YRKESHÖGSKOLAN
NOVIA

Seeking creativity

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Master thesis

Master of culture and arts, entrepreneurship in the arts, photography.

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INTRODUCTION

Creativity - the ability to produce original and unusual ideas, or to make something new or imaginative (Cambridge University Press, n.d.). Universal in its nature, but so complex when examined in more depth the concept of creativity is the main object of study in this thesis.

In this work, I start with exploring creativity in general, I ask a question if we can train creativity – is creativity gained or inherited? Because there is no unequivocal answer to this question, I soon realize I'm more interested in the creative process itself. I follow the creative problem-solving model stages: preparation, incubation, illumination, and verification to explore how the creative process works. This is my attempt to connect photography and science as I see it.

I'm following creative problem-solving model steps to generate my artwork. By assigning specific actions to each of the stages, I create artwork in 4 chapters. Each chapter is my interpretation of theoretical events in the corresponding stages. In the thesis I rationale my work with a scientific background, I explain how each of my steps supports the creative problem-solving model.

I conclude that the most important stage of the creative problem-solving model for artists is the incubation stage. In this stage, only subconscious work is present, and the best results can be achieved by doing mental relaxation or even physical work. I suggest forced use of this stage and even using some idea-generation methods to achieve the desired result faster.

Keywords:

Creativity, creative problem-solving model, creative process, science and photography.

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1 RATIONALE

My personal academic background is in natural sciences and as of this moment, I also teach university-level ecology and nature conservation. I have also been part of the organization “Teach for All” were while working in the classroom I explored ways how to use creative exercises to promote science learning. Because of this strong scientific and teaching background, I developed an interest in the science behind the art in general. While doing my research I came across the nature versus nurture phenomenon of creativity. This got me thinking if it is possible to train one’s creativity. And if so, how? My master thesis explores this question and in my artistic practice, I’m following creative problem-solving model steps.

I began my creative practice by exploring scientific research about creativity and perception. I interpret scientific concepts in my artwork. I use this as a creativity exercise and purposely use some scientific concepts to play with the viewer’s perception. The next step was to explore the relationship between art and science, I focus on photography as an art form. I look at this from both sides – how photography has affected science and how science has affected photography. I review how I have used photography in my biology research. I explore artists using science in their art.

My research on the intricate relationship between art and science reveals the similarities between the scientific method and the creative process. There is plenty of models representing the creative problem-solving process, but I focus on the “innovation process model” by G. Wallas (1926). This is a historical four-step creative problem-solving model that is still used nowadays. Each step is characterized by different actions. These actions can be transferred from idea innovation to a creative process.

Creative problem-solving model by G. Wallas:

Preparation – Incubation – Illumination – Verification

I take this model as the backbone of my artistic work and categorized my practice into these four stages. Via my own personal practice, I explore how this model works in the art context. I conclude that the preparation and incubation stages are the most time-consuming and the main phases where the creative process happens. The moment before the incubation stage might be mistaken for artistic block, but if used correctly it can be solved with creative problem-solving methods. I test a few methods to achieve the verification phase sooner. In the art world, the verification stage is out of the artist's reach, because artwork usually is verified and judged by the outer part of the creative problem-solving model – the audience. But disregarding the outer agent of the model, I can shape how my artwork is viewed or *perceived* because in the preparation stage I have explored visual perception.

My final master thesis consists of four sets of series representing each stage of the creative problem-solving model. Four iterations each with a different approach and scope to creativity. The first set "Preparation" consists of photographs created to interpret scientific research around creativity and perception. The second set "Incubation" consists of practical work done to practice mental relaxation, meaning that it consists of handmade items like one-page cut-and-fold photobooks or treated prints. The third set "Illumination" shows my practical work development after the "eureka" moment. The fourth set "Verification" consists of work to be shown in the final graduation exhibition.

2 RESEARCH CONDUCTED

2.1 Creativity.

“Creativity - the ability to produce original and unusual ideas, or to make something new or imaginative” (Cambridge University Press, n.d.). But what makes a creative person creative? What helps a person be able to produce original and unusual ideas, or to make something new or imaginative?

At the time of writing this thesis, Wikipedia article on creativity consists of 21018 words (*Creativity - Wikipedia*, n.d.), and it takes around 161.5 minutes to read it. The article has 265 references. I use this data to highlight the extent this topic covers. It is really important to justify my decision not to cover every aspect of creativity, regardless of the fact that I am looking for an answer to a general question – I’m seeking creativity.

Brown (1989) writes: “The question of what constitutes creativity needs to be addressed on two quite different levels: First, what individual and/or contextual factors or processes lead to a creative product? [..] Second, what is the status of creativity as a concept, and what implications does that status have for theory development and evaluation?” So without any deeper research of creativity as a concept, I’m exploring what factors or processes lead to a creative product.

2.2 Nature vs. Nurture

In natural sciences it always has been questioned is the trait is acquired or inherited. The first common aspect of the art and science Nature vs. Nurture phenomenon. When this question is asked in the context of art and artist, it is not a simple answer. The main problem roots in the difficulties of defining and measuring creativity - what are the variables we are measuring (Brown, 1989)? Is that ability to come up with a number of new ideas in a particular time frame? Is that the net worth of the artist?

Because creativity consists of at least four components: the creative process, the creative product, the creative person, and the creative situation (MacKinnon, 1970; Mooney, 1963 as cited in Brown, 1989), the creative person is often overrated.

There have been researches on individual differences in creativity that have been connected with differences in personality traits. The most pronounced relationship is between openness to experience and all creativity measures between creativity (assessed by the Creative Personality Scale (Gough, 1979, as cited in Wolfradt & Pretz, 2001) and openness (Wolfradt & Pretz, 2001). But the question remains – are these traits inherited or obtained? The same question stays open if we look at the correlation between creative production and general intelligence. It is known that the correlation between those traits is strong, but it can't be used as a valid predictor of future scientific or artistic creativity (Vernon, 1989).

