

A "critically creative composition" on the subject of "creativity and infrastructure".

Wolfgang Weinlich

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Quotes have been translated from German into English

1. Creativity and infrastructure: Models

Referring to the text of the CTS call for proposals for the seminar "Creativity and Infrastructure¹", this text is an attempt to shed light on social challenges and creative solutions.

Critical perspectives from various disciplines and art education research are incorporated to reflect on the interface between artificial intelligence and human creativity.

The text attempts to provide answers as to how creativity can be "utilised" or even "rethought" in order to improve our infrastructures and how problems can be solved differently in the field of tension between problem-solving and artistic creativity. The term model is located in the creative context as an example. There are also some considerations on the interface between artificial intelligence and human creativity in this elaboration. The example of petrol station infrastructure is also addressed and discussed using (practical) examples. This text is rounded off by an examination of cultural codes and aesthetic artistic potential.

To introduce my text, I asked ChatGPT to write me an essay on infrastructure and creativity. I received the following reply:

The interaction between infrastructure and creativity is fascinating and crucial for the development of societies. Infrastructure, including transport routes, communication networks and educational facilities, forms the backbone of a modern society. It creates the framework conditions for the exchange of ideas, resources and talent.

A well-developed transport network enables the smooth transport of people and goods, promotes cultural exchange and creates a platform for diverse creative influences. Communication networks, such as the internet, broaden the horizons of creativity by connecting people worldwide and facilitating access to information.

Educational institutions are breeding grounds for creativity. They not only offer the necessary knowledge, but also the opportunity to develop and exchange ideas. A well-functioning infrastructure in the education sector is crucial to unlocking people's creative potential. Conversely, creativity contributes to the further development of infrastructure. Innovative ideas lead to new technologies, more efficient processes and sustainable solutions for urban and rural areas. Creative minds think beyond existing boundaries and shape the infrastructure of the future.

Overall, infrastructure and creativity are interconnected and can be mutually beneficial. A modern society based on innovation and creative thinking needs a robust infrastructure as a foundation, while creativity is the engine for the continuous development of this infrastructure (ChatGPT, personal communication, 13 November 2023).

Physical infrastructures are often planned using different models to ensure efficiency, sustainability and functionality. I am therefore trying to answer the question of where the word model comes from.

¹ Invitation to tender at https://cts.wien/en/misc/20231130_creativity_and_infrastructuring/

The word "model" comes from the Latin word "modellus", which means "small form" or "replica". In the Middle Ages, it was used in Latin and then in Middle High German as "modell". The meaning has expanded over time, and today "model" refers to a simplified representation, representation or idea of an object, system or concept, often used to explain, understand or plan something (ChatGPT, personal communication, 13 November 2023).

Since artificial intelligence (AI) is mentioned in the topic, I ask ChatGPT whether AI is also a model.

Yes, artificial intelligence (AI) can be seen as a model, more precisely as a model for machine learning. In AI, models are created to solve complex tasks, recognise patterns or make decisions based on data and algorithms. These models can take various forms, such as neural networks, decision trees or support vector machines.

An AI model is trained by feeding it with large amounts of data in order to learn patterns and correlations. After training, the model can then be applied to new, untrained data to make predictions or solve problems.

In this sense, artificial intelligence is not just a model, but often a collection of models that work together to accomplish complex tasks. It is important to note that the success of AI depends heavily on the quality of the data used to train the models, as well as the algorithms used to extract patterns and make decisions (ChatGPT, personal communication, 13 November 2023).

Accordingly, in the context of creativity and infrastructure, the question arises as to whether infrastructure is a model.

No, infrastructure is not modelling in the sense of artificial intelligence or machine learning. Infrastructure refers to the basic physical and organisational structures, facilities and systems that are necessary for a society to function. This includes, for example, transport routes, water supply, energy supply, educational facilities and communication networks.

While artificial intelligence is often based on models and algorithms, infrastructure is more of a real, tangible part of the physical world. Infrastructure includes the buildings, roads, bridges and networks that form the basis for everyday life.

In a figurative sense, one could argue that urban planning models or planning concepts serve as "models" for infrastructure development, but this would be more in the context of planning and designing physical structures and not in the sense of AI models (ChatGPT, personal communication, 13 November 2023).

I'm entering into a brief negotiation with ChatGPT: Yes, but physical infrastructures are planned with models, right?

Physical infrastructures are often planned using different models to ensure efficiency, sustainability and functionality.

I go on to ask whether creativity is a model.

Creativity itself cannot be considered a fixed, standardised model, as it is a complex and multi-layered phenomenon. Creativity refers to the ability to develop new and original ideas, concepts or solutions that often deviate from existing conventions. It is more of a process than a rigid model (...) Creativity is a multifaceted concept and different disciplines look at it in different ways. While there are models that attempt to structure the creative process,

creativity in general remains a dynamic and individual phenomenon (ChatGPT, personal communication, 13 November 2023).

Scientists want to understand relationships in nature, predict the behaviour of nature and solve problems, and this is often done using models.

Change processes in particular can be initiated and strengthened by harmonising the triad of thinking, feeling and acting. Creative processes can be supported by tools such as creativity models or creativity methods and techniques.

