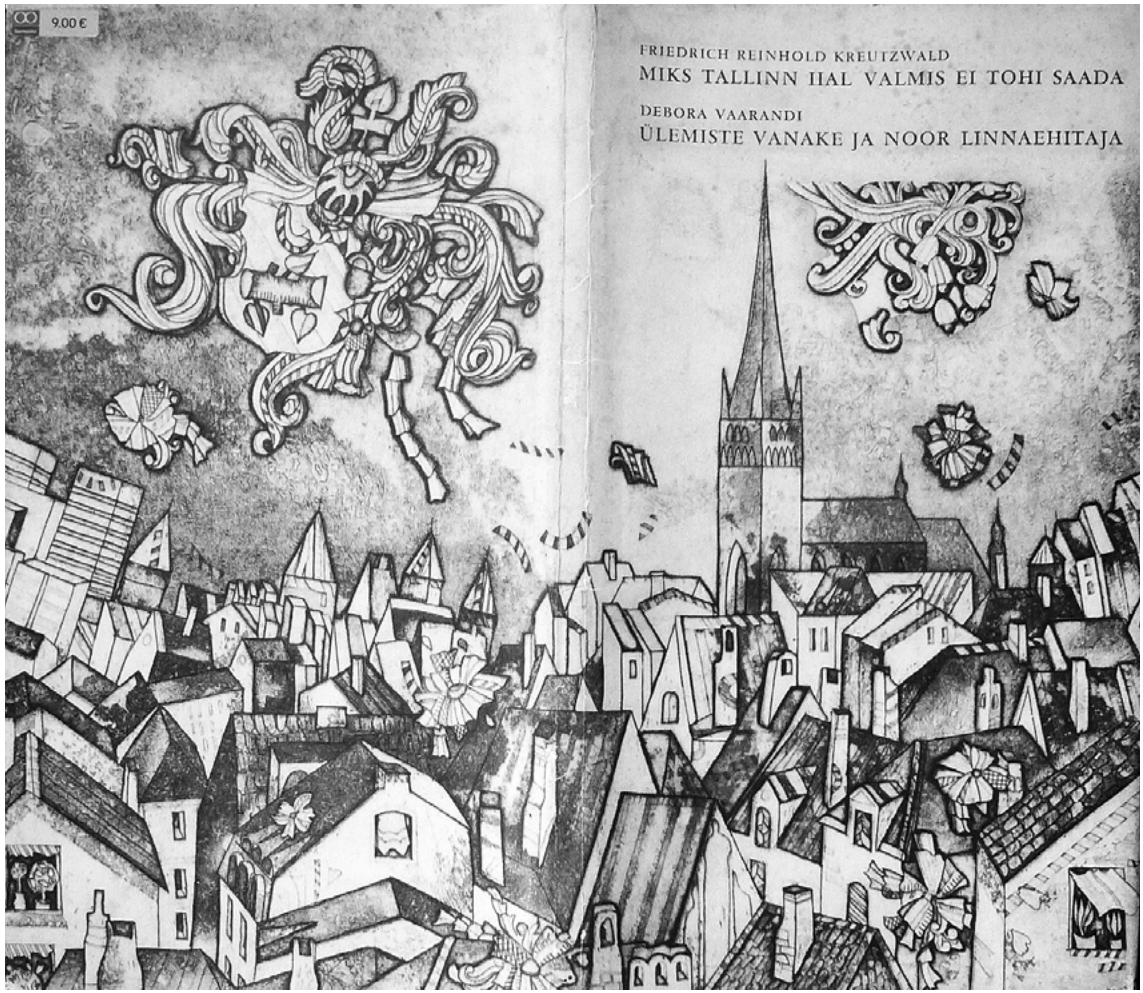


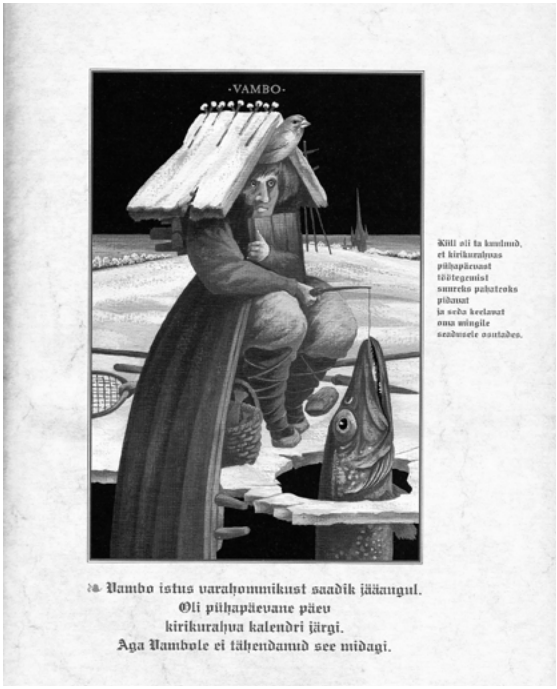
Figure 7. The book illustration by Viive Tolli 1975. Photo: Jüri Soolep.

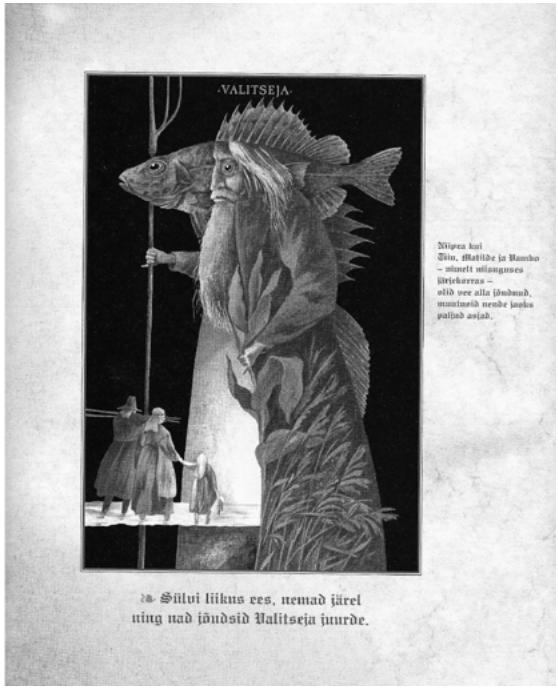
Figure 8. The spread from the book illustration by Viive Tolli 1975. Photo: Jüri Soolep.

Figure 9. The book by Arvo Valton 2008, illustrated by Jaan Tammsaar. Photo: Jüri Soolep.

Figure 10. Vambo. The spread from the book by Arvo Valton 2008, illustrated by Jaan Tammsaar. Photo: Jüri Soolep.

Figure 11. The spread from the book by Arvo Valton, illustrated by Jaan Tammsaar. Photo: Jüri Soolep.





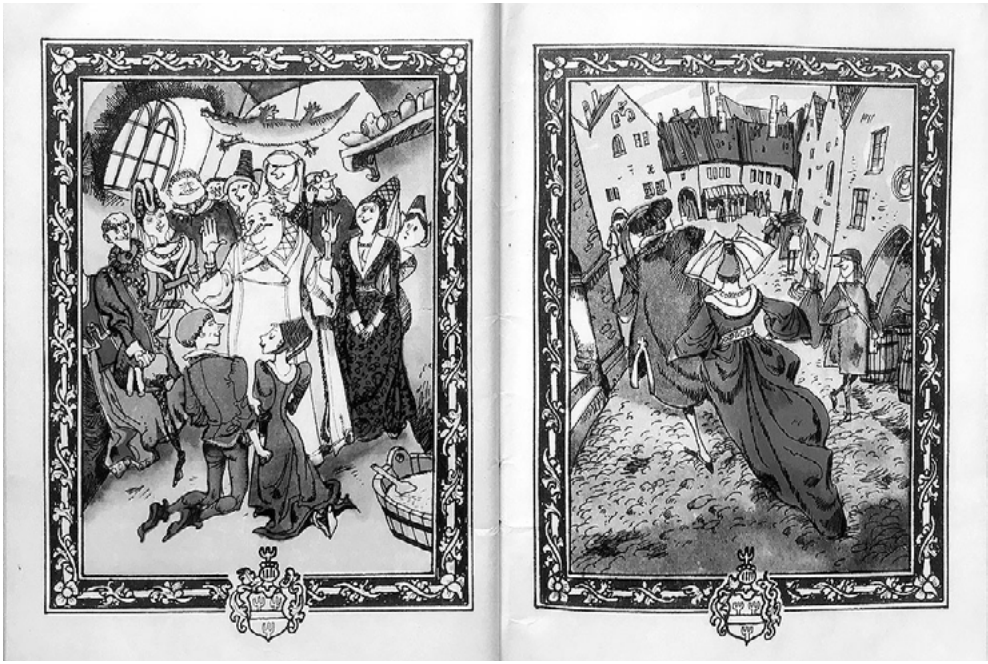


Figure 12. The spread from the book "Mardileib" by Jaan Kross 1973, illustrated by Edgar Valter. Photo: Jüri Soolep.

Figure 13. The spread from the book "Mardileib" by Jaan Kross, illustrated by Edgar Valter. Photo: Jüri Soolep.

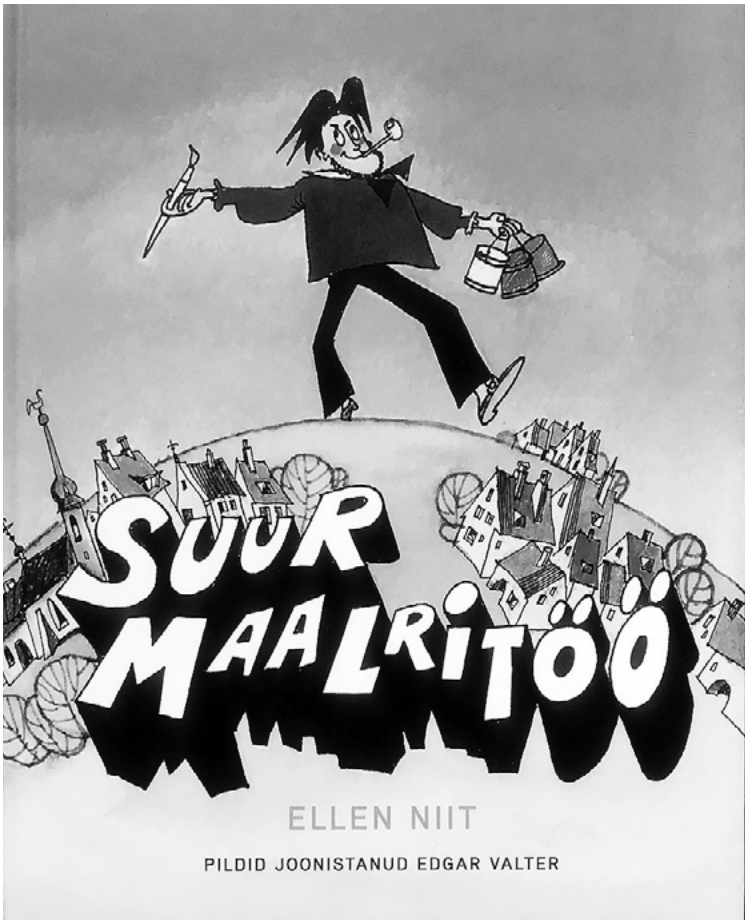


Figure 14. The book by Ellen Niit 2020, illustrated by Edgar Valter. Photo: Jüri Soolep.

Figure 15. The spread from the book "Suur maalritöö" by Ellen Niit, illustrated by Edgar Valter. Photo: Jüri Soolep.

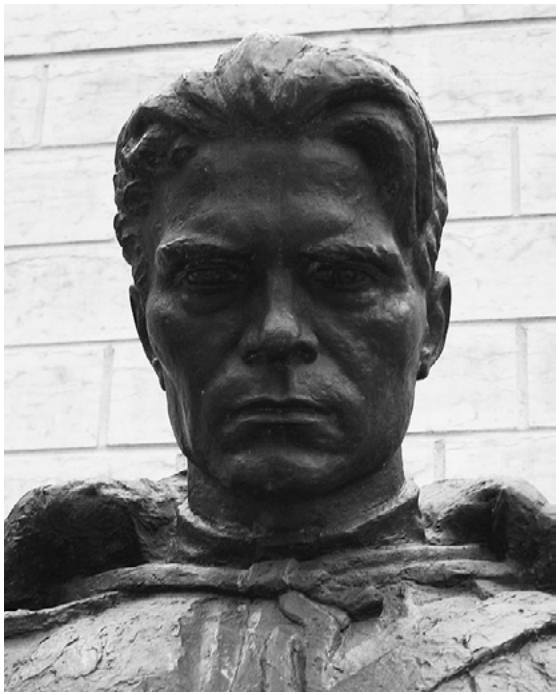


Figure 16. The monument by architect Arnold Hoffard-Alas and by Enn Roos in 1947. Photo: Jüri Soolep.

Figures 17. 18. 19. Screenshots from the film: Bronze Night: the Russian Riot in Tallinn. Urmas Eero Liiv. Tallinn, 2007..

VULVA ART, AESTHETIC DISCOURSE AND FEMINISM: CREATION'S ACCOUNT OF TWO DIGITAL ARTISTIC ARTEFACTS IN SITE-SPECIFIC AND HYBRID SPACE

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The anatomy of the vulva is being aestheticized in visual, performance and digital arts, in physical and virtual galleries, alternative spaces and in public space through techniques such as graffiti and video mapping. Vulvar forms are also being taken up in the design and construction of architectural devices, in contrast to Phallic Architecture and in the light of historical representations such as the Sheela Na Gigs at the Church of St. Mary and St. David in Kilpech, Herefordshire, and at Oaksey in Wiltshire, England. Besides having consolidated space in the hypotheses of archaeological research on Palaeolithic art. Thus, a contemporary aesthetic movement with feminist artivist motivations is configured, which promotes a discontinuation in taboo themes, generates new visual representations, creates narratives that destabilise patriarchal notions of gender and produces disruptive aesthetic discourses, which have also been enhanced through the field of digital media art. Based on this phenomenon, the present article proposal reports the development of two computational art artefacts inspired by vulva art aesthetics. The first refers to the art installation *ivagination*, a computational artefact of immersive and interactive character, conceived in site-specific contexts during the pandemic situation in Lisbon, Portugal in 2020 for the virtual exhibition Reconnecting of the *DMAD ONLINE Retreat*. The second concerns the project *Make me up*!, a transmedia digital artefact of cyber performative character inspired by the resignification of post-pandemic urban art and formulated on the concept of Hybrid Space that was launched during the 10th International Conference on Digital and Interactive Arts – ARTECH 2021: Hybrid Praxis: Art, Sustainability & Technology, in the historical city of Aveiro, Portugal, also known as the Portuguese Venice due to its canals on the "Ria de Aveiro".

Keywords: art-based research, digital media art, feminism, hybrid spaces, site-specific, vulva art

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Introduction

In 'ARS Telematics', Giannetti (1998) points out that "Everything seems to indicate that the first evident testimony of mental travel comes from the Paleolithic." (Giannetti 1998, 121). The researcher evokes a central question of the work of the palaeontologist John Pfeiffer, "what led our palaeolithic ancestors, thirty thousand years ago, to paint the inside of caves?" (Giannetti 1998, 121) and also answers that something must have occurred in order to make the passage from immediate communication to the two-dimensional representation of the medium, the mediated communication. This transformation, however, would not be in the biological sense of mutation or selection, but in the sense of knowledge. Giannetti problematises the complexity of the issue by pointing out the facts of the location and depth at which such cave paintings are found, "They are places where daylight does not penetrate; they are small chambers that were not inhabited. Pfeiffer's hypothesis is that the paintings are related to the appearance, at about the same period, of rituals and ceremonials". (Giannetti 1998, 121-122). In his article 'The sex of Graffiti, Urban art, women and 'gender perception': testing biases in the eye of the observer', Parisi (2015) cites a recent study by anthropologist Dean Snow (2013) of Pennsylvania State University, who conducted a measurement of the design of painted hands in caves from the Palaeolithic period in Spain and France and suggests that at least 75% of these would have been made by women.

For Giannetti, the underground paintings of the Palaeolithic "were intended to provoke a certain 'state of consciousness'. According to Pfeiffer, their characteristic anamorphism (they are deliberately treated in a distorted way) would correspond to the idea of taking advantage of the reliefs and depths of rock surfaces to provide the sensation of three-dimensionality (Giannetti 1998: 121-122). In Pfeiffer's opinion, "Homo sapiens sapiens employed the strategy of paintings in order to create spaces for initiation rites so that the apprentices, removed from everyday reality, could undergo surprising experiences: to experience, through mental journeys, other 'virtual' realities that would bring them new knowledge." (Giannetti 1998: 121-122). Giannetti points out that "the use of a certain technique of permanent (visual) expression in outer space as a resource for stimulating the imaginative power or the internal processes of individual or collective cognitive experiences has remained to this day, as a fundamental instituting gesture of the interpersonal information system" (Giannetti 1998: 121-122).

There are also numerous studies regarding cave incisions and their ritual relationship with vulvar forms. Among them is the theory that engravings of the female genitalia may be the world's oldest rock art discovered to date. The article 'Anthropogenic hydrological staging of an upper Palaeolithic carved shelter in Paris basin', published in the Journal of Archaeological Science in 2020, brings an account regarding the carved shelter Ségognole 3 in Noisy-sur-Ecole, France, which is known for its Palaeolithic style panel engraved with two horses arranged in a row on either side of three slits, initially assumed to be natural, evoking a pelvic triangle. A thorough re-examination revealed the artificial character of the cracks as well as numerous anthropogenic interventions to modify the hydrology of the shelter to drain water into the crack representing the vulva (Thiry et al. 2020).

In some studies regarding the art of the Palaeolithic period, such as the one included in the 'Boletín del Museo Chileno de Arte Precolombino', stylistic definitions, motifs and recurring techniques are made known with the presence of vulvas and deep furrows and the phenomenon of holy stones reported ethnographically in that area, where rock art, the scholars say, is a scarcely studied archaeological evidence in the area of Chile (Campbell et al. 2020). Another study looks at a complex of shelters located at Riparo di San Giovanni in Sambuca, Sicily. The engraved linear series and painted figures make up a very rich collection of engraved linear elements that almost entirely covered the walls of the shelter itself and would give contour to triangular-vulvular figures "in quanto simbolica dell'elemento femminile, faccia da contrappunto alla pervasiva immanenza delle linee che, in tal caso, potrebbero essere interpretati come elemento maschile" or even that "si verrebbe a creare un complesso dove la ritualità consisterebbe nel tracciare un elemento maschile in un riparo caratterizzato

come femminile dai pochi ma significativi elementi vulvari." (Buccellato, Riportella & Tusa 2012, 82).

Stonehenge, a work from the Neolithic period, also gains a hypothesis from medical studies which refers to the "vulvar" analogy of its conformation. The research of Perks and Bailey (2003) considers that "Stonehenge, with its stone circles and inspiring arches, the trilithons, has stood on Salisbury Plain in south central England for over 4000 years; it is said to be the largest and most complete megalithic monument in Europe and is probably older than the Great Pyramid of Egypt" and that "For most of the last thousand years it has been a centre of mystery […] Here a theory is offered based on the henge's resemblance to the human vulva, with the birth canal at its centre." (Perks & Bailey 2003, 94).

However, there is research that problematises this tradition in the description of the images as being in fact figures of the vulvar genitalia. Anthropologist Nada R. Hosling develops a study that relativises the contemporary male-centred values that dominate the interpretation of circular, oval, triangular, open-angle or forked engravings from 40,000 years ago as female genitalia. In her 2013 DE article, published in the Journal of Anthropology at the University of Berkley, the anthropologist issues a critical and forceful position with regard to some of these studies that tend to find vulvas among palaeolithic crevices and lapidary, as analogies and speculations with regard to whether or not these representations are true. In the article 'The Mind in the Vulva: Deconstructing the Androcentric Interpretation of Prehistoric Images', the researcher states that this is an obsession with vulvar forms. Her critique is clearly directed at the inheritance as to a strict mode of interpretation of archaeological images and with the label "vulva" as the dominant narrative. To reassess this interpretation, the researcher conducts a systematic review of all the literature related to interpretations of these Upper Palaeolithic engravings; a survey of museums of prehistoric art in France; and photographs taken during her visit to some sites in the Dordogne Valley, where many of these engravings were found. In the article, Nada focuses on the first two of the proposed questions in order to discover the epistemological platforms that generated this enduring interpretation and to open space for a wide range of approaches, increasing the possibility of discovering potential and alternative interpretations for these engravings.

Aside from the disagreements about the origin of palaeolithic artworks and vulvar forms, it is true that among the female representations that generated worlds in primordial myths, there is a series of sculptures that evoke the female genitalia and make up the figurative art of the palaeolithic and later influenced genital art. Vulvar forms are also being taken up in the design and construction of architectural devices, in contrast to Phallic Architecture and in the light of historical representations such as the Sheela-Na-Gigs at the Church of St. Mary and St. David in Kilpech, Herefordshire, and at Oaksey in Wiltshire, England. At the same time, for centuries Sheela-na-gigs led a quiet existence on churches all over the British Isles, "When they were brought to scientific attention in Ireland, some 160 years ago, their discovery, understandably, was not greeted with an unqualified welcome." (Freitag 2004, 1) and then "after all, what were these carvings of naked females doing on medieval churches? And not only naked, but openly displaying their genitalia" (p. 1). Researchers and "archaeologists tended either to ignore them altogether or to label them as lewd, barbarous or repulsive. Museums kept them locked away safely from public scrutiny" (p. 1). Freitag (2004) points out that only in the less puritanical environment of recent decades have both academics and artists turned their interest to these sculptures, "Divergent views emerged as regards the origin and function of the Sheela-Na-Gigs. Some see them as ancient goddesses, some as vestiges of a pagan cult, others as protective talismans or good luck charms, to name but a few interpretations." (Freitag 2004, 1). The most favoured critical opinion, "however, claims that they are copies of French sculptures put on Romanesque churches as warnings against lust, portraying evil in the battle against moral corruption." (p.1). Although the reasons "advanced for this view are rather unconvincing and, what is more, even contradicted by folk tradition, it has been widely accepted and found its way into dictionaries of art, museum guides and generally into all academic literature on the subject" (Freitag 2004, 1).

Today, the anatomy of the vulva is being aestheticized in visual, performance and digital arts, in physical and virtual galleries, alternative spaces and in public space through techniques such as graffiti and video mapping. The polyphonic (Bakhtin 2003) discourses generated by these creations trigger a vast field of liberation of the imaginary of repressions, of depressurisation of themes and discussions about the existence and politics of female bodies, including subaltern ones (Preciado 2019). They also express darker aspects of the collective unconscious structured in patriarchal and neoliberal logic, oppressions, abuses, violence, violations, mutilations to bodies with a vulva. They configure a close connection between art, science and activism in a task force in the production of new meanings, new criticisms, new existential, social and political issues, ranging from the fight for the guarantee of reproductive rights, such as the right to abortion, to a resistance to an androcentric view in the sciences, arts and medicine. In vulva art, artists would avail themselves of the aestheticization of the vulva to produce discourses in the field of feminism and transfeminism for the deconstruction of the patriarchal structure of socioeconomic and cultural domination. In this context, the vulva is aestheticized in favour of imagetic discourse transgressors of patriarchal norms, in resistance to hegemonic positions and gender binarism, religious beliefs and taboos (Freud 2013), and not necessarily in the production of a cis-biological genitalist vision of the body, as would be operated in phallocentric and essentialist devices of culture.

In this sense and following the example of works that aim to enhance aesthetic discourses of this nature, relata-se a realização de *ivagination* and *Make me up!*: two computational art artefacts inspired by vulva art aesthetics. The two authorial computer art projects reported below were developed in the context of a PhD in Digital Media-Art, under the premises of Art-Based Research and Practice Based Research (Candy 2006), which aim to develop scientific methodologies and knowledge production from the experience of creating practical projects and artistic artefacts. Both present artivist characteristics (Ortega 2015): the first, for having a theme directly related to the deconstruction of the myth of the jagged vagina and the second, for the realisation of curation through a collab with another project of the vulva art genre focused on street art interventions entitled @vulvabell.

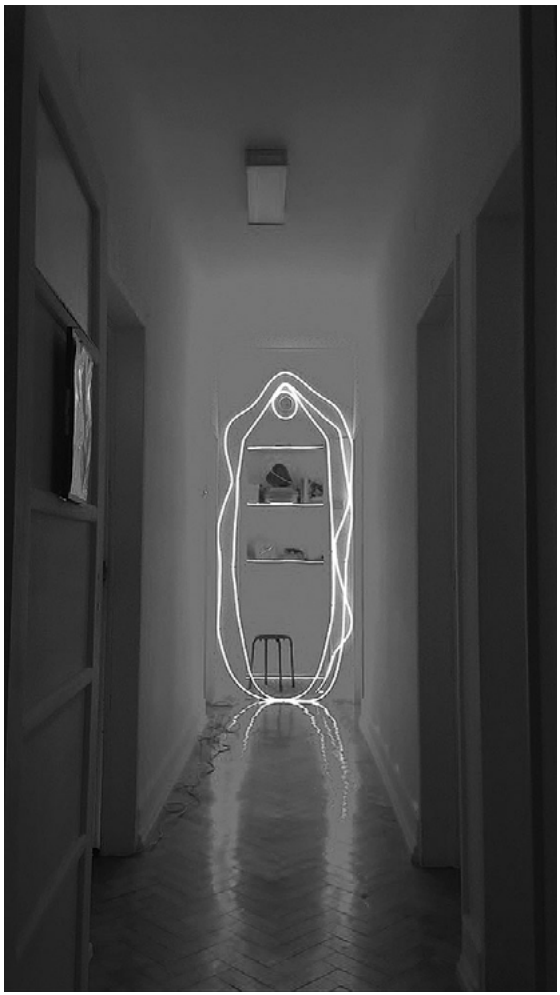
ivagination

In 2000, Virginia Braun conducted a study to demarcate and explore the meanings given to the vagina and vulva in Western culture and examine women's accounts of their personal meanings and experiences in relation to these cultural representations. In her study, she states that the vagina and vulva are often represented in conversations, texts and images, carrying a range of socio-cultural meanings but at the same time is still a taboo – a difficult word to pronounce and difficult topic to address. Adopting a social feminist approach, the researcher transposes the idea of a natural, pre-social body to a conceptualisation of bodies deeply rooted in the sociocultural, and assumes that sociocultural representations form resources from which women understand and talk about their bodies.

In this sense and facing the need to break with patriarchal and gender paradigms also in the middle of digital media-art, the artwork un-installation *ivagination* was created, which consists of an interactive digital artefact developed from site-specific proposal that partially transforms the artist's house into a body with a vulva. For this, each architectural element of the domestic environment had its connotation, function and aesthetics altered: the narrow corridor that connects the rooms of the residence fulfilled the role of extension of the female body; the pantry door at the end of the same corridor won the representation of the vulva and the symbolic entry of the vagina and the pantry of the house took the form of a uterus; beside the upper wall of the same door to serve as a support for affixing a projector of strobe light and this, finally, performs the metaphorical function of the clitoris (Wexel & Tavares 2020). According to Bambozzi, "Site-specific is a concept coined in the context of land art to refer to works in which the results obtained depended on the specificity of the place chosen for their development, that is, works in which the context was incorporated into the artistic procedure" (Bambozzi 2010, 144).

The un-installation is presented in the form of a luminous sculpture and centred on a musical narrative of autogynographic experience (Stanton 1983) and poetics of the artist, from an aesthetic based on vulva art, a contemporary artivist genre that would focus on aesthetic discourses on the vulva to address taboo issues related to empowerment and sexuality. Both the visual and sound dimensions of the artistic project dialogue directly with this universe and are based on the anthropological myth of the *toothed vagina*, present in countless primordial cultures and denoting the fear of contact with the potency of sexuality of bodies with a vulva, as verified in Badinter (1983). By mentioning and analysing the recurrent and ancestral representations of the vulva and the vagina in primitive societies, such as the Baruya of New Guinea and the Maori of New Zealand, and which is not restricted only to this type of social formation, Badinter discusses "the fear of the other", and illustrates "the set of anxieties which the female sex arouses", still today as a "devouring, devastating, insatiable force, a cave 'with teeth' which causes nightmares [. ...] deadly" (Badinter 1983, 149). The researcher states that "Among the Baruya, it is not so much the vaginal cavity that is feared, but the 'poisons' it secretes. By contrast, in other societies, it is the den of the vagina that provokes the greatest fear" (Badinter 1983, 152). When referring to pre-historic art, Badinter (1983) points out that "Since the Aurignacian (-30000), in a period producing only incisions and graffiti, we already see vulvas appearing, symbols of fecundity" (p. 58). And that in the chronology of the appearance of agriculture, "the fertility of the earth was not only the result of the action of the feminine principle, but of the association of the two principles. The assimilation of the woman and the earth became that of the furrow and the vulva". (Badinter 1983, 152).

In the immersive experience of the *ivagination* artefact, the dialogue with the referenced myth takes place in the exercise of the hyperexposure of a toothless vagina, turned by lights, led and neon and which offers a possibility of crossing and accessing the artist's inner world. The contemporary metaphor (Agamben 2009) works as a transgression of the original myth, a kind of rite of passage, where the opening to this physicalized place is neither dark nor obscure but possible, attractive and expected, in an act of transgressing also the patriarchal interpretations and dictates regarding the genitalia and its performance. In technological terms, the artefact *ivagination* was engendered based on a double and corresponding aesthetic dimension, the visual (luminous) and sound (musical), through the presence of sensors controlled via microprocessor Arduino and that require a physical presence of the public to act (Wexel & Tavares 2021). In the experience, which is limited to one or,



Figures 1/2. Public viewing experience during the un-installation *ivagination* experience in Lisbon, Portugal (2020). Photos: Plata o Plomo Duo.

at most, two participants at the same time, the public walks the length of the corridor of the house and comes into contact with three mini proximity sensors, located at different points of the space, which trigger a sequence of sound and light events, according to the body movements of people and their drifts. The variety of personal objects and the sound-musical stimuli, offered according to the spatialization of the public throughout the immersive and interactive experience, allow a customized fruition of the interaction, since the dwell time, along with the choice of experimentation with each object, spatial position, movement, visual and sound contact are determined predominantly by the desire of the visitor to remain and enjoy the work, or not, and still interpret such stimuli in his own way.

Make me up!

In *Make me up!*, digital AR technology was used to support aesthetic discourses that highlight artistic self-expression in cyberperformance (Jamieson 2008) and in the network, having as substrate street art works made under the perspective of intersectional feminist artivism using the concept of the hybrid space. The use of the imperative verbal mode in its title was a call to the public to "reinvent" itself: an invitation to the digital performative gesture, since it is understood that the relations of convergence between public space, street art and digital media-art have been changing substantially in the post-pandemic context. It can be concluded that the aesthetic discourses produced by the street art works were maintained, enhanced and amplified with the transmediation of the creations in reality filter increases and from the interaction and cyberperformativity of users. The creation of *Make me up!* is based on two procedures: the curation of works of urban artistic interventions carried out by four feminist activists in cities of Portugal, Italy and Brazil and the remodelling of them from the augmented reality resource *Spark AR* for the creation of digital filters to the social network Instagram. The first version of the digital artefact was composed of 12 filters for selfie photographs developed and made available via *@makemeup.artproject* on Instagram, where the user could try them with no limit of time of use or number of accesses, perform them, register them in photographs and screenshots, download the results and, still, share their experiences on the network. The only requirement to access the performative artefact would be to have an active profile on the social network Instagram. The assignment and sharing of *Make me up!* filters on Instagram follow the concept of Instagrammism (Manovich 2017) and Selfiecity (Manovich 2019). Since its creation, this social network has differentiated itself by offering editing tools integrated into the app itself and, with this, stimulates the production of aesthetic experiences and narratives based on photography and self-representation in digital visual culture and, more recently, by the introduction of the aesthetics of filters in AR. The cyberperformative artefact *Make me up!* was launched during the 10th International Conference on Digital and Interactive Arts – ARTECH 2021: Hybrid Praxis: Art, Sustainability & Technology in the historical city of Aveiro, known as the "Portuguese Venice" due to its canals on the "Ria de Aveiro".

