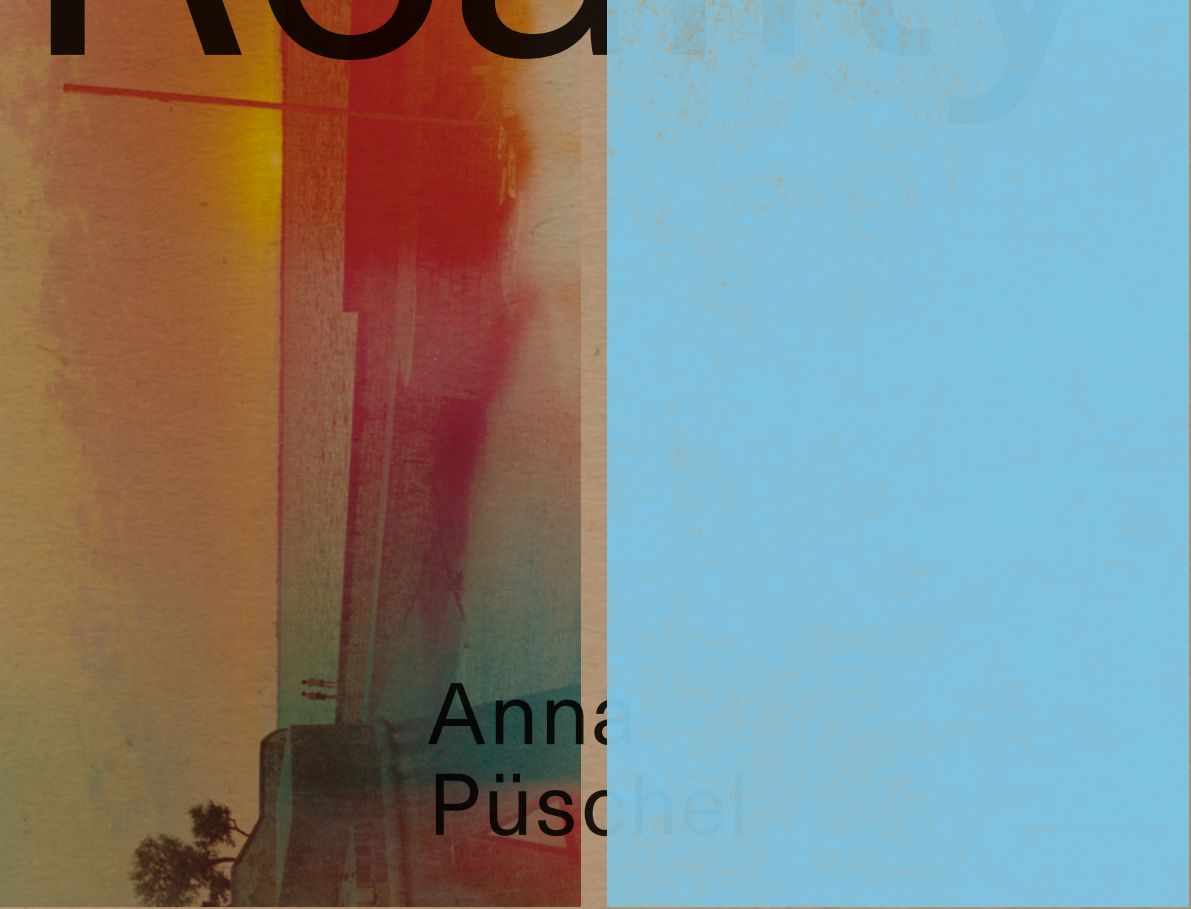


Layers of Reality

Perception Study
of a Synaesthete



Anna
Püschel

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When I started art school, I did not know about synaesthesia. The fact that my emotions are coloured or that memories carry different tints did not appear as anything special to me.

It was just a few years ago that I realised that those associations of mine were not as common as I thought. Some of us can see music or taste words, while others see time in a geometrical shape or perceive numbers or letters as personalities. I found that this phenomenon has a name: synaesthesia — the merging of the senses.

I was relieved to hear that many synaesthetes are not aware that their reality looks different to those of others, just like me — and that, once they find out about their divergence in perception, they mostly state how much they appreciate the way their brain brings the world to them. I started a project on synaesthesia because I do not perceive it only as a funny twist of evolution. For me, this topic also raises the fundamental question of the extent to which we as individuals share the same reality.