2.3 Photography and science

Photography and science always have had a dual relationship. Art has been a way how to document science and science always have been used in art. The same applies to photography as a form of art. If we are summing up a brief history of how photography has shaped science and vice versa, it is important to understand that early photography advances were directly affected by scientific progress – from metal-based images to flexible film in the 1880s and colour photography – all these advantages go closely together with the development of technology. Susan Sontag in her classic book *On Photography* (1977) opens a discussion of the connection or even intersection between art and science: "Some photographers set up as scientists, others as moralists. The scientists make an inventory of the world; the moralists concentrate on hard cases." Sontag emphasizes her statement with the example of German portraitist and documentary photographer August Sander as photographer-as-scientist.

When we look at more traditional comprehension of the relationship between science and photography, we should examine this relationship from both sides – science using photography and photography using science. The most known example of science using photography is Anna Atkins and her 1843 book “Photographs of British Algae: Cyanotype Impressions” this is the first book illustrated with photographic images. Atkins used the cyanotype photographic process and applied the process to algae by making cyanotype photograms that were contact printed. After photography becomes more accessible to the general public including scientists. Nowadays photography is widely used across almost all fields of science, for example, ornithology, astronomy, physics, earth sciences, and chemistry.

Photographers using science to create their art on the other hand seem to be much more diverse than a group of scientists using photography. If in science photography is mainly used to document scientific research or the photographs are used for the research, then artists usually use scientific concepts and methods as their tools. Excellent examples have been seen in Paris Photo 2021: Almudena Romero and her project The Pigment Change. In her work, she uses light to change the pigment of the leaves creating photographs on leaves or photographs out of plants themselves.

Family Identity

© Almudena Romero – BMW Residency

Another excellent example is the British photographer Tim Flach, who works with animals and explores the role of imagery in fostering an emotional connection. In a fortunate event of face-to-face conversation, the artist emphasized the importance of creating emotional connection and empathy. He pointed out that he is using scientific concepts behind it and have published his scientific work about using animal portraiture to activate emotional affect (Whitley et al., 2021).

2.4 Innovation process and Creative problem-solving

Nowadays there are a few stage-based creative problem-solving models. The most used is the classic 4-stage model – the creative problem-solving model by Wallas (Wallas, 1926). This model might not be the most precise, because it tends to isolate each stage as a separate process, but it has been proved that subprocesses characterizing different stages can be happening simultaneously. Variations in these stages also depend on the domain of the creative work (Brown, 1989; Lubart, 2001). Creative problem-solving is widely used across industries. In the last few decades, it

has become an essential tool in business (Basadur, 1994; Čančer, 2014; Fontenot, 1993; Smailhodžić & Berberović, 2021) as well as in science, education (Kaufman & Sternberg, 2007; Munakata & Vaidya, 2012), and health care (Wolcott & McLaughlin, 2020) and other industries. Regardless of the industry ability to find new approaches to solving existing problems is highly valued.

For this master thesis, the creative process is explored via Wallas's (Wallas, 1926) four-stage model. Wallas described how the model consists of a four-stage process: preparation (or saturation), incubation, illumination, and verification (or implementation). This 1920s theory continues to be highly used among scholarly works on creativity. As previously stated, this is not the only creative problem-solving model used nowadays, but this is a generalized model and easy to apply across different domains. Each step is characterized by different actions. These actions can be transferred from idea innovation to a creative process of an artist.

Preparation. The first stage is about gathering information and systematic analysis of the problem. Usually, in the innovation process, this is the stage where the preliminary analysis of a problem, defining and setting up the problem occurs. Preparation requires conscious work and is highly dependent on one's education, analytical skills, and domain-relevant knowledge.

Incubation. In contrast to the preparation stage, in the incubation stage, there is no conscious work on the problem. Usually in this stage a person consciously is working on other problems or relaxing, doing physical work.

Illumination. This stage is also known as the "eureka!" moment or when the promising idea breaks through to conscious awareness. Purposeful and conscious work on developing the idea happens in this stage.

Verification. This is a stage of conscious work, which involves evaluating, refining, and developing one's idea.

It is important to note that the creative process is circular and usually happens in iterations. The idea might get invalidated in the verification stage setting the creative process back to the preparation stage.

3 PROJECT DEVELOPMENT

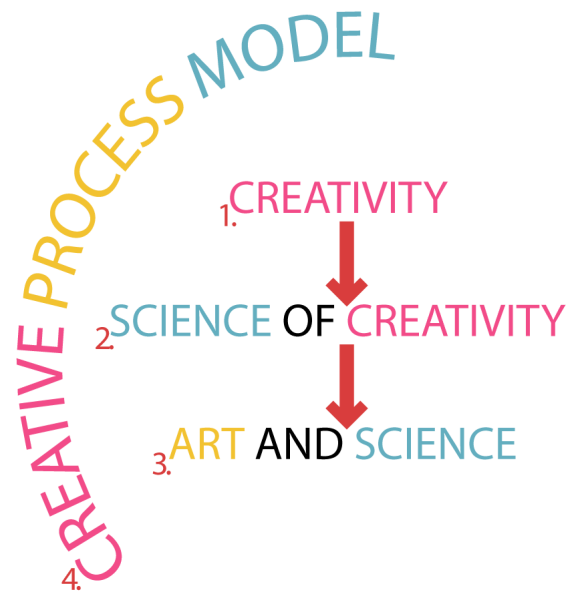


Figure 1. Stages of project development.