Figures 3/4/5. Interventions of @vulvabell project in the Lisbon's streets, Portugal. Photo: @vulvabell

One of the projects curated in collab for the artefact *Make me up!* is @vulvabell, by Brazilian artist Carine Panigaz. The artivism of the @vulvabell project takes place through the aestheticization of mini vulvar sculptures, graffiti and paste up drawings of the anatomy of the clitoris, which have been stylised in public spaces in dozens of countries across Latin America and Europe since 2017. The mini sculptures are interactive: the clitoris is represented by a rattle, an element that instigates the viewers to interact with this kind of symbolic "bell". And through the stop motion animations disseminated in the networks and the posting of the vulvar mini-sculptures in public spaces, the artist invites the viewers and passers-by to interact with the aestheticized anatomy of the vulva. For the project of the artistic artefact *Make me up!*, four images of the project Vulvabell were used, two referring to the shape of the vulva: the first, in which the genitalia is a girl and another allusive to the anthropological myth of the toothed vagina, beside other two in which the anatomy of the clitoris is personified and applied through the technique of paste up in spaces already inserted in the circuit of street art in Lisbon, Portugal. The use of these works in the constitution of the first version of the artefact also serves to develop a concept about vulva art, object of investigation and problematization for the next stage of research of the doctoral research in progress, which integrates the elaboration of *Make me up!*. Following the example of the @Vulvabell project, numerous artistic projects, circumscribed in the fourth feminist wave, which began around 2012 and is characterized by a focus on the empowerment of women, the use of internet tools, and intersectionality, focus on the issue of knowledge of the anatomy of the vulva, especially the clitoris, the act of masturbation and pleasure itself. In this action, the bell is a direct analogy to the stimulation of the clitoris, central element of the production of jouissance in bodies with a vulva and fully described in the annals of contemporary medicine only in 1998, due to the investigations of Hellen O'Connell, urologist and professor of the Department of Urology and Surgery of the University of Melbourne, Australia.

Conclusion

Both of the artistic projects mentioned above make use of the aesthetic concept of vulva art not only for the purpose of artistic creation, but of methodological actions that contribute to the conceptualisation

Figures 5/6/7. On the left, visual artist Carine Panigaz in the process of creating a representation of the personified vulva; in the centre, the finished work; on the right, journalist and scriptwriter from Rio de Janeiro Ana Beatriz Petrini potentiates the aesthetic discourse of the work in AR through another device: a plaster statue inspired by the painting La nascita di Venere, (1482-1485), by Sandro Botticelli. In her gesture, the journalist "reveals" what in the Italian painter's original work is hidden by the goddess's hair. Source: *Make me up!*

and consolidation of this artistic genre still in validation. This genre has been showing increasing adherence by feminist artists around the world, especially in the space of net art and social networks. These same discourses have been amplified with digital media-art resources and end up not only provoking the rupture of taboo themes, but also contributing to the disruption of consolidated hegemonic processes of the patriarchal system and, also, to a change in the aesthetic perception of reality. In this sense, it is understood that the new artistic representations of the genitalia of the vulva have been cooperating to the maintenance of a movement of epistemological transition (Preciado 2019) in the discourses of gender, sexuality and in the field of cultural and technological relations.

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FABLES OF FLOODS AND FIRE - DILUVIAL MYTHS AS TOOLS FOR URBAN (RE-)CONFIGURATION

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Abstract

Myths are neither neutral nor stable. They are narrative tools born from circumstances that typically refer to historical occurrences linked to the natural environment. As expressive carriers of knowledge, they are tied to localism, heritage, and geographical or urban situations, but are also in constant flux as they get remoulded and repurposed with each consecutive telling. Cautionary tales of impending destruction are particularly widespread, persistent and cyclical. This paper will consider flood myths in particular in relation to the built environment with the aim to trace the parallel developments and complementary genealogies of destruction myths in European cities. First, the myth of the old grey man threatening to wash Tallinn, the Estonian capital, into the sea will be traced across its various iterations and narrators. Flood myths from Durrës in Albania, from Zeeland in the Netherlands and from Beirut in Lebanon will be interwoven as contrasting and complimentary examples to the Tallinn myth. Analysed in unison, these selected narratives form the basis for a critical analysis of the destruction myth as an operational tool in justifying urban development, harnessing collective memory for economic gain and expansive geoengineering as well as a call to enduring the potential and ultimately anthropogenic "endings" societies continually face. The article does not aim to holistically represent each chosen narrative. Instead, it highlights and critically analyses overlaps in content and similarities in instrumentalisation. The findings contribute to understanding the work of cyclical myths as narratives that not only have a structure behind them but also project potential socio-spatial structures into the future of our cities when operationalised as such.

Keywords: built environment; cyclical myth, deconstruction myth; geography; urban development; urban narrative.

Introduction

Tallinn, the capital of Estonia, is nested between two natural barriers. The first is the Baltic Sea. The city stretches well over 30 kilometres along its shores and its coastline is dotted with the industries and ports that have been Tallinn's economic lifeblood for centuries. The second dominant topographic feature defining the urban morphology of the city is the Baltic Klint. The exposed cliffside encircles most of the city and narrows it to only 3 kilometres across near the historical centre. Perched on this pinch-point 36 metres above sea level is Lake Ülemiste, the main source of potable water in Tallinn since the 14th century. Converse to its significance to life in the city, it also represents a looming threat and a fabled scenario for destruction.

According to a popular myth, an old man lives in the lake. Once a year, he surfaces from its depths and descends from the clifftop. At the city gates, he enquires if the construction of Tallinn is completed. Should the answer be yes, he would raise the lake over its banks and drown all "the sinful beasts and children of men" in an almost biblical fashion so that only "the top of St. Olaf's church[1] remains to mark where it once was" (Kreutzwald, in Kalda 2005, 578). According to the myth, the only way to put off this fate is to continually (re-)build. At the very least, the water spirit must be tricked to believe this is the case.

In this story, the threat to the city is minimised by the old man's predictability. As the city guards know to expect him yearly around autumn, they already have the necessary reply – "No" – prepared and usually outsmart the water spirit with ease. Still, in some cases, the old man followed through with his threat and flooded the city. Most recently this happened in 1708, 1761 and in 1867. In the last case, water levels rapidly rose to 1.8m on some city streets. Modern flood barriers and pumps have rendered the old man less of a threat. Nevertheless, the myth calling for constant construction continues to be instrumentalised in various ways.

1 According to some highly speculative reports, it was the tallest building in the world between 1549–1625.

In this article, the myth of the old man of Lake Ülemiste forms a unifying thread in an anthology of cyclical fables foretelling floods, fire, and destruction. With certain cultural and geographical adaptations, coastal cities worldwide share remarkably similar stories of cataclysm. Gods of water are among the earliest and most persistent myths in many major mythologies, representing the cosmogonic element of water. Moreover, flood myths, also referred to as diluvian myths, symbolise a necessary rebirth, a cleansing, and a way of making new forms of inhabiting land. In addition to the old man of Lake Ülemiste, diluvian myths from Durrës in Albania and Saeftinghe in the Netherlands will be discussed alongside the cyclical destruction of Beirut, Lebanon. True to the subject matter of oral histories, the structure of the paper is conversational and interjectory – much as the discussions when the authors first set out to investigate the agency of myths in Tallinn on an autumn day in September 2021.

The initial discussion prompted questions about myths. How are they entwined with their locations? More specifically, how do myths contribute to structuring the physical and psychological aspects of contemporary cities? Furthermore, in whose hands can myths be wielded as tools – or even weapons? This article expands on these insights and comparatively explores a set of myths to make visible their function in the context of contemporary city-making. Together, these case studies form a broader perspective on the vitality of myths, exploring their function in the fields of architecture and urbanism in a wider context, including aspects of heritage, social meaning-making and power dynamics in planning. Rather than making sweeping generalisations, the aim of the article is to undertake a critical analysis of the modernisation of myths, and subsequently, their use, misuse, and abuse in urban development.

Myths and city dwellers

Commonly, myths are based on geographical conditions and societal prescriptions. They reflect environmental specificities and embody local knowledge. However, in an age of accelerating technological control over the natural environment (Rosa 2020), the

instructive knowledge encoded in myths tends to be relegated to romantic prose. No longer required for passing down local knowledge in oral histories in a practical sense, they are nonetheless instrumental to the current praxes of city-making. When modernised and appropriated, the power of myths to affect physical space should not be underestimated.

The contemporary relationship between cities and myth was established in 1980 by architect, urbanist and professor Bernardo Secchi, who drew attention to the 'urban planning narrative' (Secchi in Mager and Matthey 2015). He highlighted the creation as well as coercion of myths as primary to the work of planners as technical drawings. Since then, this research strand has been extensively developed in English-speaking academia (Mager and Matthey 2015). A contemporary of Secchi, the anthropologist Alan Dundes who is dubbed the "father of folklore", formulated a precise definition for myth and theorised its significance. A myth, he says, is "a sacred narrative explaining how the world and man came to be in their present form" (Dundes 1984, 1). These narratives tend to be linked to some kind of rituals, have main characters who are not human, and take place in a world which is different from our own. In the societies in which they are told, they are adhered to and their rituals are to be followed. Therefore, and according to Dundes's colleague William A. Wilson, the study of folklore is crucial in human attempts to understand the behaviour of ourselves and fellow humans more than pleasant idle moments of storytelling (2006). Historian Bruce Lincoln later adds that myths are by nature half-truths: explanatory region-specific fantasies that are nonetheless based on historical events (1999). What sets myths apart from other forms of prose is "a peculiar affective quality or narrative potency that carries its ideological matter in disguise" (Aparna 2010). It is this aspect of being accepted on the basis of faith but having hidden ideological potential which makes myths useful tools for structuring (urban) lives and an intriguing field of study for scholars in architecture, urbanism, and literature.

The hybrid nature and potential of myths have also been highlighted by Robert A. Segal, a scholar of myth and religion, who argues that theories of myths are ontologically symbiotic with other disciplines. He asserts that there are no comprehensive theories of myths themselves as no theory of myth can exist within itself. Crucially, he separates myth from literature, which it has traditionally been equated with, and rejects the literary study of myth (Segal 2004, 2). Whereas a myth has literary components (language, narrative, symbolism), its particular function surpasses simple stories as history and instruction. The following interwoven myths aim to highlight this potential agency of myths to harness aspects of collective histories in creating new urban futures. In particular, it pays attention to the ability of myths to permeate planning scales and direct public discussion.

Thread I: The Myth of Redon: the Inevitable as a Human Choice

In Illyrian mythology, Redon, the God of the seas and waters, represents an aquatic mythological mentality, which is especially evident in Durrës, a beautiful coastal city of 290,000 inhabitants in western Albania. Durrës (named Dyrrachium in antiquity) is the second-largest city in the country. It has a rich history of over 2500 years and according to Grote "it was founded around the 7th century BC" (2013: 440). Some local myths have endured and continue to have a crucial function in expressing the spatial identity of the city. This is most evident with toponyms.

In Durrës, Redon is an essential mythological figure, evidenced in coins and archaeological monuments (inscriptions, and records of ancient authors). This is also evident in various toponymic connections, such as the Cape of Rodon, a coveted coastal destination near Durrës. According to archaeologist Moikom Zeqo, "The toponym is known in medieval documents of 1324 with the forms Redonum and Redones to finally pass to the current toponymic name Rodon" (Zeqo 1996, 54). Zeqo also highlights how Redon's name has proliferated on coins from the III century BC to the II century AD. After these five centuries, however, the mythological figure disappeared for some time. His toponymic presence persisted, but otherwise, the awareness of the mythical figure vanished. The reasons for this process are strongly related to the collective psychology of the inhabitants of Durrës.

Figure 1. Redon, Durrës, Albania. Photo by Luca Roggero E.g. https://www.ocnal.com/2020/12/illyrian-gods-statue-is-overthrown-in.html

The figure of Redon as the Illyrian God of water was closely related to earthquakes. This is because Durrës lies in a territory of high seismological activity. Due to its coastal location, every time strong earthquakes hit Durrës, floods followed. That is why modern Durrës is only a fraction of the ancient city, half of which is still hidden underground and much of it underwater. Thus, Redon's figure was associated not only with the forces of nature but also with fatalities connected with them.

Albanians rarely tend to articulate death verbally. Instead, they use euphemisms when referring to "it". According to Stavre, B. et al (2010, 119), expressions like "his days came to an end", "bought a one-way ticket", "joined the majority", "fall to eternal sleep", "parted from this life"[2] refer to a mentality of a nation whose effort is to linguistically stave off death. Referring to Çabej, this euphemistic use does not only "echo the ancient times, but is also an undisputable value of the linguistic ethnography" (Çabej 1978, 15). However, the euphemistic expressions of death have probably been one of the reasons that contributed to the fading of the mythical figure. According to Allan and Burridge "throughout history, people have attributed supernatural powers to names and naming forms a special case of word taboo. These practices are motivated by fears comparable with those of death and disease and people use similar strategies to avoid calling down malfeasance upon themselves" (Allan and Burridge 2006, 5). The euphemistic use of death is related to the belief "that uttering the word 'death' meant 'inviting' it" (Stavre et al 2010, 119).

Redon became condemned for causing the flood, destruction and many deaths in Dyrrachium (today's Durrës). Around this time monotheistic religions, first Christianity, then Islam began to spread. These further contributed to the dormancy of Redon as an Illyrian mythical figure of water and earthquakes.

In 2019, Redon somewhat unexpectedly resurfaced when a statue of him was placed in the centre of Durrës promenade. A few months after, a powerful earthquake struck Durrës and the fear of a new flood arose. Redon's presence was felt again. The myth was a self-referential mirror reflecting fear and obedience towards a kind of supreme authority, one of natural forces.

The revival of the myth is closely related to the activation of the collective unconscious where "the human mind retains fundamental, unconscious, biological aspects of our ancestors" (Jung 1970, 79). These "primordial images," which serve as a basic foundation of how to be human, come from the mythical pattern. Lévi-Strauss claimed that "myth is language, which may exhibit more complex functions compared to linguistic expression" (1963, 210). He also highlights that myths are complex structures, which can be divided into smaller constituents called mythemes, which function as "bundles of relations" (1963, 211). The mythemes in the new functionalization of Redon's myth include important semantic binomial sequences

2 In Albanian: "Ju mbaruan ditët", "Iku aty nga nuk kthehesh më", "Iku me të shumtit", "E ka zënë gjumi i madh", "U nda nga jeta".

such as destruction and self-destruction; fate/destiny and free will; guilt and fatality; and oblivion and remembrance of the mythical heritage.

These mythemes bring the mythical figure of Redon into another context. He no longer only represents the ancient myth of the II century but also a modern and renewed mythical structure. Analysing the mythemes, one may answer many essential questions that are related to the present or even the future. The mythological figure is retrieved from collective oblivion in order to give "linguistic presence" to new fears and thoughts. He represents the absolute authority of nature, which due to deep roots in the psychology of human beings may play a significant role at some crucial point in mankind's existence. Moreover, he expresses a mental structure related to the identity of the space in which he has been created. The myth evolved, expanding its boundaries because the "intellectual impulse which has produced it" (Lévi-Strauss, 1963: 210) was reawakened. It was as if Durrës inhabitants called Redon and he answered, bringing along total destruction.

How did the embodiment of the mythical figure relate to the urban space of Durrës? Is the mythical energy still active with the same intensity as the days of devastation? As expected, his mythological presence is less intense, but the monument has expanded in its spatial relevance. It has become a referential landmark in the city. Being placed at the beginning of the Vollga promenade, it not only aesthetically improved the landscape but also marked the space, changing its symbolic meaning. The place has become part of many tourist itineraries, and through them, it became an important reference point regarding the local residents' and guests' representation of the city.

The myth and technological mastery of the natural environment

In 1947, under the conditions of Stalinism, the water spirit looking over Tallinn also underwent a contextual rebirth. A new adaptation of the myth was penned by Debora Vaarandi, an Estonian poet who belonged to the Communist party and in 1949 personally took part in the mass deportation commissions. Although her later work turns towards naturalist themes and expresses some regret over these actions (see Kalda, 2007), much of her early work is steeped in Stalinist excess.

'The Old Man of Ülemiste and the Young Urban Planner' (Vaarandi, 1952) fits into this canon and takes place during the post-war reconstruction of the heavily bombed city. Instead of a city guard, the old man runs into an idealistic Soviet urban planner. The young man is completely unphased by the natural disaster and the weight of tradition the spirit represents. He knows that reconstructing the city will take time. But beyond this, he is also confident in the centrality of this effort to build a new kind of person: *homo sovieticus*. To showcase his vision and plans for Tallinn and its people, he takes the old man on an urban tour of Tallinn:

Figure 2. Cover of the Soviet retelling of the Ülemiste myth, showing the young urban planner and the old man of the lake. Raamatukoi, 2022 https://www.raamatukoi.ee/ulemiste-vanake-ja-noor-linnaehitaja

Where once sprawling bric-a-brac shops
stood unseemly and in decay,
the main square will be in lights,
shimmering and smooth as parquet.
[...]
I see how on festive days
cheerful crowds here will shout,
I see here dancing and marching
rows of worker folk all about

Vaarandi, in Kalda, 2005[3]

The young planner's confidence in the bold dream of modernism, centralised planning and progress overwhelms the water spirit[4]. At the end of the retelling, after seeing the purity of the Soviet vision of reconstruction, the old man considers giving up his task for good. However, the key to understanding his resignation lies in the origin myth of the lake itself.

Lake Ülemiste is supposedly formed from Linda's tears of grief, who mourned the death of her husband Kalev. They are the mythical parents of the heroic figure of the Estonian national epic, Kalevipoeg. Therefore, the lake is considered sacred and pure. When considering the role of the lake as a source of drinking water for the city, this reverence is entirely practical. The role of the old man of the lake is to guard against contamination of any kind and ward off expansion on its shores. More than anything he despises the greed and disrespect for the natural order of the citizens of Tallinn encroaching on the lake. So he follows the construction of their 'wicked' city and waits. This is not out of leniency or to offer some chance for retribution. He has already decided to drown the city, only the timing is in question as he wishes for the destruction to be total and final. Instead of immediate action, he will let the citizens' toil and construction run their course before performing his correction. Why then does he eventually relent in the Soviet retelling of the myth?

The tipping point in Vaarandi's version of the story is rooted in the uncompromising purity of the communist vision. As the young urban planner purveys the scope and enlightenment of the Soviet endeavour of progress to the water spirit, he is convinced to retire. Finally, he can be safe in the knowledge that the citizens of Tallinn are worthy of living on the shores of Lake Ülemiste. Nevertheless, his retirement was not for long.

Thread II: An Everlasting Fight with the Rising Tide: Flooding Myths and Dutch Stubbornness

Flooding myths in the Netherlands can either tell a heroic story of victories over the untameable seas or an ominous warning. But who can tell which is which? For centuries, the Dutch have lived on land and fought against the sea, a continuous societal duel (Mosters, 2020; Duiveman, 2021). This undertaking is visible in the countless waterworks dominating the landscape such as ancient mounds, locks, fosse, ditches and dykes. Vast flat grasslands, interlaced by a rigid water grid, and occasionally, some cows grazing behind man-made concrete walls keeping the water out: the typical Dutch scenery. The modern waterworks infrastructure is a framework that could be read as a narrative in which concrete control is the main theme. The historicity of water is not purely fact or fiction but a blend of the two. Myths, such as the one of the drowned land of Saeftinghe, are but traces of historical narratives of water as a thread and salient future scenario. The (re-)telling of myths provokes the rethinking of spatial arrangements for the Netherlands, which need to be critically reviewed because of their entrenchment in a mentality of war (Duiveman, 2021) as well as the current rising sea levels.

Saeftinghe, Zeeland, was a city built on land from the Schelde river delta in the 13th century when local monks erected seawalls to protect the land and control the water. The walls secured the rich delta soils and enabled salt production, similar to how peat is produced. Salt production made locals so wealthy that it is said that the farmers wore silk, their horses wore silver and their thresholds were made of gold. One foggy morning, the myth says, a Saeftinghe fisherman was out on the Western Scheldt. There, to his surprise, he caught a mermaid. She was beautiful but had a harsh and alarming message for the fisherman and his folk: their attitude should be less

3 Translated from Estonian into English by Mattias Malk
4 See Figure 1

Figure 3. Oosterscheldekering, Zeeland, the Netherlands 2021. Photo by Eileen Stornebrink

presumptuous and they needed to be more generous by dispersing the wealth of their city. On his way back, a merman seized his boat and told him to free the mermaid or he would curse Saeftinghe. However, the fisherman chose to ignore the warning and returned with his valuable catch.

Shortly after, a huge flood swallowed the neighbouring towns. The people of Seaftinghe thought they were safe, but their fate was slower to arrive. As their wealth was generated from salt production by mining the surrounding lands, they were unwittingly digging their own grave. The effect of mining was amplified by high water levels and in time their land steadily sank (Het Zeeuwse Landschap 2013). Nowadays waterworks can be found where the city once was, keeping the tidal saltwater out and forming a channel for cargo ships bringing economic growth to Antwerp, farther upstream. On top of the dyke, cars and bikes also pass. The myth has made former Saeftinghe[5] a tourist attraction but has disassociated from the original warning of peril.

5 The total area which is currently called Saeftinghe is about 3500 ha. Many dykes were erected around 1300 but not all held water: around 100 villages and towns were taken by the sea during the Middle Ages.

Throughout the Middle Ages, water and land arrangements were managed in early democratic assemblies: the Waterschappen (water councils) with their Dijkgraven (dukes of dykes) (Waterschappen, 2022). These assemblies arranged the land according to dominant water flows. This way they managed to channel excess water to larger lakes or rivers. In time, this allowed farmlands to be formed where swamps once lay. Currently, the Waterschappen still hold a crucial function in controlling the safety of these farmlands and are, thus, an essential facet of the Dutch political arena. Every four years, inhabitants of the Netherlands vote for representatives. Yearly, they pay significant taxes to guarantee their safety. Unfortunately, few tend to know about their influence on the environment.

Alongside persistent political remnants, such as the Waterschappen, many stories and myths about the Dutch relationship with water get passed on through generations. These narratives tend to fall into two categories of battles: either heroic victories or cautionary tales of destruction. This highlights a fundamental dissonance in the Dutch relationship with water. Although water has played an important role in both economic and recreational prosperity, it is still seen as the enemy. Maybe not surprisingly since

every once in a while, a flood will occur either from the sea or upstream of the rivers. In 2021 alone, many towns along the Rhine River in the Southern province were flooded. This was unexpected, for it had been 70 years since the last major sea flood rolled into the southern part of the Netherlands.

In 1953, an area of 129,000 hectares was flooded when critical dykes collapsed, leaving more than 1000 houses and farms in ruins and killing 1836 people (Watersnoodmuseum, 2022). This event could have been averted completely if one Dutch engineer Johan van Veen's warning had been heeded in time. Although he worked for the government at the time, his ominous predictions fell on deaf ears. His proposed plan of upgrades was only executed after the flood and has battled the sea since then[6]. Currently, this Delta plan is under the watchful eye of the Waterschappen (Waterschappen, 2022), but more than 70% of the Dutch population live between 1 and 4 metres below sea level and most inhabitants choose to ignore the impending threat of water (Bregman, 2000).

Contemporary whistleblowers are already sounding the alarm that the battle is not over. The Intergovernmental Panel on Climate Change has sketched a sea-level rise of 1-2 metres by 2100 even if humankind keeps within the recommended bandwidth of climate action[7]. With this in mind, delta engineers and the Waterschappen produced a significant number of spatial development plans dealing with the rising water. All the forecasted scenarios[8] have significant costs and losses and have mired both the state and the Waterschappen in indecision. Their hesitance is partly grounded in electoral cycles of ruling which typically last for four years and do not favour long-term development or dwelling on dreary future prospects.

This attitude of complacency mirrors the attitude of the inhabitants of Saeftinghe. The myth has been recalled for centuries to tell a message and remind people to be constantly aware of the water and the treatment of the environment. In doing so, it becomes clear that myths are tightly linked to identity and place, thus, the caution becomes of the context, not of an event. The adversarial relationship, when coupled with upcoming worldwide environmental change, predicts more harmful than beneficial consequences for the Netherlands. As Le Guin sharply points out in her essay in 'The Carrier Bag Theory of Fiction', "the trouble is, we've all let ourselves become part of the […] story, and so we may get finished along with it" (2019: 33). Perhaps new coalitions based on collaboration and cohabitation can be established with the water as a precious and respected ally.

The myth and the market

In 2008, the old man of Lake Ülemiste resurfaced in yet another retelling. While it could be speculated that he had followed the fall of state socialism and perceived an ensuing shuffle in morality in the newly independent country, the reason for his return was more prosaic and practical. As in the late 1940s, Tallinn was again experiencing fast-paced (re-)construction of comparable scale. However, if the mid-century urbanisation was driven by the vestiges of war and a totalising state-socialist ideology, development in the 2000s operated under different conditions. For the last two decades, the country had been transitioning from a planned economy to a liberal market economy, showing the highest GDP growth rate in Europe between 2000 and 2007. Much of this growth was based on deregulation, privatisation, cheap credit and increasing household debt associated with the neoliberal model that drove the construction sector and reached its peak in the 2007 global financial crisis. Having quickly caught up with 'western' neoliberalism in a process described as 'cowboy capitalism' (Kooskora, 2004), developers began to experiment with more elaborate strategies for increasing land value. This is why the contemporary rendition of the myth of the old man is best understood in the context of place branding and capital.

Around this time, Ülemiste City, a private enterprise that owns and operates a large business park near Lake Ülemiste and Tallinn international airport, had rapidly expanded. As the developer and land owner,

6 see Figure 3 as example.
7 see Chapter 9 in the IPCC Climate Report, 2021.
8 see the four scenarios of Deltares: Analyse van bouwstenen en adaptatiepaden voor aanpassen aan zeespiegelstijging in Nederland (2022) https://publications.deltares.nl/11208062_005_0001.pdf.

it found itself in need of new ways to market itself to prospective customers. They saw potential in anchoring the enterprise to the well-known myth and commissioned the accomplished author Arvo Valton and illustrator Jaan Tammsaar to resurrect the old man of the lake.

The new book is visually attractive and its illustrations are instantly recognizable. However, it does not meet Valton's stature in the realm of Estonian literature. That is, fundamentally, the revived myth reads, in his book, as a claim to relevance and authenticity by the business park operators. Instead of policing the morality of the citizens, the old man has been drafted into the marketing strategy of the private developer. Having passed from folklore to state propaganda, he is now an unwitting participant in a straightforward exercise of place-branding the Ülemiste business park (see Sekavin, 2018). Admittedly, adaptation and appropriation are inherent to retelling stories. However, operational narrativity in the case of hegemonic powers such as the state or increasingly, the private enterprise are reshaping the myth to reshape the city, thus the critique from an urbanist perspective.

The lake water poses little threat to the contemporary city. Nevertheless, the myth still possesses potential as a cautionary tale. Nowadays, however, the flood may not come from water but from the industrial quantities of chlorine stored at the water purification plant by the lake. In the case of an accidental breach, coupled with favourable winds, the heavier-than-air gas can flow down the banks of the klint and pose a deadly risk to the citizens of Tallinn below. However, the more probable, and simultaneously insidious, threat to the city is posed by the inhabitants themselves and the kinds of urban futures they dream up. In a sense, the fate of the Ülemiste water spirit illustrates well the overall relationship of urban dwellers to the natural environment. This is to say that the city was initially conditioned by a state of cautious cohabitation which, in turn, was ensued by mastery over the threatening environment via technological innovation. This led to the demotion of the myth to accommodate marketing strategies and recreation as convenient simulacra. Therefore, contemporary citizens of Tallinn have none but themselves to fear.

Thread III: The Lebanese Phoenix: The Myth, the Rhetoric, the Curse

The myth of the phoenix has a significant presence in both ancient and modern Lebanese history and culture. The Phoenician civilisation which extended along the eastern Mediterranean coast left a lasting impact on the world with the invention of the first alphabet, their colonial maritime presence and trade in the Mediterranean. The Greeks referred to the Phoenicians as such mainly due to their textile exports. Nonetheless, the Phoenicians and the Phoenix are evidently cognate. This approximation goes beyond shared etymological roots[9] to also include a mythological aspect. Roel van den Broek, a scholar in theology asserts that "almost all the versions of the Physiologus say that the phoenix goes from Lebanon or Paradise to Heliopolis in Egypt to cremate itself there" (2015, 177). The endless cycles of birth, death, and rebirth, which described the Phoenix and old Phoenicians' rebirth in their colonies in Carthage and Iberia, seem to also recount the modern days of Lebanon.

The history of Beirut, the Lebanese capital and one of the major Phoenician cities, could be told as a series of cycles of devastation and reconstruction; "according to Lebanese folklore, Beirut was destroyed and rebuilt seven times during its 5,000-year history" (Raschka 1996, 44). Over the past century alone, the Ottoman centre of the city was first razed and replaced with French-styled squares and buildings during the French mandate (1925-1946). This became the seed for Dangers' and Ecochard's[10] masterplan which cut through the existing urban fabric and replaced the pedestrian coastline with coastal highways. The most significant incident in the Lebanese collective memory is the Lebanese civil war (1975-1990), during which the phoenix seemingly died in Beirut. The scale and brutality of destruction, the division between a Christian east and a Muslim west, with the Beirut Central District

9 More evident in Arabic: Phoenician: ي + فينيقي = فينيقيي Phoenix: فينيق.

10 René and Raymond Danger and Michel Ecochard were the urbanists and architects commissioned with planning many French colonial cities such as Casablanca, Damascus, and Beirut.

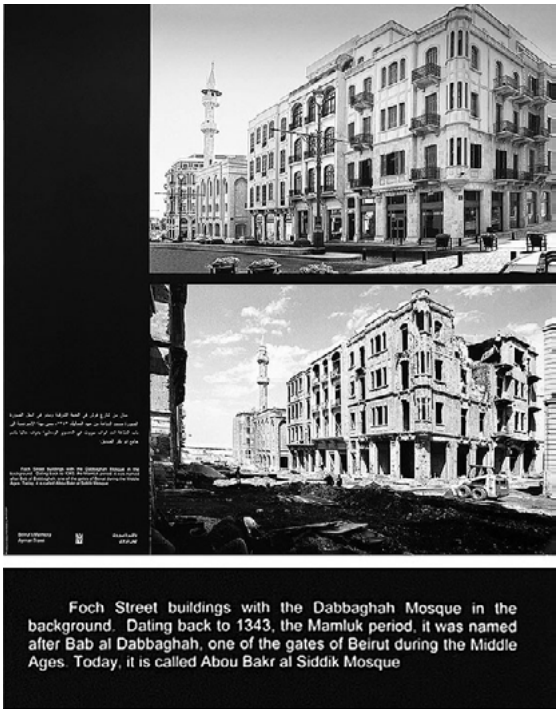

Figure 4. Advertisement at Rafiq Hariri International Airport showing before and after images of Beirut's central district. Ad campaign promoted by the ministry of tourism. Photo by Amer Obied 2022.

(BCD) falling in-between as a 'no man's land' and the loss of countless lives all contributed to this metaphorical death.

The signing of the Al-Taif accord in 1989 and the ceasefire in 1990 marked the rebirth of the Phoenix (Traboulsi 2008). The country and its capital began rebuilding with extraordinary speed and momentum, recovering the unity of the city. The reconstruction of Beirut was spearheaded by Solidere[11]; a Lebanese joint-stock company and a model for capitalist enterprise backed by a neo-liberal government. Solidere was founded in 1994 as the vision of the then Prime Minister Rafiq Al-Hariri, capitalising on a reignited phoenix-like spirit of renewal and promising an "Ancient City for the Future"[12].

However, Solidere's practices were not without controversy. First, they deemed BCD unsalvageable and subsequently demolished more buildings than during the years of conflict (Makdisi 1997). They also employed a "wholescale reconstruction" project (Perring 2009, 297), during which the new government permitted land to be impulsively expropriated from owners and tenants, compensating the dispossessed only in Solidere shares.