But even these are not a simple addition, but in the concept of this trinity of Pestalozzi² the term "hand" or "art" always includes the term "spirit". Associations of terms float through my mind: Visual arts. Didactic reduction. Reducing models.

I would like to briefly summarise the question of what a model is. A model is simplistic - it only captures aspects that appear relevant, but not all aspects of reality. Models are summaries of complex relationships. Models are often visual in order to describe in pictures what is hardly possible in words. This fact once again emphasises the importance of the visual factor in these processes! Models are methodical and must first be applied. Only then do answers to the questions posed by the models emerge. Thus, they reduce to the essentials and fade out (Krogerus & Tschäppeler, 2021: 6).

2. Creativity models, methods and techniques

² Johann Heinrich Pestalozzi (1746 - 1827)

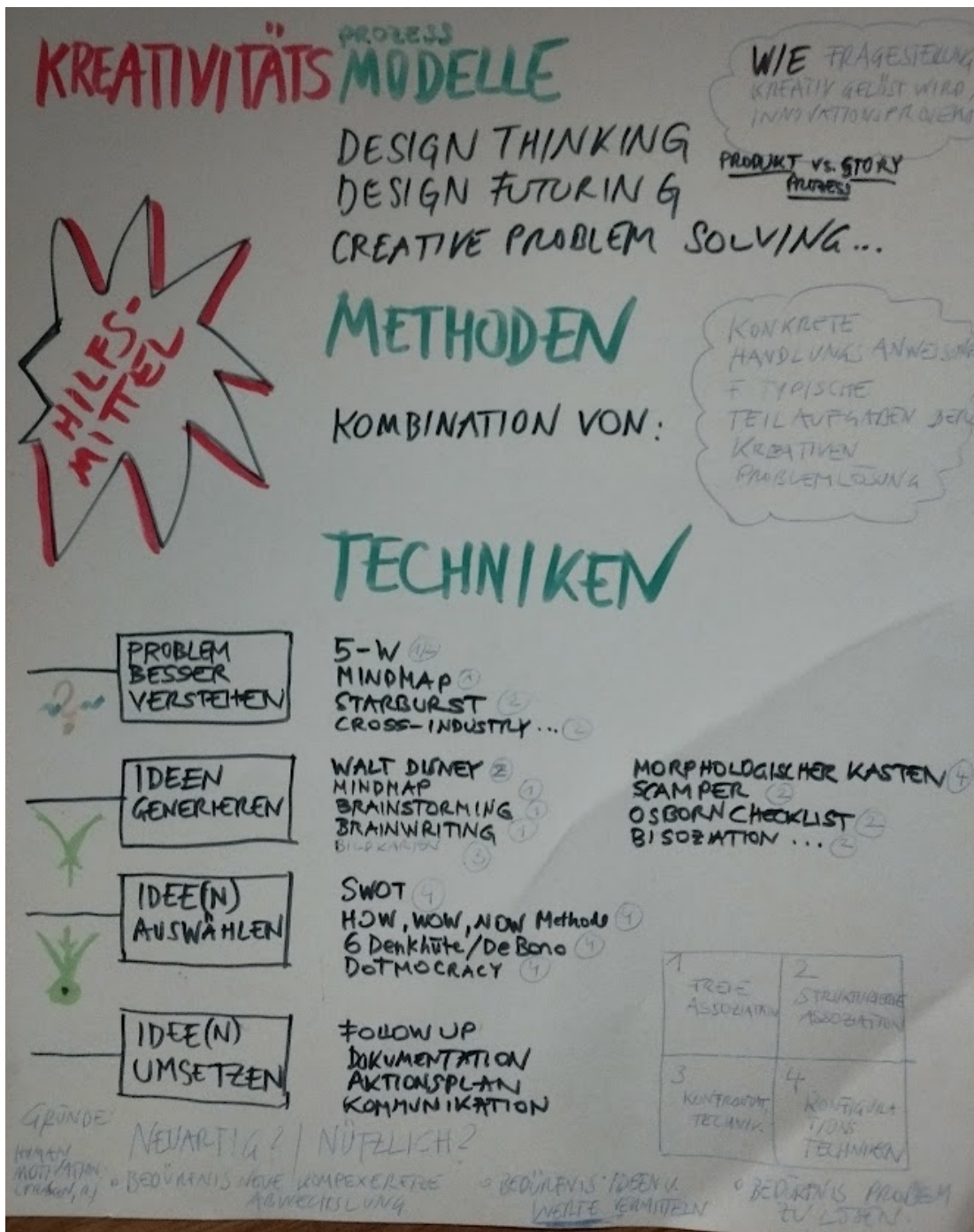


Illustration 1: Creativity models, methods and techniques

Creativity models are process models for structured approaches. For example, design thinking is a systematic approach to complex problems from all areas of life. Creative methods are a combination of several different creative techniques. Creativity techniques are concrete instructions for typical subtasks of creative problem solving.

The following description is indicative of the difference between divergent and convergent thinking:

Divergent thinking refers to expansive, intuition- and emotion-orientated thinking, associations and different perspectives. An attempt is made to consciously abandon thought

paradigms and existing basic assumptions are questioned. This form of thinking should be playful, whereas concentration and focus are important in convergent thinking. Logical-rational judgements are made on the basis of basic assumptions and cognitive abilities (cf. Strebl, 2007; Kapeindl, 2019: 9).