I can distinguish four parts of my project development (Figure 1). I applied and started my research with an interest in creativity as a personality trait (Figure 1, 1.). I soon realized that there are a lot of factors affecting creativity and creativity has been researched a lot (Figure 1, 2.). That got me interested in the general art and science relationship (Figure 1, 3.). Continuing my research on creativity and with the help of my mentor Assoc. prof. PhD. Elina Mikelsone I came across the historical creative problem-solving model (Wallas, 1926). Wallas describes a four-stage creative process: preparation, incubation, illumination, and verification. Reflecting on my practice I can distinguish each stage of the creative process model. For example, the stage when I explored creativity, the science behind creativity, art and science relationship can be put under the first stage of the creative model – preparation. It's

the stage when we investigate in all directions. I was exploring what makes a person creative.

After coming across this model, I purposefully used it as a backbone for my research and artistic work (Figure 1.,4). Further, I explain my creative process and research done in each stage. It results in creative artwork in four chapters: preparation, incubation, illumination, and verification.

Preparation.

In this stage, I explore creativity and perception as part of my attempt to connect art and science in a different way. I play with science and interpret scientific research in photographs. By doing research on creativity and perception, I have decided to embrace the following aspects of factors affecting creativity: upbringing, sense of self, and individual personal experience (Vernon, 1989; Wolfradt & Pretz, 2001). Because at this point I see that not only creative person plays role in this art-science setup, I continue my research on how we see and the factors affecting our perception. It is important for me not to cross the cognition “line” – I’m interested in processes that happen unconsciously or are physical. I explore how luminosity affects image perception (Loftus, 1985), if our expectations can shape what we see (de Lange et al., 2018), and what is more important – the speed in which the brain processes information or the time we are exposed to pictures (Johnston & Ya Nishida, 2001).

Incubation.

By its nature incubation is the stage where no active mental work happens, but the creative process happens in the subconscious. It has been proved that the subconscious work matter in this stage, but despite popular assumptions, it is **not** necessary to “forget” about the creative task one is working on (Gilhooly et al., 2013, 2015; Sio & Rudowicz, 2007). Based on this information I made myself physically

work with photographs created in the first chapter preparation. I was physically working with the work I was taking a mental break. In order to do that I made prints and manipulated them. I chose various methods – experimented with bleaching, embroidery, single-page books (Figure 2), and collages.

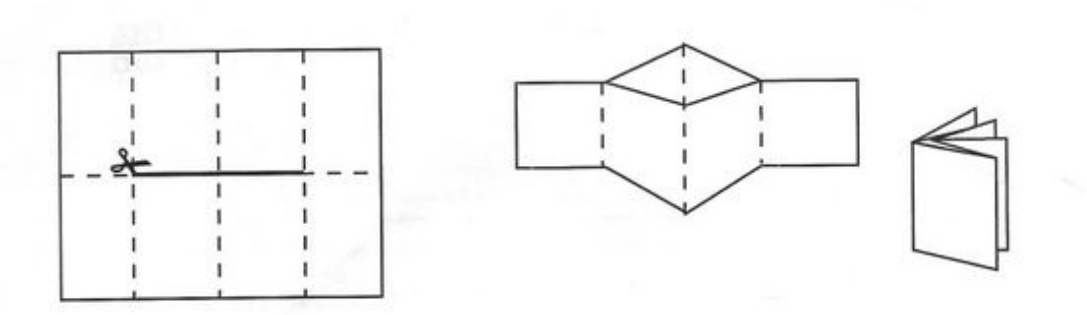


Figure 2. Cut and folded single-page book.

Not to my surprise and validating the science behind the creative process, these actions set me into the next creative problem-solving model stage – illumination.

Illumination.

This chapter consists of work triggered by the incubation stage. Illumination usually is characterized as the “eureka” moment followed by a train of thought. For me it was the question “but what if I did…” that set me into work mode. In the illumination chapter, I show a series produced in one of these “what if” episodes: “Growing up fat” starts whit exploring myself as a [creative] person. I’m exploring my body as many artists before I have done it. I divide my body into parts and then put them back together.

Verification.

This chapter is still open. In the creative problem-solving model verification is the stage where ideas are tested and evaluated. It is important to evaluate if the solution meets the needs and solves the problem. In my work, this chapter is about exhibiting my work and receiving feedback. At this moment it is out of my control to predict the outcome and rating of my creative work, but what is in my control is the setup I exhibit my work.

Having excellent experience in the incubation stage and physical work, I decided to use another method. This time I'm using the idea generation method: Random inputs (Gray, 2009). The main idea behind this method is to use random words to generate ideas on how to solve the previously defined problem. Because my work is about photography and science, I felt obligated to use Darwin's "*Origin Of The Species*" as a random word source. The problem I defined: What to exhibit?

Generated ideas I considered:

- *Absence* – the absence of photographs.
- *Developed* – development – showing the development of my process, maybe timeline.
- *Diverging* – 2-sided prints.
- *Rough* – homemade imperfect prints.
- *Transmitted* – photographs that transmit as a disease, maybe temporary tattoos.

No matter how tempting the idea of turning my work into temporary tattoos was, I stuck with the idea of rough homemade prints. I chose this idea mainly because I already have a lot of homemade prints that I put through different treatments (bleaching, embroidery, etc.).

Creative problem-solving happens in cycles and this is exactly how I see further development of my current work. I have put a lot of effort into exploring creativity and perception while working on my thesis, I have started a few projects as the direct outcome of my research. I will continue working on my interests and right now I feel like I have all the skills needed to be a successful creative person.

4 CONCLUSION

Creativity - the ability to produce original and unusual ideas, or to make something new or imaginative (Cambridge University Press, n.d.).

We have made this term universal, but it tends to have different meanings depending on the situation and field. Science and technology, businesses, and innovation usually focus on the first part of this definition – original ideas, making something new. Whereas the art field will usually focus on creativity as the ability to produce unusual ideas, making something imaginative. I find it fascinating how these two different comprehensions of the term “creativity” stop to matter the moment we look into the creative process and the science behind it. Scientists doing research on creativity and the creative process tend to put scientific creativity same category as artistic creativity. So in the end two different definitions still explore the same issue.