Today, after extensive construction, Solidere has succeeded in rebuilding BCD and a new waterfront as well as reclaiming a large area of the sea as a water-break from potential tsunamis (Baecker 2013, 4). Nonetheless, the project received, and is still receiving, heated criticism from academics and professionals. Makidisi refers to the rebuilt BCD as "an island of modernity" (1997, 670). This island perpetrated the detachment of the centre from the city, first as a warzone during the war, and now a socially and economically exclusive one.

That is to say, while Solidere succeeded on an architectural level, it failed on many others. The modern buildings are unaffordable to the majority of the population, and the rebuilt BCD, in the French style, feels uncanny and artificially out of time – a replica of its past self without any evidence of war. Many of Solidere's proposed public spaces such as parks were not implemented. And finally, some archaeological findings were purposefully destroyed or damaged to make way for reconstruction (Perring 2009; Raschka 2006).

Entrusting the physical memory of the civil war to the hands of a for-profit enterprise proved to be unwise as the memory was used and abused by Solidere. Makdisi regards the direct manipulation of public grief, "The company's [Solidere] advertising booklets rely heavily on visual photographic contrasts between the ruined central district as it is today, the bustle of the district in the heady pre-war days of

11 Société Libanaise pour le Développement et la Reconstruction du Centre-ville de Beyrouth (Lebanese Society for Development and Reconstruction of Beirut's City Centre).
12 Solidere's slogan was "An ancient city for the Future". For more on the rhetoric see Makdisi 1997.

the 1960s and 1970s, and the promise of a poised and elegantly manicured downtown sometime in the next ten or fifteen years" (1997, 679). The reconstruction was, and predominantly remains, a capitalist project serving the new city narrative in which war is supposed to become a forgotten distant past.

With this promise of rebirth, the myth of the phoenix has since been repeatedly invoked in political rhetoric to instil nationalism and cultivate approval. The myth has been reiterated over and over and therefore has come to be perceived as a national tradition, for some, even a duty, to stop remembering the past. Thus, the modern use of the myth is unquestionably political, but the belief in it stems from a deeper collective wound and a longing for a metaphorical rebirth to baptise the hurt, the blamelessness, and the innocent. After a war, these are typically abundant.

Aside from Solidere, Beirut keeps on living in that invented national tradition, falling and being rebuilt many times, but not without a high cost. Political corruption, religious radicalism, conflicting ideologies, and massive debt have left the country in serious crises. Adding insult to injury, each summer wildfires ravage the mountains, and each winter its cities are flooded with rainwater. For many, Beirut has changed beyond recognition – undead rather than reborn. The story of a bird with field feathers compels the Lebanese to never question the reasons for the demise of their country but only, and blindly, celebrate the joy of potential rebirth.

The massive explosion that occurred in Beirut's port in 2020 highlights the continued challenges facing the city. When on the 4th of August, the most powerful non-nuclear explosion in human history obliterated the vicinity of the port and damaged a third of the built structure of the city, hundreds died and thousands were rendered homeless. The flood had returned to reclaim the land of fire erupted, engulfing the Phoenix. As the port is being reconstructed, life goes on and no one is held accountable. Once again, this highlights how the rebirth myth of the Phoenix is no longer a legend but a burden, a conspiracy of the willing. It is not history that repeats itself, but the humans who repeat it.

The diluvian myth as a tool for spatial transformation

In a return to Tallinn, Estonian poet Hasso Krull (2021) summarises the myth of the old man in a series of seven questions to the old man along with his answers:

"Who are you? - *I am the beginning*;
Where do you come from? *I come from the beyond*;
Why did you come? *To remind you of something*;
What is your message? *I am your message*;
Are you real? *I was here before reality was born*;
Do you never change? *I am the transformation*;
Can we avoid the flood? *The flood is the flow of new life*". [13]

The old man of Ülemiste makes apparent how myths are rooted in their unique cultures and geographies. While the narrative itself is fantastical, the threat of destruction related to its geographical particularity at its epicentre is not. This is a common thread across all four myths presented in this paper. That is, alongside significant similarities constituting a pattern of water (or fiery) spirits, they all heed disaster and repetition. Romanian historian, writer and philosopher Mircea Eliade linked the "eternal return" of such myths to the cyclic vision of time, involving a systematic return to origin (1998, 49). The logic of cyclic time is grounded in natural phenomena such as the day-night rhythm and the changing of seasons that gave structure and meaning to ancient life. In time, human dependence on these cycles has reduced in a transition of technological supremacy over environmental conditions. In this process, the role of myths has not vanished but transformed.

Traditionally, cyclical Diluvian myths strive to remind the inhabitants of the unique geography and repeating patterns of natural systems that govern their environment. Yet, in a contemporary context, the described myths are increasingly drafted into the arsenal of justifying new directions of market-led urban development. This approach is visible in the

13 Transcribed from his introductory lecture on 15th of September 2021 at the Estonia Academy of Arts, Tallinn, in the scope of COST Action CA18126 – Writing Urban Places' training school "Local Stories and Visual Narratives".

cases of Tallinn, Durrës and Beirut, where vindictive spirits have been resurrected by developers and planners. However, these retellings disregard the origin and subject matter of the myths. Disassociation from the original cautionary tale about environmental conditions and local knowledge can be witnessed in all four narratives and is particularly pertinent to the Dutch example.

Anxious undertones can still linger in retelling myths such as in the constant battle with rising water levels in the Netherlands. While the economy and quality of life in the region have boomed on the backs of the concrete structures keeping the water at bay, so has the awareness of the consequences for the natural environment. The warning of the diluvian myth from Saeftinghe would seem to ring as true now as it ever has. Still, the idea that water could be allowed to take back land is, for now, itself more myth than reality. In Beirut, a similar trend can be observed in the awareness of the continuous destruction of the city as a result of conflict beginning to disassociate from the legend of the Phoenix. All the while the city continues to be remoulded time and time again.

Although the cultural impact of a myth can disperse among whole societies, in a contemporary context it typically transforms into tools in the hands of political or economic agendas. The geographic and historic grounding as well as the cultural significance of myths can cast a helpful shade of legitimacy on new narratives and transformative endeavours. In other words, myths can be utilised to remould societies when tooled to do so for ideological or economic reasons. Their latent representative power can therefore have a direct influence on the physically lived environment. Following this line of thought, we encourage urbanists, architects and citizens to not only consider the origins and subject matter of myths as historical or cultural stories but as functional narratives told by someone for a particular reason. What if the citizens of Tallinn would use the old man to ratify their access to the lake? Or that Redon is not merely a statue on a square but an incentive for the inhabitants of Durrës to always have access to the seaside, or even demand earthquake- and flood-proofed homes and city planning? And why could the mermaid not be a story to plead for a healthy delta region where a wide variety of species can dwell without interference from dams and dikes that only serve to accumulate wealth? And finally, why could the phoenix not be utilised by the citizens of Beirut to celebrate their ancient Phoenician heritage rather than destroying it bit by bit, time after time? We also invite further critical reflection on how myths get used and abused for political or economic gain.

This article focused on the changing function of myths in contemporary water-related cities. The telling and retelling of myths, with deliberate appropriation to fulfil a rhetorical purpose, clearly shows the soft and emancipating power of myths to (re-)shape urban narratives. These examples illustrate how modern (re-)tellings tend to distort the innate meaning of myth from the cautionary to the commercial. They also demonstrate how contemporary readings can tool myths towards (re-)configuring the city. Furthermore, they outline the need to recognise this agency and democratise its functioning and impact.

Acknowledgement:

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PROTO-HISTORIC SERPENT INSCRIPTIONS AND THEIR SURROUNDINGS: UNVEILING FOLKLORE TALES AND MYTHICAL MEANING

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Stone and story

The following text is both the result and integrating part of an ongoing investigation whose main focus is the interrelation of several archaeological remains depicting serpents, with a significant presence in the Iberian northwest. Although its physical characteristics (dimensions, support, inscription technique, etc.) are not immediately relevant for the thematic development of this article, it is important to note that it is in the context of a probable ophiolatric practice connected to the set of such engravings that the following considerations are developed.

The recognition of a still present popular mythology around the figure of the serpent in Galicia and the Portuguese interior leads to several ways of interpretation, particularly when confronted with these proto-historical remains, predominantly stone engravings in the open air. This relationship is, moreover, quite popular and extensively described (López Cuevillas and Bouza Brey 1929; Alves 1934; Ferreira and Almeida 1935; Tavares 1967; Gomes 1999), setting the tone for the Iberian ophiolatry argument and framing such narratives as one of the contemporary echoes of this proto-historical heritage.

Within the few surviving descriptions of this period, the testimony of the Latin poem *Ora Marítima* by Rufo Avieno stands out. It tells, through the compilation of the 6th century BC reports on the Iberian Peninsula, about the evasion of a people after an attack by serpents in a territory that would later be called Ophiussa (the etym *ὄφις/óphis* means serpent in Greek). Coincidently, many of the local folktales around this species lack a concrete location, although the narrative is anchored to specific objects (e.g., hill, rock, cave, stream). This is certainly one of the interesting dichotomies of this intersection: on the one hand, there is a series of pre-Roman stone engravings, which reveal their time through an artistic expression; on the other hand, variations of a vast rural imaginary of vague or unknown spatial reference have been registered, especially in the past century. The specific study of narrative and engraving overlapping presents an opportunity to understand both phenomena, providing arguments for the origin of these fantastic episodes as coming from matter or resulting from a gradual overlapping/appropriation/symbolic transformation.

Tale inscribed

In this perspective, two examples of temporal and spatial overlap are examined. The first, a rock with a serpent-like representation, is located in the Galician region of the Spanish territory, in Castro de Troña, in Ponteares, Pontevedra. It was first noted by Luis Pericot and Florentino L. Cuevillas, during the excavations of the village in 1929-30. In the first year of the archaeological work, Cuevillas, together with Fermín Bouza Brey, published a study called *Os Oestrimnios, os Saefes e a Ofiolatria em Galiza*. Here are laid some of the initial arguments for the hypothesis that

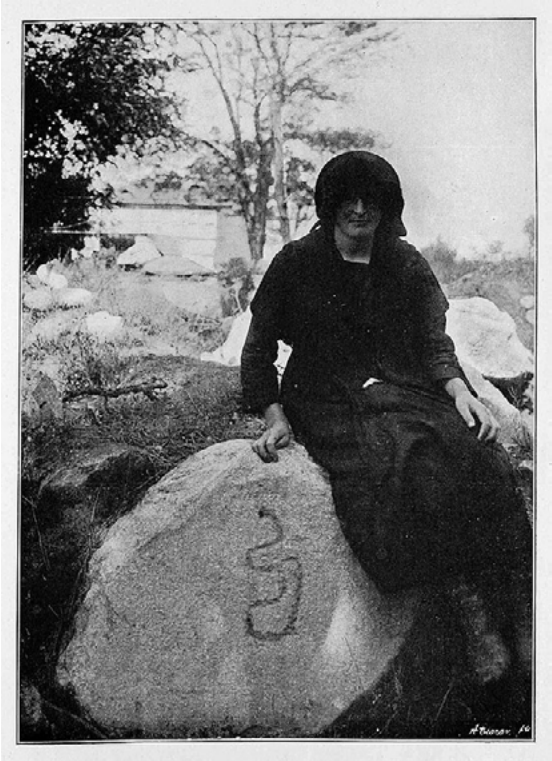


Figure 1. Lámina II in *Escavaciones en la Citania de Troña*. Luis Pericot Garcia e Florentino Lopez Cuevillas. Madrid, 1930.

regards the serpent as a structuring symbol of a prehistoric religion in the northwest peninsular territory. From this very important contribution, we highlight the popular report linked to the petroglyph:

"Once upon a time, there was a serpent on the hill, which lowered the land to eat a beast, a sheep, or whatever came by. Out of fear, and so that the serpent wouldn't show up, the locals would take to the hill and offer the serpent an animal drawn among them. In time, they crafted a tangle of skeins that the weavers had given them, and fixed the tightly twisted threads with a rope and a large skein, and fed it to the serpent. As soon as the serpent swallowed it, they pulled the rope, dragged and buried it here in the churchyard of the chapel, and in the burial place, they raised the cross that stood where today's one does" (told by Contante Fernández, de Pías). (Lopez Cuevillas and Bouza Brey 1929, 139)

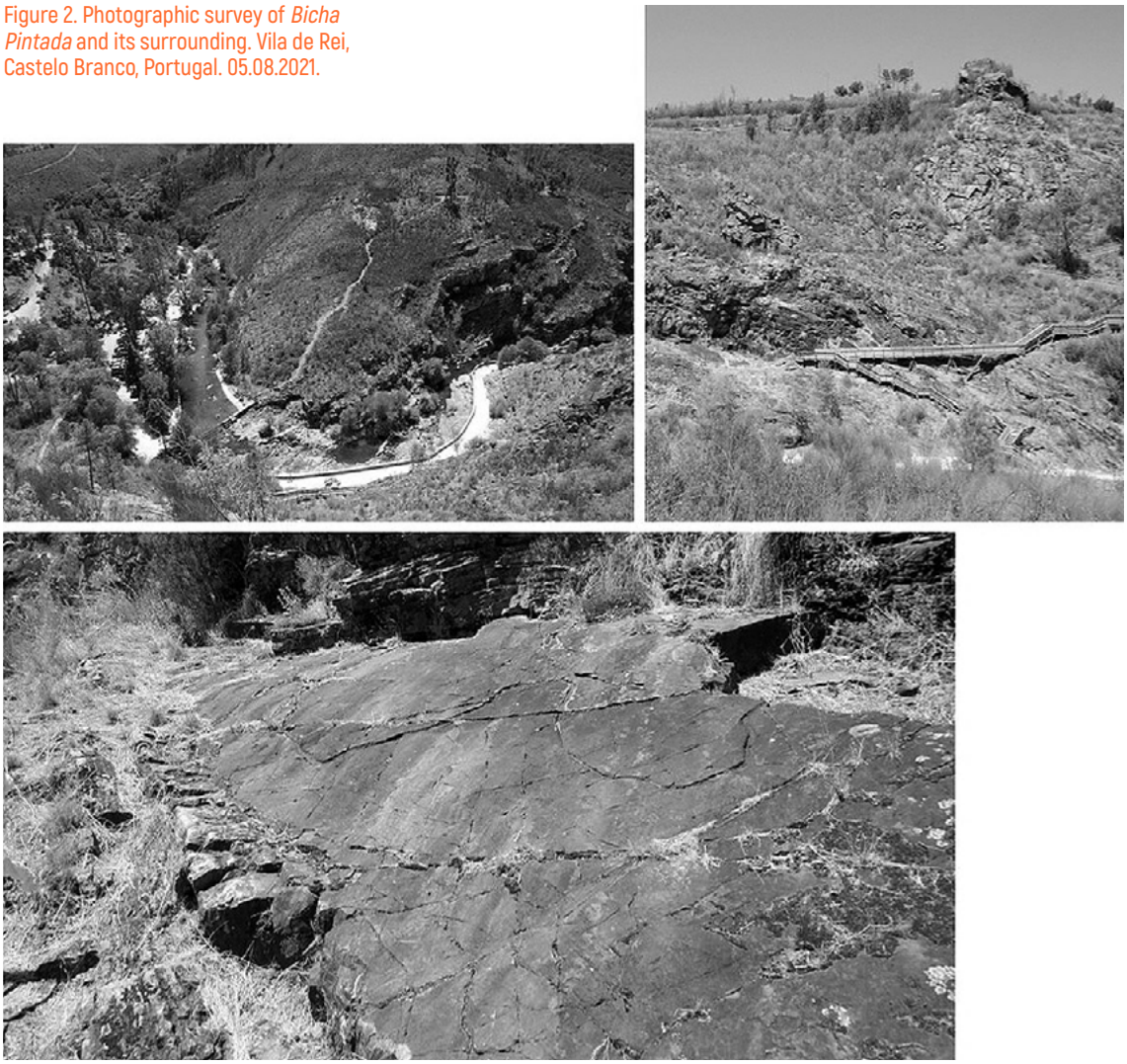
In this description, the serpent stands out as a terrifying animal whose threat is only appeased by the offerings of the locals. The narrative is made of the conflict between the people and the animal; the serpent is the destabilizing element that needs to be defeated so the locals may resume a peaceful living. This is, moreover, a common function of the serpent (Criado-Boado 1986).

Hence, the serpent has a single narrative purpose: to incorporate the evils and afflictions that dawn on these communities. Its annihilation provides a necessary transformation through a singular audacious act that allows the alteration of its subjugation condition. The insurgency, which in this case is collective, conveys the achievement of new prosperity and, in a more metaphorical interpretation, it can represent the overcoming of an obstacle, difficulty, or evil common to rural populations. From a broader and more moralizing perspective, it translates the victory of good over evil through an archetypal heroic act (Campbell 1973; Eliade 1992). Finally, the superimposition of Christianity over paganism, embodied in the erection and marking of the cross, closes the narrative and synthesizes its symbolic set.

The derogatory image of the serpent is supported by its bestiality; not only the exacerbation of its physical characteristics such as size, viscosity, aggressiveness and appetite, but the often added extrinsic features such as large teeth, abundant hair, wings, etc. This negative connotation is, according to this research, diminished by its anthropomorphization, either by the human/serpent transfiguration, its hybrid existence, or simply by the embodiment of human characteristics onto the serpent, such as speech, long and beautiful hair, teeth, etc. In these situations, the symbolic value of the serpent makes room for new and varied interpretations that will be developed in the course of this article.

The second example concerns the engraving popularly known as Bicha Pintada, located on one of the banks of the Ribeira de Codes, in Vila de Rei, Castelo Branco, Portugal. The neighbouring proto-historical villages of Pico do Castelo de Matagosa and Castro de S. Miguel e Amêndoa may be the reason of its existence and date the engraving, isolated on one of the sloping banks of the stream, to a proto-historical

Figure 2. Photographic survey of *Bicha Pintada* and its surrounding. Vila de Rei, Castelo Branco, Portugal. 05.08.2021.



time (Gomes 1999). Atop the history of this meandering landscape, at the top of the hill that holds the Bicha, lies the Penedo Furado viewpoint, inaugurated in 1964, where two tiles refer both to the engraved stone and to a treasure kept in a cave by an enchanted Moura (Moorish woman). According to Mário Varela Gomes, the legend:

"(...) says that a young shepherdess there saw a Moorish woman straightening her hair, with a golden comb. She asked for the comb, but in return the *Moura* had to lick her palate to convert her to her faith. Then the Moura turned into a serpent to get into the girl's mouth more easily, scaring the shepherdess and making her run away. Failing to secure the request and break the spell she was under, the serpent disappeared under the rocks, leaving the long trail that is seen today and which the people call "Bicha Pintada". (Gomes 1999, 221)

In this case, there is a more complex symbolic frame defined by the triad woman-moura-serpent,

expressed in the transformation of the Moorish woman into a serpent. Only by conceding to the will of the enchanted figure can the shepherdess be converted to the *Moorish faith* and be granted the golden comb. Upon rejection, the Moorish woman remained enchanted as a serpent and carved her unique shape by taking refuge among the rocks. Encounters of this kind, more common between men and Moorish women, offer two outcomes: either the proposal is accepted and compensated in the form of hidden treasures, valuable objects, or the marriage of a princess, through the disenchantment of her animal form; or it is rejected and, in addition to revealing the presence of the magical being, the enchantment of that place is maintained. This motif – the figuration of the *Moura* – is a common feature of the Portuguese and Galician popular imagination, entailed in a series of descriptions of the Moorish people.

The *Moura*

An immediate association assigns the origin of this group to the Muslim people who occupied the Iberian peninsula between the 8th and 15th century. Its recurrent use offers two primary interpretations: one of temporal reference, the Moor represents the ancient, ancestral and distant; and the other with epic outlines, highlighting the victory of Christian peoples. After the so-called Christian Reconquest, the battles, conquests, heroic deeds, recovered loves, and so on went through a mythification process. The telling and retelling of these stories among the Portuguese and Spanish people, acted as a way of proclaiming victory over the invading people and self-affirming a new dominion over the territory. The repetition of these stories and tales validates the hostile image of the Muslims as it reinforces a sense of own identity. Notwithstanding, within the purpose of this article, we are not necessarily interested in the historical Moor but rather the mythical Moor.

According to Alexandre Parafita (2006) and his synthesis of the various authors who have studied the concept of the Moor in Iberian culture, several interpretations stand out: an ancestral one, which portrays the Moor as the prehistoric inhabitant of Galicia; a dualist, opposing the Galician peasant Moor, as an external and displaced agent: the non-peasant; a duplicate interpretation, the Moor is the other, he belongs to the peasant world but lives as a reference of its concerns, conflicts, and peculiarities.

They also focus on the Moor/Moorish distinction, in which the Moorish woman embodies the aura of ancient nymphs, local spirits that represent the naturalistic characters of rivers, springs, hills and forests, protecting and sometimes hiding treasures and wealth; like weavers, craftswoman, combing their hair or set in a spell; or even equivalent to both Catholic saints and virgins, as remnants of a pagan experience, willing to persecute and frighten or to marry and make men rich (Parafita 2006, 98).

"Nevertheless, it seems necessary to make a distinction based on the fact that Moorish women have their own features that make them more individual, while in the case of the Moorish men it seems that the collective aspect is more important, as a distinct race." (Mar Llinares Garcia 1990, 119)

This is an important distinction: the symbolic content that the Moorish woman carries is far from that of the male Moor. Considering her benign nature and solitary character, the Moura gains yet another dimension in her association with the serpent, fulfilling – through her transformation – a kind of magical penance. In turn, the Moorish-serpent identification gives the animal not only a human incarnation but also female characteristics.

It is, therefore, crucial to understand the relationship between the serpent and the *Moura*, which, more than representing an ethnic group, plays a role traditionally associated with the feminine, making room for analytical expansion of the Galician imaginary into the Portuguese case. The predominance of this theme in the narratives establishes a mythical structuring system based on the bidirectional transfiguration between the woman and the serpent (Criado-Boado 1986).

One explanation for this motif can be found in the work of Manuel Bernardes. The Portuguese priest published the second volume of Nova Floresta in

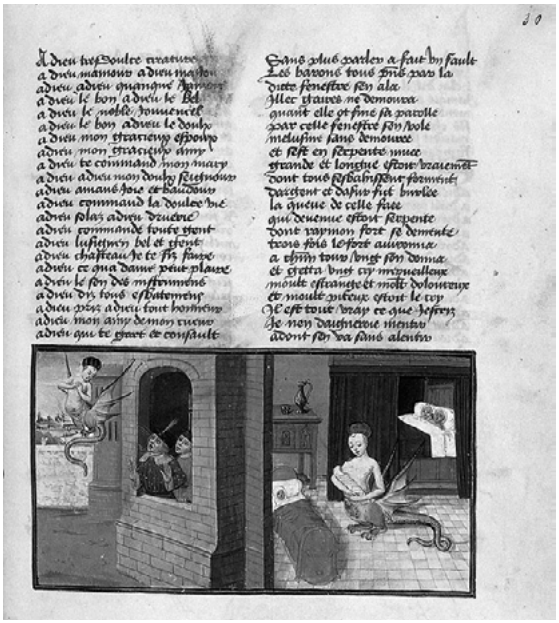


Figure 3. Adapted from *Roman de Mélusine*, attribuído a Couldrette. Published 1401-1500.

1708, in abidance with the European trend. In this series of texts, he narrates in the form of *exemplum*, an adaptation of oral tradition to Catholic doctrine, containing three different stories involving women/serpents, mermaids, and mélusines. All derive from tales and external records that subsequently adjust to the Portuguese context. The descriptions of these supernatural beings are grounded on a negative idea of women. With his sermons, moral guides, and ascetic treatises, Bernardes, leveraging the long Christian tradition, depicts a naturally impure woman, heir to Eve's original sin. He also reinforces a derogatory view of the Muslim presence in Portugal, but above all, a negative image of women is imposed in the Portuguese case of the Moorish Enchanted (del Priore 2008).

This contradiction with the previous favourable interpretation of the Moorish women is well illustrated by the publication by Consiglieri Pedroso (1851-1910) with excerpts from the processes of the Lisbon Inquisition during the 17th century. On the one hand, one can grasp the existence of popular accounts describing these magical beings as beneficiary entities, either for their exceptional beauty or for the treasures and wealth they promised, and conversely, an attempt at appropriation and evangelizing adaptation of the popular narrative, full of erudition, carried out by the Church since the middle of the 11th century.

Goddess Ex Machina

"It is always difficult to describe a myth; it does not allow itself to be caught or surrounded, it inhabits consciousness without ever standing in front of it like an immovable object. It is sometimes so fluid, so contradictory, that it is hard to perceive its oneness, at start: Delilah and Judith, Aspasia and Lucrezia, Pandora and Athena, the woman is both Eve and the Virgin Mary. She is an idol, a servant, the source of life, a force of darkness; she is the elementary silence of Truth, she is artifice, gossip and lies; the one who heals and the one who adorns; it is man's prey and his loss, she is all he wants to have, his negation and his reason for being." (Beauvoir 2009, 2:248)

This immense imaginary has, naturally, been constantly subject to interference, adaptations, and subversions, and many of the direct reports obtained from various ethnographic studies were the result of this cumulative process. The mythical process lends itself to this plasticity, evolves, and adapts to the social, temporal, religious, and spatial context.

To better understand the meaningful woman/serpent relationship, a link can be established with the ancestral concept of the *Mother Goddess*, a female deity with roots in the Neolithic, whose first sculptures in bone, ivory, and stone represent scenes of childbirth, pregnancy, breastfeeding, and death. Over millennia, it summarized the arcane theme of birth and death – the renewal of life – entailing all forms of life and the cosmos itself. The representation of vulvas, triangles, breasts, zigzags, meanders, and dimples are recurring motifs in a symbolic aggregate that compiles the functions of giver of life, bearer of death, *regeneratrix*, and representative of fertility with the mother earth.

"She was the single source of all life who took her energy from the springs and wells, from the sun, moon, and moist earth. This symbolic system represents

cyclical, not linear, mythical time. In art this is manifested by the signs of dynamic motion: whirling and twisting spirals, winding and coiling snakes, circles, crescents, horns, sprouting seeds and shoots. The snake was a symbol of life energy and regeneration, a most benevolent, not an evil, creature."(Gimbutas 1989, xix)

According to Marija Gimbutas, this complex symbolic connection is also reflected in the shapes of the serpent through various examples of a *Serpent Goddess*, with great expression and expansion in Europe in the 5th and 4th millennium BC. Its beneficial action may have continuously fostered a cult that would later influence the Greek, Roman, Celtic, and Baltic religions.

The early works of Jakob Bachofen (*Mutterrecht*, 1861) and James Frazer (*The Golden Bough*, 1911-15) suggest, through a comprehensive analysis of archaic mythologies, this idea of the *Mother Goddess* or *Great Mother*, later recovered and developed in light of the psychoanalytic vision of Sigmund Freud, Carl Jung, and Erich Neumann. These works would later be the basis for the referred *Goddess movement*, which shaped a new mythological, historical and social viewpoint from vast sets of archaeological remains. This movement undertook a historical revisionism, both a result and contribution of the feminist revolution of the 1960s and 1970s, rethinking not only the role and function of women but also the entire context and social organization of ancient civilizations. This effort strongly challenged the dominant misogynistic conceptions that disregarded the contributions of women to the cultures to which they belonged, based on a secular vision, heir to religious thought, considering the female body as unnatural and impious.

Despite the essential reassessment of archaeological data, questioning the masculine status quo in current academic theories, its excessive generalization – the result of an outdated methodology – was widely disputed in the scientific debate. The *Mother Goddess* theory emerged out of disciplines mostly removed from the field of archaeology. It became later undermined by its connection to the much-needed political and social movement that advocated positions and values temporally and contextually disconnected and biased against the subject of study (Goodison and Morris 1998). In this regard, the strengthening of the position and significance of the historical and mythological woman could not be achieved to the detriment and replacement of those occupied by men. Not only due to its roots in models that perpetuated female stereotypes, supported by theories from the late 19th century and beginning of the 20th century, but also by the superficial aggregation of long periods of time and cultural variations in a single divine representation.

Figure 4. Fountain with serpent depictions. Dated to 1995. Padrón, Spain. Own photo, 30.07.2021.

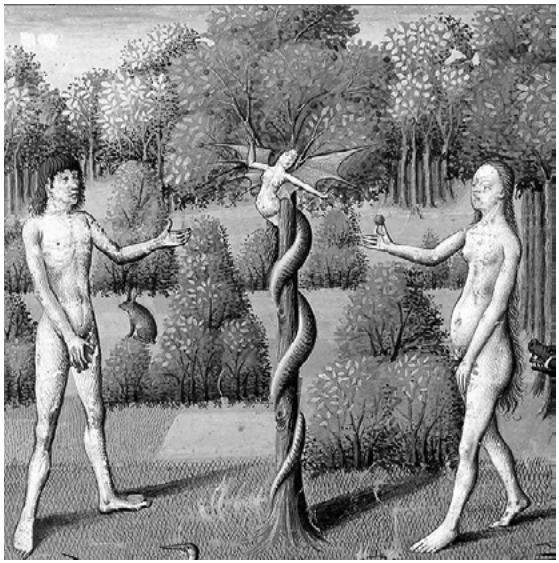


Figure 5. *The temptation of Adam and Eve in the Garden of Eden*. Adapted illustration from the manuscript *The City of God* from St. Augustine. 1469-1473, France.

Space in tales

The complex process of dissecting the various symbolic layers compressed in the Bicha Pintada tale and its elements go beyond a plain reading. This narration incorporates themes that are not unique to it – both in its symbolic content and territorial dispersion – as they are part of a wide popular repository whose recurrence hides an allegorical function. Therefore, besides the depth and polysemy of these elements, their continuous revision is justified by their diffusion through the communities of the Iberian territory (Gomes 1999; Parafita 2006; Guimarães 2010).

The identification of these tales, specifically in the Portuguese territory, is made possible by a lengthy bibliography of predominant regional ethnographic records, available in the Arquivo Português de Lendas (Portuguese Tale Archive), a project led by the Centro de Estudos Ataíde Oliveira da Universidade do Algarve. Descriptions of serpents are distinguished by six common, often overlapping traits:

a) woman/Moorish enchanted in serpent (35 occurrences);
b) treasure guardian serpents (7 occurrences);
c) salvation by prayer in the face of imminent attack by a serpent (6 occurrences);
d) the serpent as a dangerous and deadly animal (5 occurrences);
e) the Moorish/serpent/lion triad (3 occurrences);
f) man enchanted in occurrences (2 occurrences).

The examples taken and studied from Troña and Vila de Rei, of tale and engraving overlap, rely on the serpent as the essential character for its structure, clearly matching the aforementioned thematic categories. Nevertheless, there is a yet unresolved issue that is decisive for the purpose of this study: its space – what constitutes the diegetic space – and its relevance not only in the narrative but in the effective relationship with the real space.

Considering the narrative variations and the assignment of magical traits to the characters and the places they occupy, we can perceive them as enchanted spaces. Such places differ from the space of everyday life – concrete and real – and draw the line between the *human* and the *mythical world* (Criado-Boado 1986). Circling back to the mythical figure of the *Moura* and her transmutation into a serpent, their onset is repeatedly linked to common places: the *Castros* stand out as indicators of the ancient and monumental, just like the *mamoas*, albeit less frequently; rocks, caves or simply underground places are references of the natural world; fountains, rivers, water lines or wells (also natural elements) highlight the strong presence of water; they appear, on rare occasion, in the human social world at fairs, inside tents both visible and invisible (Mar Llinares García 1990).

Water is undeniably an element of paramount importance for understanding the *Moura*/serpent phenomenon: it is in the springs and streams that they bathe, straighten their hair with golden combs, or simply emerge and are often close to rocks, *castros*, *mamoas*, or enchanted graves. The cult of freshwater nymphs and fairies is densely present in Iberian religions, having been subjected to the roman *interpratio* (assimilation of indigenous deities to the Roman pantheon), with emphasis on the goddess Nabia or

Nava, who would later name the rivers Nabão and Neiva (Pereira 2010).

