

Architectural Freehand Drawing versus Artificial Intelligence

Analysis of how Human Imagination differs from what AI presently does

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Abstract

Architectural drawing was always a main tool for us – Architects. Transferring thoughts to paper is something that allows us to communicate our ideas and make them more tangible. But the drawing itself has another unique feature – it is always very personal. We all have an extraordinary imagination that allows us to become special creators and designers. However, in the age of new technologies, some people fear being replaced by Artificial Intelligence. Certainly, with its technology, AI can create amazing images and be a powerful tool for architects. How does AI work? Can we say that Artificial Intelligence will win over Human Intelligence? This thesis is conducted in order to explore how the human creative process works, whether AI will actually win out over our imagination, and how, in the end, we can use AI as a tool during design. In this thesis, two sets of free-hand drawings will be produced to analyze its process and the way of thinking. The differences between hand drawings and computer-generated drawings will be analyzed, which will help identify how human imagination differs from what AI presently does. For this purpose, this research will be based on the prompts from the thesis "Monuments in the AI Age Evaluation of AI Generated Images in Architecture", where students were investigating how AI sees different common keywords related to monuments. With a strong belief that hand drawing will be always an irreplaceable tool, reaching for new ones does not have to dominate traditional drawing, but can enrich it.

Keywords

Artificial Intelligence - Architectural hand drawing – Dall-E – Midjourney – Design process

1 Introduction

Freehand drawings made by architects, whether of something existing or imagined, are fundamentally analytical and synthetic in nature – we draw to see, to know, to understand, to experience, and to imagine (Welton, 2015). Transferring thoughts to paper is something that allows us to communicate our ideas and make them more tangible. For each design process, an early stage is crucial – we confront different concepts, we try to visualize them through drawings. Moreover, the act of drawing is important not only as a vehicle for communication with others; it actually helps designers see and understand the forms they work with (Edwards, 1979).

Although hand drawing is a unique and important tool for many designers, its use and popularity is declining over time. New technologies are continuously increasing the intelligence and life of drawings and images (Garcia, 2013), therefore drawing is no longer just a direct result of our hand. Just as the world and technology are moving forward, so are architects reaching for new tools for creative work.

1.2 General introduction

With the constant development of new technologies, the idea of drawing by hand is increasingly disappearing. Even from the past, 'Acheiropoieta' (a word of Byzantine etymology meaning 'made without hands') can be an example of denying the need to use the hands - archeiropoieta are images made miraculously by divine (non-human) forces (Garcia, 2013). On the other hand, according to Daniel Libeskind, there is a historical tradition in architecture, whereby drawings (as well as other forms of communication) signify more than can be embodied in stabilized frameworks of objectifiable data (Libeskind, 1987).

Thus, with two opposite positions regarding the importance of hand drawing, an important question arises: What is the future of freehand drawing for architects today?

Recently, one of the biggest topics is Artificial Intelligence and its capabilities and threats.

Here again, opinions vary. For some people, AI is an extraordinary tool to make our work easier in the future, while for others AI itself poses an existential threat to human civilization (Leach, 2022). Although no other systems give designers such a high level of control and the possibility to create their own design tools (Radziszewski, 2018), AI is not always accurate in its results as we think it is. For example, in the experiment made by Dan Baciú and his students, we can clearly see that AI results are not as satisfactory as we wished. After giving a prompt sentence „Monument of America“, it returned four almost identical images of the Statue of Liberty seen in a stereotypical way from below (Baciú, 2023). Since one of the current statements is „what would a person do, a machine will do better“ (Leach, 2022), we expect to get more diverse and creative results. However, there is an opposite position that claims that AI and machines will never replace the human mind, like Ulric Neisser writes in „The Imitation of Man by Machine“.

1.3 Problem validation

According to Laseau, architects for many years are thought to think graphically. We think by drawing and draw by thinking (1980). Therefore, this tool will always be irreplaceable when it comes to the design process. However, since tools used by architects are constantly evolving (Cudzík, Radziszewski, 2018), we shouldn't be afraid of trying and combining new ones. AI is starting to have an impact on progressive architectural practice; for example, a Pritzker Prize winner Thom Mayne explored the potential of AI to increase the range of design options (Leach, 2022). Therefore, why shouldn't we take advantage of it, and implement AI into our standard design processes, and thus drawing as well? This thesis is conducted to discover whether human imagination differs from what AI presently does, but also to investigate how architects can expand their imagination by making use of AI. For this purpose, the research will be based on eight chosen prompts from the thesis „Monuments in the AI Age Evaluation of AI-Generated Images in Architecture“, where students were investigating how AI sees different common keywords related to monuments. Simple drawings will be created and then see how AI can enhance them or stimulate creativity.

1.4 Research question

Exploring the current popularity of AI and the importance of freehand drawing in the design process, an important question arises:

Will Artificial Intelligence replace architects' basic tool in the design process - hand drawing?

This research question means to investigate the current real opportunities given by AI and its implementation in the creative process. Moreover, additional questions will be asked in the research to reach a conclusion:

- How to work with this new tool?
- What is the creative process? How is it related to our hands?
- What are the differences between how AI works and how does the human brain?
- Should architects be afraid of AI and its capabilities?