When I started this project I wanted to explore the scientific approach to photography and I was really hooked on the Nature versus Nurture phenomenon of creativity. I really wanted to know if you are born creative or if life makes you creative. By the time I started exploring this delicate and intricate relationship between art and science, I realized that exactly the creative process is the link between art and science. Of course, it is known that there is a strong correlation between general intelligence and creativity. One might think that excelling in academia means excelling in art as well, but that’s not the case. The correlation comes from the approach of how scientists and artists solve problems. Usually, scientific problems are much easier to define than artistic problems. Depending on the art domain artists solves a different type of problems with their work. But it is really important that the framework of problem-solving stays the same. In this thesis, I explore how the creative problem-solving model applies to my creative process. I make conclusions about methods to use to facilitate and promote my creative process. And I do all of this in the scope of my passion – the relationship between art and science.

Chapter 1: Preparation.

To explore. Every single detail in our lives starts with exploration.

I started my journey to find creativity with the thing I do the best – scientific literature research on the theme. But what to do with the information I find? So what if creativity is strongly correlated with the general intellect? And does it really matter if we process green and red colour at a different speeds?

I decided to interpret scientific papers into photography. Chapter one consists of my take on a few scientific concepts on perception and creativity I found interesting and fascinating.

In my creative process, this was the stage where I felt the most stuck. Now looking back I realize that it's just part of the process and next time I will let myself experience this stage without self-doubt.

Chapter 2: Incubation.

Take a break, do physical activities and try to forget about the problem you are trying to solve. In the creative problem-solving model incubation is the stage where the magic happens and problems are solved, innovations happen and artistic block disappears. In this chapter, I show work created while purposefully taking a break from my artistic research. I tried to avoid "forgetting" about my work and research because I found scientific papers explaining how just mental relaxation is important but "thinking about something else" was not necessary. I decided to work with photographs I had created in the preparation stage. I printed everything, without any culling and explored all the possibilities. I bleached my prints, made collages, made dry flower applique, and created single-page fold books. Usually, this mental relaxation through practical work resulted in the next stage of the creative problem-solving model – illumination. That is the stage where active work on ideas or solutions happens. In my case, these two stages interchanged – I was manipulating my prints, and the idea of how I could

improve the exact photograph came into my mind, so I switched and took some more photographs.

Chapter 3: Illumination.

As previously stated, the illumination stage was represented by an interchanging process with the incubating stage. This is a normal process in any creative process – repeating steps and coming back to the previous stages.

In my work illumination stage is depicted by photographs created after a successful mental relaxation session in which I was making collages out of my body parts. I had the cliché moment of “oh, what if I do like this…” and produced a set of photographs to use in collage. The set of photographs has been made in one photoshoot and I think exactly that perfectly illustrates the illumination stage.

Doing my research on creativity, I came across known factors affecting one’s creativity: genetics, upbringing, environment… A lot of artists have been in this stage of exploring themselves as an object – studying their own bodies. I wanted to do the same thing and I took photos of my body, paying attention to each part of it – legs, head, ears… But I struggled with some parts of my body. I struggled with the parts I hate. And again – I did what a lot of artists have done before me – I investigated my childhood to explore my self-hate. I have always been on the larger side of a human being. I’m tall and… I have a lot of flesh on my bones. Of course, I feel insecure about myself. There have been a lot of situations that have catalysed my insecurities, for example, while I and my mother were shopping for my first bra, she commented that she has no idea “how it [bra] should look on all that fat.” I can’t fit into standard sizes of any high heels – the core definition of femininity – the high heels. I have a congenital jaw deformity and my face looks long and narrow, but surprisingly this has never been an issue for me, but sometimes I dream, what if… In my work, I photograph my body, dissect it, and put it back together purposely spotlighting my insecurities.

This work will be exhibited in the group exhibition “Prometheus” 24.11–2.12.2022, Novia University Of Applied Sciences, Banking Hall, Campus Allegro.

Chapter 4: Verification.

In the end, everything is in the hands of an observer.

Every creative process whether problem-solving or creative ends with an evaluation. We can evaluate if the proposed solution fits the defined problem and we can evaluate if the creative work reaches the observer’s consciousness in the way we intended.

To depict the verification stage of my work I need outer input. In the art field, this step seems to be self-explanatory – every artwork’s aim is to be seen. I will be using this study program graduation exhibition as my stage where I invite everyone to evaluate my created solutions – artwork. But which of the ideas to show? Which step would be the most appropriate? Is it the beginning and my interpretation of scientific papers? Or maybe the illumination stage with a lot of generated work? I felt stuck and didn’t know what to do next. This feeling was familiar – it’s the same feeling at the end of the preparation stage, this is the moment when it’s time to switch to the incubation stage and do mental relaxation. So I did and decided to test some idea-generation games.

In the beginning, it was really important for me to show my creative process, so I decided to do exactly that. I felt that the incubation stage and forced mental relaxation gave the greatest results. Also emotionally I felt the most connected with the work created in this stage. When I defined what I want to show and ask for an outer evaluation, I had to decide how to show it. There comes the help of another idea-generation tool as part of mental relaxation. Based on the results, I decided to show my exact work produced – bleached, embroidered photographs with flower applique and collages. Every single part of this helped me to achieve my goal to explore how creativity works.

In his publication about different creative problem-solving models, Lubart (2001) talks about frustration before the incubation stage. Could this be the artistic block? If so, can we solve it with a simple idea-generation method? Most likely this will be my next iteration in the creative problem-solving cycle about creativity and the science behind it.

BIBLIOGRAPHY

Basadur, M. (1994). Managing the creative process in organizations. In M. A. Runco (Ed.), *Problem finding, problem solving, and creativity* (pp. 237–268). Ablex Publishing.