Creative thinking is therefore the synergy of these two mindsets and design thinking is therefore closely related to the creative thinking process.

The design thinking process has a "flare and focus" characteristic. "This refers to the interplay of divergent ("flare") and convergent ("focus") thinking phases. In the divergent phases, the focus is on generating ideas" (Kapeindl, 2019: 10).

I would also like to mention the relatively new and unknown concept of design futuring, which deals with the creation of future scenarios and ideas in order to negotiate desirable futures. It deals with questions about recommendations for action and tactics that work with questions about images of the future in a similar way to design thinking (cf. Groß & Mandir, 2022).

But how can we describe the characteristics of creative ideas? The following characteristics are often associated with creative ideas:

- Original
- Rarely thought of
- Unique
- Useful
- Useful
- Appropriate
- Suitable

3. Problem and solution space in the context of creativity

In design thinking, the double diamond model serves as a form of representation for a problem and solution space. Creativity models often have a defined problem space and a solution space. In specialised artistic didactics, a creative process is also guided through different phases. Starting with initiation through, for example, a fantasy journey or image viewing (but can also take place at the end of the lesson!), exploration, trying out the new technique and intermediate reflection, objectification: design and integration, such as a visit to the museum or reflection (Otto, 1964).

The following similar phases can also be identified in creative processes.

- *Preparation: The inspiration phase.*
- *Incubation: intake and processing.*
- *Realisation: The "eureka" moment.*
- *Evaluation: Put your idea to the test.*

- *Elaboration: Putting pen to paper*

For example, the "B-I-L-D" model - another four-phase model according to Off (2008) is based on four steps:

- *Description (of the problem)*
- *Information arrangement*
- *Solution*
- *Definition or enforcement*

The word problem often has a negative connotation. First of all, it is a neutral term, "The question presented for solution, the unresolved task, as well as the *uncertain, doubtful, questionable or merely possible*. An undesirable, inadequate or not yet optimal state; usually a *goal* that is upside down. *The difference between ACTUAL and TARGET (Luther, n.d.)*.

But the question also arises as to whether creativity should serve as a problem-solving force for the challenges. This would be a purely functionalist view.

Form follows function - a concept that has been around since the Bauhaus - originally posed not only the question of function, but also of "spiritual purpose" (Hartl, 2021: 212).

Design and architecture shape physical infrastructures. Function is often at the centre of the designed environment. Are we the material of the CAD architecture software NavisWorks or the designers? (see Weinlich, 2017). Are we being designed or are we designing? Technology thrives on constant renewal, culture requires preservation (Hartl, 2021: 99).

How do we want to live? Even if this question is of a philosophical nature - it should be discussed rather than directly finding a creative solution for petrol station infrastructure, for example. Is there room for this time?

From the perspective of art education, "problem-solving creativity" is geared towards economic utilisation as opposed to artistic creativity, self-realisation and research into meaning. Perhaps the focus should be placed on the social level as a common area of technical, economic and artistic innovation as a contribution to social innovation (cf. Rustler, 2023: 34).

Aesthetic experience does not refer to the experience of art, but is a mode of experiencing the world and oneself in relation to the world and the world view of others³ " (Otto 1994: 56).

³ J.P. Guilford (1897-1988)

The psychologist Joy Guilford defined creativity as the ability to create something new and solve problems in an unprecedented and effective way. This approach is also likely to often characterise the mindset in non-art domains.

According to Guilford, the psychological characteristics of creativity are

- Problem sensitivity (recognising that and where a problem exists)
- Fluidity (generating many ideas in a short time)
- Flexibility (leaving familiar ways of thinking; developing new perspectives)
- Redefinition (reuse familiar objects, improvise)
- Elaboration (adapting ideas to reality)
- Originality.

(Amelang, 2006)

In this context, I would also like to mention Luther's Creativity 2.0 approach (2009). This builds on the research of Guilford, Rhodes, Csikszentmihalyi, Gardner, Boden, de Bono and VanGundy and is a systemic-integral approach to action that integrates all known concepts, models, methods and formats at model level in the sense of a "unifying field approach" (cf. Luther, 2009, Luther, 2020). This comprehensive approach describes three essential dimensions: the interdisciplinary dimension, the systemic dimension and the functional dimension (cf. Luther, 2009).

In general, creativity is a characteristic of living systems. The ambiguity of the term creativity through the Latin root "creare" - "to create, invent, generate" and the further root "crescere", which means "to happen and grow", is reflected in concepts of creativity between active doing and passive letting things happen (see Csikszentmihalyi 1996)⁴. In my opinion, creativity is a prerequisite for our future viability. From a neurobiological point of view, there is a plasticity of the brain from earliest childhood, which in its autopoietic organisation is in constant creative exchange with the environment. Human creativity takes place in a system of individual, domain and recognising environment (Csikszentmihalyi, 1996).⁵ Media cultures and the respective time and society characterise us; this characterisation is impressively portrayed in utopias or dystopias. The staging of one's own life in social media as an exciting story leads to an increasing loss of reality in the physical world. Cultural dimensions in particular are more important than ever; cultural models help us to understand cultural patterns. They examine how social problems are dealt with, which is generally recognised in a culture. According to Hofstede, this is referred to as "a collective programming of the mind" (Hofstede, 1980, p. 25), even if the boundaries for this are also blurred (for criticism of Hofstede's model, see Jones, 2007: 5; Kutschker & Schmid, 2011: 731 ff.; Reimer, 2005: 45 ff.). Social consequences should always be considered in this context, as well as the assumption that we humans are aesthetic beings. We are moulded by sensory experience, our emotions control us and we evaluate values. It is necessary to