1.5 Thesis outline

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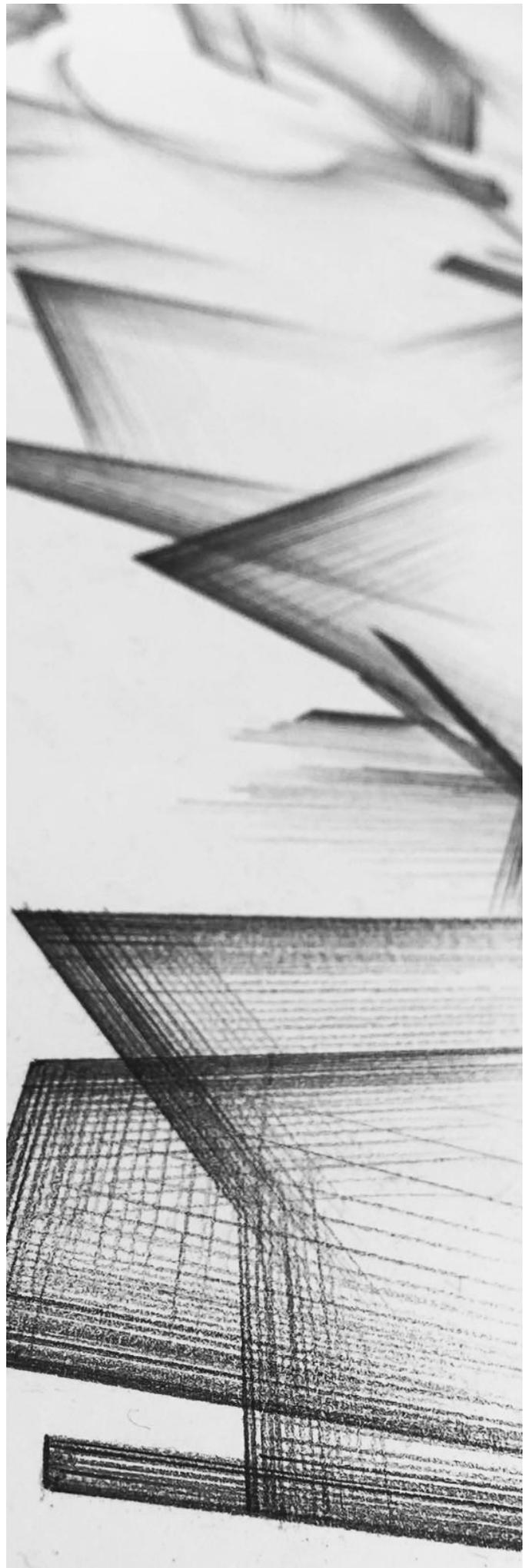
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Source:

Drawing and Picture made by Hanna Adamczyk

1 THEORETICAL FRAMEWORK

1.1 Significance of Drawing

Drawing in and of itself has an ambiguous status that derives from its ubiquity. We all draw. It would be virtually impossible at any stage in human history to find a person who had never scratched marks on a convenient nearby surface, or doodled, or made a diagram to explain something, or sketched a map to give someone directions, or idly trailed a stick through the sand.

- Derek Horton "Drawing Ambiguity"

Drawing is an integral part of any designer. It is something that makes our thoughts tangible, able to be communicated to others through images. In our history, drawing has had a special significance for the existence of humanity. For centuries we have been passing on the history of mankind through drawings, sketches, and symbols. And so, according to Yuwal Noach Harari, author of the book „Sapiens,“ humanity has survived and evolved thanks to two factors - the ability to cooperate and the need to create and listen to stories (2019). Moreover, in the academic world, drawing also played a key role. For almost two centuries, the Ecole des Beaux Arts in Paris used the plan esquisse as the foundation for its training method (Laseau, 2000).

Drawing, therefore, is a remarkable tool for depicting thoughts and communication. The process of hand-drawing itself has something magical about it, something through which we can delve into a completely different reality. Upon reflection, an architectural drawing can transport you into another world (Thomas, 1964). Libeskind claims that a hand in all its primitive, physiological obscurity has a source, though the source is unknown, though we don't have to be mystical about it, the hand has been given to us by forces that are beyond our own autonomy (1981).

More than that, while drawing, we create new connections between our existential being and the outside world. The pencil becomes an extension of the hand, the body, the self (Moses, 2019).

The relationship between the brain and the hand is thus a confirmed phenomenon that, although being invisible, is an important factor in creating new images. According to Rudolf Arnheim, thinking calls for images and images contain thought. Therefore, the visual arts are a home ground of visual thinking (Arnheim, 1969). But how those images are created in our minds? What causes each of us to have a different image in our head when asked to imagine a certain occurring situation?

Pictures from our imagination, though their abstract and not always-known sources, have a certain relationship. Images are linked to the memory, with the objects and spaces that a man is already familiar with. We view design as a cognitive activity that involves attention, perception, memory and processing through the act of drawing (Yi-Luen Do, 1998). However, despite the image's attachment to memory, it is never a faithful representation of the remembered scene. We often miss important details or even colors, but memory can take things out of their contexts and show them in isolation (Arnheim, 1969).

If thinking takes place in the realm of images, many of these images must be highly abstract since the mind operates often at high levels of abstraction. But to get at these images is not so easy. (...) Mental images are hard to describe and easily disturbed. Therefore, drawings that can be expected to relate to such images are welcome material.

- Rudolf Arnheim "Visual Thinking"

We draw by thinking, we think by drawing. We create images based on our memory, perception, imagination. Drawing is a prior form of creation in its form. Throughout history, we have been learning about new tools to create these drawings. In the age of new technology and the constantly growing computer world, the bloom of new tools has been most noticeable than ever. In the time of artificial intelligence, freehand drawing is increasingly being cast aside. What is AI? Should we be afraid of it?

1.2 Introduction to AI

A generation ago, very few people believed that any machine could ever think as a man does. Now, however, it is widely held that this goal will be reached quite soon, perhaps in our lifetimes (...) Yesterday's skepticism was based on ignorance of the capacities of machines; today's confidence reflects a misunderstanding of the nature of thought.

- Ulric Neisser „*The Imitation of Man by Machine*”

Although Artificial Intelligence is a relatively new tool, its presence has accompanied us for a long time. AI identifies our friends on Facebook and categorizes our images on Instagram (Leach, 2022). AI filters our interests and tastes, it suggests new music on Spotify and new clothes to buy online. AI is everywhere. Why then, discussions about it have become the most lively in recent times?

One of the popular features offered by AI is the AI Image Generator. It allows us to create images based on a given prompt. While lively discussions continue about the ethics of this tool in relation to art and copyright, one thing is certain: never before we have had such a fast and accessible tool for creating images. It is interesting to mention the art world itself and institutions that sponsor and support artistic exhibitions. In the past, they were mostly some established bank families or Church institutions. Today, however, big tech companies such as Amazon, Microsoft, Apple and Google, increasingly play that role (Leach, 2022). The presence of technology in the art world is therefore noticeable.

AI, along with its capabilities, creates a lot of fear among some people. In the art world, artists and designers fear the disappearance of their profession and being replaced by machines. They question the origin of images and who is their authentic author. However, we may have missed the fact, that this phenomenon was already faced before AI. In the age of reproduction, media and film nothing is original in itself. Walter Benjamin in his book “*The Work of Art in the Age of Mechanical Reproduction*” raised this topic. He writes about the loss of aura, where aura is “unrepeatable appearance of a distance however close it may be”

(Benjamin, 1935). The author has raised important issues related to the reproduction of art, with the increasing popularity of copies of the original, with the presence of films and photographs, where art itself is not its only dimension. Nowadays we can admire art not only in its original location but also virtually, in images. For a long time, we have been living in the world of Google Images, where every image is easily available. Therefore, why should we be afraid of AI if Google is recently much more powerful (explained in detail in chapter 2.2) and we are familiar with it for years?