Layers of Reality is not a reference work, but a personal journey into my individual perception. My goal is to show that this phenomenon is not a disease, nor are synaesthetes making anything up. We are not sick and we do not need to be treated. Synaesthesia creates much controversy, as I learned during my research, and I do not aspire to solve all misconceptions or explain this phenomenon in every tiny detail. What I want is to make it accessible by offering a personal

approach, and to help spread awareness about synaesthesia. By enriching my own findings with scientific approaches from different disciplines, I hope this book will answer a few questions and raise many more.

I feel we should all remember that what we perceive is not static, but a construct of our senses. It is our perception that shapes our world.

There is not one single reality.

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An Introduction to Synaesthesia

Sam Beekhuizen, MSc

psychological researcher

Synaesthesia is a composition of the Greek words ‘syn’ — ‘together’ and ‘aesthesia’ — ‘sensation’. It is a neurological condition in which the sensory experience in one sense (the inducing experience) involuntarily leads to a perceptual experience in another sense (the concurrent experience).

However, the concurrent does not always have to be an experience in another sense. It can also be in the same sensory modality or cognitive in nature.¹ A certain sound can be linked with the visual experience of a colour, or a number can be linked with the idea of a certain personality (for instance, ‘7’ is cold but very intelligent).

The phenomenon of synaesthesia was first investigated by Georg Tobias Ludwig Sachs in 1812.² However, research into this interesting phenomenon progressed slowly for a long time. It received a new surge of interest from the scientific community in the last few decades; many different forms of synaesthesia have been characterised by now. There are some common characteristics that seem to apply to synaesthetic percepts. Firstly, the coupling between the inducing sensory stimulus and the following perceptual concurrent seems to be consistent over time.³ Indeed, synaesthetes report that the links between the perceptual experiences are not random, but appear to them as normal, just as intuitive as regular sensory experiences. Secondly, the synaesthetic percepts are evoked involuntarily and automatically.⁴ There is no conscious influence

that synaesthetes can exert on the percepts; they just happen to them. The spatial location of the synaesthetic experience, however, can differ between individuals.⁵ Sometimes the synaesthetic percept is experienced as a natural association in the mind’s eye, while for others the synaesthetic percept behaves as an actual perceptual experience coming from the outside world. The latter are named ‘projector’ synaesthetes, whereas the former are named ‘associator’ synaesthetes.

A very common form of synaesthesia is grapheme–colour synaesthesia, in which seeing letters or numbers evokes the perception of colour.⁶ However, we all have certain associations, sometimes strange, between different shapes, colours, emotions and concepts. Think for a second about a much more common form of what could be called synaesthesia: the pairing of colours to certain days of the week. Or having a specific mental lay-out for the week. In people with genuine synaesthesia, however, the concurrents are less like mental imagery, but more like actual sensory experiences entering their consciousness from the outside world. It ‘happens’ to them, more than being ‘formed’ consciously.

To date, the origins of synaesthesia remain unclear. Research shows that, to a large extent, synaesthetic percepts entail real-world properties and mimic the directness and intensity of ‘true’ sensory experiences.⁷ And, indeed, studies of the brain have shown that synaesthetic experiences show activity in the same parts

1

Simner, J. Defining synesthesia. *British Journal of Psychology*, 103(1), 1–5 (2012).

2

Jewanski, D. & W., cited in Simner, J. (2012). Defining synesthesia 1, 1–15 (2009).

3

Eagleman, D. M., Kagan, A. D., Nelson, S. S., Sagaram, D. & Sarma, A. K. A standardized test battery for the study of synesthesia. *Journal of Neuroscience Methods* 159(1), 139–145 (2007).

4

Van der Veen, F. M., Aben, H. P., Smits, M. & Röder, C. H. Grapheme-color synesthesia interferes with color perception in a standard Stroop task. *Neuroscience* 258, 246–253 (2014).

5

Cytowic, R. E. *Synesthesia: A union of the senses*. MIT Press (2002).

6

Colizoli, O., Murre, J. M. & Rouw, R. Defining (trained) grapheme-color synesthesia. *Frontiers in Human Neuroscience* 8, 368 (2014).

7

Nunn, J. A., Gregory, L. J., Brammer, M., Williams, S. C. R., Parslow, D. M., Morgan, M. J., Morris, R. G., Bullmore, E. T., Baron-Cohen, S. & Gray, J. A. Functional magnetic resonance imaging of synesthesia: Activation of V4/V8 by spoken words. *Nature Neuroscience* 5, 371–375 (2002).

of the brain as 'normal' sensory experiences. However, a complete account of the neural basis of synaesthesia deals with the difficult problem of the huge diversity of synaesthetic experiences. Each form of synaesthesia shows its own characteristics; even within the same form, there are many variations and individual differences.

