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Putting a White Box in the Black Box

In April 2023, I turned down a Sony World Photography Award because the image I submitted was AI-generated. My rejection of the award was motivated by the need to distinguish more clearly between photography and AI-generated images (promptography) and to initiate a discussion on the future relationship between the two. This essay is intended to contribute to this discussion by working out the differences in motivation and workflow and taking a close look at the future cooperation between man and machine.

Part I. Bringing Light into the Black Box

The World of the Photographer

Photography is image-making with light particles. The path of most photographers therefore leads "out into the world". Many photographers explain this as curiosity about people, cultures, and places. Their hunger for experience is fed by empathy. Photographers want to freeze time, build bridges to other ways of life, bring problems to consciousness, give people a voice, show the "human condition". The image is formed through a dance with the world, a shared process with whatever is in front of the lens. When you work with people, respect, trust, and empathy are the keys to strong images. Social competence pays off – a good portrait is about finding and being found.

Promptography and the World

Does promptography need the "way out into the world"? No. But promptographers need to have been out in the world once, to have gained experience and knowledge – this is the material I work with. In prompting, therefore, the journey ideally goes inwards. I need to ask myself: what do I want to generate? Why? I can draw entirely from my imagination. But what does it yield? Which experience can I build upon?

However, many people do not embark on this possible journey inwards. A closer look at the categories of users will explain why.

The "John Doe" Prompter

Most users welcome AI as a shortcut to an image result that they could not previously produce through their own skills. They lack the time, talent, training, or patience. They are excited by the speed and ease with which they can now produce images that meet their needs. They are not interested in depicting the "human condition" or in freezing time. It is more important to create a cool image, one that gets applause from their own community. It doesn't matter whether the user had the lead in the process of creating the image or was pulled along by the AI. It is the result that counts. And the result

often reveals the unconscious clichés of the user. Here we find many mashups like Batman dressed as Barbie.

The Prompt Engineer

Commercial image creators use the new technology because they want to save time and money. They want to stay competitive and on the cutting edge. Prompt engineers are experts in a certain image category and want to solve a given task with AI. They know the keywords and workflow of an industry and have already gained experience in it. To use AI image generators as a professional tool, I must enter the process with the intention to solve a task and with the attitude that the first four images are just the beginning, the starting point for a continuous fine-tuning of the image generation that looks critically at intermediate results, discards, starts again, changes the workflow, and mixes platforms. To evaluate the generated output and derive corrections from it, I need experience in editing and image-making. The prompt engineer is "not just giving orders", he is giving informed orders, based on knowledge and experience in his business.

But the result often betrays the unconscious clichés of the industry. The generated images convey the same visual mainstream we know from glossy magazines. Unfortunately, this happens very often, because advertising is mostly about reaching the broad masses with a statistical average.

The Prompt Whisperer

As an artist, I see technology as liberating individual imagination from material constraints. Since there is no longer any need to compromise on production, and the subject, action, location, lighting, equipment, etc., can be freely chosen, the artist can for the first time express his or her vision unfiltered. The promise of being able to create new visual languages with a new tool, synthesising a never-before-seen aesthetic from the visual languages of the past is appealing to many.

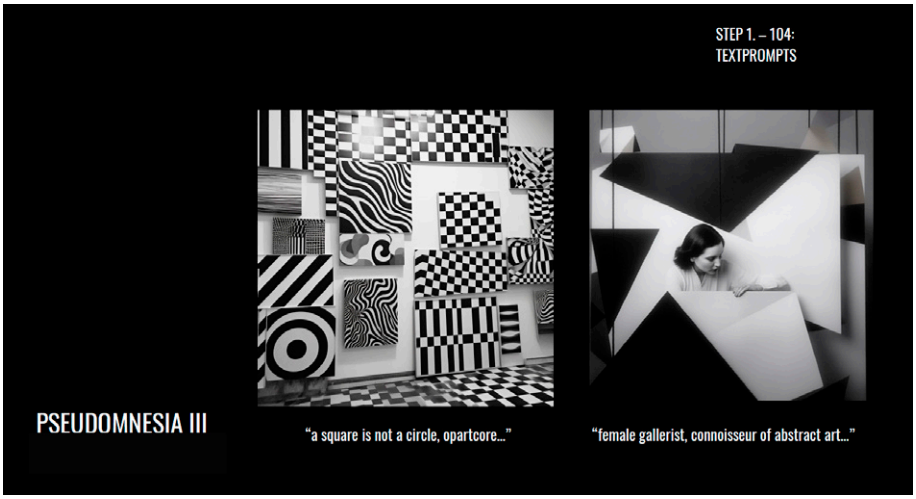
Unlike the Prompt Engineer, the Prompt Whisperer's intended goal is not to create a product or feed a target audience. Like many photographers, Prompt Whisperers are interested in expressing the human condition. As AI training data can be seen as a mirror of mankind, or what C. G. Jung called the collective unconscious, the task of the Prompt Whisperer is to synchronise his subjectivity with the collective. And to become a conductor of the anonymous choir that is the training data of the AI.