1.3 Future of Drawing

Moving with and against the grain, depicting real and fantastic structures, hand drawing richly complements the work of the computer. The hand brings a formal intelligence, assertive sensuality, and emotional immediacy to the page that the computer, right now, cannot.

- Nalina Mosses “*Single-Handedly - Contemporary architects draw by hand*”

Will machines take away the value of a hand drawing? Despite their really promising results, they lack one of the most needed features for thought processing: AI does not possess consciousness (Leach, 2022). Even if the computer is now winning against a man in a game of chess, the intellectual processes of the two are likely to remain fundamentally different (Neisser, 1963). We derive pleasure from the physical game, from the pawns turned, from observing the emotions of the opponent.

The drawing, as we have already established, involves consciousness. Memory, perception, attention and imagination occur in the drawing and design process. Artificial Intelligence is based on things already known, based on the data that humans have entered. What is new and innovative comes out of a human being, from his thoughts originally put on paper and transferred through drawing.

2 DRAWINGS

2.1 Hand-drawing Prompts

To begin the drawing journey, eight prompt sentences were chosen from the thesis "Monuments in the AI Age Evaluation of AI-Generated Images in Architecture". The thesis authors wanted to investigate how powerful the images created by AI Image Generator are, in particular from Mid-Journey, DELL-A and Google Images. To achieve that, they have chosen a specific topic to work with, which is "Monumentality". The term „monument“ is probably one the terms in art and architecture that presently undergoes some of the most substantial rethinking (Baciu, 2023). For the drawing experiment, selected prompts are listed below:

- Hill Monument
- Monument of Ancient Rome
- Monument of Unknown Soldier
- Monument of the Dead
- Monument in the City Park
- Monument for my Mother
- Monument in the Church
- Monument of America

The first approach to drawing was based only on the listed prompts. The AI results have not been examined so as not to suggest specific images in the creative process. However, it was not easy to draw something completely from scratch. For example, for the prompt "Monument in the Church", I was sure as an author that I want to show a sculpture of Jesus and Mary, because this was the first image that appeared in my mind after reading the prompt. After a really enthusiastic beginning and imagining the concrete images, that enthusiasm slowly declined as it moved on to putting the images on paper. My experience was exactly how Rudolf Arnheim explained the process of creating. He claims that mental images are hard to describe and easily disturbed (1969).

As a result, I started to look for some references for the Jesus and Mary sculpture. After looking for a few images from Google Images, finally my drawing was created (Figure 1). In this drawing, the details of the sculpture are the most noticeable,

which have been carefully studied from various references. In contrast, the background and surroundings were treated very schematically, without going into much detail.



Figure 1. Monument of the Church, individual drawing interpretation of the prompt

A very similar approach was taken while producing the drawings for "Monument of Unknown Soldier" (Figure 2). Here again, the sculpture itself is a direct answer to the prompt, and again the sculpture has been studied based on different references. Consequently, the drawing is detailed in its main subject (unknown soldier), while the background is a simple addition to it.

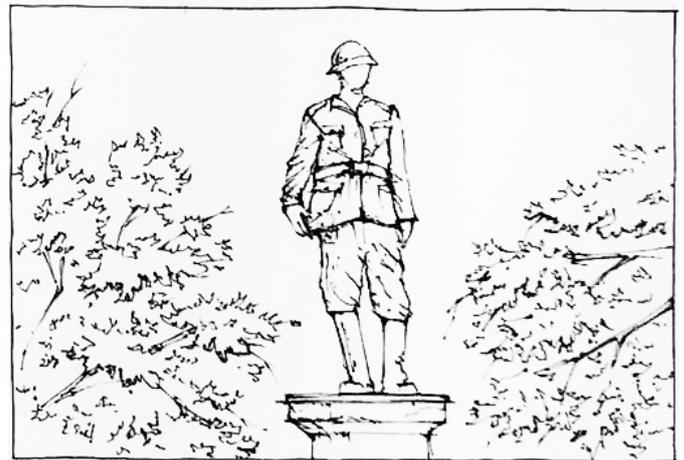


Figure 2. Monument of Unknown Soldier, individual drawing interpretation of the prompt.

Other drawings were named "Monument of the Hill" (Figure 3) and "Monument in the Park" (Figure 4). I place them together, because the approach was much the same. Here, instead of focusing on the monument itself, my imagination has opened wide to the slogans "Hill" and "Park". As a result, the monuments are presented in very simple and familiar shapes, while the environment is way

more reach in detail. However, these surroundings are again some typical spaces that probably most of us would imagine for the first time: "Hill" as a couple of slopes with trees, or "Park" as a path between greenery with people walking.

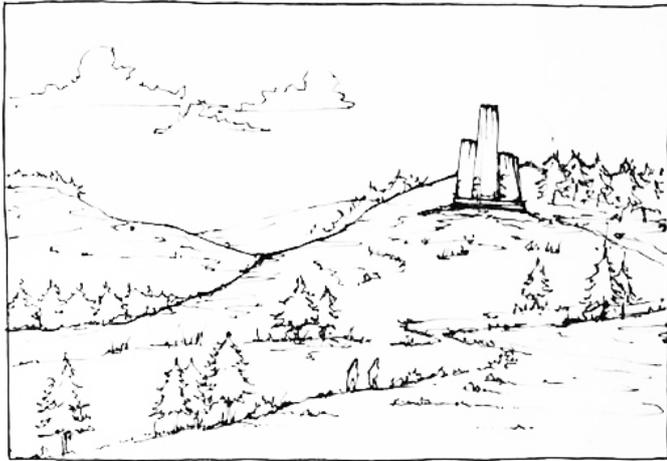


Figure 3. Monument of the Hill, individual drawing interpretation of the prompt

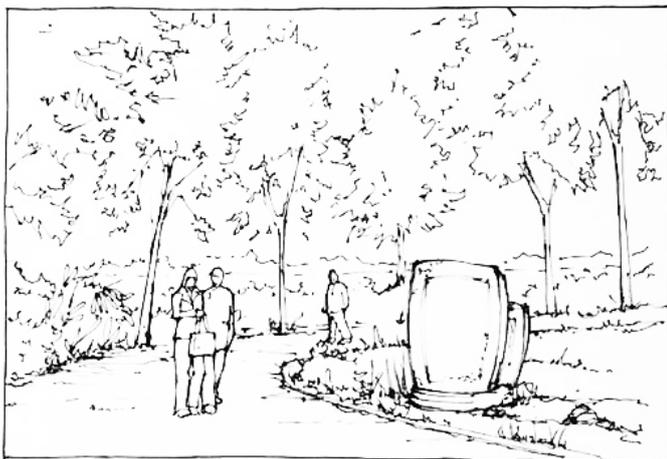


Figure 4. Monument in the City Park, individual drawing interpretation of the prompt.