Often, individuals that have one form of synaesthesia also show other forms. In *Layers of Reality*, Anna focuses on her emotion to colour synaesthesia, but she also experiences many other forms of perceptual divergence that, depending on the classification criteria chosen, would fall under synaesthesia: ordinal linguistic personification (the feeling that numbers or letters have a gender and/or personality), a slight grapheme-colour synaesthesia (letters appear coloured, but in her case only vowels are consistent), spatio-temporal synaesthesia (units of time such as the week and the year occupy a structure in space), personality-colour synaesthesia (feeling that specific colours belong to specific people), and colours and textures associated to strong sensory experiences such as orgasms or intense physical pain.

There are a number of general theories as to the neurological cause of synaesthesia.⁸ Some focus on the existence of cross-activation between different perceptual and cognitive parts of the brain. It is assumed that, early during human development, different areas of the brain cortex are not yet specialised to process information from specific sensory modalities.

There are still a lot of cross-connections between different brain areas. During development, these are pruned and removed based on which connections prove themselves useful and efficient. Thus, every sensory modality develops into an increasingly efficient, specialised system in a specific location in the brain. According to these theories, the pruning of synaptic connections between neurons is not complete in synaesthesia. This allows different sensory modalities to influence each other.

Other theories assume that connections between brain areas that process different sensory modalities are common, but that these connections are usually inhibited by feedback from other brain areas. In synaesthesia, this feedback is not strong enough to inhibit these 'incorrect' connections or malfunctions, so the senses are able to influence each other in strange and interesting ways.

It is however unclear what the exact functional and structural differences are in the brains of synaesthetes compared to non-synaesthetes.

The fact that synaesthesia is a general term for such a large number of perceptual conditions makes it even more difficult to find a coherent definition.⁹ Moreover, our views on reality are always individual. That is why synaesthesia is so difficult to capture in quantitative measurements.

As a comparison: how do you study people's perception of the colour 'red', or the way someone feels when studying a painting?

It is theorised that about 5% of the adult population has some form of synaesthesia,¹⁰ but the phenomenon could be more prevalent than we think. Rather than an abnormal way of processing sensory stimuli, it is more like an exaggeration of the norm, depending on how the millions upon millions of neurons in our brains are wired. The senses do not necessarily operate as separate modules, but rather as a network of communicative pathways between different parts of our brains and minds.

This book is a dive into Anna's synaesthetic reality.

Enjoy.

Outlines of the Perception Study

Anna Püschel

artist

10

Simner, J., Mulvenna, C., Sagiv, N., Tsakanikos, E., Witherby, S., Fraser, C., Scott, K. & Ward, J. (2006), cited in Spector, F. & Maurer, D. Synesthesia: A new approach to understanding the development of perception. *Developmental Psychology* 45, 175–189 (2009).



I started this project in order to understand what distinguished my perception and thus my reality from that of others. *Layers of Reality* began as an exploration of my condition in order to figure out how it works. Diving deep into a matter is the basis for my practice as a photographer and artist.

My research became an intimate journey guided by the wish to understand a complex phenomenon that draws that subtle line between my perception and those of others, and the desire to communicate about it.

I started with organising the colours of my emotions into a colour range. What do the colours mean, where do they come from, when do they appear?

What would their description be in terms of feelings? I am often asked which colour a specific feeling has – “which colour is love?”, but that is not how I perceive emotions. They are first and foremost subtle, three-dimensional tints that I feel inside of me. I can describe verbally how I feel, what the colour means individually, but the colours are not clearly classified in such categories as hate, pain, or happiness.

Love, for instance, can have a magnificent variety of shades. It can be tinted by joy, excitement, satisfaction, a feeling of safety and trust when met – these would be blending into a warm and soft bath of ivory, white and sandy shades – but it can also be hard, dark blue,

cold as concrete when deceived. To me, the colour of the feeling is a much more precise indicator of how I feel, with words often failing when I want to include all aspects of an emotion in a verbal description.

Intrigued by this variety of sensations and the seemingly unsurmountable task to break them down into an accessible record, I decided to investigate all questions that came up when I realised that my reality was different from that of most people around me. In order to make a representative investigation, I needed a database to base my research on. I collected 1500 images from my private archive, covering my photo-making lifespan and a wide range of subjects. That is why there are many snapshots and private images without much artistic value, but crucial for the research, since I wanted to examine my emotional response to images and therefore needed a large database including 'all of life'.