This relationship is noticeable in the Bicha Pintada which, although not included in its narrative, is set on the banks of a stream by attaching itself to the ancient engraved rock. The strength and impact of the tale/rock set are enhanced by the proximity to neighbouring lands where other narratives – either about the serpent or the serpent enchanted *Moura* – inhabit their lands. From Tomar to Castelo Branco, these tales spread throughout the landscape, and by engaging people in a magical process, additional meanings are imprinted on their environment.

In Alcaravela, 8 km to the south, it is said that next to Pedra da Moura lies a golden skirt at the bottom of a deep hole. In order to redeem it, one has to cut the tongue of the serpent that protects it. An alternative version claims the stone was left along the stream by a Moorish woman who carried it on her head while spinning. This same story is told in Vila Velha de Rodão, 40 km to the east, placing the mine next to a spring for ease of spotting. Over there, there is a tale of yet another goldmine under the Penedo do Sardão that, despite several excavations, is yet to be found. Another account describes a large serpent that fed on animals in a nearby valley and was defeated only by the strength and weapons of a vast group of people. The valley is called Vale Cobrão (*cobra* is Portuguese for snake). In Castelo Branco, there is a tale of a serpent with human features, next to Ribeiro das Oliveiras, which would come close to newly baptized children; the parish priest warned it was an enchanted princess who tried to lick the sacred oils in order to break her enchantment. Also in Castelo Branco, there is a story of a Moorish serpent next to an olive tree whose treasure will be offered to anyone who, for three nights in a row, during sleep, lets her put her tongue on their mouth. Last but not least, 20 km north of the remain, in the village of Sertã, they tell of a nobleman who, upon encountering a large serpent during a hunt in the woods, frightenedly fled up a tree and prayed for help; by way of divine assistance, he sought courage and shot the animal. In that place, he later ordered the construction of a chapel in honour of Nossa Senhora dos Remédios (Ataíde Oliveira Studies Centre 2006).

Tales are space

It is important to highlight the spatial correspondence of the enchanted creatures that, under wonderful narrations, act as a direct interlocutor between people and the landscape to which they belong. Such places can be interpreted as spaces of assimilation of the past, sometimes revealing settlements or signs of inhabitants from unknown times and, as such, strange and displaced from contemporary culture – recognized, but not understood. Places that portray the exotic and marginal, representing the dualities: village and fort; human and enchanted; land and water (Criado-Boado 1986). Traversed alone by travellers or shepherds, the places of encounters with mythical beings are on the edge of known human space, protected by their difficult access and insufficient productive potential. They preserve the rudeness, spontaneity, and wonder of the untouched, summoning to themselves a sublime imaginary – converging fear and astonishment – typical of the fantastic. The purity of its form suggests a deviation from the human order, places without morality, and as such holders of a natural, primitive and uncontrolled energy, fertile for personification, deification, animism, or mythification. It is through these processes that they become intelligible: their sacralization is allowed by their overlying myths, tales, and names – they act as portals to the transcendent; boundaries between the profane and the sacred. Peaks and mountains are boundaries between heaven and earth – this prescription may cover other elements that define this limit: trees, stones, caves, paths, forests, streams, etc (Eliade 1992; Nanson 2021). The experience of the place and its aura allows for an effective connection with the territory as it enables human access to the transcendental.

Nonetheless, the industrial and digital progression of the world gradually made this reading of the landscape unfeasible. The rationalization of the world, promoted by the scientific spirit and a rapid technological rise, took charge of measuring and manipulating the environment without, however, fully understanding it. The landscape became a commensurable good and, as such, disenchanted (Nanson 2021; Lavrenova 2019). The attempt to represent it by transposing the various dimensions that characterize it by a rigid system of codes and symbols does

not attest to the presumption that current techniques and tools can summarize the entire experience of the place (Corner 2014).

Understanding the landscape, the places and the lived territory requires different layers of meaning and significance for each community or population, changing according to the dominant culture. Different cultures, whether ancient or contemporary, assign the material object qualities extrinsic to its form, both individually and collectively. Such qualities are decisive in building the mental maps that orientate and guide them through physical space. The meaning of space is, therefore, a key aspect of their experience – moreover, the connection between folklore and popular narrative conveys and densifies what is called a sense of place – that is, identity and cultural construction over the lived space (Kevin Lynch 1960; Ryden 1993; Jackson 1995).

One can, therefore, say the roots of these tales are precisely founded on a previous culture of serpent worship, holding a possible connection with the feminine, and that these help not only to understand the symbolic charge of the engravings but also their spatial context. Beyond the controversial *Mother Goddess* theory, this argument's consolidation lacks the data to establish a relationship between the mythical system of arrival and departure. The broad temporal interval that divides such apparently distinct symbolic systems does not allow a direct transfer of the same sign (Criado-Boado 1986). Furthermore, the interpretation of rupestrian motifs follows rigorous criteria and methodologies, which modern archaeology has yet to use in the analysis of the set of engravings of Iberian serpents. Speculation is, therefore, a frequent tool in the incorporation of narratives in archaeological remains, not sustaining, however, a definitive study (Coimbra 2005).

On the other hand, the recurrence of the same sign is undeniable, which, regardless of its signifiers, has been observed in the same territory since time immemorial. A deeper analysis of the religions in the Iberian Peninsula, which respect the general features of a serpent mythography, may support the thesis of permanent evolution, adaptation, and re-signification of the serpent, related to a natural plane not only geographical and biological but also a representative of a divine, often feminine, collective. Are these narratives heirs of an ancient tradition or do they hold an aura that is recurrently manifested in the cultures and traditions of different peoples?

The overlapping of narratives over archaeological remains contributes to an enveloping imaginary, and, consequently, their experience also adds layers of interpretation, connection, and appreciation of the spatial qualities. In this particular case, the meanings that folklore conveys are complemented by the extraordinary content and symbolic depth that the serpent holds (Chevalier and Gheerbrant 1994; Mundkur 1983). This relationship served a particular purpose: to take the focus off mundane concerns and confront the grandeur and splendour of existence. Mythology and religion acted as a catalyst. A scientific understanding does not necessarily reject this experience, however these narratives are currently discredited, ignored, and infantilized. Will this progressive demagicalization reveal extemporaneous obscurantism, or does it push us away from a more effective and profound understanding of the world and ourselves?

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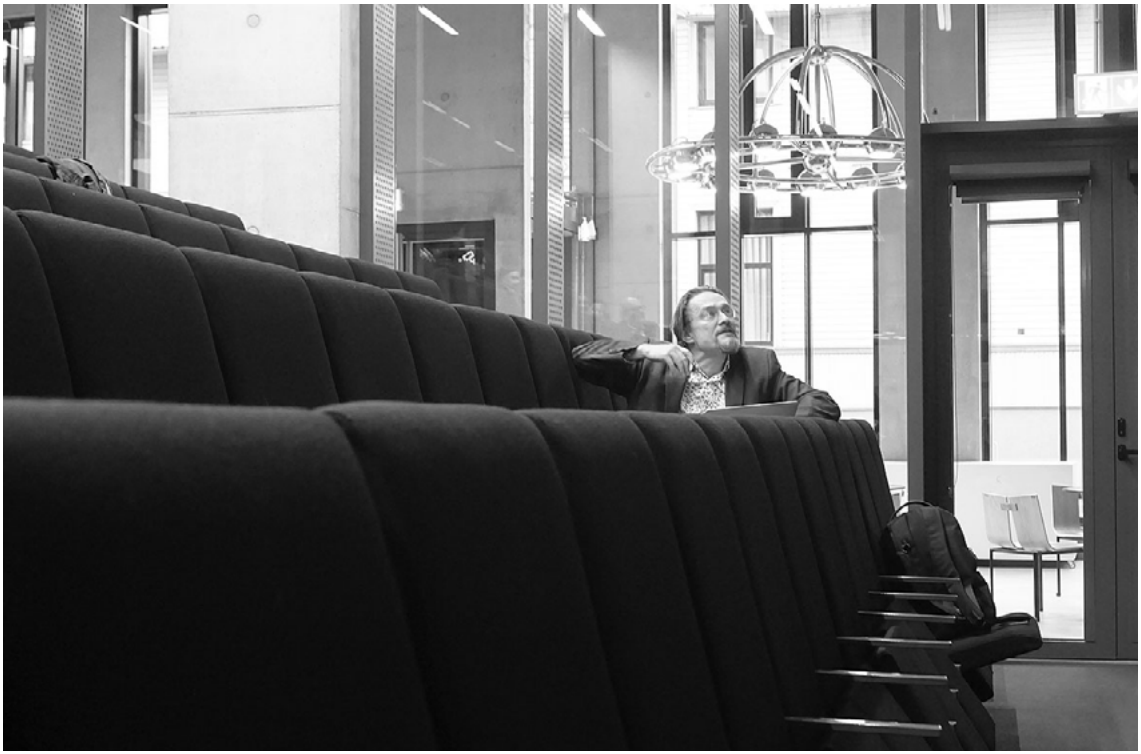
GALLERY OF THE WORKSHOP

Photos by Tiina Tammet


Local Stories and Visual Narratives / Training school
CA18126 – Writing Urban Places
New Narratives of the European City
September 15-16, 2021
writing urban places


Names Used
Naming of things and phenomena is important. How we na
thus they will be and how they are, we will call them.
The old hermeneutic circle, cut only by the first words of
or mythic texts –
reciting of which does establish the formal beginning: aga
Enuma Elish – the Babylonian genesis epic says (Annus 200
When above the heaven was not named
And below the earth's name called ...
When no gods had made their coming
No names were called, no fates cast ...




TELLIMUSVEDU

Conference Innovation and Digital Reality, panel discussion. From left: Jüri Soolep, Max Eschenbach, Martin Melioranski, Siim Tuksam, Roemer van Toorn, Roberto Verganti.
Photo: Evert Palmets

II INNOVATION AND DIGITAL REALITY

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II INNOVATION AND DIGITAL REALITY

CONFERENCE PREAMBLE

Jüri Soolep
Head of PhD School, Faculty of Architecture,
Estonian Academy of Arts

The international research conference *Space and Digital Reality* took place in Tallinn on September 12, 2019. The conference looked into the new phenomenon, established by the Third Technological Revolution that we called Digital Reality. The keynote lectures and several presentations painted a picture for the design-based disciplines of what could be expected: Antoine Picon about hybridisation of atoms and bits; Mario Carpo about consequences of brutal computation and Roland Snooks about advanced algorithmic design.

Since the conference in 2019, a lot had changed: the pandemic hit global economy and culture with unprecedented might forcing everybody to rebuild their life, business and entertainment habits. The lockdowns catalysed e-commerce, distance learning and working as well as all the digital processes as their foundation. The innovations within the Digital Reality have gathered momentum and emerged as the source of entirely new possibilities.

The 4th edition of *Oslo Manual 2018* expanded the concept of innovation far beyond products and processes of business and economy. The concept of innovation actually radiates through all human economy and culture. Roberto Verganti has shown that if the innovation is to be radical, it has to be design-driven. We can see a logical sequence from creativity and invention through new ideas and concepts to entirely new innovations within our life.

To advance the knowledge of creativity, innovation and Digital Reality, the Faculty of Architecture of EKA, in collaboration with associations of architects, interior and landscape architects, has prepared and

announced a new international research conference: *Innovation and Digital Reality, September 6, 2022*. It consists of several keynote lectures as well as blind-reviewed conference presentations. The aim of the conference is to collect and disseminate deeper knowledge on creativity and innovation within the design professions as well as for wider audiences. We believe EKA with all its creative professions is a very suitable intellectual space for advancing the ideas of innovation.

INTERNATIONAL CONFERENCE: INNOVATION AND DIGITAL REALITY

6 September 2022
Tallinn, Estonian Academy of Arts

Conference Program

09:00 Registration

09:30 Opening of the conference. Rector Prof. Dr. Mart Kalm, Estonian Academy of Arts (EKA)

09:40 Opening remarks. Dr. Sille Pihlak, Head of the Department of Architecture and Urban Design, EKA

09:50 Introductory presentation: On Digital Reality. Is it Really? Dr. Jüri Soolep, director of PhD programme, Department of Architecture, EKA

10:30 Morning session is moderated by Prof. Toomas Tammis, EKA

10:30 From digital-real to real-digital: challenging established sequences of design to materialisation through digital recombination. Max Eschenbach; Prof. Dr.-Ing. Oliver Tessmann. Technical University of Darmstadt

11:00 Digitalisation of architecture – from purification to hybridisation. Dr. Siim Tuksam, EKA

11:30 The power of gentleness in architecture. Prof. Roemer van Toorn. UMA School of Architecture, Umeå University

12:00 discussion

12:30 - 14:30 Lunch

14:30 Afternoon session is moderated by Prof. Dr. Andres Kurg, EKA

14:30 Arithmetic of spatial elements – the continuous and the discrete. Martin Melioranski, EKA

15:00 A study on the cultural landscape conservation of traditional Chinese temple gardens based on the vision of digital technology. Gao X u. Taiyuan University of Technology; Cheng Lu. Cardiff University. Welsh School of Architecture

16:00 discussion

16:30 Keynote lecture: Design-driven innovation and radical invention of arts. Prof. Dr. Roberto Verganti. The Garden – Centre for Design and Leadership. Stockholm School of Economics. Harvard Business School

17:30 - 18:15 Concluding panel, moderated by Dr. Jüri Soolep

7 September 2022
10:00 - 12:00 Working lunch with Prof. Dr. Roberto Verganti, EKA Gallery

INNOVATION AND DIGITAL REALITY OPENING REMARKS

Sille Pihlak
Head of Curricula of Architecture and Urban Planning, Faculty of Architecture, Estonian Academy of Arts

I'm honoured to welcome you all to the Estonian Academy of Arts, Faculty of Architecture, the second research conference titled *Innovation and Digital Reality*.

The particular timing of this conference has become somewhat a new tradition – to closely collaborate with the Tallinn Architecture Biennale opening week. I find this arrangement essential to how to create architectural innovation – connecting festivals with academic research. Architecture is and should be perceived from both ends – how to educate the wider society on urban and architectural topics where the culture of spatial design is heading – but also where the limit is, the blue-sky research edge, where the design-driven and artistic research is moving towards. So again, I find it essential to combine large architecture festivals with science conferences because the critical mass is here!

This year's title *Innovation and Digital Reality* is a really challenging one. I like the approach of our head of doctoral school, Jüri Soolep, to question the meanings of widely used and misused terms. Hence, last year the conference was named *Space and Digital Reality*. From the unknown to the unknown, from space to innovation, it seems to me that at least the second part of the title is rather clear – because the new reality is the digital reality. It doesn't matter if we want it or not.

I could say that innovation is a term that we come across too often, not knowing what the others could have in mind when using it. I have similar feelings with a pile of terms such as sustainability, parametric, innovation, green architecture (and I could continue) which can mean a lot of things and at the same time nothing in particular. One could even say these are the academic filler words of the 21st century.

Yet, innovation is the basis of every practicing architect. Design-driven disciplines are constantly seeking for new systems while being highly systematic in order to introduce new applications and qualities to our field. We, architects, find that our creation is always based on insufficient information as our tasks and briefs tend to be. So systematic research, questioning the given and proposing new methodologies have been our field of expertise since the beginning, as has been the term innovation.

So arriving at the context of this conference, where we are today – the Estonian longest running art and architecture university – the novelty is the definition of every outcome of this building. More precisely, in the last decade, the Estonian Academy of Arts has taken long leaps to educate PhDs also in design-driven as well as artistic research. Let's remind us of the most horrifying question every PhD student gets, "What is your unique contribution to the field?" – it could be quickly answered with "every work of art is unique made by a unique individual using (mostly) unique methods". Now it's just a question if you can pinpoint it and make it a contribution, or even an innovation for the field….

I would wrap it up by saying that – I am glad to welcome you, the international and EKA architectural researchers, to show your contribution to the development of spatial culture. I also hope that the field research that you are showing us would help us to better understand the terminology so ambitiously inserted into this conference title.

So, let's have a great day in defining the meaning of innovation for the field of architecture!

DIGITAL REALITY? IS IT REALLY?

Jüri Soolep
Head of PhD School, Faculty of Architecture,
Estonian Academy of Arts

Ladies and gentlemen, colleagues and good students,

This is a personal introduction in the form of a position paper about digital reality. Digital reality – we can ask – is it really? Or maybe you just imagined it.

The title image comes to us from Oxford. And metaphorically, it has been called Chandelier of Quantum. Quantum chandelier – a beautiful word and a beautiful object. We do not use the word "beauty" very often in teaching architecture, similarly when doing architecture, because it can be relative. But I think in this device, the platonic beauty of goodness, purposefulness and celebration of materials all comes together. The image comes from the fantastically named digital Journal: Quantum Zeitgeist. So, Quantum in several metaphoric ways.

My attention was caught because there was a little explanatory schema what a "quantum" is and I recognized there three axes: X, Z, and Y. It helped me to recall Alberti and Brunelleschi. It really started in Renaissance when Brunelleschi was trying to show how plan elevation and 3D image form the coherent analytical space that can be treated with geometrical means. He was making a perspective of San Giovanni Baptistery in front of the Florence Cathedral, the Duomo of Maria del Fiore. Alberti used that to define and explain what an architecture project is and how to make one. He was the first one saying that it has to have three projections, the planes where we can explain what the space is about. From here it was just a small step to go further with Cartesian space where all the coordinates can be calculated and through which the calculus would develop into the algorithms of today waiting for the quantum computing to take them to an entirely new level of digitality.

Here is the celebrated painting by Jan van Eyck – The Arnolfini Portrait. It creates through perspectival space a whole new spatial and temporal context out of the picture plane or its visual projection. The viewers of 600 years including Eyck himself are compressed into a space-time continuum revealed by the spherical mirror at the end of the room.

The projections were operationalised further by the printing press by Gutenberg and the creation of the Encyclopaedia which had an obsession with describing things. It took things apart and then described them in an understandable way, either in an axonometric or perspective view. This was the precondition of the First Technological Revolution in powerful machines of steam mostly. And today we are surprised by the Fourth Technological Revolution in the hope of quantum computing.

I had a wake-up call that something was in the process of serious change in 2007. Firstly, it was the emergence of a widely spread digital image and secondly, the use of the digital image, or more exactly, the use of digital moving image in the Bronze Soldier riots. After the riots, I came across a film – *Notchnoi Dozor, The Night Watch*. The film took a visual starting point from Rembrandt's picture of the same title. The famous picture of the Dutch paramilitary organization was also highly commercialized, a depiction of the dignitaries who paid for their portrait on the canvas.

The film illustrated the book by Sergei Lukyanenko. The new thing was the political message hidden in the build-up of the political agenda: We and They. We, the good soviet people, and They – the evil capitalists and vampires. A good film with masterful visual effects and the catch-name to rally the monument protectors – the Night Watch. It had also a series of

other archetypal energetics, all dedicated to the soviet nostalgia.

The second film that came within the same political propaganda on which Russian boys were raised for several years was *Brat, The Brother*. Similarly, a violent cult film and also messianic to the Ukraine war. There is a particular sentence that encapsulated the resentment of 1990s in Russia, "and you will pay for Sevastopol, you pigs". But not in our worst nightmares could we have foreseen how one step after another will lead to the horrible war between Ukraine and Russia. These were only poetic propaganda films, but the infrastructure – digital networks – allowed it to reach an enormous number of people in a coherent time frame.

That brings us to another image where we can already see that. The reality has really taken a digital turn. This is Luca Bruno and the image was made for Associated Press in 2005 and it depicts the inauguration of the Pope, the very old and understandable procession where people come together. They witness what is happening and they know all about it. As Hans Georg Gadamer said: *theorein* – coming together and witnessing the same event. After that event it was legitimate as everybody had seen it.

Here is another image of the same event. And this is by Michael Sohn, also for Associated Press, but It was made in 2013. I found them very often together online and they really show us the kind of new turn in digitality. It is not just that we have taken over the new technologies and it is not just that we have got new implements. It really is about the existence of human understanding, when first we come together and witness the event as an existential part, like offering and the communion after the offering in Ancient Greece, where people came together. They prayed to the gods and then had a meal together being there in their very existence. Then in 2013, we can already see that I am there to make the image. I am there, as much as I have made the image and I am as much as I have uploaded that image. My existence and legitimisation are in the fact of an image.

Then I saw a peculiar dataset from Statista between 2006 and 2016. A lot of IT tech companies have surged up in the best companies amongst the capitalization values. Energy really is going down and the tech firms come up. So something has happened between the years 2005 and 2013. The tech companies are doing also fine in 2018 and 2021. They have grown, we can see all the important companies still up there. And furthermore, after the COVID, these tech companies have had a fantastic growth. Now, my question was: if we are talking about a poetic visual image, which has an energy that was not noticeable earlier, and if this energy is now turned into technical development in the form of technical devices, when did that happen? I look at the Apple iPhone and we can see that 2007 it's barely there but it gets its momentum somewhere between 2013 and 2014.

The same is happening with Apple Mac a bit earlier. When it reaches that certain platform where their sales go steady.

The iPhone really is a new type of instrument. It is not a camera, it is not a computer, it is not a phone, it's all together in there and the function depends on the size of the screen. It can do different things but basically they all do the same thing. And then suddenly, it is quite clear that there is a whole great world behind the screens, and we communicate with that world through the screens and every screen is actually an image, a poetic visual image even in its simplest format as a text. It has all the spatial dimensions – it has up and down, it has left and right. It even has forward and backward as well as the moving image.

So this is the fantastic device that has spread the image all over the world and here are its sales. Well, you do not change the phone, at least I do not, every year so it must be that the whole mankind is saturated with mobile devices that actually have that capacity of a visual poetic image. Beamed all over the world, all over the place. Here we can see also the social networks that have been taken for granted recently.

Recently I was at a conference where the Research Council of Estonia was describing how the research money is doing fine in Estonia and everybody was happy about it, except me. I was thinking that most of the money that we have for research actually goes into positivistic sciences. It also goes into the exact

sciences and, of course, with these we can let the rockets go to the Moon or shoot our enemy if we want to. But what if next time there were millions on the Capitol Hill. The millions that have been living and getting the energy from the images, real or fake, on their smart phones.

It is clear that the images are not that very simple. They have a lot of meanings behind them because image is something that is not like a text. The image cannot be defined, it has all the layers, all the latent meanings of all the potential viewers coming along.

Suddenly the image from Capitol Hill is connected to the Minotauros and Pasiphae, to the Zeus and the rape of Europe. It becomes a part of advertising, taking us to the multitude of meanings that we really do not know. It can go archetypal up to the animalistic meanings of the subconscious. Some human beings still come together to see whether we kill the bull or not, and the bullfight itself is a caricature of the of the sacrifice since the times unknown.

So we might say that all our work, entertainment and communication are compressed into an image on the screen. It came to us about 60,000 years ago or even more.

Now, a few words about this revolution. Already in 1973, it was clear to Daniel Bell that some things are going to change in an unimaginable way. He could predict everything that has happened till now, 50 years later. Then came Jeremy Rifkin renaming Bell's technological revolution as Industrial Revolutions. And then in the Economist article in the Special Report section on world economy in 2014, the third great wave was already becoming mainstream knowledge. There was a table which I found very fascinating. Here, it is shown how the industrial or technological revolutions have occurred in the US and UK. It describes how the speed of GDP growth has moved in both countries. So as Thomas Kuhn has proposed: after every new invention and innovation there is a retooling period that will take time and this is what economists really recognised in the late 20th century. It promises to deliver similar mixture of social stress and economic transformations as the earlier revolutions. So, we are actually in these transformations with the black swans of the history. Then we have the quantum computing coming and here is another metaphoric saying by David Awschalom: if someone reaches two hundred qubits (and we get 128 at the moment), we are actually able to do computations exceeding the number of atoms in the visible universe.

What has this new world shown us? Here we can see six generalizations that I would like to point out:

- There is the plenitude of information. It has a possibility to self-copy and distribute itself all over the digital networks. It is not the question if the information is there. How do we find it? This is something that we need to understand and find a way for.

- Secondly, the elements of documents, fiction, advertisements etc. have amalgamated together the public and the private spheres but also the reality and fiction. Where there is the private, there is always fiction and that becomes the new reality.

- The truth and the means to find it have disappeared. We have a peculiar digital world, which is post-truth, post-statistics, post-facts and also post-public media. Everything has become private.

- Then there is the hybridization of the material and the digital. With the Third Industrial Revolution we are already hit by its fourth wave. We have the internet of things and internet of food coming.

- With the help of several goggles, the virtual presence has merged together space and fantasy. Digitally our eyes have been shut and that actually brings forward all the possible fantasy in AR. This is imagination in the form of existential reality for a human being who has two eyes and can see the world in a special format.

- This is where according to Raymond Kurzweil the digital and the informational and the existential are fused together and that will happen to his mind in six to eight years? In his prediction, time has been taken further on when he can upload himself into the digital networks and live forever.

So, if we look at these empirical speculative generalizations of digital reality, we can see that there are six.

At least four of them deal with the poetic visual image and that visual image of archetypal nature. It can be called the imagospheric condition because there are so many images around us. They form almost an atmosphere around us. So this is the predominance of an archetypal image.

Then the three of them, most certainly dealing with science, a very complicated science of today, mostly geometrical and mathematical nature, but this science, as we have seen in the past five years, has really been fantastic and unpredictable. So, I think we are polarizing as mankind around these two directions, fantastic and seemingly simple, and fantastic and utterly complex, both fascinating in the same way.

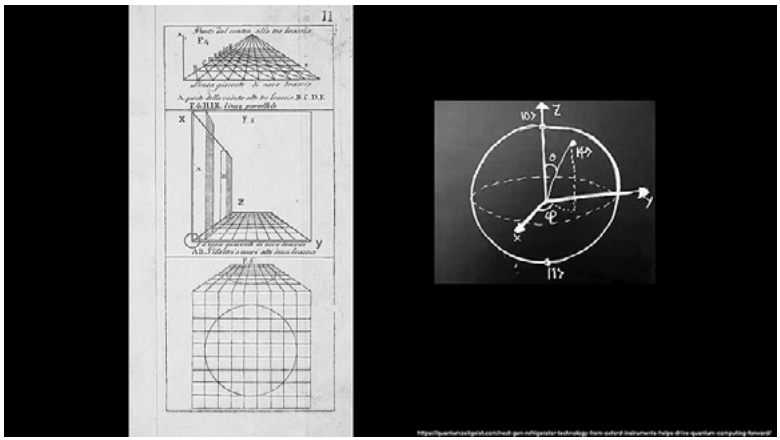
The world history, in these five years at least, has seen several unpredictable events which have catalysed the digital reality. We can name here the election of President Trump, or the Covid pandemic that hit the mankind with unprecedented force. Then also the horrible war in Ukraine. Like the Second World War in the digital age in the edges of Europe. It could have been predicted but nobody believed it, just like nobody believes there is the Black Swan.

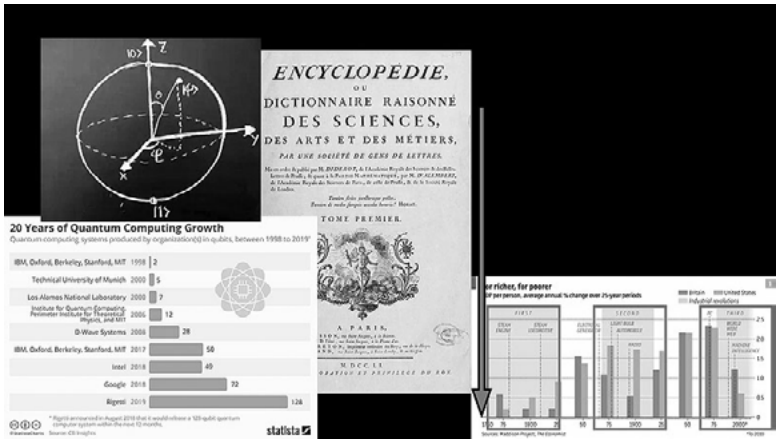
The way we live, we learn and experience the world has changed forever. There is no going back. And then, of course, the AI market that has come to stay with us, boosting other fantasies. A fantastic and utterly complex way of understanding. This is the new development of AI in arts and illustrations. Journals have already taken it up. They have hopefully not fired the graphic designers, but nevertheless, the AI images are there to stay and their creativity and innovation in art remains to be seen. In design-led disciplines, one has to imagine what will happen, and then the recent AD published the new Rembrandt amongst the machine hallucinations.

I recently compiled a lecture series called *On Composition*. It has been a kind obsession of mine for some time because it seems composition is disappearing and design is about to take over. And when I was reading the Oslo Manual 2018, describing the essence of innovation, I realised that the innovation of business models and business achievements has been extended to private persons, communities, local governments and non-governmental organizations. Above all, innovation requires implementation. It is always creativity first and then the conscious way of putting it together.

Thus, innovation is exactly like the higher levels of composition. On top of the layers of rhythm, colour, elements, proportions, there are the other layers: the semantic, the functional, and the conceptual composition. We are so familiar with these in design-based disciplines and especially in architecture where the building has to be taken to the final levels. It is exactly the way the wider processes of innovation is described. So, we may have something to investigate and also publicize for others about what we do in design-based disciplines, as innovation is the only way forward!


On Digital Reality
Is it Really?
Conference : Innovation and Digital Reality
Tallinn, 06 September 2022
Jüri Soolep



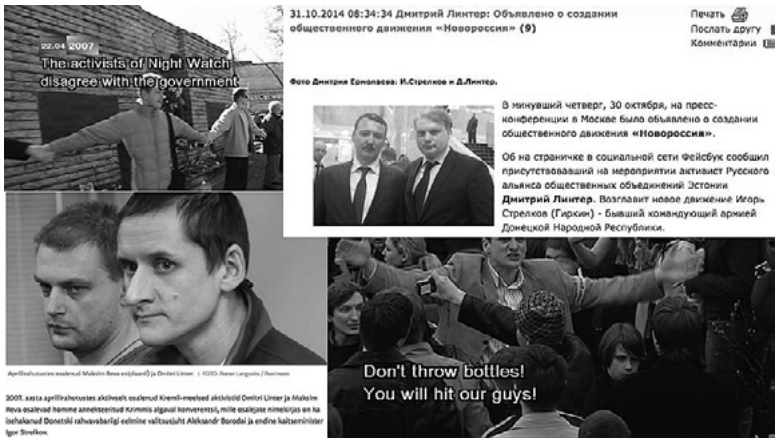

ENCYCLOPÉDIE,
OU
DICTIONNAIRE RAISONNÉ
DES SCIENCES,
DES ARTS ET DES MÉTIERS,
TOME PREMIER.
20 Years of Quantum Computing Growth
Quantum computing systems produced by organization(s) in qubits, between 1998 to 2019*
IBM, Oxford, Berkeley, Stanford, MIT 1998 2
Technical University of Munich 2000 5
Los Alamos National Laboratory 2000 7
Institute for Quantum Computing, Perimeter Institute for Theoretical Physics, and MIT 2006 12
D-Wave Systems 2008 28
IBM, Oxford, Berkeley, Stanford, MIT 2017 50
Intel 2018 49
Google 2018 72
Rigetti 2019 128
statista


Сергей ЛУКЬЯНЕНКО
Ночной Дозор
1998 SERGEI LUKJANENKO published a fantasy book NIGHT WATCH
2000 it was ready for film or miniseries,
2004 Russian ORT bought the rights
2005 was screened

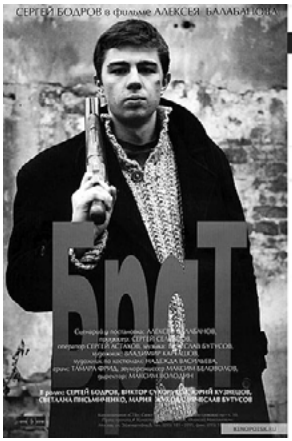

ЗАВУЛОН
Начальник московского Дневного Дозора, Темный маг высшей категории.
ГЕСЕР
Начальник московского Ночного Дозора, Светлый маг высшей категории.
ANTON:
▪COLLABORATOR OF NIGHT WATCH
▪YOUNG MAGE OF MIDDLE HAND
▪TRANSFERRED FROM DEPARTMENT OF INFORMATION TO THE DEPARTMENT OF OPERATIONAL WORK
▪DOES NOT LOOK AT THE WORLD AS ONLY BLACK AND WHITE
КГБ СССР

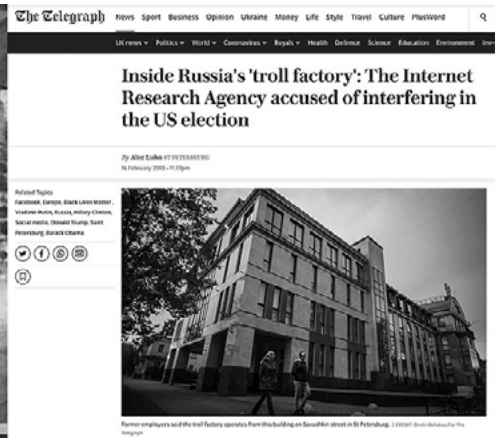

April 1945: 12 Russian soldiers
May 1945: competition for Square of Liberators
Architect: Arnold Hoffart-Alas
Sculptor: Enn Roos
1964 "Eternal fire" was added


22.04 2007
The activists of Night Watch disagree with the government
ÖINE VAHTKOND
НОЧНОЙ ДОЗОР
NIGHT WATCH
Don't throw bottles!
You will hit our guys!