What we could learn from this experiment? That creation is not simple. Our imagination calls for images that are already known. In order to create a drawing, we usually need references or brainstorming. Sometimes we have a time that favors creativity, sometimes we have to strongly awaken it in ourselves. Does this mean that in this task AI can win against us?

2.2 AI Results

How does this AI Image Generator work? Essentially, an AI agent grasps what humans have already created and attempts to imitate or make a collage with the existing works to produce its

own work (Baciu, 2023). AI is therefore producing patterns that we as humans are already familiar with, though it can present these patterns in a completely different context than we would expect. However, each of the AI generators has its own "style" to represent an image. Let's dive into this topic a bit further.

We take one prompt from "Monuments in the AI Age Evaluation of AI-Generated Images in Architecture" thesis: Monuments of Antiquity. In the research, two different generators were used in order to create an image: Mid-Journey and DALL-E. Figure 5 shows the results of Mid-Journey. We can clearly see that those images have one common style. The atmosphere is always a bit "artificial", like an image from a fairytale or animated movie. Therefore, the expected result will always be limited in its style.



Figure 5. Mid-Journey's results based on the prompt from thesis „Monuments in the A"

In contrast, the images created by Dall-E have a very realistic appearance (Figure 6). This engine gives detailed results based on a given prompt. However, we can see that the results are very similar to each other. The lack of diversity is strongly noticeable.

In addition, the authors investigated also Google Images results (Figure 7) to compare them with AI. Here, in contrast to previous finds, the images are varied. Google gives many answers per sample, while AI generators are still somehow limited. Therefore, why should we be afraid of AI if Google is much more powerful and we are familiar with it for years?



Figure 6. DALL-E results based on the prompt from thesis „Monuments in the AI”



Figure 7. Google Images results based on the prompt from thesis „Monuments in the AI”

2.3 Conclusion

Might we draw a distinction between human creativity and absolute creativity, just as we have drawn a distinction between human intelligence and absolute intelligence? Does creativity, perhaps, lie in the eye of the beholder? Or does creativity exist in the mind of the creative individual? In order to fully understand the creative process, should we not take into account the background sensibilities and aspirations that feed into process? (...) What if an individual creates something without knowing whatever someone else has created it before? In short, is it not time to revisit the question of creativity?

- Neil Leach "Architecture in the Age of Artificial Intelligence"

After being aware of the characteristics of different engines, let's try to compare human and artificial intelligence. When we see the AI and drawing results from the prompt "Monument of the Hill" (Figure 8), one thing is intriguing. All the images created similar content, with a simple shape of a monument and a non-detailed background. How is it possible?

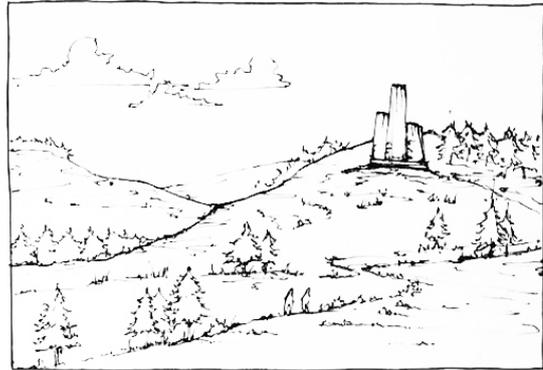


Figure 8. MidJourney DALL-E and hand-drawing result based on the prompt "Monument of the Hill"

As previously noted, AI is based on what is already known, and what is known is also included in the images of our imagination. As designers, we need constant development and attempts in order to create. This phenomenon is visible in the academic world, where students are often trying the same thing several times. It is not in order to repeat an assignment, but in order to enrich the concept. Sometimes they need to make thirteen drawings to arrive at a satisfactory statement (Arnheim, 1969).

When we try to ask AI to produce again the image based on the same prompt, at some point it would suggest very similar images from the beginning. It means that AI doesn't process images progressively, like a human brain. When we study the history behind various pieces of art, we can notice that the number of trials was enormous. For instance, an example from Picasso, his painting "Guernica" has been preceded by numerous sketches to achieve a satisfactory result (Arnheim, 1969).

We can simplify how AI Image Generator works by saying that the results are shown in the "loop". For the human mind, it is necessary to try one thing several times in order to progress. And this is what going to happen in the next chapter. Although now it may seem that human intelligence doesn't win with artificial intelligence, I will try to break it in further experiments.

3 FUTHER IMAGINATION

3.1 Hand-drawing Second Approach

After creating a set of drawings, an important conclusion emerged. Namely, a phenomenon already noted by Ellen Yi-Luen Do, that designers depend heavily on reference to previous similar designs, that is, cases or precedents (1998). This type of process occurs mainly in the first stage of designing, where we as creators reach for inspiration in order to give the most satisfactory output. However, this is not the only method practiced by designers. One of the greatest Polish architects, Robert Konieczny, claims that in order to create something innovative, we should invent new ideas and not copy what is already known. Indeed, without this approach, many things wouldn't be present today; nobody would invent modernism, or nobody would invent parametrical design. We all need to gain courage and trust in ourselves to create innovative solutions.

For the second try at drawing-making, I tried to acknowledge this approach. Although not reaching for visual inspiration was challenging, I could notice clear changes in the way of thinking. Let's take a prompt "Hill monument". As it was already discussed, the first result was predictable and similar to the AI results. For the second try, instead of drawing my first impression on the prompt, I have tried to re-think the assignment. What is a hill? What a hill could become? What would be the right monument for a hill of the future? All those questions started to stimulate my imagination, thinking more out of the picture plan, and trying to imagine things on a more abstract level. Consequently, the "Hill Monument" ended to be an endless line, which touches the horizon and reverberates with varying strength (Figure 9). That's how a hill could be created, and that's how it could be remembered as a monument.

This output is strongly abstract and personal. While some people would not find a connection with the given prompt, others would find this image inspiring. For some of them, this drawing might remind a hill that was devastated rather than the common understanding of a monument "on a" hill. This is the complete opposite of the first approach, where everything was taken too literally.