To become a Prompt Whisperer requires the skills of a Prompt Engineer, the mind of an artist, and a deeper consciousness of your own psychological condition. If you fail here, the work will show the unconscious clichés of mankind.

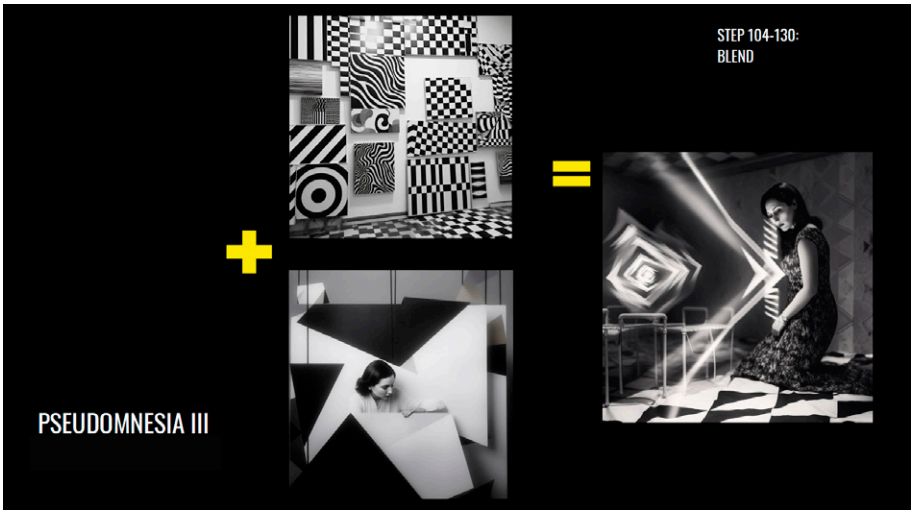
If you are not able to tweak the training data and become a conductor, the training data will take the lead and produce a statistical average.

An Example

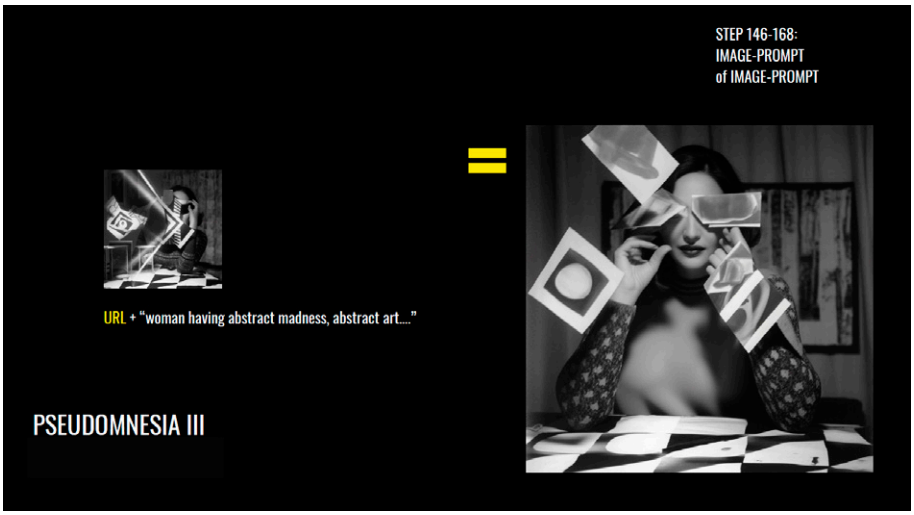
In 2023, I was invited by a gallery in Panama to show generated images in the context of abstract art. I decided to create images that fuse the history of abstract art with a photographic aesthetic. As it is a good example of my creative workflow, I will take you through the individual work steps.



Phase 1: I started, as always, with “text prompts”. I have identified more than 13 different text prompt elements (subject, solidifier, vibe, action, location, medium, medium technology, perspective, colours, lighting, reference, genre, booster) and I usually start with seven or eight of them. Using AI, I created two categories of images: abstract art and images of people in galleries.



The resulting images formed the material for Phase 2: the blending of two images to create a new one. The “blend” feature analyses the structure and content of the images and melts them into a new image. The resulting image becomes an organic “child” of the input images.