In my private photographs, I shoot to hold on to a feeling, a memory — that is why my own photographs often evoke the strongest colours: they touch a string in me. I see fragments of my life in them. A selection of 216 images from this archive were picked and randomised by the designers. These became the images I used for the research. The different steps I undertook are explained at the beginning of every chapter, each covering one particular question I asked myself about synaesthesia. I decided to work together with scientists who could give

a context to my findings and place them within what is known today about this neurological phenomenon.

This is how I want to give a first impression of what synaesthesia can be like, make it accessible through a personal approach, and show how fascinating this phenomenon is.

Chapter 1

Familiarity

To investigate which photographs trigger a synaesthetic colour response, I compared a selection of 216 images from my own photographic archive to similar 'anonymous' pictures picked from Google as a neutral reference.

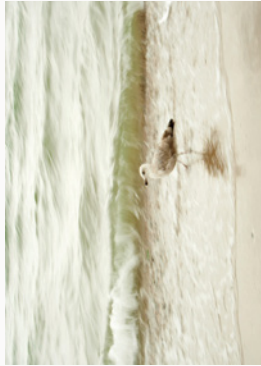
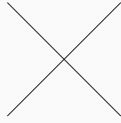
All images were mixed, randomised and renamed. I noted which colours I felt when looking at each image individually. My own photographs are on the left; their anonymous counterpart is on the right side of each page.



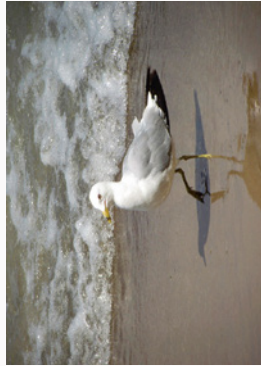
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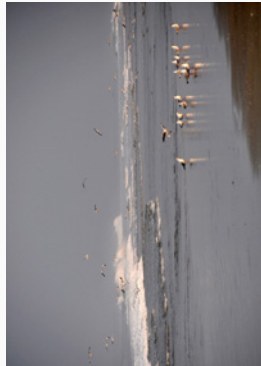
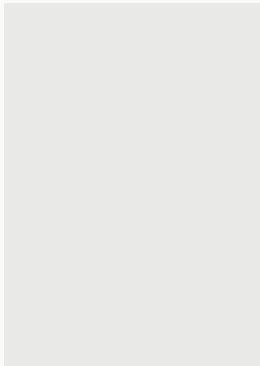
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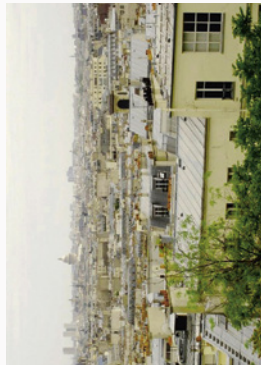
0015P



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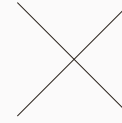
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0021P



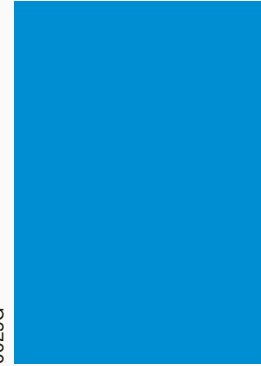
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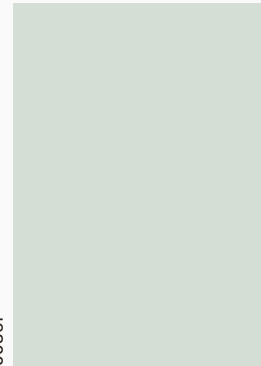
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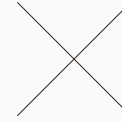
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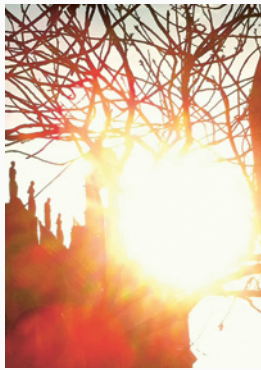


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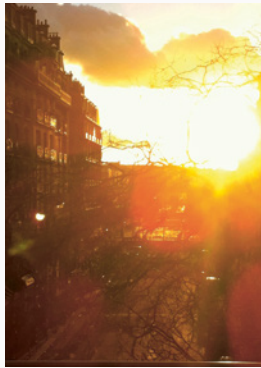