Brown, R. T. (1989). Creativity. What are we to measure? In *Handbook of Creativity* (pp. 3–32). Springer US. https://doi.org/10.1007/978-1-4757-5356-1_1

Cambridge University Press. (n.d.). *creativity*. Retrieved November 9, 2022, from https://dictionary.cambridge.org/dictionary/english/creativity

Čančer, V. (2014). Teaching creative problem solving methods to undergraduate economics and business students. *Journal of Further and Higher Education*, *38*(4), 485–500. https://doi.org/10.1080/0309877X.2012.726968

Creativity - Wikipedia. (n.d.). Retrieved November 11, 2022, from https://en.wikipedia.org/wiki/Creativity

de Lange, F. P., Heilbron, M., & Kok, P. (2018). How Do Expectations Shape Perception? In *Trends in Cognitive Sciences* (Vol. 22, Issue 9, pp. 764–779). Elsevier Ltd. https://doi.org/10.1016/j.tics.2018.06.002

Fontenot, N. A. (1993). Effects of training in creativity and creative problem finding upon business people. *Journal of Social Psychology*, *133*(1), 11–22. https://doi.org/10.1080/00224545.1993.9712114

Gilhooly, K. J., Georgiou, G., & Devery, U. (2013). Incubation and creativity: Do something different. *Thinking and Reasoning*, *19*(2), 137–149. https://doi.org/10.1080/13546783.2012.749812

Gilhooly, K. J., Georgiou, G. J., Sirota, M., & Paphiti-Galeano, A. (2015). Incubation and suppression processes in creative problem solving. *Thinking and Reasoning*, *21*(1), 130–146. https://doi.org/10.1080/13546783.2014.953581

Gray, D. (2009, December 18). *Random Inputs - Gamestorming*. https://gamestorming.com/113/

Johnston, A., & Ya Nishida, S. ’. (2001). Time perception: Brain time or event time? In *Current Biology* (Vol. 11).

Kaufman, J. C., & Sternberg, R. J. (2007). *Change: The Magazine of Higher Learning Creativity*. *39*(4), 55–60. https://doi.org/10.3200/CHNG.39.4.55-C4

Loftus, G. R. (1985). *Picture Perception: Effects of Luminance on Available Information and Information-Extraction Rate* (Vol. 114, Issue 3). Psychological Association, Inc.

Lubart, T. I. (2001). Models of the creative process: Past, present and future. *Creativity Research Journal*, *13*(3–4), 295–308. https://doi.org/10.1207/s15326934crj1334_07

Munakata, M., & Vaidya, A. (2012). Encouraging creativity in mathematics and science through photography. *Teaching Mathematics and Its Applications*, *31*, 121–132. https://doi.org/10.1093/teamat/hrr022

Sio, U. N., & Rudowicz, E. (2007). The role of an incubation period in creative problem solving. *Creativity Research Journal*, *19*(2–3), 307–318. https://doi.org/10.1080/10400410701397453

Smailhodžić, E., & Berberović, D. (2021). *Digital Creativity: Upgrading Creativity in Digital Business* (pp. 165–182). https://doi.org/10.1007/978-3-030-53914-6_9

Sontag, S. (1977). *On Photography*. Penguin books.

Vernon, P. E. (1989). The Nature-Nurture Problem in Creativity. In *Handbook of creativity* (pp. 93–110). https://link.springer.com/chapter/10.1007/978-1-4757-5356-1_5

Wallas, G. (1926). *The art of thought*. J Cape.

Whitley, C. T., Kalof, L., & Flach, T. (2021). Using Animal Portraiture to Activate Emotional Affect. *Environment and Behavior*, *53*(8), 837–863. https://doi.org/10.1177/0013916520928429

Wolcott, M. D., & McLaughlin, J. E. (2020). Promoting creative problem-solving in schools of pharmacy with the use of design thinking. *American Journal of Pharmaceutical Education*, *84*(10), 1271–1276. https://doi.org/10.5688/ajpe8065