Here, we consciously switch to different fields of thought, activate all the senses, and experiment. One fact is certain – because AI does not contain consciousness, it would never consciously move to a higher level of abstract thinking, whereas the human mind would do.

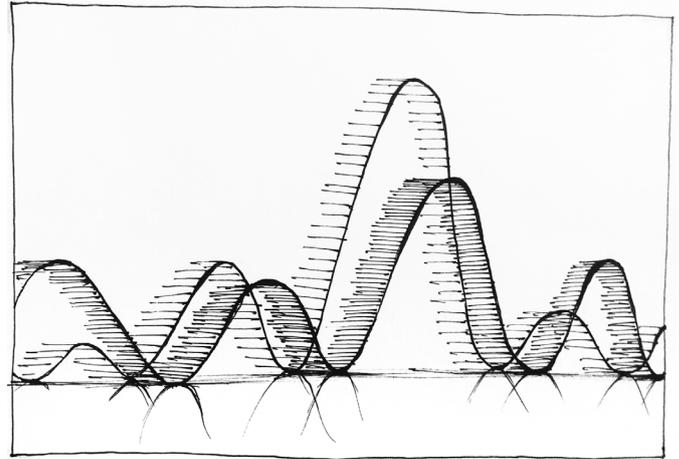


Figure 9. Second drawing result of a prompt "Hill Monument"

Let's examine another prompt "Monument in the Church". Previously, the prompt was interpreted literally and resulted in a sculpture of Mary taking care of Jesus. The second approach was again preceded by some key questions: What is the Church? What is its purpose? How to achieve this purpose? My individual reflections led to the conclusion that the church has always been trying to connect with god. The god is probably somewhere far away, in an unreachable place for a living man. The drawing, therefore, resulted in a stream of light or other unknown power, flowing from the church spire toward the heavens (Figure 10). This may be an ambiguous answer for a monument, which in this case is very symbolic.

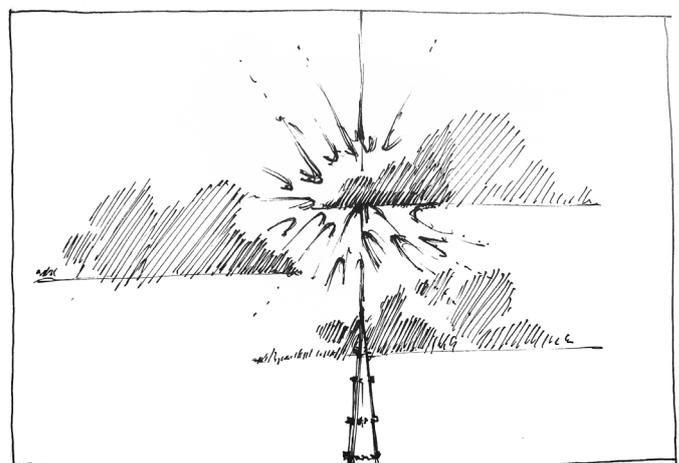


Figure 10. Second drawing result of a prompt "Monument in the Church"

Although both approaches were similar, the drawings result in a range of different types of visual thinking. To conclude better, let's dive into another example "Monument for the Dead". The first drawing presents probably the type of cemetery most familiar to all, with tombstones in a consistent, simple form (Appendix). It was the first attempt to visualize how "Monument for the Dead" can be integrated into some sort of space. On the second try, in contrast to previous examples, I tried to question my first idea for the drawing. Why do we think of the dead as a tombstone? Why not memorialize the dead for their lives? Here the conclusion was quite simple and immediate: We live in cities, in urbanized spaces. Each city is a kind of memorial, a museum; like Paris where we can see a sign of life of Chopin on Boulevard Poissonniere or a sign of life of Hemingway in the Latin district. Thus, the drawing resulted in a simple interpretation of a city, which can be a monument for the dead (Figure 11).

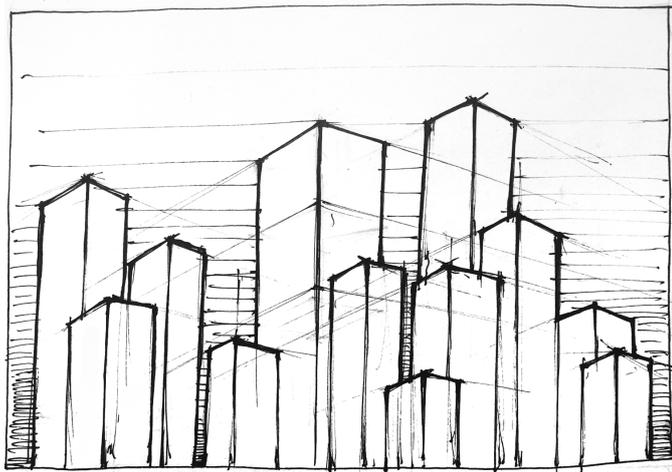


Figure 11. Second drawing result of a prompt "for the Dead"

After drawing the images above, I looked into the prompt "Monument for Unknown Soldier". An unknown soldier probably wanted to make a name for himself for the sake of an idea or homeland, conquering more territory or increasing his reach. Each step forward drew consequences for his stay, he strongly marked the area with his actions. Such is also the drawing (Figure 12) - a reflection of a certain winding path of life, which, seemingly insignificant, leaves a trail in different directions.

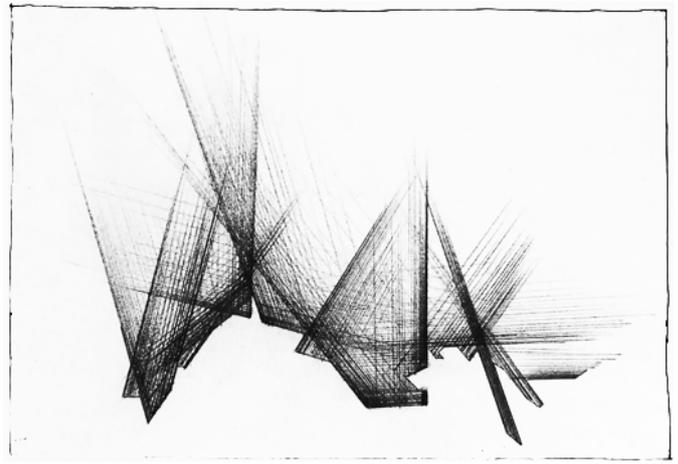


Figure 12. Second drawing result of a prompt "Monument for Unknown Soldier"

3.2 Conclusion

While the first set of drawings did not differ significantly from the results of the AI, in the second trial we see a stronger separation. The drawings operate at the abstract level, although they consist shapes and forms that we are already familiar with. This experience may confirm a belief that AI is far from being a match for the human imagination. Just like Neisser predicted, Artificial Intelligence seems to lack not only breadth but depth: Computers do not dream (1963). We as designers, architects, creators, we constantly try to question the world around us, we try to experiment and often be controversial in order to invent the new. We all dream and this is our greatest power.