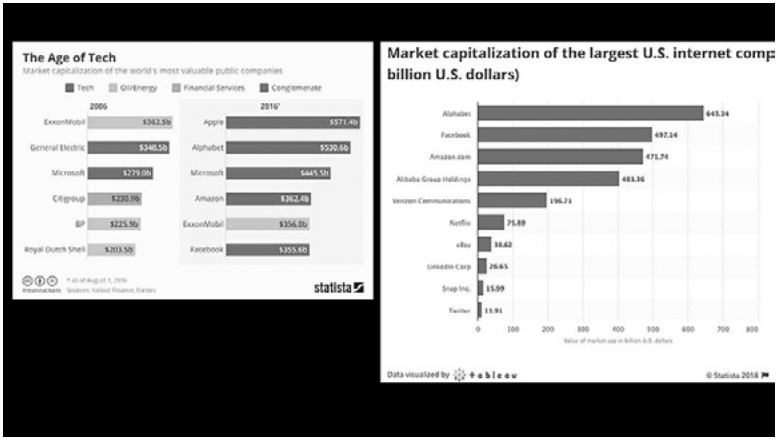

22.04 2007
The activists of Night Watch disagree with the government
31.10.2014 08:34:34 Дмитрий Линтер: Объявлено о создании общественного движения «Новороссия» (9)
Печать
Послать другу
Комментарии
Фото Дмитрия Еропаева: И.Стрелков и Д.Линтер.
В минувший четверг, 30 октября, на пресс-конференции в Москве было объявлено о создании общественного движения «Новороссия».
Об на страничке в социальной сети Фейсбук сообщил присутствовавший на мероприятии активист Русского альянса общественных объединений Эстонии Дмитрий Линтер. Возглавит новое движение Игорь Стрелков (Гиркин) - бывший командующий армией Донецкой Народной Республики.
2009. aasta aprillirahutustes aktiivseik osalenud Kremli-meelsed aktivistid Dmitri Linter ja Maksim Reva osalevad homme anneteeritud Krimmis algavail konverentsil, mille osalejate nimekirjas on ka isehakanud Donetski rahvavabariigi eelmine valitsusjuht Aleksandr Borodai ja endine kaitseminister Igor Strelkov.
Don't throw bottles!
You will hit our guys!

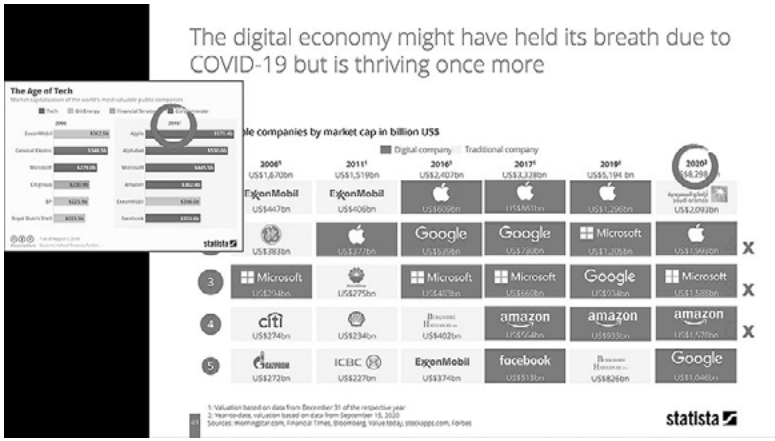

КОЛЛЕКЦИЯ ЛУЧШИХ ФИЛЬМОВ СТВ
Сергей БОДРОВ
в фильме Алексея БАЛАБАНОВА
ДАНИЛА ВОЗВРАЩАЕТСЯ!
БРАТ 2
DVD
2000
New negative heros:
: African-Americans
: Russian Jews
: Ukrainian maffia
use of the word
"banderovets"

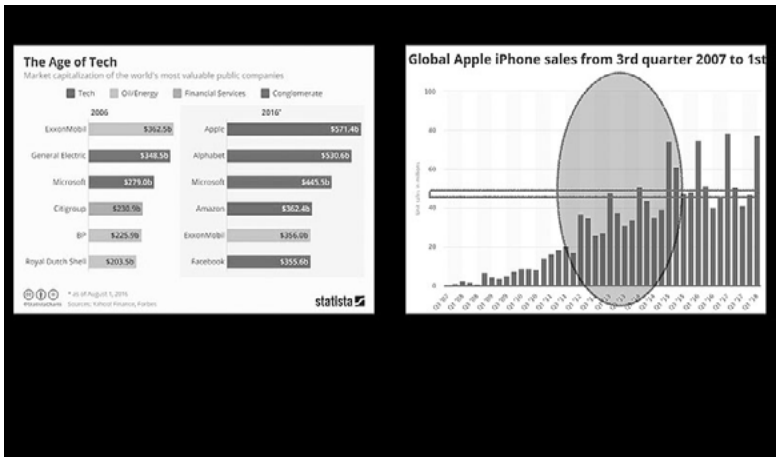

СЕРГЕЙ БОДРОВ в фильме АЛЕКСЕЯ БАЛАБАНОВА
БрАТ


The Telegraph
News Sport Business Opinion Ukraine Money Life Style Travel Culture Plusword
Inside Russia's 'troll factory': The Internet Research Agency accused of interfering in the US election
Former employees said the troll factory operates from this building on Savushkin street in St Petersburg.


2005
2013


The Age of Tech
Market capitalization of the world's most valuable public companies
Tech
Oil/Energy
Financial Services
Conglomerate
2006
ExxonMobil $362.5b
General Electric $340.5b
Microsoft $279.0b
Citigroup $230.9b
BP $225.9b
Royal Dutch Shell $203.5b
2016*
Apple $571.4b
Alphabet $530.6b
Microsoft $445.5b
Amazon $362.4b
ExxonMobil $356.0b
Facebook $355.6b
statista
Market capitalization of the largest U.S. internet comp
billion U.S. dollars)
Alphabet 645.34
Facebook 497.14
Amazon.com 471.74
Alibaba Group Holdings 483.36
Verizon Communications 196.71
Netflix 75.89
eBay 36.62
LinkedIn Corp 26.65
Snap Inc. 15.09
Twitter 11.91
0 100 200 300 400 500 600 700 800
Data visualized by tableau
© Statista 2018


The digital economy might have held its breath due to COVID-19 but is thriving once more
statista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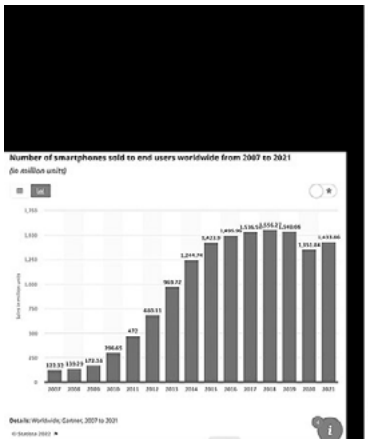
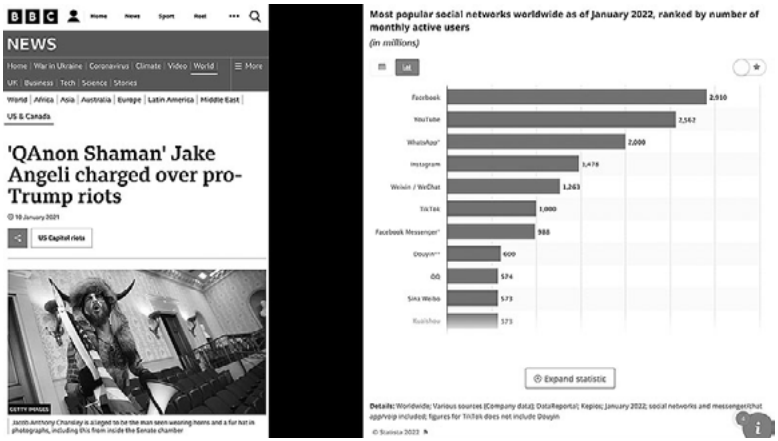
Apple $571.4b
Alphabet $530.6b
Microsoft $465.5b
Amazon $362.4b
ExxonMobil $356.0b
Facebook $355.6b
statista
Global Apple iPhone sales from 3rd quarter 2007 to 1st


Number of smartphones sold to end users worldwide from 2007 to 2021
(in million units)
Most popular social networks worldwide as of January 2022, ranked by number of monthly active users
(in millions)
Facebook 2,910
YouTube 2,562
WhatsApp 2,000
Instagram 1,478
Weixin / WeChat 1,263
TikTok 1,000
Facebook Messenger 988
Douyin 600
QQ 574
Sina Weibo 573
Kuaishou 573
Expand statistic


BBC
NEWS
'QAnon Shaman' Jake Angeli charged over pro-Trump riots
US Capitol riots
Most popular social networks worldwide as of January 2022, ranked by number of monthly active users
(in millions)
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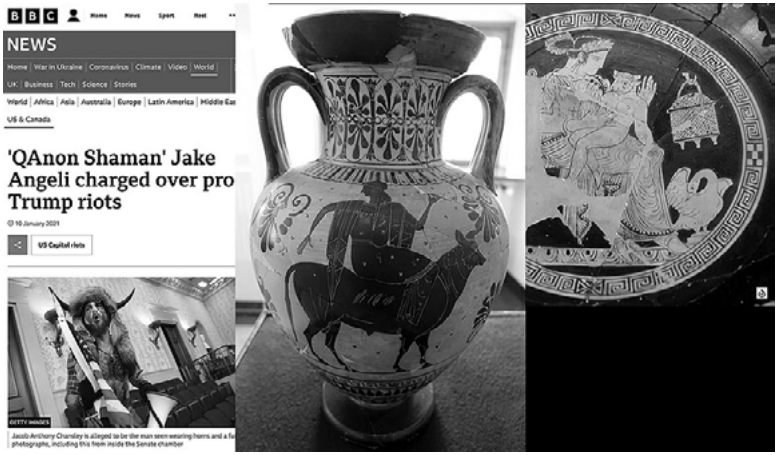
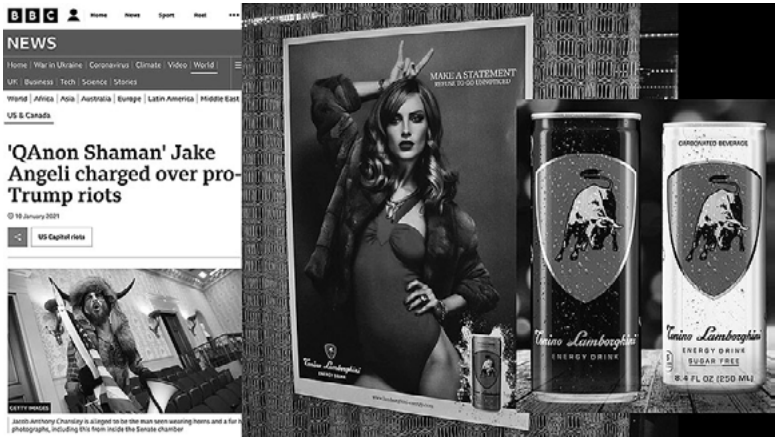
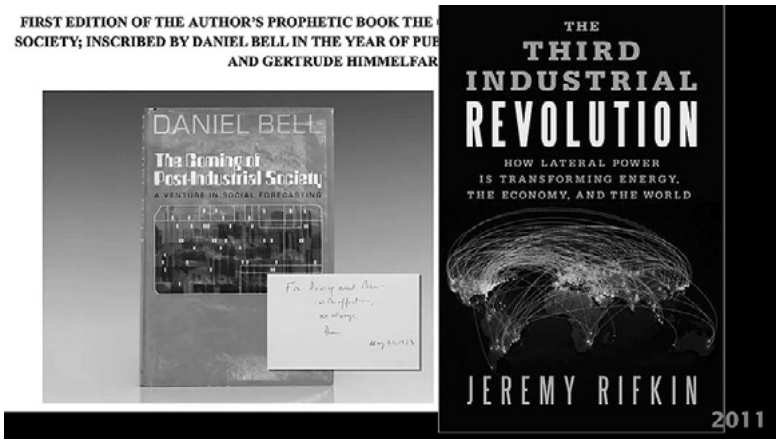
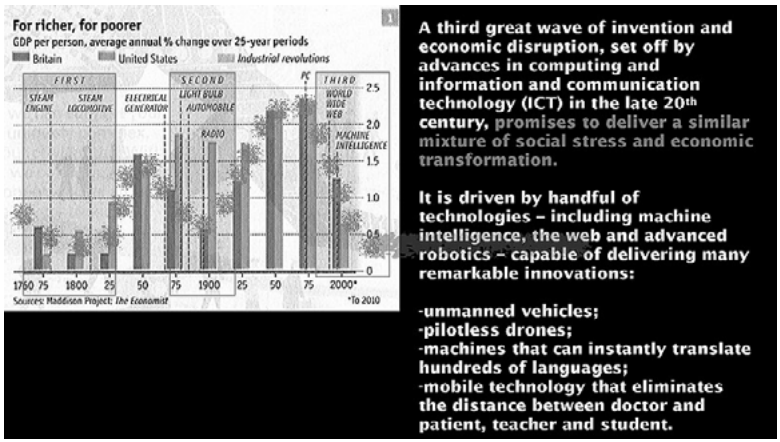
TikTok 1,000
Facebook Messenger 988
Douyin 600
QQ 574
Sina Weibo 573
Kuaishou 573
Expand statistic


BBC
NEWS
'QAnon Shaman' Jake Angeli charged over pro Trump riots
US Capitol riots

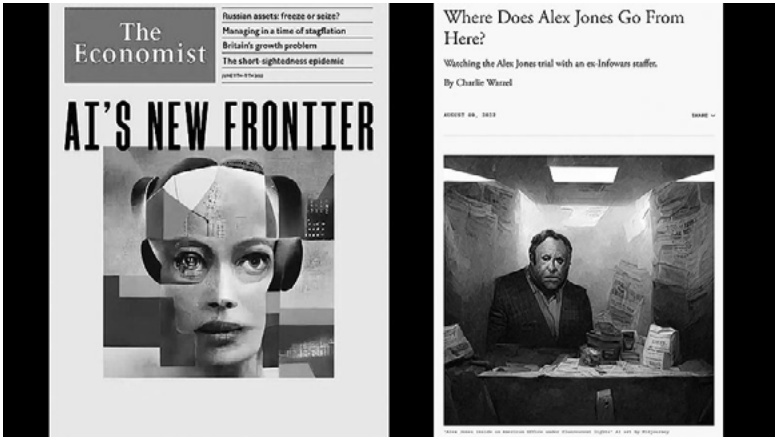

BBC
NEWS
'QAnon Shaman' Jake Angeli charged over pro-Trump riots
US Capitol riots
MAKE A STATEMENT
Tonino Lamborghini
ENERGY DRINK
CARBONATED BEVERAGE
SUGAR FREE
8.4 FL OZ (250 ML)


All our work, entertainment and communication in the digital sphere is compressed into an image on the screen!


FIRST EDITION OF THE AUTHOR'S PROPHETIC BOOK THE
SOCIETY; INSCRIBED BY DANIEL BELL IN THE YEAR OF PUB
AND GERTRUDE HIMMELFAR
DANIEL BELL
The Coming of Post-Industrial Society
A VENTURE IN SOCIAL FORECASTING
THE
THIRD
INDUSTRIAL
REVOLUTION
HOW LATERAL POWER
IS TRANSFORMING ENERGY,
THE ECONOMY, AND THE WORLD
JEREMY RIFKIN
2011


For richer, for poorer
GDP per person, average annual % change over 25-year periods
Britain
United States
Industrial revolutions
FIRST
SECOND
THIRD
STEAM ENGINE
STEAM LOCOMOTIVE
ELECTRICAL GENERATOR
LIGHT BULB
AUTOMOBILE
RADIO
PC
WORLD WIDE WEB
MACHINE INTELLIGENCE
2.5
2.0
1.5
1.0
0.5
0
1750 75 1800 25 50 75 1900 25 50 75 2000*
Sources: Maddison Project; The Economist
*To 2010
A third great wave of invention and economic disruption, set off by advances in computing and information and communication technology (ICT) in the late 20th century, promises to deliver a similar mixture of social stress and economic transformation.
It is driven by handful of technologies – including machine intelligence, the web and advanced robotics – capable of delivering many remarkable innovations:
-unmanned vehicles;
-pilotless drones;
-machines that can instantly translate hundreds of languages;
-mobile technology that eliminates the distance between doctor and patient, teacher and student.


PREDOMINANCE OF THE ARCHETYPAL IMAGE: IMAGOSPHERIC CONDITION
PREDOMINANCE OF THE FANTASTIC AND UNPREDICTABLE SCIENCE
- Fantastic and seemingly simple
- Fantastic and utterly complex


The Economist
Russian assets: freeze or seize?
Managing in a time of stagflation
Britain's growth problem
The short-sightedness epidemic
AI'S NEW FRONTIER
Where Does Alex Jones Go From Here?
Watching the Alex Jones trial with an ex-Infowars staffer.
By Charlie Warzel


LAYERS OF COMPOSITION:
4. Semantic composition
5. Functional composition
6. Conceptual composition
Digital Image
Composition
Innovation
Design
The Measurement of Scientific, Technological and Innovation Activities
Oslo Manual 2018
GUIDELINES FOR COLLECTING, REPORTING AND USING DATA ON INNOVATION
OECD
eurostat
4th Edition

FROM DIGITAL-REAL TO REAL-DIGITAL

CHALLENGING ESTABLISHED SEQUENCES OF DESIGN TO MATERIALISATION THROUGH DIGITAL RECOMBINATION

Max Benjamin Eschenbach and
Prof. Dr.-Ing. Oliver Tessmann
Technical University of Darmstadt –
Digital Design Unit (DDU)
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tessmann@dg.tu-darmstadt.de

Abstract

Computational design and digital fabrication have become widely adapted in architectural research as well as in the contemporary design and construction practice. Seamless digital process chains enabled us to design, optimise and build complex non-standard structures. However, current design and planning processes are still focused on a linear notion of material use: components are digitally designed, engineered and subsequently materialised through *digital-real* process chains. Despite their highly optimised nature, savings resulting from consuming fewer raw materials may be diminished or even eliminated completely by the use of energy-intensive fabrication processes, complex assembly procedures and what can be called *over-individualisation* that largely inhibits reuse. Recently, these predominant design and construction logics based on mass customisation have been challenged by the evolution of combinatorial as well as discrete design and modelling paradigms. These methods rely more on modularisation and discrete parts and thus can also be utilised to recombine existing components. Computational tools enable us to design and build structures from highly heterogeneous materials, even reusing materials formerly considered waste, like scrap or rubble. We define these procedures as *real-digital* process chains since they depart from the real, already materialised components of our built environment and proceed to recombine them in a digital manner. We address the growing problem of resource scarcity by proposing a computational framework targeting the reuse of building components through digitisation, sorting, categorisation and finally recombination. By linking design exploration with state-of-the-art computation, we aim at overcoming the thinking barrier associated with a *real-digital* design process departing from existing components: The transition to a circular economy is not merely a technical problem to be solved but rather a socio-economic and cultural endeavour to be explored from a design point of view.

Introduction

1972. The first building of the Pruitt-Igoe complex in St. Louis is demolished, after only 17 years of use. By 1976, all of the 33 buildings had been demolished, rendering all their prefabricated components waste while effectively destroying all the embedded design and engineering intelligence.

2014. After 42 years of use, the AfE-Tower in Frankfurt/Main, Germany, whose construction was finished in 1972, is demolished through controlled blasting, although its structural skeleton was completely intact. Subsequently, the One Forty West was constructed at the same site, exhibiting an almost identical typology. While the AfE-Tower served as a university building, the One Forty West now accommodates apartments and a hotel.

The Pruitt-Igoe buildings often serve as a poster-child for the failures of public housing and modernist architecture. But they may also serve as an example of an unsustainable building practice that has been continuing. The later destruction and replacement of the AfE-Tower is a testimony of the fact that most buildings today are not demolished as a consequence of irreparable structural damage but because of a volatile real-estate market. In fact, the lifespan of today's buildings varies greatly: while architectural history is full of examples where buildings last hundreds of years, nowadays, buildings are commonly planned for a life cycle of 50 years which the market often does not even allow them to exhaust. This highlights one of the current core problems in the struggle for sustainability of construction: the short duration of the use

Figure 1. Demolition of Pruitt-Igoe building through controlled blasting on April 21, 1972.
(Image credit: U.S. Department of Housing and Urban Development, image placed in Public Domain)

Figure 2. Left: AfE-Tower in Frankfurt/Main before its demolition in 2014 (Image credit: Karsten Ratzke, image placed in public domain). Centre: Demolition of AfE-Tower in February 2014 (Image credit: Sven-Sebastian Sajak, licensed under CC BY-SA 3.0). Right: One Forty West building in March of 2021 (Image credit: User 'Silesia711' through Wikimedia Commons, licensed under CC BY-SA 4.0)

phase as well as the destructive end-of-life we reserve for our buildings. An issue that is increasingly becoming the focus of public and political attention, e.g., as stated by The European Commission in The European Green Deal (COM(2019)640, 2019) and A New Circular Economy Action Plan (COM(2020)98, 2020).

The Digital-Real Process Chain

We regard digital design and fabrication techniques as important building blocks that can contribute to more circular approaches. From the 1990s onwards, computational and parametric design has been predominantly used by the first generation of digital architects in the context of mass-customisation of form, creating non-standard architecture from a large number of individualised components as a reaction to the industrialised, serialised and automated production of building elements (Carpo 2011). In recent years, these design and construction logics are being challenged by the evolution of discrete and combinatorial design paradigms. One approach called *kit of parts* is based on the standardisation and modularisation of building components. In contrast to parametric design and its mass-customisation of form, this approach is characterised by a mass-customisation of assembly. Given a predefined catalogue of standardised elements, design and customisation are based solely on the combination of these given components. But as described by Gilles Retsin, this approach "with fixed hierarchies and types, severely limits the amount of difference that can be achieved, putting into doubt the earlier promise of mass customisation and design freedom." As a reaction to both parametric design as well as the limitations of a predefined kit of parts, the *Discrete* has emerged as a new architectural paradigm, based on understanding parts as "function agnostic, generic 'building blocks' which through their combination and interaction can establish higher-level functionality" (Retsin 2020). As such, the discrete constitutes a genuine architectural paradigm, as it does not erode the agency of architecture. Designing within the discrete paradigm poses not only the challenge of designing the discrete building blocks themselves in a generic way, enabling their use for multiple purposes (beams, columns, slabs, etc.) but also designing the architectural structure based on these building blocks. It is through this interdependency that the discrete addresses and overcomes the problem of over-individualisation through mass-customisation of form in

parametric design as well as the design limitations of a kit of parts approach.

However, independently from architectural design paradigms, the current design, fabrication and construction processes are still stuck in a linear notion of material use: most building components are digitally designed, engineered and ultimately materialised by consumption of raw materials. These can be defined as *digital-real* process chains. In the context of the global climate emergency, these process chains that are fundamentally based on the established linear economy need to be questioned and rethought. Resorting to renewable materials such as timber for the fabrication of building components is one solution. However, building solely from timber is not feasible, given the construction industry's sheer demand for construction material. Consequently, fundamental changes in design as well as in building and construction practice, not just in material choice, are a necessity.

Both the kit of parts and the discrete design approaches inherently carry the notion of prefabrication: building components are manufactured off-site and then assembled on-site. In addition, both approaches carry the possibility of employing a *Design for Reuse* practice: given their modularity and standardisation, the components may be disassembled, recombined and reassembled into alternative structures.

Accepting the anthropogenic stock

Combining the discrete design approach and a *Design for Reuse* practice offers a solution to the issue posed by the end-of-life of buildings. Replacing demolition by deconstruction allows for the components that have been designed to be disassembled, to be sent to new construction sites and to be used in newly designed buildings. However, this only puts an end to linear destructive ends-of-life for buildings to be built in the future. In parallel, the end-of-life of buildings currently in their exploitation phase needs to be addressed as well, as it represents vast amounts of waste if this is not done. In fact, since 2020, the human-made mass exceeds the living biomass in size (Elhacham et al. 2020). This can be called the *anthropogenic* stock. And while the digital fabrication strategies highlighted above are promising, we need a transitory strategy to address existing buildings, as they do not only represent a vast amount of waste if we do not focus on their end-of-life: they also represent a vast amount of material we could use, or rather, reuse. More precisely, we could reuse these building components directly, as is, without or with only minor transformation in the assembly strategies. We conceive this strategy as *design with debris*, aimed not only at a better end-of-life but also at limiting the amount of transformations the debris is submitted to.

"Construction waste recycled into new materials, such as recycled concrete or steel, are primarily challenges in terms of materials technology. They affect design and planning only peripherally. The reuse and reusability of entire building components, on the other hand, as well as the repair, conversion and addition of preserved buildings and parts of buildings, are genuine architectural issues that always touch on all aspects of sustainability."

Furthermore, as this quote by Angst, Brandi and Stricker indicates, reusing our anthropogenic stock might help cultivate novel care practices. In fact, designing with debris entails a wholly different approach, a renewed one that may align with the changes brought about by the discrete paradigm in architecture. Design within the discrete paradigm requires a different thinking about architectural structures and their components. Designing based on a given stock of already manufactured components also constitutes itself as a fundamentally different practice than designing and engineering new components with the freedom of design materialisation. Right from the beginning, formal and structural constraints are present as components may not be manufactured at will, but it rather becomes the responsibility of architects and designers to navigate and leverage a given, finite stock of components in their designs. As such, it requires not only different technical prerequisites but also a different approach.

Documenting the anthropogenic stock

Beyond the overarching design approach that designing with debris necessitates, research into the steps of such a process has also been growingly performed in the past years. The following section examines how

to handle the anthropogenic stock in order to reuse it. In addition to the description of these steps and the range of issues they pose, two case studies are used as an illustration. The first one is the *Fertigteil 2.0 (Precast Concrete Components 2.0)* project, and in particular the demonstrator it aims at producing by the reuse of a series of concrete components stemming from the deconstruction of an obsolete building structure. The second one is a master studio held at the TU Darmstadt by the Digital Design Unit in autumn 2021. Entitled *Circular Production*, it explores how digital technologies in design and fabrication can contribute to novel strategies of circular economy in architecture and the construction sector. As such, it goes through all steps of transformation of an existing building through the *design with debris* approach. While the *Fertigteil 2.0* project provides a real-scale demonstration, we also have highlighted the changes in design thinking this approach entails. Such change must be conveyed not only in practice, but also in teaching and learning contexts, which is why we have selected illustrations stemming from the *Circular Production* studio.

The first step in employing real-digital process chains consists of cataloguing the anthropogenic stock. 3D scanning provides precise information on the geometry that can be completed with on-site observations of materials, and with computational analysis to isolate the components within the model (Klawitter, Bringmann and Tonn 2019). Today, smartphones and tablets, equipped with Lidar distance sensors as well as powerful camera systems, enable us to perform 3D scanning and photogrammetry without specialised equipment. Software to analyse the captured data and recompose the scanned components is also readily available. Efforts in mapping the existing environment therefore can rely not only on existing technical means but also on a widespread access to them, which can help tackling the major issue in this

Figure 3. Selective disassembly using a diamond-fitted concrete saw as a proof of the concept of harvesting concrete components for reconditioning and reuse.

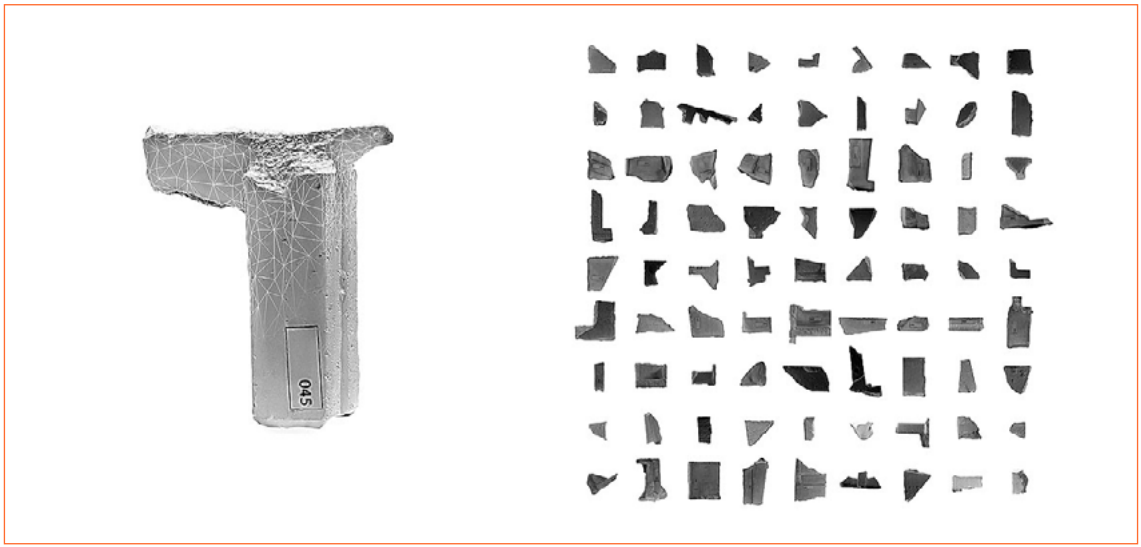


Figure 4. Concrete debris is digitised, catalogued in a database and can be subsequently reused using computational discrete and combinatorial design tools.

venture: capturing data at a scale as large as the available anthropogenic building stock. The work of the *Circular Construction Lab* lead by Prof. Felix Heisel can be seen as particularly illustrative examples, bringing together cataloguing, deconstruction as well as reuse in an effort towards implementing a local circular construction industry in Ithaca, New York.

Once the components have been identified and digitised, a component repository becomes necessary to store the gathered data for further use in the design of the next building. We have described how geometry can be handled, but material performances of components are also critical if one is to build with them again. Handling a stock of existing components therefore also requires non-invasive performance assessment methods in order to know how these have aged and how to reuse them in relevant ways in the new building design. This is in fact an aspect that is particularly important not only technically but also for the social and economic aspects of reuse. Reaching a more widespread use of the *design with debris* approach indeed requires that insurances are on-board with such practices just as they would be with traditional building processes. Integrating performance assessments in the repository is one aspect that would enable sharing information with all players in the building industry, thus allowing them to play their role as they usually do and providing enough guarantees for them to do so. More broadly, issues of mapping out the existing anthropogenic stock also provide solutions for the post-transition strategy of designing for reuse, as some of the issues will be posed as well for components that have been explicitly designed for that use, such as methods for structuring and evaluating a repository.