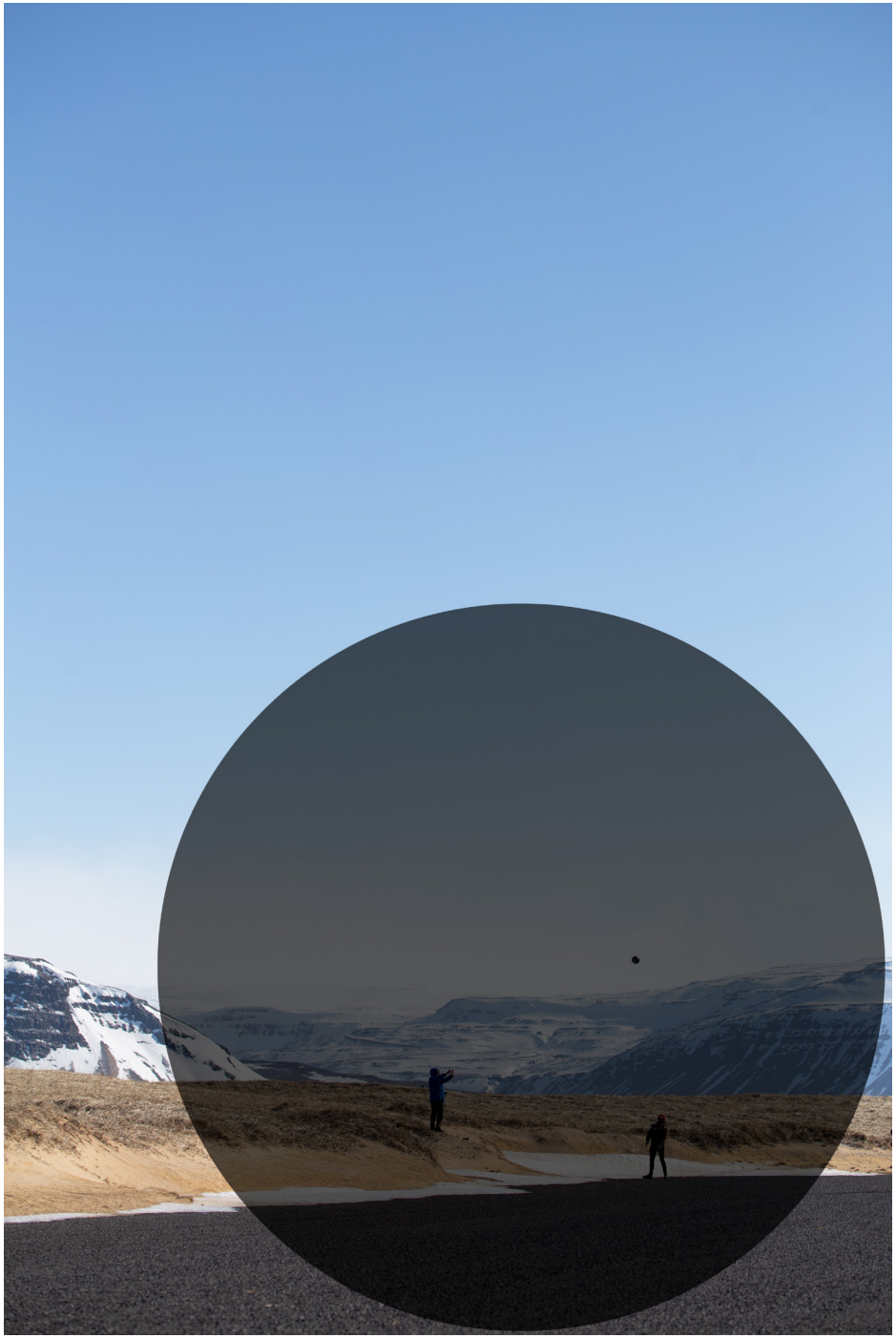
Wolfradt, U., & Pretz, J. E. (2001). Individual differences in creativity: Personality, story writing, and hobbies. *European Journal of Personality*, *15*(4), 297–310. https://doi.org/10.1002/per.409

seeking creativity

Linda Dambeniece-Migliniece

chapter 1

preparation



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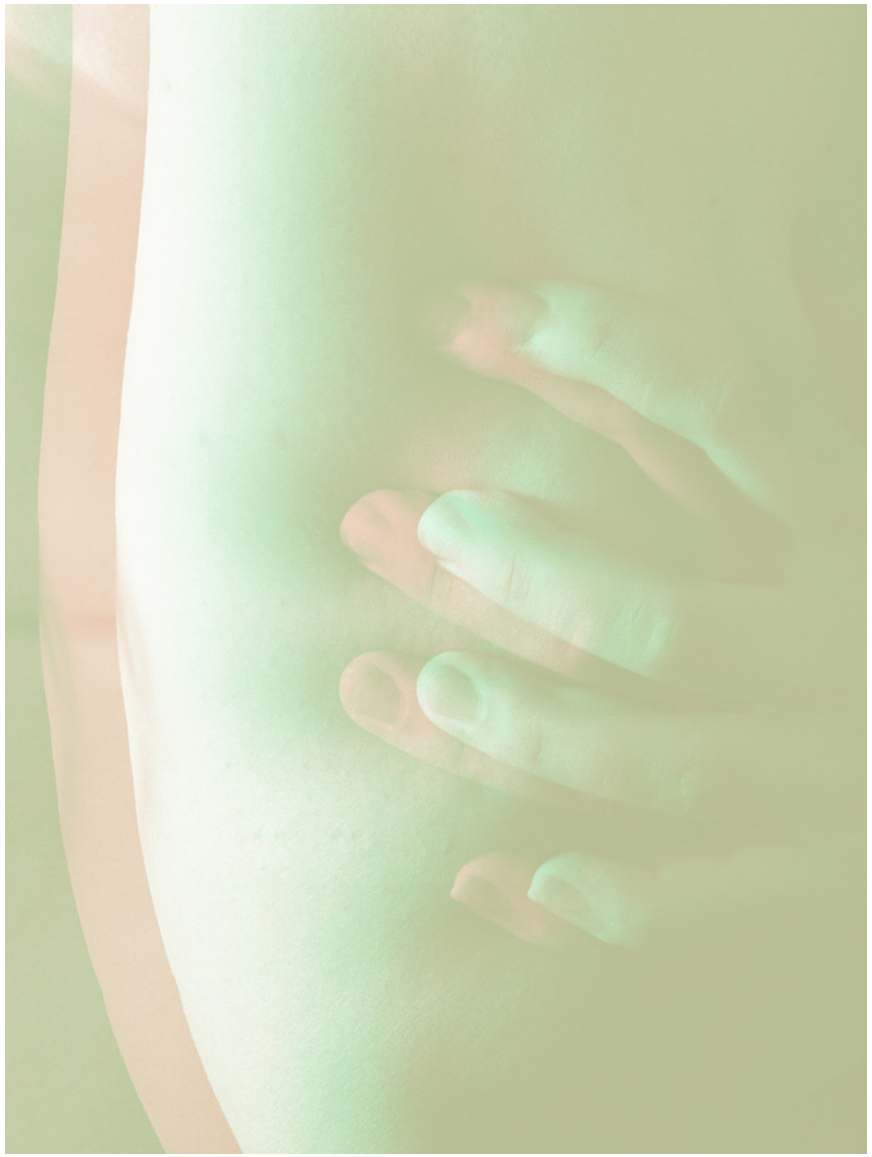