Despite the fact that the above experiment had a positive result to show the power of the human imagination, AI is undeniably entering the lives of designers, often with dominating effect. A lot of designers fear to be replaced by AI. As a result, they do not want to use this tool. Neil Leach anticipates that there is a high probability that AI might be banned from some architecture studios, just as computers were once banned in certain schools of architecture (2022). Consequently, we all see that architects being able to use computers are now more desirable employees in design offices. Most likely the same is going to happen with AI: Architects who use AI will replace those who don't (Leach, 2022). Hence, how can designers, dedicated and attached to freehand drawing, take advantage of AI tool today? What opportunities does AI create in the overall creative process?

4 TOOLS FOR ARCHITECTS

4.1 Possibilities in Practice

This expanding field of possibilities for the role of the hand, computer and/or other technologies presents an exploding spectrum of possibilities for significant innovations in architectural design

- Mark Garcia "The Futures of Images in Architectural Design"

Freehand drawing has always been, is and will continue to be an important part of the creative process for designers and architects. What we could learn from the drawing experiment in this thesis is that human imagination sometimes does not differ much from AI. This is the result of creating things based on the images we already know and have stored in our memory, which is the basis for the functioning of AI Images Generators. One of the possibilities in the use of this tool is using it as a reference. Design is a process of trying different things over and over again. References do not have to dominate our imagination, but be the basis for questioning these inspirations. They force us to rethink, to experiment and look for what is still unknown. They can perhaps show us things from an unfamiliar perspective, where they will expand our thinking on a given topic. They can suggest frames, colors, shapes we wouldn't have come up with, which will only stimulate us to think further.

Another possibility to use AI is to enhance our own drawings. AI does not only create images based on the given prompt, but it can also transform further given images. It is common to feel blocked in the design process when we find it challenging to put another line on the paper. That's when AI can be helpful, and when asked to further modify an image, it can transform our drawings and thus inspire us.

4.2 Conclusion

Moving with and against the grain, depicting real and fantastic structures, hand drawing richly complements the work of the computer. The hand brings a formal intelligence, assertive sensuality, and emotional immediacy to the page that the computer, right now, cannot.

- Nalina Mosses "Single-handedly: Contemporary Architects Draw by Hand"

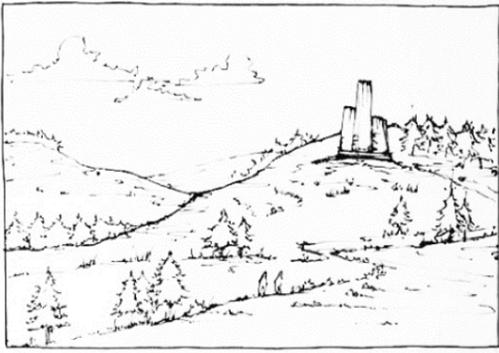
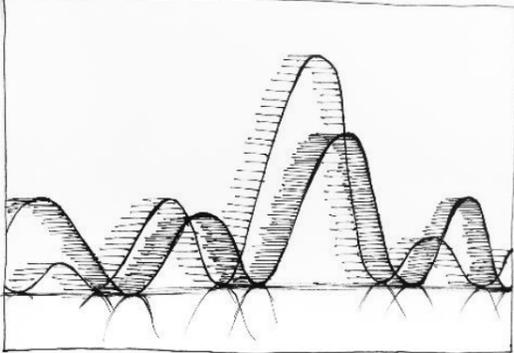
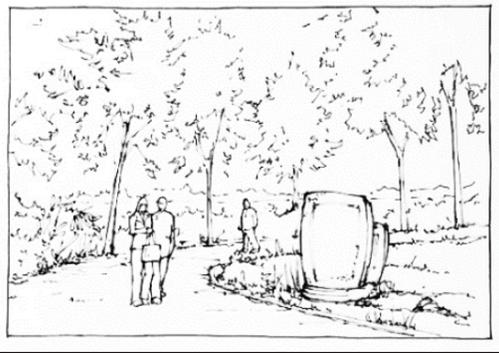
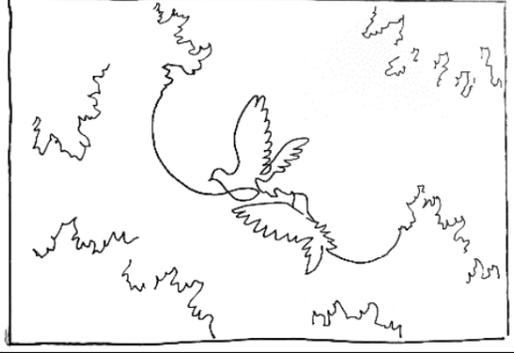
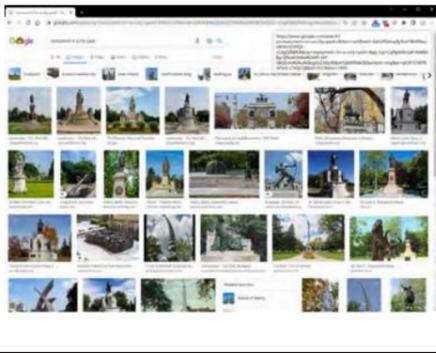
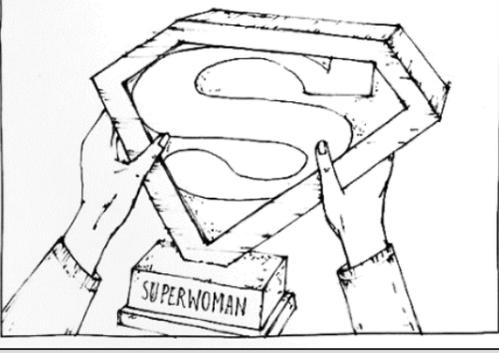
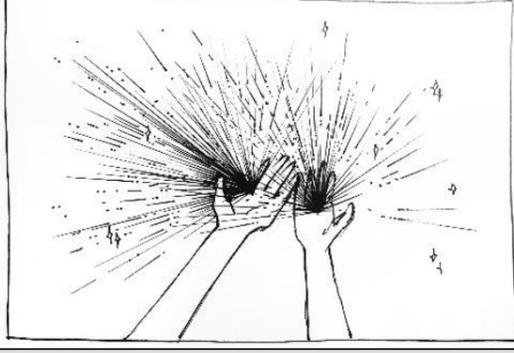
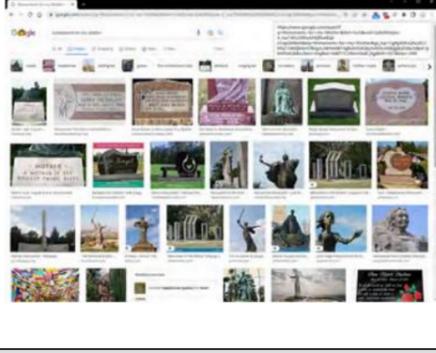
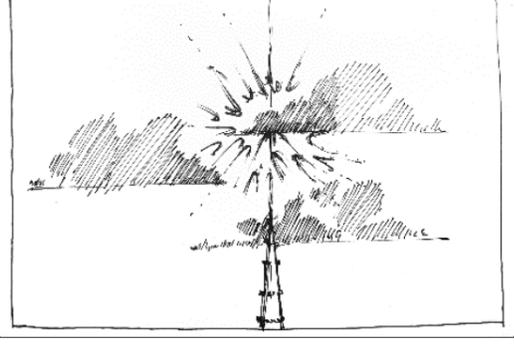
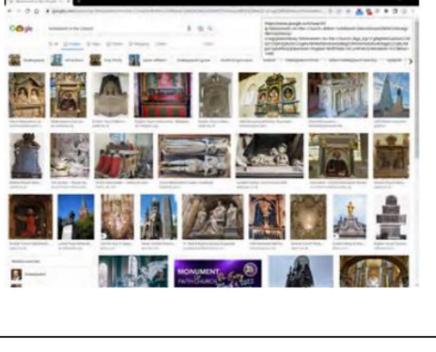
We all know how powerful AI is. We know how quickly and impressively it creates images. But beyond all its technical parameters, AI lacks human senses, perception, imagination, dreams. In contrast, almost all human activity, including thinking, serves not one but a multiplicity of motives at the same time (Neisser, 1963). Various emotions and experiences accompany us during the design process. Besides the final result, we must not forget the process itself. Despite the fact that it is often difficult and challenging, the process shapes us as designers. It is during this process that we learn from our mistakes and invent new solutions.