Designing with the anthropogenic stock

Once the anthropogenic stock is catalogued in a database, computational means help to navigate and leverage this repository. Two different trajectories are possible:

a. The component repository may be browsed virtually through filtering for component types and manually choosing components that fit the design idea. Selected components are then inserted into the digital design model by the architect, as described by Runberger, Ondejcik and Elbrrashi 2022.

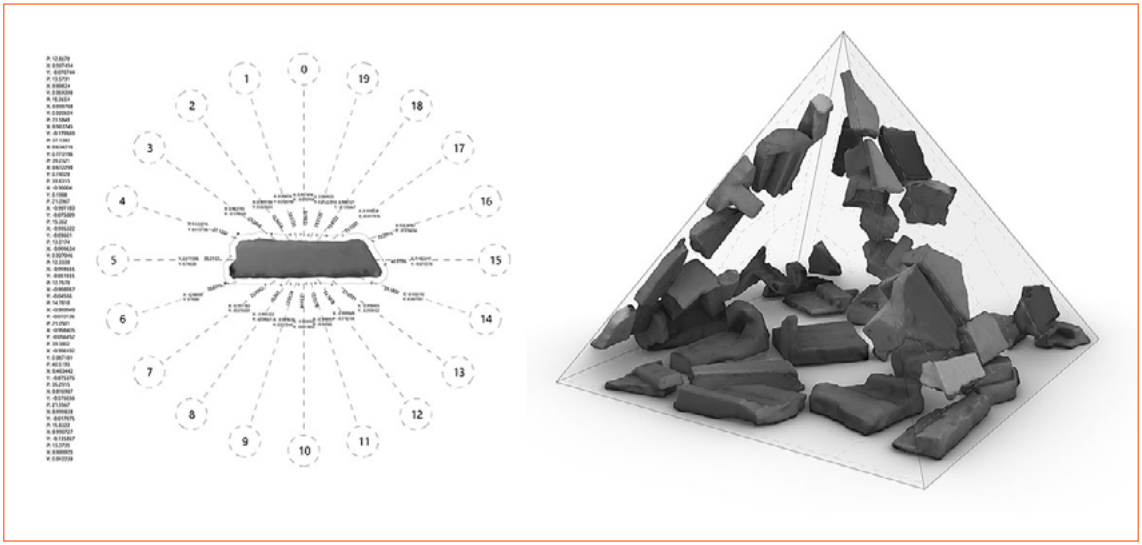


Figure 5. Left: Transformation of a digitised component into a feature vector by means of a centroid-based function, similar to the approach used by Mueller et al. 2020. Right: A digital case study, matching digitised concrete rubble into predefined tessellation cells forming a tetrahedron.

b. The design model is specified by the architect. While modelling components in the digital model and specifying their dimensions and materiality, the computational optimisation selects the most appropriate components from the repository. This requires a standardised and numerical description of the components for a matching algorithm to work.

The benefits of one of these trajectories over the other are highly dependent on the specific context of the design and the components in question. Within the *Fertigteil 2.0* project, an optimisation approach based on the works of Brütting et al. (2020) is being used, which relies on extending a cutting stock problem (CSP) with additional constraints. The optimisation problem is defined as a mixed integer program and solved using the *Gurobi* solver (Gurobi Optimization LLC 2022). This model was interfaced into *Grasshopper* using the *Hops* plug-in and the *ghhops-server* python module (Robert McNeel &

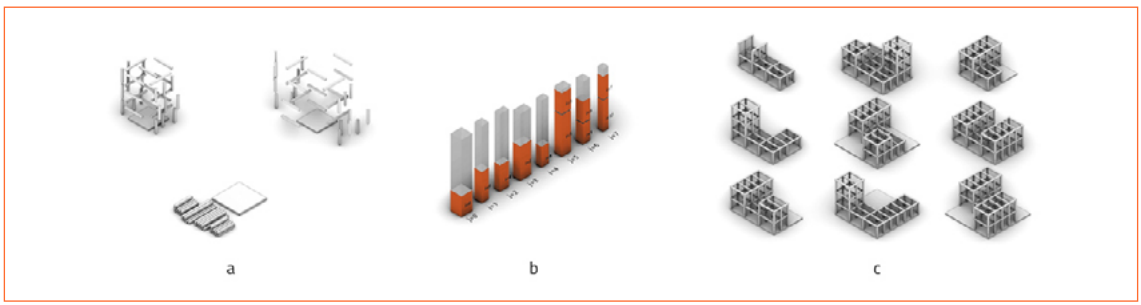
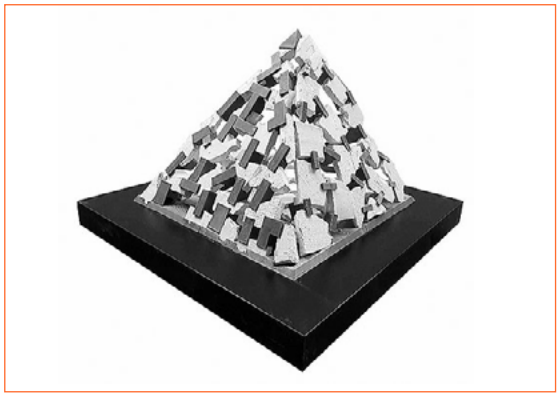


Figure 6. Schematic visualisation of digital disassembly on the basis of abstracted surface geometry acquired from point clouds (a), modularisation and combinatorial optimisation of the resulting CSP formalised as mixed integer program (b) and digital recombination of modularised components (c).

Figure 7. Demonstrator stemming from the *Digital Rubble* research (Wibranek and Tessmann 2019).



Right: Small scale demonstrator built in the *Circular Production* studio.

Associates 2022), enabling direct feedback loops between the design model and the possible utilisation of available stock components.

Using debris or deconstructed components as the basis for design also entails deciding on how to assemble these components again once they have been placed in the new building design. A key issue that also affects post-transition strategies is to avoid weakening the component, e.g., by piercing it with screws or nails to assemble it with other components. Doing so weakens not only its mechanical performance but also diminishes the service life of the component and thus poses a limitation for future reuse. As tested in the *Circular Production* studio, 3D printing can provide bespoke connectors to bring together the components as well as to fill potential gaps between the available stock and the target shape.

These examples give an overview of the technical steps necessary when making use of parts of the available anthropogenic stock. However, navigating a certain stock of components and creating architecture from them is first and foremost a question of design.

Figure 8. Images generated using *Midjourney*. Left: "A building that is being built by construction workers and robots out of reused components and recycled materials such as reused concrete columns or reused floor slabs and reused windows with a demolition site and a city in the background, realistic".

Right: "A building entirely made from reused components", 2022.

As Daniel Marshall puts it, "There already is enough scrap material to create sublime architecture. One just has to learn how to use it." (Marshall 2019). And once the size of the stock to navigate becomes sufficiently large, automation not only comes into play but can be deemed absolutely necessary as an aid in the design process to effectively search and carefully choose from the components that are available, based on the architectural design that is imagined. It also stands to question how we as designers and architects envision the aspect of reuse: do we establish a new aesthetic language that employs the reused component's patina and imperfections as a virtue or do we hide it within established aesthetic expressions?

Prompting *Midjourney*, a popular AI system for image generation based on textual input with queries relating to the reuse of components in architecture revealed a potpourri of elements that are puzzled together. As *Midjourney* is sourcing from a global repertoire of human creativity expressed in images, the generated results suggest that there seems to be no established design language, no specific style yet that corresponds with the reuse of building components. The resulting images are a mash-up of architectural elements – like windows, columns and slabs, put together in a seemingly deconstructivist architectural collage. Reusing building components currently seems to be associated with this kind of mash-up aesthetic and it is now up to us as designers and architects to further explore and define or discard this style.

Conclusion

This paper has outlined specific and feasible concepts and strategies to challenge the established sequence of design materialisation. It has become clear that employing a circular economy in the construction sector and better end-of-life for buildings cannot be achieved by following a single course of action. Instead, overcoming this challenge requires at least a twofold, if not manifold strategy, depending on the context and given circumstances:

a. Building components that are designed today need to anticipate future reuse by design, accounting for disassembly, reassembly and even functional change.

b. Buildings that are being planned today need to leverage existing materials and components as much as possible, either through preserving the building, i.e., through building and construction in existing contexts and building redevelopment or through the reuse of building components across several building life cycles.

c. Even more profound, however, is the need to fundamentally reassess the conceptual and theoretical framework of durability, permanence and linear material flows in architecture that still relies heavily on the Vitruvian idea of *firmitas* in which mass and solidity are meant to form eternal architecture (Touw 2006). This notion of permanence of buildings is deeply woven into the thinking and value system of architecture as a discipline, preventing an integration of circular strategies within the design, use and reuse of buildings and their components. We suggest rethinking the notion of permanence in architecture by proposing a process of continuous transformation of the built environment. Here permanence is not established within a single building but through building elements that endure as reused components in potentially numerous buildings, sites, and functions.

The implementation of such strategies may enable new roles and occupational fields within the architectural planning process, e.g., in assessment and material procurement: existing buildings need to be evaluated and their reusable components assessed, components need to be catalogued in repositories so they are digitally accessible for design and planning, computational tools need to be conceived to manage and handle these datasets during design and construction, and established notions of aesthetics in architectural design practice need to be reassessed.

Acknowledgements

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DIGITALISATION OF ARCHITECTURE – FROM PURIFICATION TO HYBRIDISATION

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> The more we forbid ourselves to conceive of hybrids, the more possible their interbreeding becomes. (Latour 1993)

The research, presented in this paper, is situated in the discourse of digital architecture and prefabrication. I would like to present some of the ideas and concepts that have emerged from my dissertation that have carried on into research and practice, and how they might relate to innovation. Inspired by Bruno Latour, the paper is organised into two main parts: purification and hybridisation. In the first, I will look at the concepts of elements and digitalisation in architecture and prefabrication. In the latter, the idea of a spatial structure and its modulation is explored and illustrated with projects co-authored by Dr Sille Pihlak and myself at the Timber Architecture Research Centre PAKK at the Estonian Academy of Arts and in our practice PART.

Purification

One of the main concerns in prefabrication is how to break wholes into parts. How to disassemble objects so that their reassembly becomes easy? These disassembled parts we call elements. What are elements? In chemistry, we know everything consists of elements. They are the basic building blocks of matter. Yet, elements can still be broken down to further particles. Until we arrive at the level of energy. Energy as we know from the first law of thermodynamics is constant – it cannot be created or destroyed, just rearranged. Energy therefore might not be the best basis for describing matter. Elements, on the other hand, are just at the right level of detail to describe matter and chemical processes. In defining elements, their productivity is of highest concern – so that their reassembly becomes easy. If everything was described as energy, we would lose meaning.

Defining the elements of architecture has been a recurring theme since antiquity. Most prominently in recent times, Rem Koolhaas devoted the 2014 Venice Architecture Biennale to this topic, exhibiting actual pieces of architecture. But just as we cannot discard the environment with chemical reactions, architecture is more than just an assembly of its parts. Within the context of this conference, I would like to look at the digital context architecture is created in. In terms of the digitalisation of architecture, I think we need to look at a different type of elements. Elements that are not yet pieces of architecture but rather abstract building blocks that can be assembled into arrangements that start to exhibit meaning as architectural artefacts through qualities like structure, proportion and rhythm. These building blocks could be geometries, stock materials, structural calculation models, or digital objects and algorithms. Not to mention master plans, spatial requirements, building codes etc.

At the end of the 18th century, French architect Jean-Nicolas-Louis Durand became a professor at the École Polytechnique. In the spirit of Étienne Bonnot de Condillac's analytical method, he developed a procedure to be followed in the composition of any project. He produced a catalogue of building parts

and used axial composition and a regular square grid to organise these elements in space (Picon 2000). By teaching architectural design to engineers in this procedural way, he made possible what we nowadays call integrated design – encoding the expertise of one profession so that it could be used by experts in another, a radical innovation ahead of its time. With scientific development it became increasingly clear that the world is too complex to be described by the combination of a finite number of elements. Yet, it is the basis of digital technologies governing every aspect of our lives today.

Jumping one and a half centuries into the age of digital computation, we can see similar rigour in some of the proposals dealing with the post-war housing crisis. One of these is the General Panel System, developed by Konrad Wachsmann together with Walter Gropius. An almost abstract building system with endless possibilities due to its highly standardised and symmetric design (Imperale 2012). When this universality is developed into the third dimension, we get space frames, seemingly defying gravity.

In 1961, Buckminster Fuller patented his Octetruss – a structural system that dissolves the distinction between classical structural elements such as walls, floors, ceilings and columns that are no longer distinguished elements but part of the same (Fuller 1961). "As [Alan] Turing noted, nothing in nature is truly digital; everywhere there is continuous variation; the great design move is making devices that treat all signals as digital, discarding instead of copying the idiosyncrasies of particular tokens" (Dennett 2017: 200). The Octetruss is an example of truly digital architecture discarding the idiosyncrasies of architectural elements.

These ideas were also picked up by a group of radical mid-century architects with the concept of the Spatial City, most notably by Yona Friedman and Eckhard Schulze-Fielitz. The latter referred to the spatial structure or *Raumstruktur* as a macro material, capable of modulation. Fielitz saw the spatial structure as a participatory and emergent democratic architecture, expressing the social structure, natural laws and technical circumstances (Fiel 2009). By modulating the conditioning circumstances into a model of *Raumstruktur*, a design space is created that governs formation – not a mould but an emergent structure of space.

Digitisation is the process of converting information into a digital format. Digitisation makes information computable. Digitalisation, on the other hand, is the process of adapting to digital tools – preparing processes and information for computation as well as the automation of labour and decision making. Digital computation is the current state of a process that started with the creation of notation systems. According to Mario Carpo, in architecture, "the Digital Turn" started with Leon Battista Alberti developing a notational system for the delivery of buildings in the 15th century. So, the digitalisation of architecture has at least a 600-year history (Carpo 2011).

With the broader development of personal digital electronic computers in late 1980s and early 1990s, a critical discourse of digital architecture emerged addressing the broader culture of digitalisation as we understand it today. Interestingly, the first notion was that digital computation, by definition discrete, was an enabler of continuity. Early digital architecture was about infinitesimal variation in design and mass customisation in production (Carpo 2013). Digitalisation has meanwhile reached industrial mass production, but the economy of scale has not disappeared. On the contrary, the lack of standardisation in the fully automated production of timber buildings is seen as one of the biggest obstacles to development.

Computational objects have code and data and this makes them responsive. Object-oriented programming is based on treating everything as an object, one that carries data and code – properties and procedures (Object… 2023). This type of structure is what puts the I in BIM models. If this is the way we conceive architecture today, then this is what determines the *Raumstruktur* of possible architecture; defining these objects and their degrees of freedom for modulation must be a matter of concern for the discipline of architecture.

Greg Lynn has described a sphere as a low-level blob when computationally defined as a metaball (Lynn 1996: 60). Following the same logic, we can say that a

square and a hexagon are computationally the same object – a Voronoi cell – and there is a possibility for one to gradually transform into the other, variation and repetition being part of the same system.

Treating everything as a computational object creates a flat ontology – everything is data and code, and it is up to the designer to modulate these relationships within the computational model. As early digital architecture was more speculative, the conditioning circumstances of fabrication were pushed off into the future and the construction of geometries was driven primarily by a fascination with calculus. However, as both Antoine Picon (Picon 2013) and Mario Carpo (Carpo 2013) have pointed out, there has been a move towards discretisation in digital architecture. Both robotic construction and advances in computing power can be seen as driving this trend.

Looking at the aesthetics of these discrete assemblies, a similarity can be drawn with early computational art like the works of Frieder Nake, for instance. Max Bense described Generative Aesthetics in 1965 as "bringing about 'orderly arrangements'" – emergence – produced by "a methodical combination of planning and chance" (Bense 165).

This kind of methodical combination of planning and chance, with complex part-to-whole relationships can also be perceived in contemporary digital architecture. There is a rising interest once again in automation, modularity and standardisation. Contemporary computational designers are automating architectural elements from the urban to the micro scale, but all of the work adheres to the generative aesthetics balancing between determinism and chance as a creative domain.

To sum up the above, we have the idea of an abstract organisational device for architectural elements – the standardised grid and a hierarchical axial composition. From there we move on to a three-dimensional grid of standardised elements that can be combined into various forms and structures. From there we develop an idea that the grid is representative of the current spatial structure that can change and adapt; to a flat ontology where the grid is one of the objects that can change and adapt based on the way we modulate the relationships within the computational model, and as the assembly of elements is automated, analysis and synthesis become inseparable.

Hybridisation

By digitally modelling the world, by making it computable, we are able to experiment with the underlying code of reality – the *Raumstruktur*, the way in which space is organised through natural and/or social processes. Bringing this idea to architecture, digital models allow us to experiment with a combination of customised or readymade algorithms, dynamic geometric systems, datasets etc. These digital artefacts become almost found objects, carriers of knowledge and culture that can be used and developed even without thorough expert understanding of their functioning. Meaning is created by the subjective modulation of the spatial structure. Creating a design space by building up a simplified model of the spatial structure, the designer starts closing in on the eventual solution. Being able to navigate this design space gives autonomy or even authority to the creator. From these ideas I have developed a design method that brings together the conditioning circumstances with the algorithmic tools that allow for subjective manipulation. A system in which the grid is inseparable from the element and vice versa (Tuksam 2020).

These systems do not necessarily need to be discrete and modular. One of the examples that illustrates this is the power line pylon family designed by PART. The Bog Fox and the Bog Crane are two different pylons, the first one a corner pylon and the second one a carrying pylon (Fig. 1). Computationally they are almost the same, but as the geometric context is different, resulting in different load cases, they are at the same time also very different. Both consist of four structural axes, the arrangement and cross-section of which is found by evolutionary structural optimisation. The subjective intervention is manifested in the initial decision to use a minimum number of linear elements and the blends between them. The size of the blends at the same time is limited by the dimensions of the trailer they are transported in. After the structural optimisation of the Bog Fox, out of subjective preference, it was decided that there needs to be a minimum distance between the connection points. It just looked

Figure 1. Bog Fox and Bog Crane by PART Architects.
Photo: Tõnu Tunnel

better and the trade-off in structural efficiency was unnoticeable. Later on, it was also justified by the construction logic of the blends and could be coded into the model. On the Bog Crane, therefore, no aesthetic adjustment was needed after the optimisation.

As we look at more complex assemblies, modularity, on the other hand, becomes quite handy. The method developed in my thesis evolved over time, starting from repetitive elements that have parametric relationships, similar to L-systems, turning into space filling

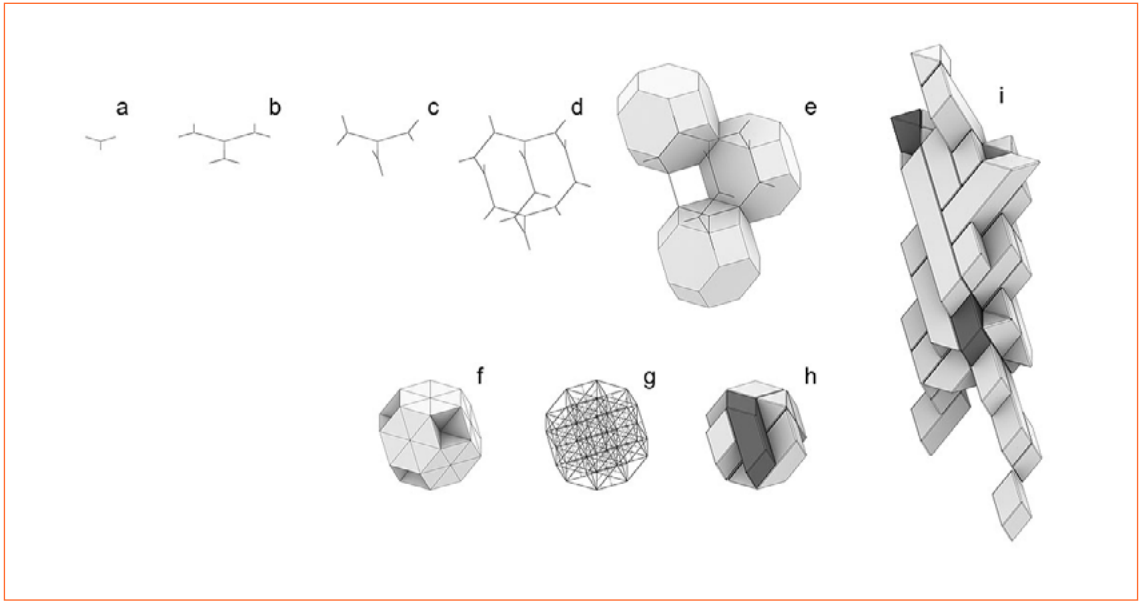

Figure 2. Evolution of Modulated Modularity – a: element; b: assembly; c: transformation; d: the chunk, defining a grid cell; e: relation to space filling truncated octahedrons; f: subdivision of a truncated octahedron; g: the resulting grid and the cell axes; h: cells combined based on resulting part length; i: the Modulated Man.

lattices and evolving into what we call a metagrid as a nod to Schulze-Fieltz's metaeder (Fig. 2). The metagrid is similar to a crystal lattice where different subdivisions, combinations and orientations are possible. This metagrid is a subjective model of the spatial structure governing formation through modulation.

The developed method has been used in the research project Elementerial Bus Stop developed by Dr Sille Pihlak and myself within the Timber Architecture Research Centre PAKK at EKA (Fig. 3). With this creative research project, we tried to solve the issue of CLT manufacturing leftovers. To produce wall elements, most of the doors and windows are cut out of large panels. This leaves a lot of door and window-sized elements as residues. Taking this size as an input, we developed standardised elements by using a minimum amount of cuts at specific angles derived from the tetrahedral-octahedral honeycomb. As long as it is structurally feasible, any form that is produced using this grid can be produced from these elements. Broken down to panels, these geometries consist either of squares or equilateral triangles. Both of these are plane-filling, meaning that they can be cut out of sheet material with close to no leftovers. For the bus stop, we decided to leave the rectangular faces as apertures and only produce triangle-based elements. While the assembly was fairly easy, taking four people two days, the production process proved to be highly inefficient. Each piece of leftover material, slightly different in size, needs to be placed on the sawmill separately, specifically selected based on the length of the element and precisely positioned. For this process to work, a higher degree of standardisation is needed. The solution could be to cut the residues into linear profiles less wide and finger jointed into longer pieces of material. The profile dimension in this case is limited by the capabilities of the finger-jointing line at hand. The whole production process needs to be designed for a new type of standard material that can be produced in bulk.

Our takeaway from the bus stop project was that instead of figuring out how to productize fabrication

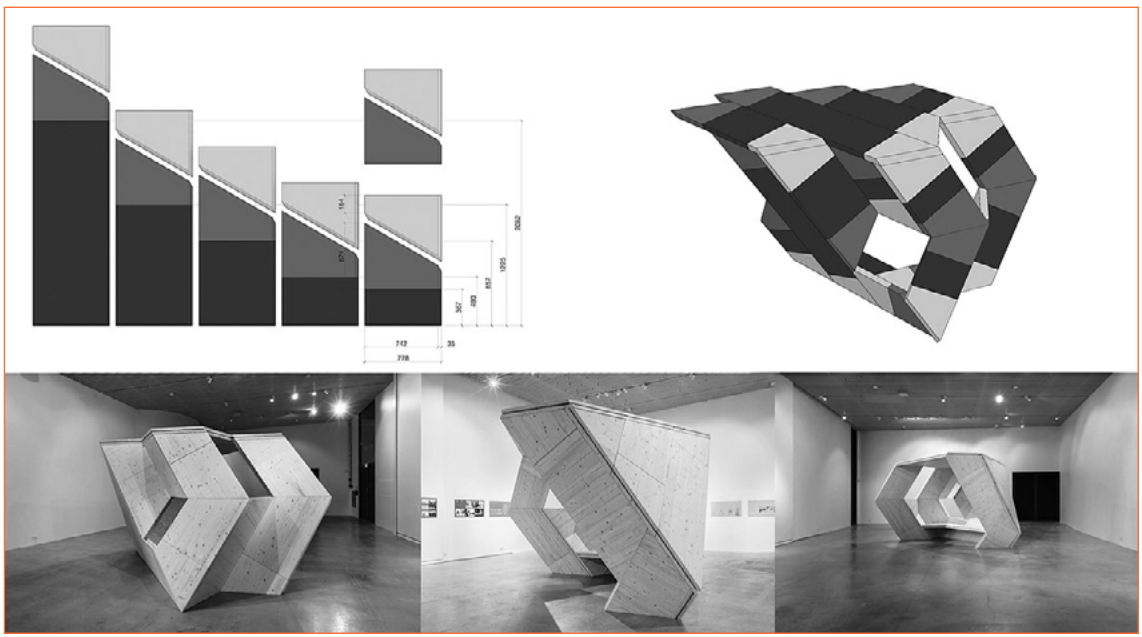

Figure 3. ELEMENTerial Bus Stop by EKA PAKK researchers Dr Sille Pihlak and Dr Siim Tuksam. A set of standardised elements is produced from CLT production leftovers – door cut-outs.

leftovers, we should be investigating how to design CLT-buildings without producing residues at all.

The Slender apartment building project is doing precisely that (Fig. 4). There are two main ways of constructing prefabricated timber wall elements: cutting the element out of a sufficiently large CLT-panel or producing it out of pieces of lumber. Our approach is to produce modular standardised wall elements in bulk and assemble them into wall elements in the factory. This high degree of standardisation allows for more complexity and customizability. The grid used has a one-metre step-size in the vertical direction, allowing for split levels. Making use of this fact, we have decided to create a spiral arrangement of floor slabs. This allows for higher flexibility in the spatial arrangement. The sizes of the apartments are not limited by the size of the floor slab. As it is a rental building, the owner is able to change the number and sizes of the apartments in the future. A shift in the spiral creates spaces that are one metre higher than the regular ceiling height, creating a loft-like feeling. The arrangement of elements is based on a myriad of subjective and pragmatic decisions coded into an algorithm that can adapt the building to different heights and plot sizes. On top of the algorithmic overall arrangement, local customisations are still possible due to the modular logic of the building system.

How does it all relate to innovation? The flatness of modular and object-based computational models allows us to experiment with hierarchies and relationships, and generative algorithms can produce unforeseen results. Instead of killing the author, high degrees of standardisation and automation have allowed us to create technologies that enable unprecedented levels of complexity within the creative process. Innovation happens in interpreting these results from the designer's perspective, trying to find new meaning.

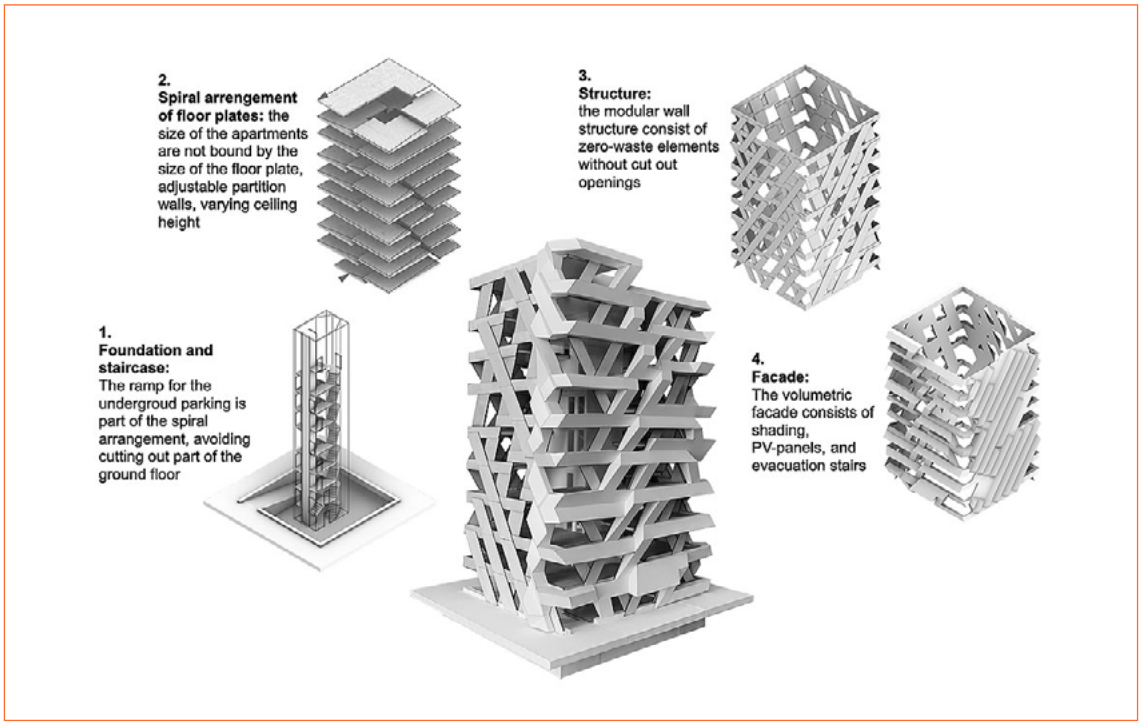

Figure 4. sLender building system. A pre-fabricated CLT multi-storey building up to 8 floors. EKA PAKK team: Dr Siim Tuksam, Dr Sille Pihlak, Dr Eero Tuhkanen, Dr Alar Just, Marko Ründva, Dr Simo Ilomets.

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THE POWER OF GENTLENESS IN ARCHITECTURE TOWARDS AN AESTHETICS OF HOSPITALITY

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> When a vigorous nature has not an inclination towards cruelty, and is not always preoccupied with itself, it involuntarily strives after gentleness, this is its distinctive characteristic.
>
> Friedrich Nietzsche

Today we live in an increasingly violent world, a state of emergency, with many crises on many fronts. To me the power of gentleness gives us an opportunity to imagine what we miss most today: a caring and welcoming world. But be warned, gentleness is not about making something cute, what needs to be restored is its greatness, its 'warrior' greatness, because it is a force of resistance, even a weapon. And it is a principle of life, of lived experiences, shared and situated with liberative potential. As philosopher Anne Dufourmantelle has observed in her book *The Power of Gentleness*, any beginning is necessarily rooted in gentleness: the birth; the beginning of love (Dufourmantelle 2018). As Antonio Negri and Defourmantelle stated, love is a genuine passion, a shared construction: '… it is precisely its open character that is so moving: a feeling of strength, a need to create (…), in other words, a need for communality, sharing, cooperating. In that sense the personal project (of love) is also a political project. It is not enough to want freedom: the point is to make freedom productive.' (Negri and Dufourmantelle 2004). Fred Moten and Stefano Harney speak of something similar in their thought in *All Incomplete*, with reference to the 'jus generativity' (Moten and Harney 2021). Here gentleness concerns a quality and capacity to give, not in economic terms, as in the managing of scarcity, but as in generosity (as in the abundance of the rainforest). When being with nature, being with trees, for example, it is all about experiencing – not a scripted space to make you consume but all about the experiences of relationships-in-action, a kinship in relation to otherness situated where architecture can play a formative and emancipatory role. Gentleness here is not simply a delicate, pleasant contact, it is recognizing and accepting the other, the construction of the human and the non-human, in their fragility. To Dufourmantelle, and myself, gentleness is a way to relate to the world, it allows emotions and feelings, thought and experience, it is located upstream and affects the very principle of life as deployment. It is open ended. And, gentleness is more than taking care, gentleness is lavished and received with experiment and *dolce vita*. In other words, it has everything to do with how freedom can be created with constraints, how you can dance with enmeshment, move beyond limiting adversary, enact, imagine, and dare to create lives of sustained well-being and joy.