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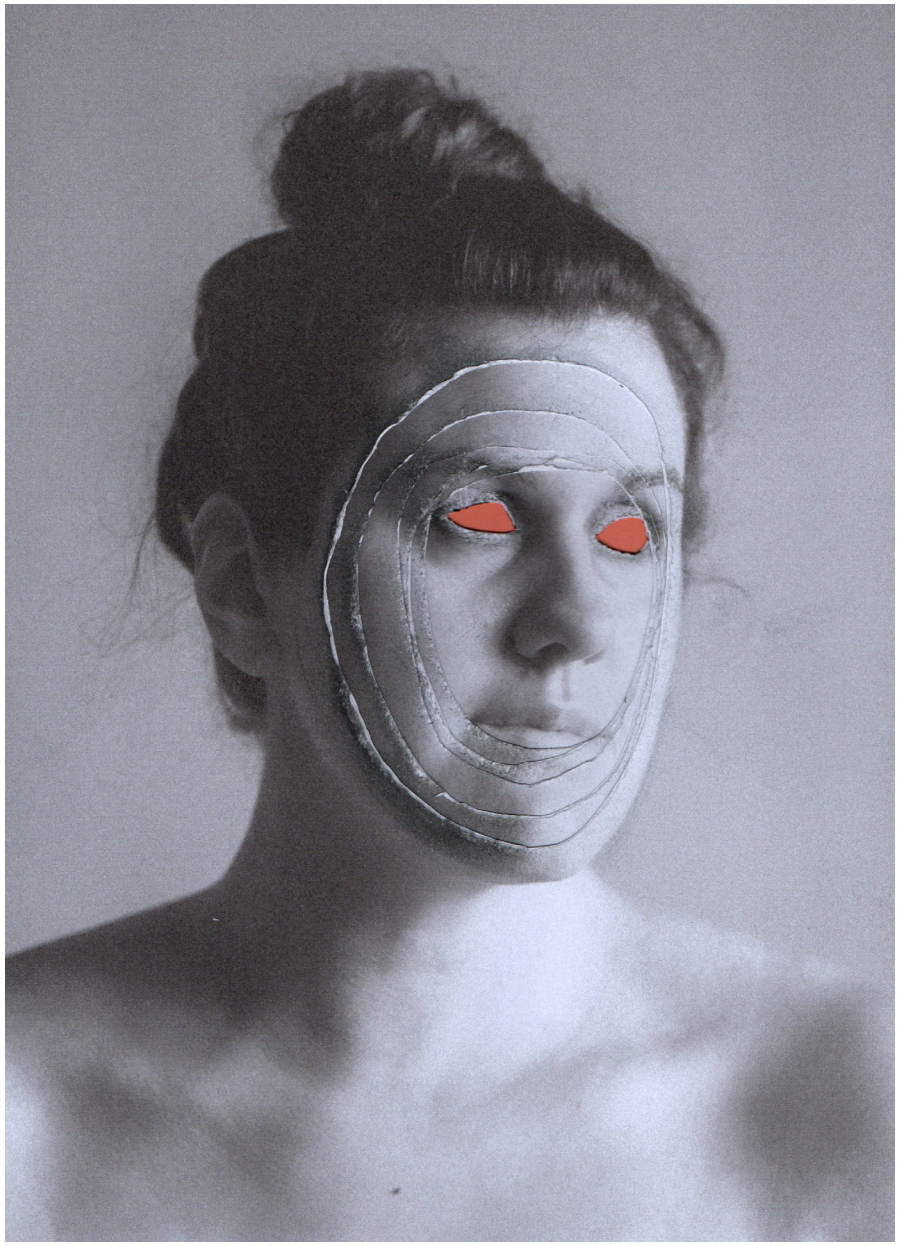
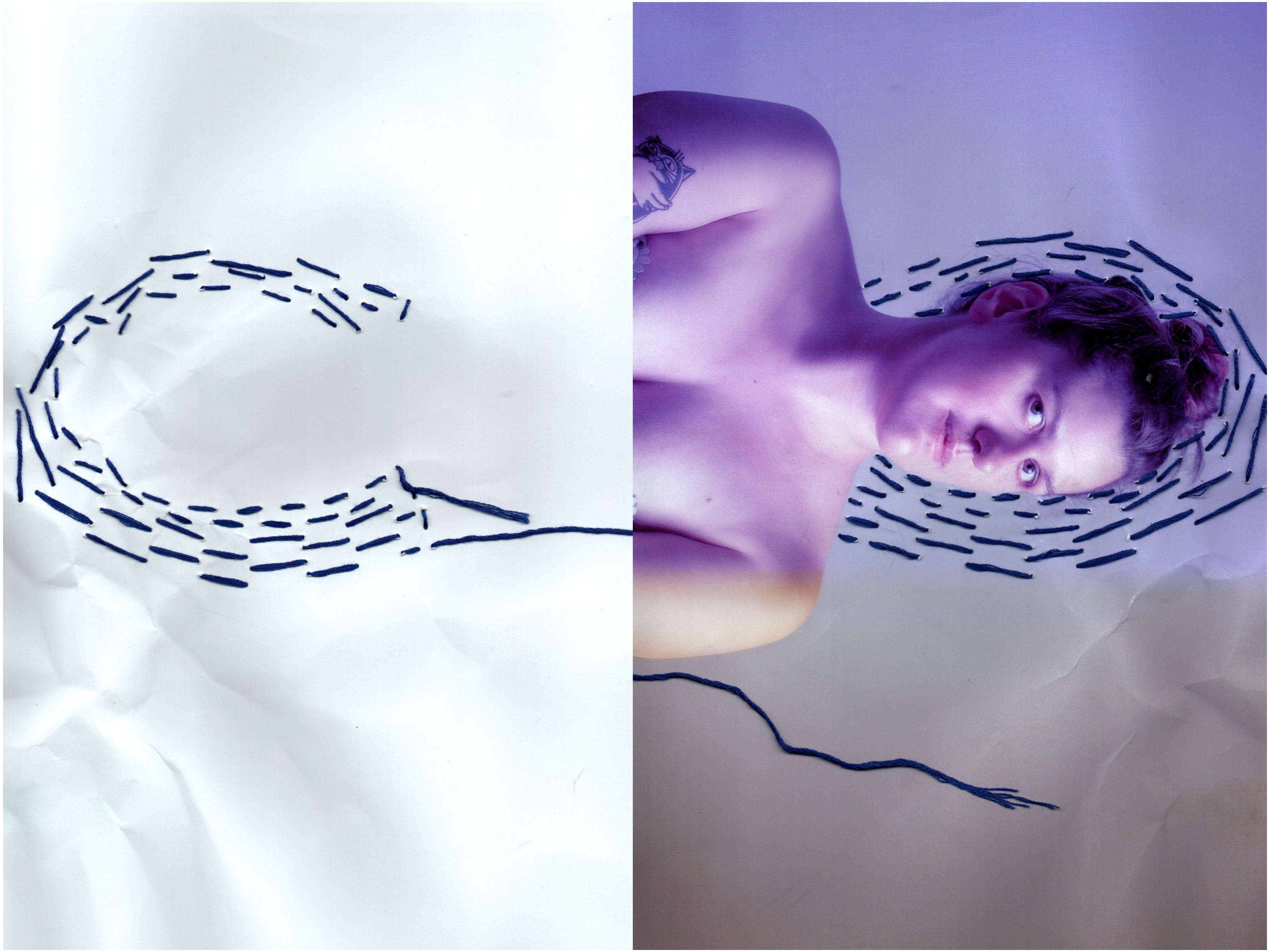