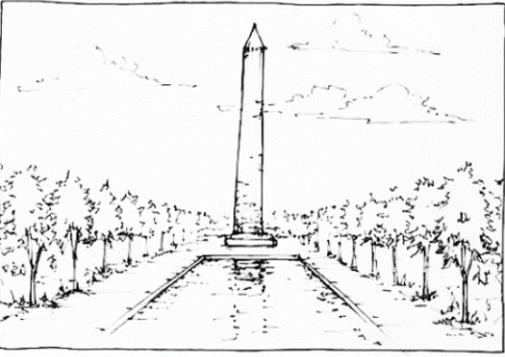
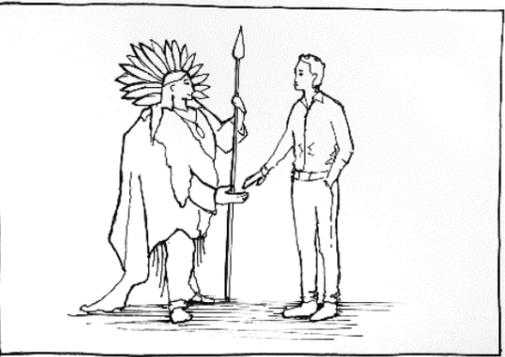
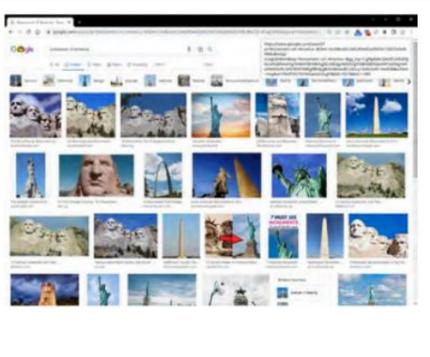
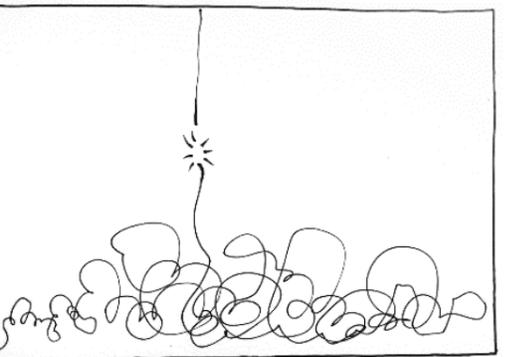
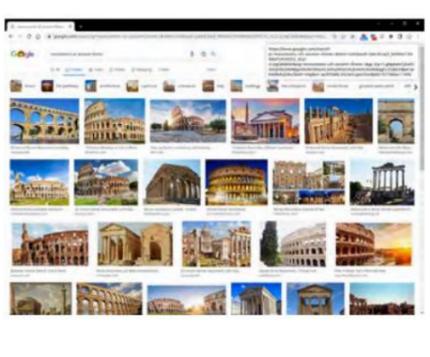
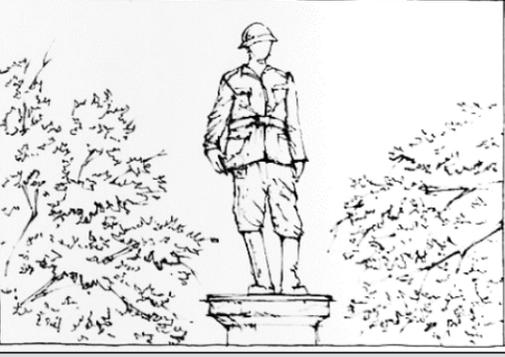
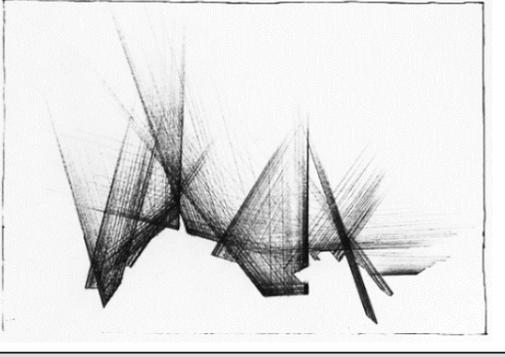
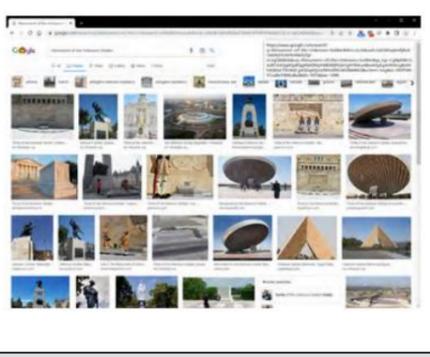
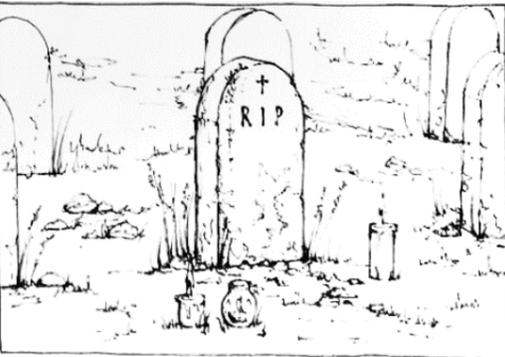
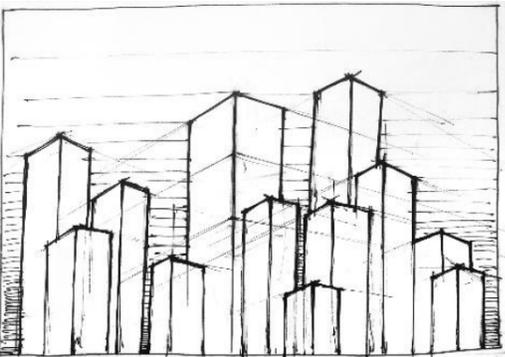
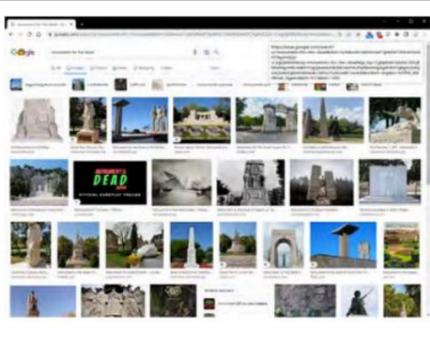
Drawing is the translation of thoughts onto paper. Drawing is the first contact of thought with reality. Drawing is the joy of creation. AI is an addition that we should study in parallel and benefit from its capabilities. In the end, it is we who decide what is the desired result, and we who shape and implement it. AI can only facilitate this, or, going further, become our design inspiration.