strengthen ambiguity in our thinking in the future. Ambiguity etymologically means something that is driven towards both sides (Latin "ambo" and "ago"). Accordingly, they are not variants, but incompatibilities. The opposite is not compatible with the "third". Hence the Latin adjective "ambiguus" means: wavering between the two. This dichotomy is clearly different from openness, indeterminacy, vagueness. It is not about clear opposites, but rather about a collapsing structure of different aspects, properties and characteristics (cf. Lüthy, 2023). Examples of this are Marcel Duchamp's *Ready*, which move in the field of tension between art and non-art (everyday objects), or Dieter Roth's mould paintings, which move in the ambiguity between the disgust and beauty of the blue tone.

What else besides ambiguity is needed in the future? The 4C model is often mentioned here. It consists of the 4Cs Communication, Collaboration, Creativity and Critical Thinking. In my opinion, for example, openness and tolerance, flexibility and adaptability, intercultural competence, a lifelong willingness to learn and a sense of purpose will also be important in the future.

4. Imaginary worlds: Model map and landscape

But back to the models. Maps are models too. Models that predict the future? The weather? Or just the address on the map?

The map is not the territory. It reduces the complex.

Why does this seem important to me? There are often transfer errors in thinking between the real world and the model or map. If you want to build a house, you draw a plan of the terrain. You imagine what the house will look like (plan in your head). Only after this diversions via the "second world" - the world of imagination - did he put his plan into practice in physical reality. (Hinnen & Hinnen, 2022a: 5ff). The boundaries between the worlds, between map and terrain, become blurred. The terrain is abstracted, reduced, conceptualised and captured on maps. Maps offer orientation, design and creation of the terrain.

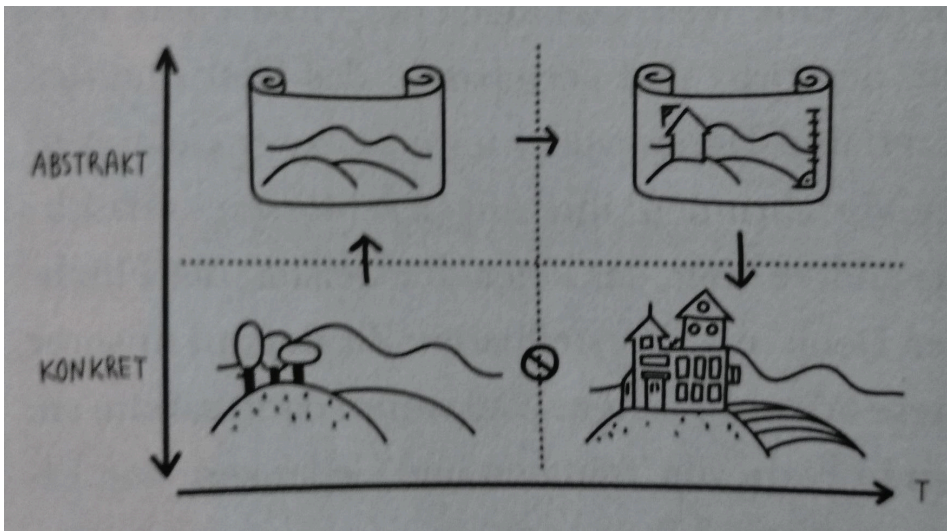


Illustration 2: Abstract and concrete from Hinnen, A. and Hinnen, G. (2022a) Change it! 5ff.

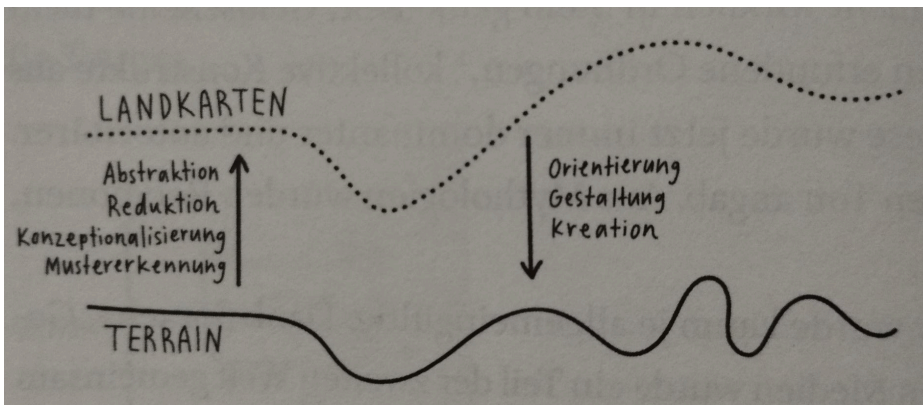


Illustration 3 Map and terrain from Hinnen, A. and Hinnen, G. (2022a) Change it! 5ff.