As I mentioned above, the power of gentleness is timely, now that we live in a state of permanent emergency, we are confronted with a paradoxical

community made up of us all being foreigners.[1] Essential to gentleness is its hospitality towards otherness, to be a host, to take the risk of inviting the unknown, taking the risk to invite and be with others in solidarity. To me that cannot go without redistributing the sensible, where architecture as a medium – through its aesthetic regime – and as a critical and projective practice (of equality, care, joy and imagination) can contribute to change, can contribute to the emancipation of our lifeworld, our being in the world (van Toorn 2022). As Rebecca Solnit recently clarified, following the footsteps of George Orwell who was an emancipatory political journalist fighting in the Spanish Civil war against Fascism, it is about 'bread AND roses' (Solnit 2022). We need bread to survive, and roses should not be missed either, they represent pleasure, leisure, self-determination, interior life, and the unquantifiable. The struggle is not only against owners and bosses seeking to crush workers, or refugees, but against other factions, says Rebecca Solnit, of the left who disparage the necessity of things. In that sense, gentleness resists a utilitarian ideology in which pleasures, beauties are seen as counter-revolutionary, just bourgeois, decadent, indulgent and that the desire for them should be weeded out and scorned. George Orwell celebrated with bread AND roses: the intangible, ordinary pleasures, the joy available in the here and now. In this sense of bread and roses, it travels beyond a politics of care, one that is purely focused on utilitarian needs, with bread and roses we start to understand that aesthetics as a medium is about a situated politics that comes about through an aesthetic regime, how materiality (and its ideology embedded within it) as a cultural artefact distributing the sensible does arouse sensations, affects, moods, atmospheres, imaginations and symbolic experiences which makes one relate to and interact with the environment one is embedded within. And it is with aesthetics, the expressions of form and content (art, architecture, culture, literature, film, music and alike) that we can discover the hidden territories of reality that would remain inaccessible using only our functional and natural senses. Aesthetics in that sense can pull us out of complacency, make us experience reality anew, see anew, imagine otherwise.

With the power of gentleness in architecture I am after a figure of emancipation, a micro-politics that can potentially resist late-capitalism's internal logic of appropriation, occupation, the ongoing colonization of our lifeworld. With the power of gentleness, in other words I am after tales, modes of storytelling in space and time that reject an either/or world, or wish to advance or sustain a clash of cultures. Instead, I prefer an approach that is welcoming, fulfilling, sustainable, open, entertaining as well as educational, joyful, diverse, social and ecological. It has to do with how in this world of many life-threatening crises, architecture as a projective project can, in my opinion, contribute to making the world a better place for all. It is related to a wider liberative aim, one of gentle modernity, that it is possible to organize another way of life in dialogue with nature, one beyond high modernism, one of maximalization, functionalism, blind progress, excavation, commodification, destruction, and colonialism.

Beyond a Politics of Care

In the past decades, the discourse of sustainability can be characterized by a move from the architectural object and its aesthetic regime towards a focus on the processes through which the architectural object is materialized, produced, constructed, maintained, demolished, recycled, renovated, co-produced with a community, etc. Reconsidering architecture from these relational perspectives of social and ecological care is of extreme and urgent importance given the multifaceted crisis today, but unfortunately the question of aesthetics – the distribution of our senses through architecture's syntax (form), its mediation, has disappeared by reducing architecture to a by-product of processes, materials, and technologies. By neglecting the question of aesthetics and its political effects, it is underestimated how essential the visual, experiential, haptic and bodily engagement of an aesthetic regime for its users, architects and alike is. As

1 'We are, for the first time in history, confronted with the following situation... A paradoxical community is emerging, made up of foreigners who are reconciled with themselves to the extent that they recognize themselves as foreigners... At the end of the twentieth century, each is fated to remain the same and the other – without forgetting his original culture but putting it in perspective to the extent of having it not only exist side by side but also alternate with others' culture.' Julia Kristeva. 2011. Quoted in Homi K. Bhabha's *Our Neighbors, Ourselves: Contemporary Reflections on Survival.* Berlin, New York: De Gruyter.

mentioned, cultural practices today are engaged in providing care for others, but should arts (including architecture) be limited to become an 'Orthopedic Aesthetic' as Grant Kester remarked and become engaged in just a reparative turn?[2] To me, care needs our scrutiny more than ever, but architecture's capacities to resist, to alter, to create happiness, joy and imagine otherwise like the arts should not be seen in opposition. Instead of binary choice, the duty of care (instrumentality), OR the arts (culture), the Power of Gentleness, should be seen as a third way, as just explained, it is about Bread AND Roses, Gravity AND Grace.[3]

I will start with explaining – through a listing of eight tableaux – what Gentleness shapes, following Dufourmantelle's publication and Catherine Malabou's foreword to *The Power of Gentleness*, and thereafter will elaborate upon them, while referring to contemporary architecture projects through images that in my opinion have to do with the power of gentleness, an aesthetics of hospitality. Not all projects are a direct match what I talk about, but they belong to an atlas of hospitality I am currently building.

One. Gentleness is not given. That means that it is cultivated. Although nature can be gentle, gentleness is

Figure 1. Art Biotop Water Garden, Junya Ishigami+Associates, 2018. Photo: Iwan Baan

2 Grant Kester, quoted in Maggie Nelson, *On Freedom, Four Songs of Care and Constraint*, (New York, Graywold Press, 2021), see also Grant Kester on *Dialogical Aesthetics*, magazine Metropolis M, 07.10.2018.

3 See also Lars Spuybroek. 2020. *Grace and Gravity, Architecture of the Figure*. London, Bloomsbury.

Figure 2. Lycée Schorge High School, Diébédo Francis Kéré, Burkino Faso, 2015. Photo: Iwan Baan

not natural. Architecture as a cultural endeavour can play a formative role through its aesthetic regime enabling gentleness.

Two. We can say that gentleness is the very foundation of ethics. Think of gentleness as the one who is humble. Or Mahatma Gandhi's, Mikhael Gorbachev's or Martin Luther King's nonviolent resistance and their politics of change advocating a journey beyond limiting the adversary; a clash of cultures.

Three. Due to its open, welcoming character, gentleness is of multiple political and moral motifs: justice, peace, generosity, listening, dialogue. To make it very clear: gentleness is not violence, war, crime, massacre, genocide, or colonialism.

Four. Perhaps its greatest enemy, says Dufourmantelle, is that the true enemy of gentleness is … gentleness. This fake gentleness fits in the market-

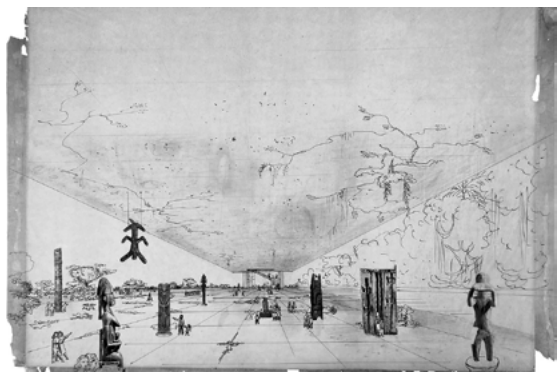

Figure 3. Sketch São Paulo Museum of Art (MASP), Lina Bo Bardi, 1968.

Figure 4. Fake gentleness. Image from Strong Towns website, Resilient Suburbia, Morgan Maiolie, 2016.

Figure 5. Terrassenhaus, Lobe Block located in Berlin-Wedding Brandlhuber + team. Photo: Erica Overmeer.

place of 'well-being', an individuality that refuses to enter negativity and confusion, and fear as essential human elements, paralyzing the future as well as the present. It's a passivity sold to us via New Age commercial techniques. This is a gentleness that does not sense, does not experience, and is another name for sameness disguised as a difference. It is this fake gentleness that sells.

Five. Gentleness in other words has its own dialectic but not one that crushes, but a dialectic that plays all the nuances of the gentle against each other. With also nuances that can fade all the way to black: the renunciation of the dying person who lets go is also gentle.

Six. Gentleness is a place – a situation – of surprise and celebration, an experiential one, impossible to grasp in just descriptions, it's a sensible perception of the mind and the senses (where temperature plays a role as well).

Figure 6. Solo House, OFFICE Kersten Geers David Van Severen, Spain, 2017. Photo: Bas Princen.

Seven. Gentleness is not exactly kindness, it is not exactly the good. It is not exactly generosity, it is not exactly the taste of sugar (sweet) either. It is not exactly the quality of velvet, low-intensity sound, quiet music, and we can go on… It is all these things simultaneously, a hybrid complexity, or what Rosa Hartman has called about a being in resonance. Gentleness is a fragile line, a pregnant line of possibility, of dialogue, an openness that comforts us, disturbs us, teaches us, and in any case touches us.

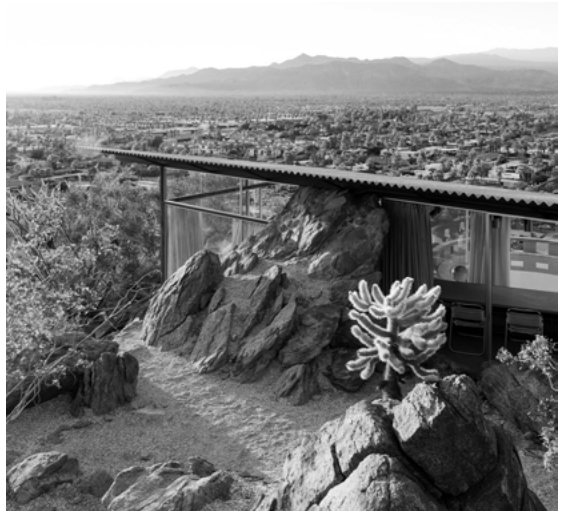

Figure 7. Frey House, architect Albert Frey, Palm Springs, USA, 1955. Photo: Iwan Baan.

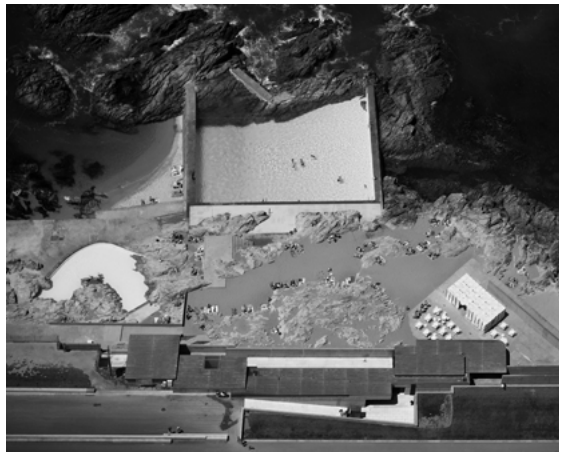

Figure 8. Leça Swimming Pools, Leça da Palmeira, Portugal, Álvaro Siza Vieira, 1966, Photo: Fernando Guerra

Eight. As Dufourmantelle says her mediations on gentleness are of a power, might, strength occurring in our everyday lives. The French word *puissance* for power refers to Aristotle's idea of potentiality – the power to change, or the potential of a possible future by *douceur* (translated as gentleness in English). *Doucement* also means to do it slowly, carefully, or gingerly, or wishing someone a soft landing.

Central to the power of gentleness is its varied and multifaceted connection. Gentleness is not something static, but a potentiality, a *power in the becoming*, a difference that relates, an inclusivity welcoming the other, and otherness. These moments offer sensory experience while drawing connections between places, ideas, people, and objects.

Insightful in relation to gentleness is also Anne Dufourmantelle's book *In Praise of Risk*, where she investigates 'How it is possible, as a living being, to think risk in terms of life rather than death?' (Dufourmantelle 2019). In her opinion, risking one's life, being gentle, is about being slightly out of joint, a radical departure of routine, to dis-identify, a chance to make room, the potential of a transformative surprise.

The power of gentleness should give you a deeper understanding what the power of gentleness – as mediation – can enact, and that we begin to see it

Figure 9. Performing Arts Centre, Koolhaas/OMA, Taipei, 2022. Photo: Chris Stowers.

where we have never observed it before and begin to appreciate it as a power when it occurs. To me it provides the following insights to bring to architecture practice:

Thirding-as-Othering

As mentioned, being gentle means that you welcome the unknown. Gentleness involves an act of hospitality. It is about a becoming, an aesthetic of hospitality, one that breaks open the conventional way space is thought and used, one that displaces the binary dialectics of the colonizer and the colonized, the one against the other by introducing a third that belongs to both the one and the other, opening alternative horizons. Such a place of radical openness is about a margin, a profound edge, that Edward Soja has called 'Thirdspace' (Soja 1996). Locating oneself there is difficult yet necessary. Such a site of radical possibility concerns a multiplicity of folds and gaps in the fabric of the common experience that change the cartography of the perceptible, the thinkable and the feasible. As such, it allows for new modes of political construction of common objects and new possibilities of collective enunciation. Instead of slipping into paternalism or control, the idea of a radical openness is characterized by indeterminacy, nuance, openness, and the multitude of encounters it could generate.

Such a methodological radical openness is concerned with what you can call the emergence of the interstice – the overlap and displacement of domains of difference. Such an idea of hybridity ('Thirdspace') is about a difference acting upon a difference. This possible third can be enacted through the interstice, the line of flight, or what Deleuze calls AND. 'The AND is then no longer even a specific conjunction or relation but implies all relations; there are as many relations as there are AND's.' Once you look between the (object) form itself, something unexpected and

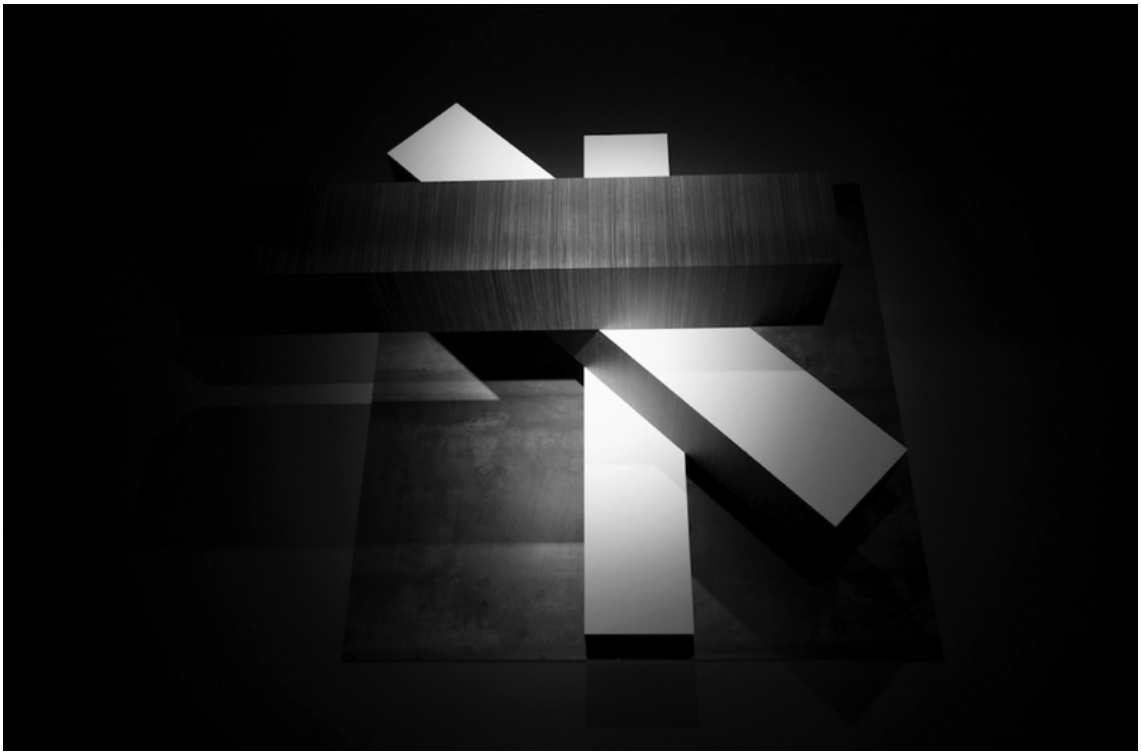

Figure 10. Tools for life, 04 Lounge, 'A stack of three horizontal bars, the user can rotate the top two bars into any configuration, transform the wall-like unit into a series of shelves, and cantilevered benches at different heights – a metamorphosis from spatial partition to a communal gathering place.' Koolhaas/OMA, Knoll design, Photo: Agostino Oslo.

unknown emerges that Deleuze describes as incommensurable. The interval of interstice being incommensurable, '… restores a belief in the virtual [becoming] as a site where choice has yet to be determined, a reservoir of unthought yet immanent possibilities and modes of existence' (Deleuze 1992).

When I invited Esra Ackan to further dwell upon the Power of Gentleness, she referred to how architect Bruno Taut, in his own house in Istanbul, instead of covering over the foreign, or totally domesticating it, included the foreignness.[4] As we saw, Taut was explicit in expressing the legacy of Japan in his house too, while building in Turkey as a modern German architect. His house has an estranging, foreignizing effect. Taut came very close as Ackan observed to what Edward Said described as the exile mind who knows at least two contexts, has a 'plurality of vision', an 'awareness of simultaneous dimensions', where 'both the new and the old environments are vivid, actual, occurring together contrapuntally' (Ackan 2022).[5] For Bruno Taut, and I believe architect and thinker Lars Lerup too, multiple attachments and openness to the hitherto foreign are architectural ways of advocating for perpetual openness. Lerup's objects, in a similar way, are in exile, go against the grain, but are also enmeshed with popular American everyday culture, joyfully so, embracing it, working from with constraints, while transforming it too, creating opportunities that can be potentially liberating… Lerup's work is

4 This initial research and series of conversations on The Power of Gentleness was made possible by UmArts, Umeå University, 2022. Its research included conversations and lectures by Roemer van Toorn and Esra Ackan and Lars Lerup. https://www.umarts.se/visionary_projects/the-power-of-gentleness/ Accessed in February 2023.

5 See also Esra Ackan. 2018. *Open Architecture. Migration, Citizenship, and the Urban Renewal of Berlin-Kreuzberg by IBA-1984/87.* Basel, Birkhäuser.

about the mediation of risk. His objects and practice embrace risk through their own zone of competence of architecture, the situated object itself that makes us move, and are moving themselves, up to the level of the detail, its materiality, being slightly out of joint. It's about a radical departure of routine (without excluding it), it is about a chance to make room, towards the potential of a transformative act (Lerup 2022).[6] Developing this theory of the power of gentleness in architecture, reading history through the lens of an open architecture, object sin situation, building an atlas of contemporary and historical examples is one side of project of the power of gentleness. Another relevant dimension is that of a cosmopolitical ethics, and investigating where architecture can contribute, what the plausible relation between form and the social (civilization and the environment) can be.

The Cosmopolitical

Now that 100 million people are driven from their homes by climate disaster, war, political and economic reasons, they not only have to migrate to neighbouring countries but to other continents. And that counts for many countries, rich and poor. In Florida, you cannot get an insurance anymore for houses on the coast. Half of the Americans have to move higher up or to Canada. That is science, not speculation, it is an issue, even more threatening for the lower classes worldwide. How we manage this global crisis and how humanely we treat each other as we migrate will be the key to whether this century of upheavals proceeds emancipatory or with violent conflict. The question how to live (and help) the ever-growing number of displaced people is one of the decisive issues to address.

Figure 11. La promenade Entre-Deux, 2017. Photo: by Mehdi Bahmed

6 See also Lars Lerup. 2022. *The Life and Death of Objects*. Berlin, Birkhäuser.

If civilizations are willing to embrace this trend of migration as a major force of internationalization and to enact hospitality through their power of gentleness, of solidarity, an idea of cosmo-politization has a chance. It would increase multiple loyalties as well as the increase in diverse transnational forms of life. Such a 'cosmo-political outlook' as imaginative superpower – if we really observe her – has its home in amazement in the expanding in-between, in which seemingly eternal certainties, borders and differentiations become blurred and effaced. Here we find transcending identities, something we might think in terms of multiplicities. Every individual must orient oneself – to find oneself – among one's multiple personalities, with the help of others (who can be abstract or ideal others: memories, stories, symbols, or institutional emblems). In extreme terms, we need to ask ourselves: can difference and sharing, conflict and the general interest be thought together? This involves two things: on the one hand, situating and relativizing one's own form of life within other horizons of possibility, and on the other, the capacity to see oneself from the perspective of cultural others and to give this practical effect in one's own experience through the exercise of boundary-transcending imagination. I believe that such a cosmopolitical outlook – one of welcoming, relying upon the self-realization of individuals to both critically reframe their own openness to the world and willingly enter in a new cosmopolitan sensibility – can be sustained through the power of gentleness, an aesthetics of hospitality. This means that the arrival of the foreign(er) and the changes/chances it brings can in fact on many fronts become a central focus of the discipline of architecture. The foreign fuels innovation, migration should not be feared, on the contrary, it should be welcomed through mediations of gentleness.

Through the power of gentleness, an aesthetics of hospitality I hope to have made a case for an open architecture that accommodates and fosters diversity, liveliness, and unpredictability, in stark opposition to over-determination, exclusion, and colonization. Its gentleness, in the words of Dufourmantelle, is about a power that is also soft, a nobility that is also humble, a sweetness that is also intelligent, a subtlety that is nevertheless striking. Such a gentleness is precisely about a fragility and complexity that has the potential to subvert and change the status quo, a micro-politics of speculative construction towards an open, ecological, and socially just future, that many have called a cosmopolitan ethics, where a 'Thirding-as-Othering' appears through the enactment of an aesthetics of hospitality.

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THE ARITHMETIC OF SPATIAL ELEMENTS – THE CONTINUOUS AND THE DISCRETE

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Abstract

The main aim of this article is to investigate how to transform ideas into dynamic concepts that at their core facilitate, clarify, and define other ideas and experiences into a workable process in such a way that the concept becomes a vehicle for making an idea understandable in all the necessary contexts. To initiate this journey, the digital and the analogue, it is proposed herein that a compression of thought is required and the use of code, diagrams, and other modes of operation preferred as its instruments. It is assumed that all these activities – both mental and material – must keep a certain open-endedness in order to leave room for other and perhaps in many cases unforeseen thoughts with their own effects and affects, while the concept becomes digital and a physical edifice with the initial idea gradually incorporated in it.

Introduction

Architectural Concepts – Alternating Between the Continuous and the Discrete

The methods for initiating, clarifying, and conveying the essence of an architectural project to an audience of those who designed it and beyond can be difficult. Especially during the times of technological shift that a more immediate contact with numeric machines has brought with it. Essentially this *design-driven theoretical investigation* can be viewed as an attempt to recognize the possibilities of summing experimental, construction-oriented and academic projects into one in order to focus on the proposition that a more coherent conceptual platform for architectural projects of multiple scales can be established – both with abstract questions as well as more straightforward activities. The starting point for this is taken from morphological conditions that are occasionally viewed as oppositional – the continuous and the discrete – and even more so, the process of alternation between these two.

As the title suggests, a more relaxed approach to the relationship between the arithmetic of spatial elements can achieve a balance of continuity and discreteness both within architecture as well as in its relationship to mathematics. To address at least a part of the conference theme – digital reality – one can think of these processes deep down as a result of binary arithmetic. If this is too dry, then we can describe a more dynamic understanding of arithmetic by looking at it from the perspective that Robert Kaplan proposes in his book *The Nothing that Is. A Natural History of Zero*, speaking about how zero as a number came into this world, including the later binary zero. But the more important example here for the argument is found in the spatial arrangement of arithmetic in Ancient Greece. Ordered around geometric figures, it was sometimes called logistics when a calculation

through coordinated movements was done (Kaplan 1999). The more specific take on arithmetic herein will be more about a kind of arrangement of thought in relationship to the arrangement of architectural processes. Prior attempts of ordering architecture in its history, on the other hand, have shown a certain vicinity to the ideology of mathematics as a discipline based on axiomatization. Certainly, one can think of mathematics as something very coherent and well arranged, but instead of the clarity implied by those historic examples of classical architecture, we are living in a world of multiplicity arising from the combinatorics of digital technologies.

Another example of directing architecture with mathematics – indeed a much more recent one than described previously – is topology. Although a clarification is needed in regard to that. Herein topology is considered as a discipline of connections and vicinities, where simple orthogonal diagrams on planar surfaces can reveal the idea of complex spatial organizations – both orientable and non-orientable surfaces, with or without holes (*genus*). This kind of associations between the continuous and the discrete are not about smoothness *per se* but instead can suggest a form of physical logistics in architecture (Cache 1998).

Ideas and Concepts

In relation to the beginning of architecture, a notion of an 'idea' can be considered as a first building block. With this in mind, it is still not about idealization. Instead, idealization is thought of as a fixation where an idea is too much singled out and perhaps even glorified to some extent that it stops developing and can become a burden to the overall process. To surpass this and continue conveying an architectural idea throughout the design and building process to different parties, a more compelling construct of thoughts can be obtained from Leibniz. The German philosopher, mathematician, a person of multiple talents, made a clear distinction between *an idea* and *a concept* in his *Discourse on Metaphysics* from 1686. According to him, contrary to the common understanding, idea is not the same as concept (Leibniz 1998). It can be argued that an idea is more akin to what he later described as *a monad* – a singular substance that is indivisible, yet contains information about the entire Universe, albeit being in some sense confused – not completely clear and fully aware of its existence (Leibniz 1998). If one starts to think about a concept as something different than an idea, it still does not imply that they should be kept separate. One should mobilize them and be aware that they are not the same thing. Especially in architecture. Concepts are constructs – multiplicities, compositions, amalgamations, arrangements, networks of knowledge, other experiences, and practices. As parallel processual contractions and expansions of thought, they are much more in motion and in contact with other different ideas. In best circumstances this can clarify the initial point or notion – in effect arranging a compression of thought.

In order to exemplify this, let us look at some experimental work – examples of organizing arbitrary information with a pipeline of code. This digital-to-analogue-to-digital process basically makes points from arbitrary coordinates – results of an occasional thermal context interpreted as 3D-space by a random number generating algorithm – and connects them with a single line in the order of their appearance. And these arbitrary points seemingly start to become a cube (Fig. 1). In some sense, this approximates digitally

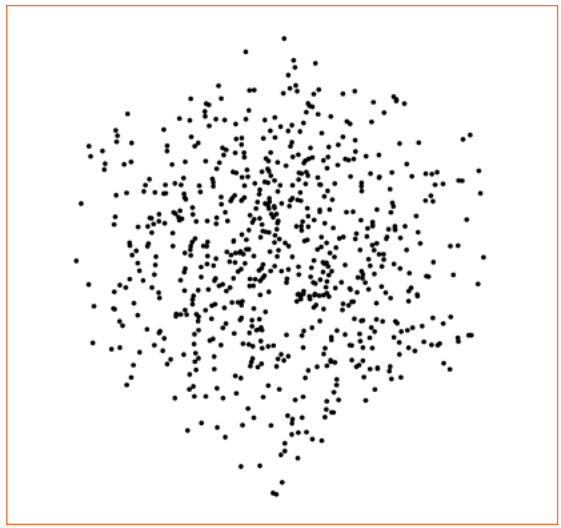

Figure 1. Arbitrary points becoming a cube.

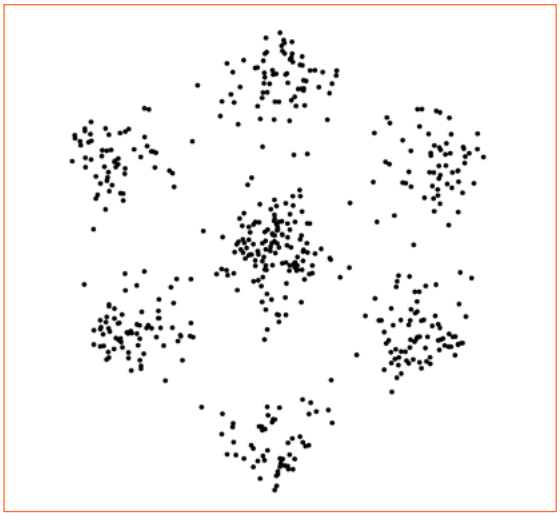

Figure 2. Zoom into a Cartesian dot – a cube with a void.

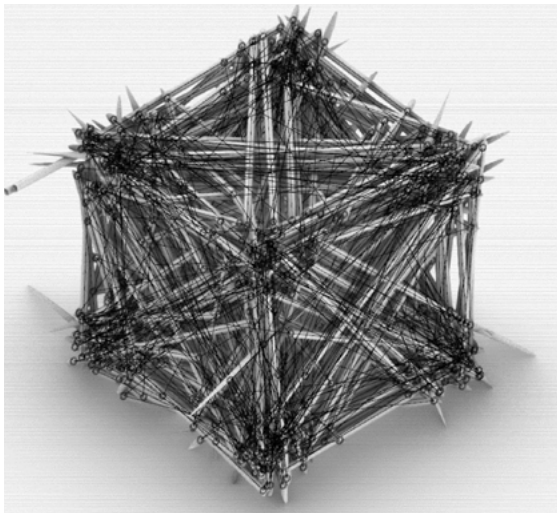

Figure 3. 'Algorithmic sketching'.

the example that Leibniz gives on the possibility of rationalizing 'a number of completely haphazard points on paper' by combining geometrical thought with calculation (Leibniz 1998). Yet, maybe it is not so important what it exactly does, but the way that we can proceed from this. It is an analogous attempt to reach somewhat vague beginnings of architectural thoughts. What happens in the next step, to clarify the idea, is a compression of the results into a single point, or at least it seems that way from a distance. First, it becomes a small dot, but when you zoom in, it is yet again a cube. This time approaching its vertices and leaving a void between them (Fig. 2). Again, when a continuous polyline couples all these dots in the order of their appearance, in a somewhat humorous way, it starts to look like 'algorithmic sketching.' (Fig. 3). Although instead of guiding a pen on a flat surface by hand, the effects are achieved by simple algorithms that calculated a cubic root of each of the previously arbitrary coordinates. Arguably this act of mathematical compression may or may not start to approximate architecture. But one can think of it also as a more general example of a conceptual endeavour that has intelligibility as its aim.

Points of Thought into Lines of Matter

Another way of dealing with simple premises giving more varied results can be chosen by having an immediate physical result – points of thoughts becoming lines of matter. The anticipated outcome of this quest is to acquire insights from the problematics of geometric diagrams directing architectural formations in space. In the first case, it is the core manufacturing technology of 3D printing and the plastic PLA material itself that produces the 'unexpected' results. Inserting the same 'code' into two different fabricating machines – in one case the result is a perfect cube as one should expect from a numeric machine, and in the other, something completely different. With the calibration and temperature values off from the reference targets, the same initial instructions achieve a rather different result. These spatial effects that are, nevertheless, not random (Fig. 4). But with these connections of thought to matter-reality, the same directions for a g-code produce material effects that are forking further from the initial instructions. Once more we can witness the outcomes of scarce spatial principles having alternating results, this time in physical space.

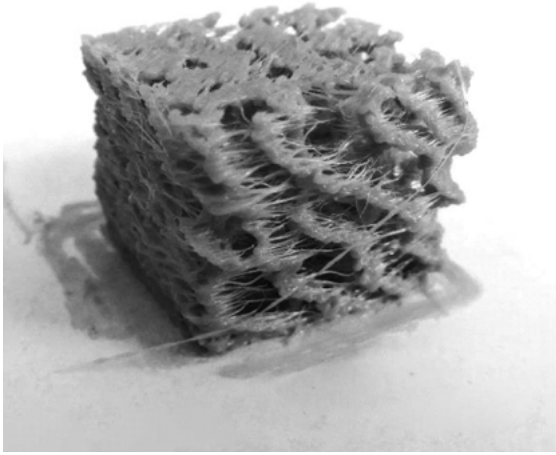

Figure 4. Off-calibration PLA cube.

Although the aforementioned can be associated with Newton's ideas of the simplest of principles giving complex outcomes (Maxwell 2012), we have to keep in mind that it was Leibniz who introduced the binary number system and arithmetic to the western world. After all – it is the binary system with a sparsity of 0s and 1s guiding the numeric machines, including 3D printers. Therefore, another glance at compression can be taken once more. This time by summing it with *Algorithmic Information Theory* of meta-mathematician Gregory Chaitin who, in the early 1960s with the digital computers appearing as big machines, began to philosophize about the impact of these devices on a broader conceptual level. Already then, by mathematical reasoning, he took the Leibnizian path of having a simple beginning reaching complex results through computation. Throughout the decades of development, his main idea has been about compression as the initial and primary mode of understanding things. In fact, 'Understanding is compression!' (Chaitin 2003). While publishing substantial amount of literature on these thoughts, he realized much later in his career that also his own ideas – although he did not acknowledge that at the beginning – are connected to Leibniz' shadow growing larger every year (Chaitin 2007). And this includes Leibnizian physics that we have not heard so much about (Pisano and Bussotti 2015).