Again, the resulting images form the material for Phase 3: "image prompts". These combine image and text and use an existing image as a reference for the accompanying new text prompt. I use the image prompt feature until I get an outcome that differs, an image that has potential.

Usually, there are always parts of an image that don't work, so I erase this part in Phase 4 and tell the AI, with a new text prompt, what to generate instead. This is called "inpainting" (or, as Midjourney calls it, "vary region"). Sometimes the resulting image needs to have additional space on the left, right, upper, or lower side, so I enlarge the canvas and describe, with a new text prompt, what should appear in the new space. This is called "outpainting" (or, as Midjourney calls it, "zoom").

After many improvements through inpainting and outpainting, I arrive at the final image.

To set up this workflow in summer 2023 by experimenting took me two-and-a-half weeks. Now, a year later, my workflow has become even more complex. I often use "nudify apps" for outpainting. These have been made to "undress" human figures in an image and are thus less restrictive than the leading platforms. I also use upscalers as creative tools, creating variations of the image or changing styles. Initially, the task of upscalers was to enlarge the pixel size, but they have become an additional creative tool in their own right.

Part II. Unboxing Creativity

In the last twelve months, I have taught more than 30 workshops, given 60 lectures, and taken part in 20 panel talks. I repeatedly come across unreflected fears that result from a lack of practical knowledge and/or a lack of definitions of terms: "AI replaces human creativity", "AI makes artists superfluous", "AI is more intelligent than humans and develops consciousness."

When I ask what creativity, intelligence, and consciousness are, there is silence.

All the terms used in the media and panel talks are "philosophical", i.e. ultimately not clearly definable terms that are subject to change. But we use creativity, intelligence, consciousness as if these were unique concepts. You could spend several semesters at university studying each term without coming to a clear conclusion. Nevertheless, everyone thinks they know what is meant by "creativity" and fears that AI could take it away from them.

Let's take a closer look.

What creative role do humans play in working with AI?

For me, AI is an ideal tool for artists. It frees artists from material constraints and allows them to draw entirely on their imagination. If they know how AI generators work, they will be able to work around embedded biases and restrictions. The material they are working with is their own knowledge and experience. As the creative process is a co-production of humans and AI, the role of the artist is comparable to that of a director. The AI is actress, cameraman, sound engineer, editor, set designer, etc., but the artist needs to direct, to make creative decisions and choices.

Who has the lead in the creative process: Man or machine?

It simply depends on the skills of the human working with AI. Many critics of AI believe that working with AI means giving up one's own creativity. They overlook the fact that the creative process consists of three steps: prompt – generation – evaluation. The more informed the prompt (*the start of the generation process*), the better the generated images will be. The more informed the evaluation of the generated images, the easier it will be to adapt and improve the prompt in the next step. It is here, in the first and third steps, where the artist connects his subjectivity, his artistic biography, with the training data to create a new work. These steps can and must be fine-tuned in many runs – until a convincing result is achieved.

Is human creativity replaceable?

In late 2023, many international studies were published celebrating the fact that ChatGPT performed as well as humans in creativity tests (e.g. Haase and Hanel 2023; Koivisto and Grassini 2023). But what definition of creativity were these tests based on? Unfortunately, this was not communicated.

It is time to ask ourselves certain questions:

What is creativity anyway?

Wikipedia defines creativity as something "novel and valuable" (Wikipedia, n.d.). Whether this novelty is global, continental, national, community-based, or just refers to the development of a single person remains open. Why creations should also be useful is a mystery to me, especially because I can attribute benefits to all things. Sugar is valuable for dentists, too.

Wikipedia has a definition of intelligence that is quite close to creativity: "knowledge to be applied to adaptive behaviours within an environment or

context" (Wikipedia, n.d.); or, as I would translate it, as old knowledge adapted to solve new problems.

If I take these definitions seriously, I find myself on a slippery slope. Isn't the creation of something that is "novel and valuable" also the adaptation of old knowledge to new problems? What is the difference between creativity and intelligence? Can I be creative without intelligence?

In his well-known book *The Artist in the Machine: The World of AI-Powered Creativity*, Arthur I. Miller, who is often quoted, describes creativity as follows:

> My studies of highly creative people have led me to define creativity as a two-step process: the production of new ideas and objects from what already exists, accomplished by problem-solving. This definition applies equally to the brain as an information processing system and to the computer (Miller 2021, 20).

Miller simply combines Wikipedia's definitions of creativity and intelligence into one. Is that enough? I don't think so.