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5 APPENDIX

First Approach	Second Approach	DALL-E	MidJourney	Google Images	Comments
<p>Hill Monument</p> 					<p>The first approach is very similar to the results of Artificial Intelligence and Google - a simple shape of the monument, in a literal context. However, the second approach is already more abstract, it was treated from a different angle - the Hill as a monument rather than a monument on the Hill.</p>
<p>Monument in the Park</p> 					<p>AI, Google and the first approach results are typical of first associations. The monument is a stone, sculpture, placed in a green environment. Second approach: monument as a celebration of the value of the park, its flora and fauna intertwined with each other.</p>
<p>Monument for my Mother</p> 					<p>AI shows the 'Monument for my Mother' as an image of herself: the monument of a woman is mainly shown. In both hand-drawn drawings, the monument for the mother is interpreted as a gift. The first approach is quite attached to general well-known images. The second approach - the interpretation of something very valuable.</p>
<p>Monument in the Church</p> 					<p>AI, Google and first drawing show the literal sculpture in the Church, while the second drawing shows an interpretation of what the Church is. The church has always been trying to connect with god. The god is probably somewhere far away, in an unreachable place for a living man. The drawing, therefore, resulted in a stream of light or other unknown power, flowing from the church spire toward the heavens.</p>

First Approach	Second Approach	DALL-E	MidJourney	Google Images	Comments
<p data-bbox="0 279 552 310">Monument of America</p> 					<p data-bbox="2303 279 2956 684">DALL-E shows the Monument of America as probably the most well-known monument in the world – the Statue of Liberty. Mid-Journey presents images that are similar to Washington Monument, which was also an immediate idea to draw as a first drawing. Google shows a collection of some of the most popular monuments in America. In contrast, the second approach is more symbolic: Here, a Native Indian and a Modern Man shake hands as a sign of peace, so as to show how in America it is important to abandon differences and make great peace between the races.</p>
<p data-bbox="0 684 552 716">Monument of Ancient Rome</p> 					<p data-bbox="2303 684 2956 1089">AI, Google and the first drawing show ancient abandoned temples. However, here AI might be more accurate since the drawing is made more in an Ancient Greek style rather than Roman. Both, however, represent a similar mindset and again show literal objects. In the second approach, the aim was to show more of a way of thinking of the people of the time, that is, a return to the philosophy of Marcus Aurelius. The drawing depicts a complicated, human fate that is fragile. It shows its end, which we cannot avoid, and then the eternal way in heaven.</p>
<p data-bbox="0 1089 552 1121">Monument of Unknown Soldier</p> 					<p data-bbox="2303 1089 2956 1495">DALL-E as well as the first drawing represent a sculpture of a soldier. Mid-Journey shows a simple, familiar shape in a natural environment. The second approach aims to show a reflection of a certain winding path of life, which, seemingly insignificant, leaves a trail in different directions.</p>
<p data-bbox="0 1495 552 1526">Monument for the Dead</p> 					<p data-bbox="2303 1495 2956 1890">AI shows rich tombstones, while the first drawing has a similar interpretation, except in a simplified version. The second figure shows the interpretation of the Monument for the Dead as a city where most of the dead have lived their lives, and where they should be remembered.</p>

Source:

- DALL-E, MidJourney and Google Images results come from the thesis "Monuments in the AI Age Evaluation of AI-Generated Images in Architecture" by
- Free-hand drawings are made by Hanna Adamczyk

Bremer, R. & Elmas, M. & Van Lierop, F. Megalovasili, S. & Xingda, G. & Yifan, Z. (2022)