Transformation of Concepts with Ideas Intact

The second series of experiments in this category has a specific aim of fostering slightly more complex spatial ideas as directly as possible into matter – not that it always needs to be the task in architecture. It begins with a compressed computer code of what brings together the continuous and the discrete. From our first attempts in 2017, when we started to experiment with 3D printing clay robotically, we realized that these digital acts of making continuous lines into tool-paths for the robot and their connections and meeting points between thought and matter can be quite fulfilling.[1] Incidentally, as the beginning of one's investigation in matter, clay can also be conceptualized as a primordial substance.[2] What is interesting about this experiment is that what at first was considered a random left-over clay in the ingest system turned out to be something different. By investigating the outcomes, it became apparent that there is something more to the resulting fractures and cracks appearing in such a repetitive way. It was not the purest form of clay that was recycled, but partly the result of a ceramics department's master student's 'author's material' that she had developed by mixing rockwool fibres into the main subject. Next to the raw matter, there was texture that appeared after being burned in the kiln and facture – the marks resulted from the intersection of ideas and technological thought. Furthermore, one can find several tectonic references in there due to gravity and matter interacting with discrete geometry in a continuous way. Discrete, because all the tool-paths were originally designed as straight lines to match the electronic limitations of the machinery (Fig. 5). All these rounded corners in the physical form

1 To a certain degree 6000 years of architectural history can be seen as compressed into these simple forms. Martin Melioranski and Märten Peterson made a public display of the entire process during the science meets entrepreneurship day *Õigel ajal õiges kohas – Koostöötestival 2017*. Mektory TTU Innovation and Entrepreneurship Center, Tallinn 11.28.2017.

2 The 3D printing experiments described earlier in this article with PLA (polylactide acid) were done in 2022.

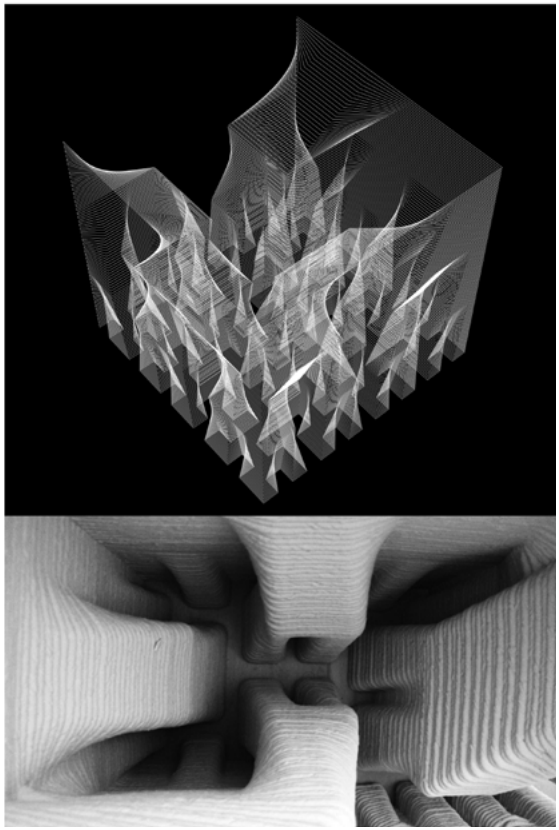

Figure 5. Discrete to matter, texture and facture.

were the results of later interferences by the Universal Robots UR10 robot's internal algorithms next to nozzle diameters for materials and unexpected stoppages that appeared during the process. Importantly, in a somewhat Albertian way, both the printing process and the initial 'pure' forms were designed by coding an iterative software called the Lindenmayer system[3] – in a 'hands-off' way.

Architect-Built Algorithm?

In relation to the organization of ideas and concepts, the composition can be understood as something gathering initial, sometimes fragmented ideas into a conceptual whole. Next in line, the designed one can have a much more direct influence on the building-oriented stages of architectural projects and be comprised of the different disciplinary knowledges – in the best case exposing the wit of its contributors in synthesis. The following example brings forth the question of the possibility of an architect composing an algorithm or on intermediary stages an *architect-designed algorithm*, as mentioned by Roland Hudson in connection with Daniel Libeskind's Futuropolis (Hudson 2010). The works described so far have largely been experimental. Next to that, projects of different scale with increased level of complexities and discreteness can be brought forth. Besides the conceptual and technological innovations needed in achieving them, the central question is tied to applying these procedures in a more conventional practice. Just to remind us of the outset of this article – the aim herein is reaching clarity and developing the conceptual power of the main architectural idea throughout the entire designing and building process. In architecture's case, it can sometimes take several years, decades or even centuries. In some circumstances thousands of people contributing to its execution. With all of this in mind, and going further from the initial compositional[4] and design stage – can there be such a thing as an *architect-built algorithm*?

The situation is very different when one starts to implement them. The project for Järve Towers took a long time to accomplish. Started by Martin Aunin, Martin Melioranski, and Ingmar Melioranski in 2006, the original idea was written directly (without sketching) into a code. By recursive iterations[5] a small set of characters defined a helical movement of a continuous geometric line that guided the overall arrangement of the balcony system around the towers (Fig. 6). There has been a lot of discussion, research, and scientific articles about how to convey digital information without data loss. And in relation to the aforementioned – how people do a lot of extra

3 Originally invented by Aristid Lindenmayer in 1968 to simulate the growth of cells and later plants (Prusinkiewicz and Lindenmayer 1989), it is known as a representative of Artificial Life or Alife (Bowden 1996). By now, Alife has become less oppositional and to some extent part of Artificial Intelligence or AI.

4 Compositional is herein thought as the formation of initial conceptual framework from the first ideas.

5 Recursion is a more general re-writing and replacement procedure with the same initial rule-set.

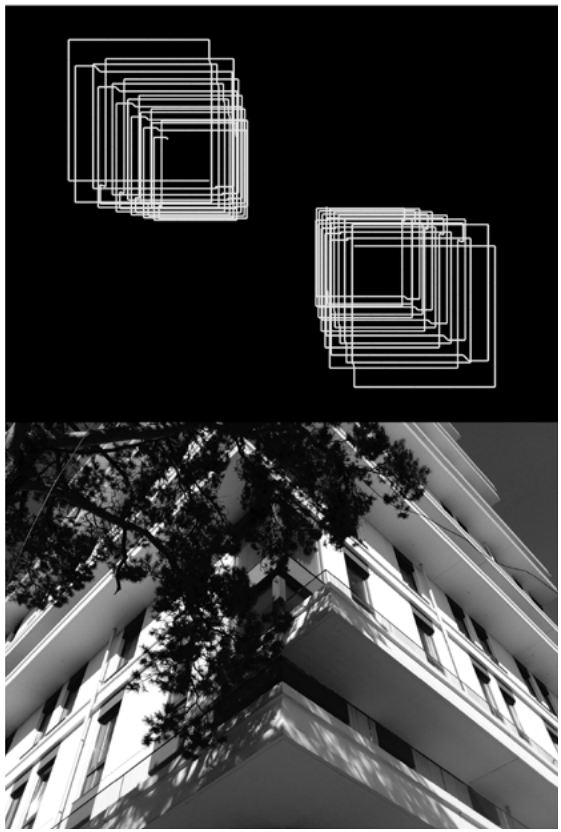

Figure 6. Recursive iterations defining a helical movement around the towers – turning a corner.

work during these processes, although maybe digital technologies could be straightforward towards the end-goals (Borrmann et al 2018). During this perhaps an even more important aspect is overlooked – next to lossless digital to digital translation, facilitating an oral communication between different parties in the project design process is of critical importance. Besides the architect also structural engineers and other specialists but most importantly the client and many other organizational structures like local government's planning office and so on, are involved in this kind of projects. Two of the original architects had left the project by 2011, and it was taken further by other architects and different structural engineers than the initial ones. The project was fully built 11 years later with the guiding idea intact.

While researching the problem, it became apparent how many other questions are at play in here. In early September 2022, a conversation with the structural engineers Jaanus Olop and Mati Jõgiste, who produced the final 3D models, calculations, and designs for the moulds for precast concrete elements, revealed that by verbal explanation it was possible to convey the idea of the towers to them better than they had realized through drawings, the architectural models they had seen and the ones modelled in detail by themselves for construction purposes.[6] Because of the balcony-system's apparent variation along the façade and its corners, they had not completely realized how repetitive this structure was, thinking that the same elements occur after every four floors. If realized earlier, it could have saved them a lot of time in the design process and extra work during the modelling and calculation of these elements and the entire structure. So, in hindsight, one of the main tasks in a project development phase can also be about motivating the structural engineers and other stakeholders. Even if they are predominantly understood as rational individuals, one must also engage them somehow – they should be thrilled about the project. What they realized next to that with a Tekla Structures BIM model on screen was that the site's ground condition together with helical balconies built a continuous loop up to the upper floors. Of course, this succession of precast concrete elements is not a NURBS-based continuous design. Instead of that, the conceptual results are physically reached by using straight lines and orthogonality – with discreteness addressing the same architectural and spatial demands of leaving the building by walking along its façade from top to bottom.

This proves the possibility of conveying the original idea from 2006 all the way to the built work of 2022 and answers the question – architects can compose an algorithm that reaches the built result.

6 The experience shows that many Estonian structural engineers tend to build their own 3D models to have better control over precision and other aspects of the design.

Room For Other Thoughts – Cognitive Aspects of Algorithm-Assisted Architecture

The problematics now, during the spring of Artificial Intelligence (AI), next to engaging people to wilfully give their best results, is how to leave room for other thoughts. All of this in the hope that the built work with the principal idea evidently in it starts to address a much wider context than could be originally imagined.

Because after writing these dry, almost reductive codes for more than two decades, a different approach was needed to play out ideas and play with a different kind of expression approximating a spatial result. When all the ideas that can be deemed relevant in the early stages of design need to be embedded, other generative algorithms can be used, with fewer degrees of compression. With a system called Midjourney AI, this process is seemingly very literal – one must convey textual descriptions containing 'colourful' words in the prompt to achieve results – like for instance 'Corbusian architecture meets parametric design in the 21st century Sahara Desert borderlining an ocean'. It is a quite figurative 'speech' and not just single characters and relationships between them like with the Alife system (Boden 1996) described earlier. Instead, it is a literal description of what one wants to achieve with it.[7] Of course, as it is a combinatorial system based on what is already known – scraped from the available internet into diffusion models associated with images – it is combining these thoughts, the textual and pictorial descriptions of possibly hundreds of millions of people all over the world into something novel. Considering the resulting images from this AI arithmetic, it appeared that first the Sahara Desert landscape started to emerge and gradually transformed into a more architectural result (Fig. 7). So, there was a certain logic that was almost physically causal – from ground to a figure – in the sequence of computational events. One can continue with the refinement of the process and receive closer results to what one wanted to achieve – perhaps vaguely at the beginning. Or if one does not like it, replace parts of the description, add to them, or start again by either refining the command description or selecting a different starting image, like in a similar software called Stable Diffusion. By implementing these text-to-image platforms, one can think that prior experience with architectural compression of thought will give an advantage, like DeepMind's founder Demis Hassabis's take on intuition would suggest (Hassabis 2018; Vokey and Higham 1999).

Figure 7. "Corbusian architecture Meets parametric design in the 21st Century Sahara Desert ..."

So, these technologies do not leave us unchanged, we are not the same as we were before. They continue to influence us during and after these encounters. We can call it 'cognitive aspects of architecture' that change our thinking and make us realize the hybrid conditions of digital and physical space forming a new realm. This includes encounters with the AI or even the more 'edgy' version of it – Quantum AI – unseen to the wider public so far. What we

7 Except for 21 as a number.

should be concerned about is that because of their complexity, most of these systems are black boxes. In some sense self-programmable, even the people who programmed them do not quite know where all the numbers for parameters came from and imagine smaller AIs studying larger ones as a possible solution (Sutskever 2023). On a larger field of events, we can hope to have other opportunities after those encounters with the unknown than just arranging relationships between these externally discrete and consistent but internally continuously approximating voids. In fact, we have just started to open possible discoveries arising from a generatively combinatorial approach – less predictable yet with an impact on architectural knowledge possibly at its largest scale to date.

Conclusions

As described at the beginning of this article, Greek arithmetic was about using visible points as numbers. Making arithmetic visible made sense. In reverse, as a parallel in the history of geometry could tell – if the ideas of the Egyptian Pyramids had been fully hidden, Thales would arguably not have made such a clear start for Greek mathematics.

Returning once more to the question of digital reality – with black boxes, the arithmetic is hidden, it is unclear where all the numbers have their origins. As the combination of complexity of architecture and the amount of data in these neural networks (LLM – large language models) are very extensive, it can be argued that they do not have enough compression. Therefore, aligning with Chaitin, full understanding is not attainable.

How do we compress something to its essence when it is hidden?[8]

8 On a sidenote, for example, by reading *Transparency: Literal and Phenomenal* (Rowe and Slutzky 1963) and starting to understand architecture by not just what we can see but also and primarily by what is not there (Eisenman and Iturbe 2020).

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A STUDY ON THE CULTURAL LANDSCAPE CONSERVATION OF TRADITIONAL CHINESE TEMPLE GARDENS BASED ON THE VISION OF DIGITAL TECHNOLOGY

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Abstract

We are currently in an ever-changing social environment, and with the innovation of digital technology, international symposia on digital landscapes are taking place around the world. Digital technologies such as Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR), and the Internet of Things (IoT) have opened up new possibilities for humanistic landscape design from both scientific and artistic aspects, for example, scientific assessment and conservation planning, new design languages and processes, new design thinking, and design theories. The digital landscape is the comprehensive use of digital technologies such as IoT, artificial intelligence and virtual reality along with the help of computer technology to collect, evaluate, assist in planning and design, simulate and reproduce landscape environmental information until the whole process of construction and control. Throughout the whole life cycle of landscape design, digital landscape research and practice is a frontier area in the discipline of landscape architecture.

Classical Chinese gardens are known as one of the major gardens in the world. Temple gardens are also distinguished from royal gardens and private gardens due to their publicity. Therefore, as a garden landscape with public attributes, it is of high research value in terms of creative techniques and integration with existing technology. This research paper intends to explore and study the combination of the humanistic landscape of Duofu Temple and digital technology. The Duofu Temple was listed as the sixth batch of national critical cultural heritage protection units (in China) in June 2002. The temple was fully built on the mountain, taking advantage of the geographical topography. The temple's main building faces south and the three courtyards are in a progressive manner. In addition, the temple's Mahavira Hall (Daxiongbaodian) fresco is a remnant of the Ming dynasty and an important remnant of the ancient temple art of fresco in Shanxi. As a humanistic landscape, the temple is not only of high artistic and historical value but also of significant research value.

1 Introduction

According to relevant literary and historical records, murals originated as primitive cave paintings, and were usually painted on stone walls with mostly exaggerated and unique painting techniques. Mural painting is one of the earliest forms of painting in human history, and what we now call frescoes mainly refer to temple murals, tomb murals or grotto murals. Currently, the existing murals in the Shanxi Province of China are primarily painted on the walls of buildings, with exaggerated, unique painting techniques and featuring prominent aesthetic characteristics of the times. However, the preservation status is not optimistic due to various factors. Hence this paper analyses and examines the conservation and management of the Ming dynasty murals at Duofu Temple in Juewei Mountain, Taiyuan combined with digital landscape.
Built entirely on a mountain, the Duofu Temple's mural paintings are a remnant of the Ming dynasty and an important remnant of the ancient temple mural art in Shanxi, and also a valuable immovable cultural asset in Taiyuan, Shanxi, China. The wall of the temple's Daxiongbao Hall features graphic statues in different postures, and the overall aesthetic is distinctly contemporary reflecting the overall characteristics of Buddhist art of the era (Zhang 2019).

This research proposes to use a variety of non-destructive analysis techniques to study and analyse the historical changes in the architectural courtyard and details of the main body of the building. Many of the paintings that adorn the surviving building bodies are faded, damaged or even missing. The paintings were digitised using a digital camera with high-definition split-frame photography, restored by hand-drawing software such as Procreate, and then analysed using colour extraction software and near-infrared spectroscopy (NIR) to determine the colour of the paintings. At the same time, the cultural connotations of the works were further explored through the collection of relevant literature and visits to local customs and folklore to digitally restore the damaged and missing parts. A 3D scanner was used to digitise the building, and the restoration work was then mapped onto the building at the appropriate location to digitally reveal the original appearance of Duofu Temple. The use of digital technology to plan, design and control in a timely manner is not only efficient but also reduces the probability of manual misjudgement and improves the accuracy of the landscape design. This study therefore provides a new way of thinking for future landscape research as well as providing theoretical and data support for future landscape conservation.

2 Literature review

The BIM-based approach to information collection, model building, information storage and management of temple and garden cultural heritage has attracted a great deal of attention in recent years. Based on BIM technology, the researchers developed an interface between Revit and Swale's analysis software to achieve building information integration and sharing (Ji et al. 2021). BIM technology was combined with VR and AR to explore and summarize the performance and visualization simulation of BIM technology in the whole building life cycle to enhance building information interaction (Zhang et al. 2020). Scholars improved ICP algorithm and combined it with BIM scanning technology to accurately determine the dimensions of ancient buildings and create 3D models for the conservation of ancient buildings (Niu & Li 2021). BIM technology has been used in the restoration of the Church of St Mary in Quella and the Church of St Abrirena in La Verne, Italy, as well as the Cathedral of St Pierre in Beauvais, France.

In order to optimise the final result of panoramic stitching, scholars have proposed image stitching methods that incorporate the Contourlet transformation (Chen et al. 2017), an automatic stitching matching method for panoramic images based on local edge density LED algorithm (Lei & Yan 2018, 377), a fast image matching algorithm based on colour information (Zhang 2018, 19), combining SIFT, improved RANSAC and multidimensional index trees (Su et al. 2022) and other methods to make the stitching effect more natural. There is also the use of panoramic VR to establish an interactive panoramic roaming system based on Pano2VR for the Liangzhu Cultural Arts Centre (Chen & Fu 2020) and the visualisation study of the Lu Tuji Yamen (Xu & Ba 2021), and so on. Scholars have combined virtual reality technology to create an interdisciplinary and interactive research structure that aims to address the heterogeneity

of cultural heritage data and build an information model for virtual restoration of cultural heritage (Tie 2019). Pagano et al. designed the VR app Archeo to restore the Italian cultural site of Paestum, providing visitors with an immersive experience of the habits and beliefs of the inhabitants of the ancient city of Magna Grazia (Pagano et al. 2020).

3 Methodology

Based on the collection and research of Ming dynasty wall painting documents, the study integrates the methods of many disciplines such as design, architecture, statistics and form staging in archaeology. It is also complemented by the use of image processing, modelling, parametric analysis and other research theories or tools to provide an in-depth analysis of the landscape environment and explain its objective laws and phenomena. In addition, it explores the relationship between humanistic landscape conservation and digital technology, so that interdisciplinary cross research can be conducted.

3.1 Literature research

This research will be summarised and re-excavated by acquiring the relevant published research results or relevant published materials, which will lay a solid theoretical foundation for the research and ensure the cutting edge of the research.

3.2 Field research and evidence-based studies

The research area is visited for field mapping and collection of valid information and data. Aerial photography by drones is used to obtain VR panoramas of the temple gardens, supplemented by image stitching and fusion technology and ghost elimination technology. It can establish a VR roaming system of the details of the garden courtyards, In addition, analysis, speculation on the original appearance of the murals and restoration can be done through line fix and colour filling. By combining the acquired data with the empirical sample situation, the fallacies and deficiencies are rectified and the rationality is followed at the same time, thus making the theory and design practice parallel in a real sense.

3.3 Summary method

Based on the summarization of the above research, the specific results are analysed for further exploration and conclusion, with the aim of forming a digital conservation process that can be universally applied to temple gardens. It is intended that this will provide an important reference and theoretical basis for similar research in the future.

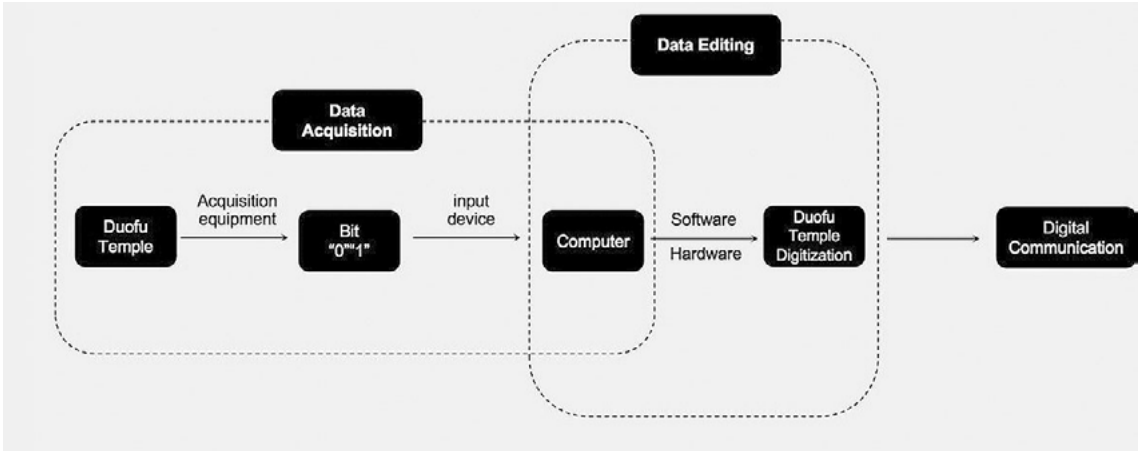
4.1 Digital model for temple gardens

Digital innovation in temple gardens is ultimately the process of digital acquisition and digital editing of information. Whether it is the garden environment or the main body of the building, the physical entity is stored in the computer in the form of a binary number "0" or "1" through an analogue-to-digital conversion to complete the digital capture. The digital information is then converted using appropriate digital technology and edited to produce a new digital work. The edited work is still stored in digital form on the computer's storage media (Gao 2019).

There are two main forms of output for the digitisation of temple gardens: one is the online display of direct digital transmission using the internet, mobile terminals, etc., and the other is the offline display of digital-analogical transmission or digital transmission through simulated restoration of temple gardens by selecting a suitable exhibition space. The digital innovation of the temple gardens at Duofu Temple covered in this paper is based on the premise mentioned above. The process of transforming the temple garden from a traditional architectural subject into a carrier for binary digital is necessarily a process of digital capture, digital editing and digital transmission.

4.2 Duofu Temple data collection

The aim of this study is to digitally restore, preserve, and analyse the architectural compound and the main details of the building, its historical imprint and human characteristics, using scientific, efficient and non-destructive techniques. As a relatively large volume of immovable cultural heritage, temple gardens are digitised in a way that distinguishes them from movable, small volume cultural heritage. In the data



Duofu Temple Digital Flow Chart by the author.

acquisition phase, this study chose to record and store the overall details of the gardens using digital cameras with high-definition split-frame filming technology.

In the digital camera split-frame photography technique, the temple gardens are first divided into blocks as a whole, then each block is photographed using filming equipment, and later multiple images are stitched together into a complete picture using image editing software, such as Adobe Photoshop, and the resulting images have a high resolution. In China, this type of filming was used earlier for data acquisition of Dunhuang murals. The reason for stitching multiple images was to better reproduce the temple gardens, and the stitching process cropped out the distorted edges.

The ultra-clear image obtained through digital capture is a bitmap image with excellent reproduction of the overall structure and detail of the temple principle of Duofu Temple. It has realistic colours and rich layers and is a pixelated transformation of a classical garden. Digital capture is the first step in the digital innovation of Duofu Temple, and the acquisition of digital ultra-clear images is the groundwork for the digital creation process. With the groundwork in place, we plan to divide the subsequent digitisation into two main sections.

4.3 Digital innovation in Duofu Temple architecture

The digital innovation for the main body of the Duofu Temple building needs not only to show the temple architecture in detail and highlight the cultural heritage but also to bring it closer to the public, to reduce the mystery appropriately and to create a sense of bonding and connection for the audience to be familiar with it.

Virtual reality is a high-end human-computer interface. It is a technology with real-time interactive simulation of a multi-sensory (visual, auditory, tactile) channel to give users an immersive feel of the simulated world. There are two main ways in which virtual reality display technology is currently applied to architectural structures. One is the computer three-dimensional scene recovery: via the site mapping, three-dimensional scanner and other collection of accurate data of the building, the CAD plan can be generated; and with the use of 3DMAX, MAYA and other three-dimensional production software, the three-dimensional model will be generated. The second is to build a stitched display of images that restore realistic scenes. This method stitches together a series of pictures taken of real scenes to truly restore the whole scene.

Dome screens, CAVE systems and responsive workstations are some of the relatively popular

applications of virtual reality technology at present. They give an immersive experience of six degrees of freedom, are large in scale and volume and also very demanding of the site. However, our aim in choosing digitisation is not only to restore the exterior of the building and preserve the cultural heritage permanently but also to promote and pass on the temple gardens and their cultural connotations better, so that more people can understand and pay attention to them. We have therefore chosen to use panoramic VR, which can be experienced on mobile devices. It is highly practical, generates realistic images and allows the audience to participate in the VR experience by taking the initiative to roam around the garden environment interactively.

Duofu Temple Panoramic VR Production Process

1	Data Acquisition · DSLR cameras · Professional panoramic cameras · Fisheye cameras
2	Data pre-processing · Denoising · Projection transformation
3	Image matching · Feature point matching
4	Image fusion · Optimal sutures · Elimination of splice marks · Elimination of ghosting
5	Generation of panoramic VR images · High pixel count · High level of detail reproduction
6	Roaming production · Generate a site map · Mark map to add hotspot details
7	Mobile Release Packaged Release

by the author

Data acquisition relies on three main types of equipment: DSLR cameras, professional panoramic cameras and fisheye cameras. Fisheye cameras take fewer images, but the stitching results are more distorted. Professional panoramic cameras are convenient for capturing but have low pixel counts. Therefore, this study uses a DSLR camera, which can take a manageable number of shots, remove most of the distortion during the image stitching process and produce a final result with very high pixels, which can better reproduce the full view of Duofu Temple. The camera is rotated 360 degrees to take a picture every 10 degrees. After acquisition, Adobe Photoshop is used to denoise, distort, correct, and adjust the light and colour of the image information, and then projection transformation is used to prepare the image for stitching. Image registration will extract the feature points in the stitched image with overlapping areas and use them as a reference to match the two corresponding feature points using algorithm. By identifying the best stitching lines, eliminating stitching marks and overlaps, and removing redundant pixels in the overlapping areas, the images are fused to produce a complete set of high-quality panoramic VR images with PTGui software. The finished panoramas can be imported into the krpano production platform for composing and creating interactive hotspots. The final package will be completed and released.

The mobile terminal-based panoramic VR display mode is a good way to avoid the restrictions on the movement of the wearer and the vertigo caused by wearing interactive equipment (Liu et al. 2022). The virtual simulation of a real-life 1:1 restoration of the Duo Temple gardens allows audiences to have an all-round interactive tour through an intuitive visual experience and get a feel of the historical flavour of the classical gardens in an immersive manner.

To promote the conservation of the temple gardens at Duofu Temple, the use of panoramic VR is a way to reduce the pressure the temple faces from visitors, while also preserving important information for later restoration of the building. This valuable and complete digital information, delivered to every mobile terminal via the internet, not only raises the profile of Duofu Temple and facilitates research by professionals but also gives audiences an immersive experience without having to visit in person.

DuoFU Temple panorama VR by the author.

4.4 Digital innovation in Duofu Temple painting

Professor Li has mentioned that the evolution of Buddhist story painting has followed two lines of development: one is the continuous deification and systematisation of Shakyamuni's life story, while the other is the continuous Chineseisation of this foreign god. In this process, the ancient Chinese social system, changes in customs and religious beliefs have also left their mark (Liu 2019) (Yi 2016). This is well illustrated by the frescoes at Duofu Temple. In terms of the development of the murals, the early ones, especially those from the Wei-Jin and Northern and Southern Dynasties, were all foreign translations of scriptures, using only one or two classics. In contrast, the classics used in the Five Dynasties to the Ming dynasty were very diverse, and the classics used in the murals at Duofu Temple were the most complete and the most complex, with significant Chinese content.

Although the temple is small in size, it contains large-scale Ming dynasty Buddhist serial murals. The two major restorations of the temple in the Ming dynasty were both funded by the princedom of Jin. This resulted in the murals being both sponsored by the royal family and painted by private artists, creating a unique artistic style. On the one hand, the murals at Duofu Temple retain the forms of the early Ming court style, but at the same time they incorporate the folk style of painting. Compared to other royal patronage temples of the Ming dynasty, the figures, composition and other aspects of Duofu's murals are simpler and more flexible. On the other hand, the 'secular' character of the murals and the programmatic elements are also more obvious and reflect the overall character of Buddhist art of the period. It is therefore easy to see that the 84 murals in the Duofu Temple all carry the connotations of the temple garden. In the digital age, it is digital animation that tells the best stories and is favoured by audiences.

This study combines the local traditional culture drawn by the murals with the traceable Buddhist classics, restoring static, fractured fragments of the story into a complete story. The aim is to be able to better display and disseminate the culture of temple garden art.

The digital copy uses Procreate app to restore the lines of the image and extracts the swatches with Photoshop to restore the painting to its original appearance. The copied work has one feature which

is very different from traditional paintings – vectorisation. The vector graphics produced by digital copying are calculated using formulaic algorithms, and these files are generally small, take up less space and are less prone to distortion.

Based on the mural sketches, the animation storyboard is then shaped according to the storyline. Character design and colour design are based on traditional paintings. In addition, simple motion effects are added to the character, animal and scenic elements of traditional paintings, such as walking back and forth, lifting things, and turning around. Eventually static paintings are transformed into digital animations with digital technology and the persistence of vision.

4.5 Digital media heating the temple gardens

McLuhan classified media into cold and hot media based on the clarity of the medium and the engagement of the audience (McLuhan 2000). Panoramic VR is a highly engaging cold medium that technically simulates human consciousness, extending human limbs and senses so that the audience is unconsciously and deeply involved in the medium and becomes its servomechanism.

Digital animation is more expressive and fashionable than the static display genre. Due to its specificity of techniques and elitist aesthetic, traditional painting is somewhat disconnected from popular culture. Digital animation uses the popular media of today and combines popular elements to blend traditional painting with modern popular culture, which is more in line with the aesthetic needs of the public and more easily accepted and loved by the public. This transition from a single medium to a complex, integrated medium further deepens the degree of 'tribalisation' and accelerates the formation of a 'global village', which will also make the temple gardens a hot and sought-after 'information'.

5 Summary

The temple gardens are a non-renewable cultural heritage, and it is particularly important to use modern technology to protect and record the cultural heritage, preserve its reproduction and promote it in a healthy and sustainable way.

This study utilizes techniques such as digital camera splitting, image stitching, image fusion, virtual reality, line restoration and colour recognition extraction, combined with software such as PTGui, colour eyes, Adobe Lightroom, Adobe Photoshop and krpano, to finally realise the panoramic VR display and digital animation creation of Duofu Temple. On the one hand, the Duofu Temple is permanently preserved in the form of digital information, providing detailed reference material for future research and conservation. On the other hand, it allows more people to get closer to the temple gardens of Duofu Temple through mobile terminals, integrating various media and eliminating the limitations of time and space. It enriches the form of visiting experience and increases the scope of communication. Furthermore, it clarifies the connotation of the relevant traditional culture and reduces the distance between the public and traditional culture.

This study hopes to explore a digital model that is suitable for temple gardens and to find a combination of different technologies, media integration and diverse displays that can maximise the impact of temple gardens and provide reference for future digitalisation efforts.

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