5. The possibility of reinterpretation : Reframing and metaphor

Reframing offers further assistance. It is a method with which complex and complicated content is not simplified, but reorganised - reframed, so to speak. The term was originally coined by Paul Watzlawick. "A reinterpretation therefore consists of replacing the conceptual and emotional framework in which a situation is experienced and assessed with another one that does justice to the >facts< of the situation just as well or even better and thus changes its overall meaning" (Watzlawick, 1976: 118). Reframing means changing the context: the perspective, the change, the medium, the structure or the >>storyworld<<. (Hinnen&Hinnen, 2022: 11). The context determines the further "text"...

When the avalanche of metal rolls. A force of nature? The traffic flows. Why does it actually flow? Here I would like to mention the cognitive metaphor theory of George Lakoff and Mark Johnson. It offers excellent insights into how metaphors guide thoughts (Lakoff & Johnson 1980). The conceptual metaphor "traffic is a river" leads us to draw on all our experiential knowledge about water in our understanding of traffic (Caviola, 2018).

The word "metaphor" has its origins in Greek and literally means "transfer" or "transport". In a metaphor, an expression is transferred from the area of meaning in which it is usually used to another (Caviola, 2018).

For example, I would like to mention the term "traffic island" here. The playful transfer of features of the natural island to the road structure opens up an interesting possibility. The metaphor can also serve as a source of ideas for dealing with traffic islands. Islands are natural. Traffic islands are artificial, but the term "island" makes them appear natural. Islands are surrounded by water - islands can usually be inhabited by people. Traffic islands are not. But both are a place of refuge! (see Caviola, 2018)

6. Storytelling: stories, images and music with artificial intelligence

What if we could turn the dry idea of a petrol station into an exciting visual story? A 24-hour shop, a stage for motorised men's dreams and a meeting place for night creatures: Petrol stations have always been more than just a place to pump petrol. But what will become of them when the transport revolution comes?

The prologue, or the first paragraph of a text, must develop the theme and conflict, come to a head and act as a cliffhanger. Joseph Campbell's form of the hero's journey is not only successful in films such as Star Wars or Hobbit etc., but also in advertising and marketing. But also in advertising and marketing. Because our brain likes it. It is rewarded emotionally.

I asked the artificial intelligence to write me a short story in the form of Joseph Campbell's hero's journey about the heroine and the petrol station of the future. The artificial intelligence wrote the following story:

In the not-too-distant future, Luna, a technology enthusiast and engineer, was going about her daily routine. One day, she stumbled across a secret research project that would revolutionise the world's energy supply. Inspired by the possibility of shaping the future, Luna embarked on a hero's journey.

Her reputation as a pioneer spread and she received a mysterious message that led her to a hidden petrol station. There she met her mentor, a wise engineer, who told her about a ground-breaking technology that could change the fate of the world.

Luna did not hesitate and embarked on a perilous journey to find the key components of the technology. She overcame obstacles along the way, from technical challenges to moral dilemmas. But her determination grew with every test.

In the darkest hour, Luna reached the precipice where she was faced with a grave decision - to use the technology for personal glory or to give it to the world. Her heart led her to the right choice, and she decided to make the invention available to the public.

Back at the petrol station of the future, Luna installed the technology and the world experienced an energy revolution. Her heroic deed spread like fire, and Luna became not only the heroine of her time, but also a source of inspiration for future generations.

The petrol station of the future became a symbol of progress and collaboration. Luna, now a wise mentor herself, smiled as she saw the fruits of her hero's journey - a world fuelled by innovation and compassion.

(ChatGPT, personal communication, 13 November 2023).

I then asked another artificial intelligence (www.craiyon.com)⁶ to visualise the following paragraph for me: "In the not-too-distant future, Luna, a technology-enthusiastic engineer, finds herself in the ordinary routine of her everyday life." At the same time, I drew my idea of Luna (see my own illustration).



Illustration 4: Own illustration



Illustration 5 Luna created by AI

Other suggestions that the artificial intelligence provided me with have a similar aesthetic. In all of the suggestions, I notice that the illustrations were developed very contextually. The moon as a translation of the word Luna, the laptop as a symbol for work and science, and the like.

The question "Is it already art when AI makes great pictures? Klaus Diepold (2022) is of the opinion that computers can produce interesting results in the sense of explorative creativity and support

⁶ Results at https://www.craiyon.com/image/2MYrQBqhTBSI_cGluUwuPA

people in creative tasks. Explorative creativity is art that follows fixed mathematical rules. However, "thinking outside the box" is difficult for computers and artificial intelligence. He illustrates this with a comparison: AI can beat humans in games such as chess, but it cannot cheat spontaneously. Art exists in a social space in which people communicate and decide together what art is. He believes it is possible "that art will change as a result - art is (...) always related to the available technologies."
(Diepold 2022)