Miller also believes that AIs will be truly creative when they have evolved emotions and consciousness. And, in his imagination, this is possible through training with data. Really?

Think about it: Can I teach a person (or a machine) what love is by feeding it love films, love poems, and love songs? No problem for Miller. For me, this is too short-sighted and a poor understanding of feelings. You will only understand love once you have felt it.

I find Miller's bestseller about AI creativity unhelpful. It was written before the technological breakthrough of 2022 and the author has given no substantial update on his webpage since then.

Which creativity theory can help to understand what is going on?

Leaving aside the creation myths, the yield from 150 years of creativity theory is meagre, and more recent buzzwords such as "design thinking" have unfortunately been unable to add anything substantial. For more than a year, I have researched which creativity theory could help to understand the future collaboration between man and machine. And it is only the work of Margaret Ann Boden that stands out. Her work embraces the fields of artificial intelligence, psychology, philosophy, and cognitive and computer science. Boden's theory is much older than Miller's but more helpful when it comes to defining the nature of creativity.

Boden developed a threefold division of creativity in the late 1990s and later summarised it as "Creativity in a nutshell" (Boden 2004, 1–10):

a) the *combination* of given content (e.g. mashups such as Batman as Barbie)

b) the *exploration* of a given space: we humans have a certain perspective in space, but the AI can take all perspectives into account and look under the chair, behind, and above us.

Only a) and b) were researched in the AI creativity studies, and they are naturally easy for AIs that are based on statistical and mathematical probabilities.

But what about Boden's third form of creativity: c) The *transformation* of given content and spaces? Is this even possible? Can AI free itself from its training data and make a leap into another dimension?

At the Munich Media Days, I asked Prof. Björn Ommer (whose team built the foundations of the open-source model Stable Diffusion) about this. He is extremely sceptical that this is possible but wouldn't rule it out completely.

Part III. Thinking Outside the Box

We need to think ahead. I truly believe that we must set up the future creative collaboration between man and machine properly. To do so, we first have to identify the strengths of each partner. Second, we must find the perfect match for our skills. Third, we must continuously optimise our collaboration. In a symbiotic relationship, humans and AI converge to amplify each other's strengths.

Recently, there was a very interesting study that offered a glance into a future collaboration between man and machine: "Training with AI: Evidence from chess computers" (Gaesler and Henning 2023) examines the quality of human chess before and after the invention of chess computers. Since the 1990s, chess computers have become so powerful that humans can no longer win against them. Did we stop playing chess? No. Instead, we started to use chess computers as sparring partners for training, with the result that the quality of chess is stronger today than in the past.

Could something like this also happen with human creativity?

I think so. Human creativity could also grow through collaboration with AI. But how?

I suggest outsourcing a) combinational and b) explorational creativity to AI and maintaining the evaluation of the outcome. In this way, we will train our combinatorial and explorative skills along the way.

But the most important thing will be to research what c) transformative creativity is and explore how we can support and increase it. If we honestly examine how many creative creations are based on combination and exploration, we will realise that transformative creativity is the least common.

Now we have the chance to change this ratio through human–AI collaboration. This has already been termed "augmented creativity". It is an alternative to the doomsday scenarios of many, and a future that I find sexy.

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Boris Eldagsen (*1970) studied fine arts at the art academies of Mainz, Prague, and the University of Hyderabad (India) and philosophy at the universities of Cologne and Mainz.
As a photomedia artist, he has exhibited in institutions and festivals since 2000, including Deichtorhallen Hamburg, CCP Melbourne, ACP Sydney, EMAF Osnabrück, Singapore International Photography Festival, Noorderlicht Groningen, and Kochi-Muziris Biennale.
As a freelance strategist and idea generator, he has worked since 2001 for agencies such as R/GA, Razorfish, MRM McCann, Saatchi&Saatchi, Scholz & Friends, TLGG, Endemol Shine, and others.
Since 2004, Boris has lectured at Victorian College of the Arts (University of Melbourne), Photography Studies College in Melbourne, Akademie für Bildende Künste Mainz, and Hochschule Furtwangen.
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Since 2019 he has worked for Roger Ballen as a digital consultant.
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Boris is an internationally known expert on AI-generated images.
His refusal of the Sony World Photo Award in April 2023 kicked off a global debate about the relationship between photography and AI-generated images ("promptography"). His image "PSEUDOMNESIA | The Electrician" became "The picture that stopped the world" (*The Guardian*) and a symbol for a new era. He was interviewed by *The Times*, *The Guardian*, Bloomberg, The Verge, BBC, CNN, Al Jazeera and others.

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