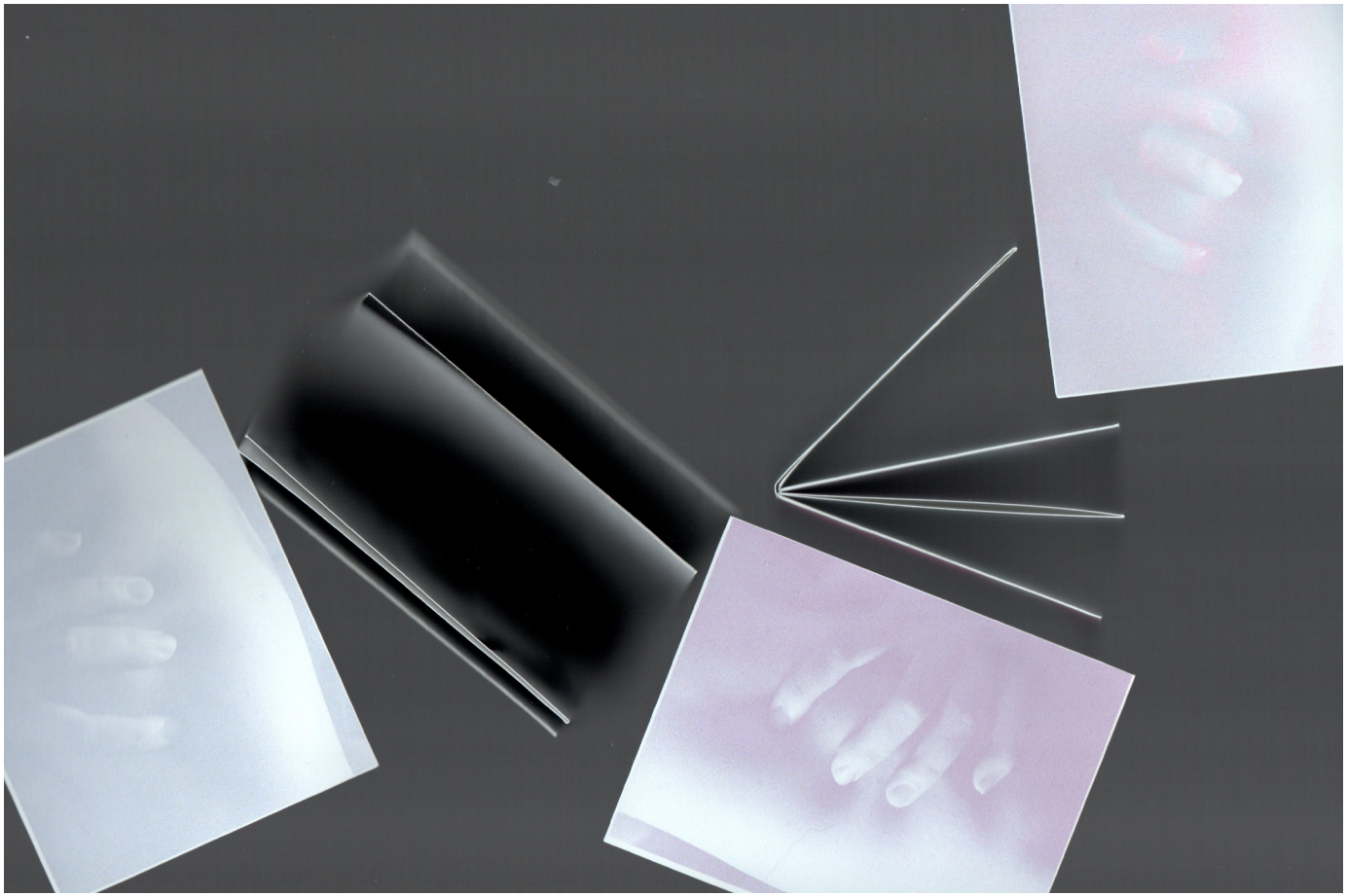
chapter 2

incubation







chapter 3

illumination

chapter 4

verification

in progress...