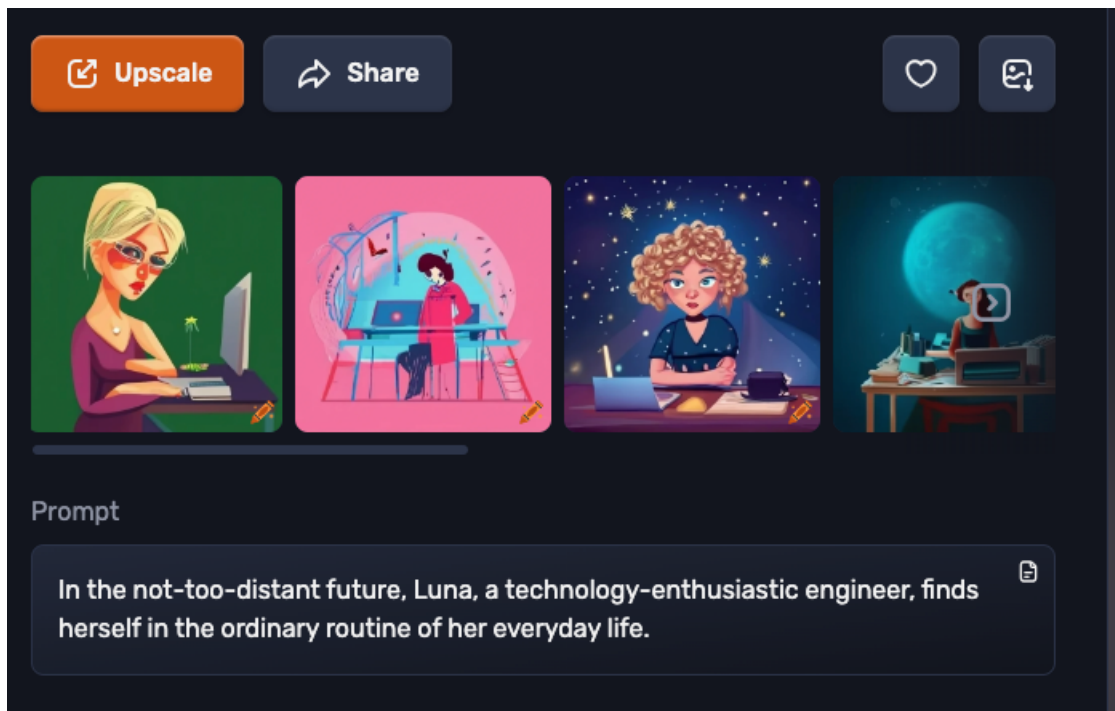


Illustration 6 Variations of Luna by AI

Inspired by videos and music created with artificial intelligence, such as completely created series of "South Park" or the following video "Eminem without Eminem" available at <https://youtu.be/98WTwSnkoas>, I asked ChatGPT to write me a rap about future scenarios for the infrastructure of petrol stations.

(Verse 1) Yo, step into the future, where gas stations gleam, A whole new scene, it's like a driver's dream. No more fossil fuels, we're rolling green, Electric vibes, charging stations, the unseen.

Solar panels on the roof, harnessing the sun, Powering up the pumps, yeah, we're getting it done. No more emissions, no more pollution, Clean energy revolution, that's the solution.

(Chorus) In the future of gas stations, we rise, Electric power, reaching for the skies. No more gas, just a charge and go, Welcome to the future, watch it unfold.

(Verse 2) Smart tech in the pumps, AI at the helmet, Autonomous cars charging, yeah, overwhelm. Swipe your card, tap your phone, it's a breeze, Futuristic vibes, we're bringing the keys.

Batteries stacked, like towers in the night, Fast charging speed, yeah, it's outta sight. No more waiting, just a pit stop delight, In the future, we're taking flight.

(Chorus) In the future of gas stations, we rise, Electric power, reaching for the skies. No more gas, just a charge and go, Welcome to the future, watch it unfold.

(Bridge) Wires in the ground, power surging through, No more fossil fuel blues, we bid adieu. Green energy flowing, like a neon glow, Future of gas stations, watch it grow.

(Verse 3) Restaurants and lounges, while you charge, Electric cars, living large. Redesigning the space, a futuristic face, Gas stations of the future, leading the race. Autonomous convenience, no need to steer, Smart grids managing, crystal clear. From city to city, charging lanes appear, The future is now, have no fear.

(Chorus) In the future of gas stations, we rise, Electric power, reaching for the skies. No more gas, just a charge and go, Welcome to the future, watch it unfold.

(Outro) So here's the vision, the future we see, Gas stations evolving, breaking free. A cleaner world, where the air is bold, Future of gas stations, the story's told.

(ChatGPT, personal communication, 13 November 2023).

Example of some verses realised in musical form by artificial intelligence using generators from the uberduck.ai website: <https://app.uberduck.ai/rap/song/31189395-2c9b-40bb-9bde-241bac297856>

7. Artificial intelligence (AI) and cultural codes

AlphaGo, an AI programme created by DeepMind, made history in 2016. In a 5-round tournament, it beat the world champion Lee Sedol in the complex board game "Go". At the end of the tournament, however, the focus was not only on the AI's victory, but also on move 37, which for many experts demonstrated AI creativity. But is it creativity? In my opinion, it's a kind of "unencumberedness" of cultural codes. It almost seems like a child... but whether it is creativity, creative power, rather not. The system didn't learn from humans, but from watching and creating the game itself and therefore didn't adopt "cultural" conventions.

AI has little relation to our sensory perception of our world in dialogue.

But is it perhaps more culturally and religiously neutral?

The question is therefore not whether progress is shaped, but how: how progress remains human. I am concerned with how we can look at the present and future technical possibilities neither naively nor sceptically and at the same time not lose sight of the question of what kind

of progress we are actually striving for. Although human reason constantly produces new inventions, at the same time reason also means being able to say "no". Recognising that a direction we have taken is wrong is also a form of progress (Hartl, 2023: 13).

AI looks at reality from many different angles and is therefore more independent and objective. AI considers different information (mostly) in real time in its analyses, instead of only subjective experiences from the past like humans! Machines do not have cognitive biases like humans, but the algorithms that react to the world are a black box that we do not yet understand, with the main problem being the lack of a value base!!!⁷ Logics of thought create their own reality.

Who sits in front of the computer? Who combines terms and how? Who thinks critically about the results? Who is the designer?

8. Aesthetic and artistic potential

Do artists also want to solve problems? They do so using other media than scientists, because their "language" is painting, theatre, music and much more. Many of today's well-known works of art sparked indignation when they were created because the respective "rules" were not observed or even disregarded. This makes them impressive and stirring. (see Ulmann, 2013).

Impressive works of art have meaning. If the meaning of a thing is therefore experienced, it requires an interpretation - even if this in turn is subjective and guided by feeling (emotion), this interpretation creates awareness.

Building on this, aesthetic experience can (sic!) be understood as a way of experiencing in which precisely the value of the perceived or imagined objects described above, which otherwise guide our actions unnoticed, is at the centre of interest (Piecha, n.d., p.2).

Interpretations and interpretations of the world strive for emotional coherence. "Emotions are physical and mental reactions through which an environmental event is absorbed, processed, classified and interpreted, whereby an evaluation takes place" (Hülshoff 1999, p. 14). Impulses for learning also imply an emotionality of intention. Learning is also about breaking through cycles of thinking, through resistance, problems and irritations, because this gives an action new reasons and a changed meaning (cf. Faulstich 2014, p. 7 f. cited in Schulz, 2019, p.14).

The aesthetic experience not only takes external perceptions into account, but can also be based on ideas. It explains the subjectivity of our aesthetic value judgements and serves as a plausible model for

⁷ The question is whether the lack of a value base is also tending to increase in people or whether it is becoming inscrutable due to its multidimensionality.

the function of emotions better than the usual descriptive observational judgements. World views can be perceived by the recipient as subjective value experiences (represented in the work of art). This makes it possible to communicate world views that are not possible in this way using everyday language. It is precisely for this reason that we need an art education that offers children and young people a training ground for developing their own stable value preferences by linking aesthetic experience with the cognitive function of emotions. This is particularly important if one follows the assumption that ethical and moral values are not something that exists in the world on its own and are therefore based on the individual's sense of values. Art education trains the experience of values through practical activity and enables students to express their thoughts and feelings and take their own standpoint. This activity involves a confrontation with the ideas of others. This experience leads to a development towards openness and tolerance (cf. Piecha, n.d., p.3).⁸

In this respect, artistic processes and experiences in particular can lead to a deeper understanding of social or ecological problems and create awareness.

We utilise the potential of art to responsibly help shape the forms of life and economy of the future. (...) Because the rationally orientated findings of scientific research on climate change would only lead to changes in people's actions if they were also grasped by the senses and emotions (Köstler, 2017).

The encounter between art and science on an equal footing should recognise the ways of thinking of the other discipline and engage with each other in an open-ended way in order to create something new together (cf. Dörner & Niederleithinger, 2022). As a result, complementary approaches are used and problems and solutions confront each other, leading to new perspectives. Transparency and participation are also important factors in artist-based research practice⁹ (cf. Wang *et. al.* 2017).

Contemporary art methods are appropriate in this context.

- Irritation, serious humour
- Participation, mediation
- Inspection, research, experiment -> starts with a question
- Staging, Collection
- Transformation and context shift, familiar things anew
- Mashup and bricolage, mix until you can't do it anymore
- Narration, seduction
- Negation
- Provocation
- Irony (joke to think about)
- Subversion, infiltration, hacking (creative misappropriation)

⁸ According to Piecha (n.d., p.3), there is a connection between interest in art and certain personality traits.

⁹ on artistic research: KUNST+UNTERRICHT 362/363 (2012): S.12.

Irritation is the disruption of routine, as an example I would like to mention the artist AiWeiWei, who quotes a drowned child as a photo reenactment. Participation is a strategy in which the viewer takes an active part in what is happening, such as Marina Abramovic in her performance "The artist is present" in 2010. Inspection means close observation. This can happen in series, variations or by pointing out similarities and differences. Staging can refer to cultural or illusionistic space. Fiction and staging make use of the combination of art and theatre. Cindy Sherman, for example, can be mentioned here with her productions in a variety of roles. The transformation involves a shift in context - something familiar takes on a new meaning. Marcel Duchamp's work Fountain from 1917 is a good example: mashup and bricolage are mixed together as much as possible. Narration is a concept that has become established, particularly with the advent of video art. An example of this narrative form is Peter Fischli and David Weiss with "Der Lauf der Dinge" from 1986/87. Negation is at the beginning of every innovation. The aim is often to free oneself from the rules and develop a new understanding of art. Take Jackson Pollock, for example, who painted without touching the canvas, "dissolving" the artist's style and thus changing the prevailing understanding. Provocation is used in artistic contexts as a means of criticism. Pussy Riot with the forbidden nature of the performance or Jeff Koons with "Ilona on Top", 1991, a depiction between pornography and art. Irony is created through creative means that do not fit together or belong together. In the work "Meteorite", Maurizio Cattelan plays insignificance. Subversion, infiltration and hacking are also strategies of creative misappropriation outside of the visual arts. (see Weiss, 2019)

8.1. Design practice

Infra expresses in formations with adjectives and nouns that the thing described lies underneath something, exists, takes place. Structure is the arrangement of the parts of a whole in relation to each other or a structure consisting of parts that are interdependent (cf. Oxford Languages)

Infrastructure is defined as the necessary economic and organisational substructure as a prerequisite for the supply and use of a certain area, for the entire economy of a country (cf. Oxford Languages). So what can I do with things that are underneath? What can I do with structures? How can I treat them, change them, rearrange them?

It is also a kind of reframing when street lamps become petrol stations and petrol stations then become travel supply islands.

The ideas of where and how electric cars can get their power are becoming increasingly diverse. A Berlin-based company has discovered street lamps as electric charging stations (Lockschen, 2019). In this text, I reinterpret the term petrol station as a travel supply island and would now like to invite you to a **practical exercise**:

But here are a few more possibilities that generally contribute to creativity and thus to practical exercises:

- Use analogies and metaphors.
- Change perspective.
- Change dimension.
- Exposure to stimuli.
- Restrict time.
- Confidence in serendipity (stumbling across something you are not looking for, but which solves a problem in a surprising way).
- Visualise (sketches, pictures, mind maps, sculpting, scribbling on a napkin, etc.).

The following figurative "alteration tailoring" offers further possibilities to change the design:

- Change
- Reversal
- Contrasting
- Accumulation
- Multiply
- Exaggeration
- Oversize , miniature
- Series
- Abstraction
- Reduction
- Variation
- Metamorphosis
- Symmetry/asymmetry
- Colour palette
- Complementary contrast
- No symbols, no words, no figurative kit
- Black/white (without colour)
- Simplify
- Add/remove
- Importance
- Precision
- Excerpt
- Cross Industry

Let me pick out the term reduction. Super Mario was developed because the computer display only had certain possibilities (number of pixels/memory). This meant that he had to limit the video game character to the essentials. Shigeru Miyamoto, the inventor of Mario, chose the large nose as a cartoon look and the moustache to avoid the mouth and facial expressions. He used the cap to

animate the problem of hair. and the dungarees to emphasise the size of Mario's arms in comparison to his height. Mario is therefore a product of limitations (cf. Burkhardt, 2019: 94). Another method is also briefly explained to help: Ask yourself Cross Industry questions. How would... McDonalds... an airline... a subscription model... a hairdresser... solve my problem? (cf. Gehlen, 2021: 83).

Briefly discuss the idea of "travel supply island" with your colleagues and draw a pictogram or picture for the term "travel supply island". Use the beer mats to design or the modelling clay. Improvisation is a raw form of innovation! Doing is like wanting only better!

8.2. Playful approach: Shifting Perspectives Game

If you want to play with the travelling supply islands, the Shifting Perspectives Game. Digital and Analogue Card Game. It was developed in the SLIDE EU project see <https://slide.reu.pub.ro/> (Service-Learning as a pedagogy to promote Inclusion, Diversity and Digital Empowerment). The game is available digitally at: <https://form.jotform.com/223315022462039>

The analogue game contains cards for the following areas:

1. PLACE OF INSPIRATION
2. CREATIVE METHOD
3. INSPIRATION QUESTIONS
4. SERVICE
5. DIVERSITY AND INCLUSION
6. CULTURAL DIMENSION
7. CONCRETE DESIGN ACTIVITY
8. CHANGE OF PERSPECTIVE. ROLE

This game was developed by Wolfgang Weinlich to stimulate critical thinking and to use various creative methods with values, art and culture in an optimal way for an innovative and playful realisation of any topic. The first card options are for choosing the place where inspiration is sought. Creativity methods and inspiration questions are first asked in order to arrive at exciting subtopics in a playful way. The next cards relate to service. The next cards are barrier or problem-solving cards inspired by the seven pillars of inclusion. With the cultural dimension, values are awakened or questioned and challenged. Now creative activities are chosen to strengthen the improvisation potential of the players as a raw form of innovation. Artistic, creative opportunities as well as teaching and learning through technology (using the SAMR model) can be creatively utilised.

However, the topic is not only scrutinised and creatively elaborated from the perspective of art and culture, but also from newly composed perspectives in the final round. The composition of the cards is a combination of the ISTE standards for technological empowerment, the creativity technique of De Bono's six thinking hats, the Walt Disney method, Mario Pricken's publications and other "brain shifters" and superheroes. This should enable the evaluation and improvement of ideas from different perspectives.

The special thing about this is that new combinations of card choices are constantly being created, leading to different thought patterns. This is also just one of many tools.

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