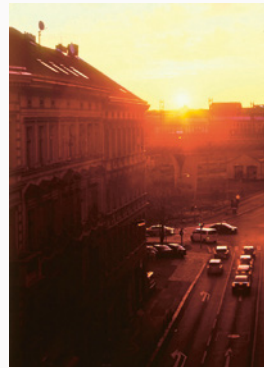
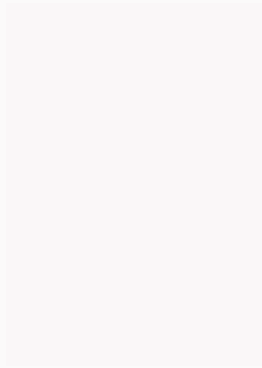
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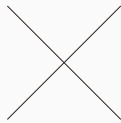
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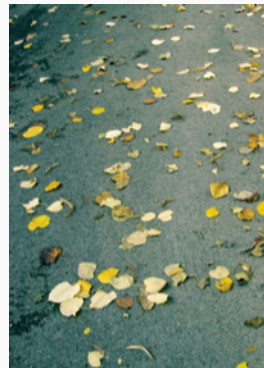
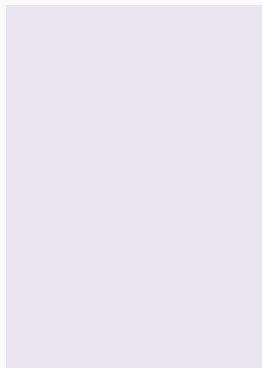
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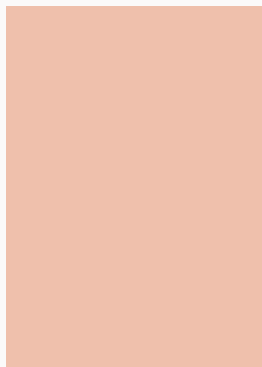
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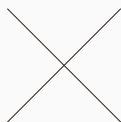
0111G



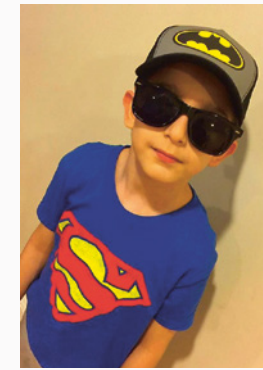
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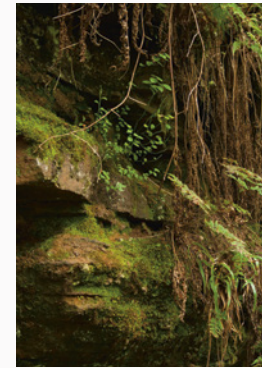
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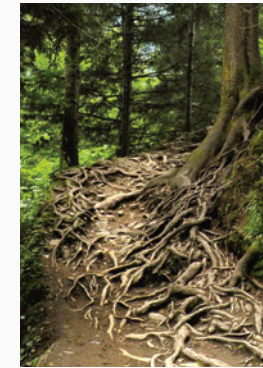
0199P



0199G



0232P



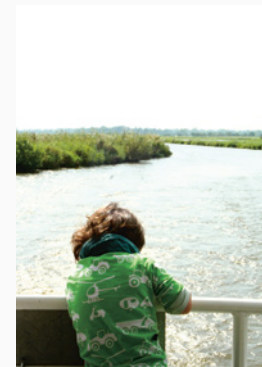
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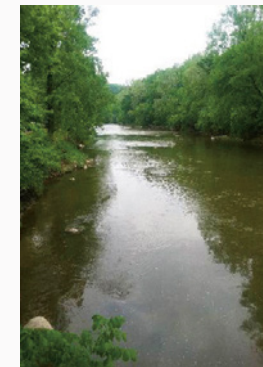
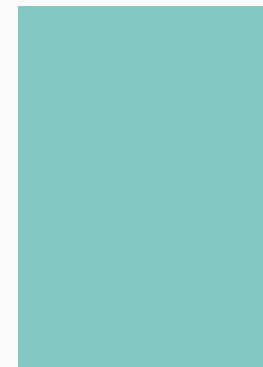
0240P



0240G



0278P



0278G



Most of the photographs I took myself trigger a synaesthetic response, in contrast to their anonymous counterparts. 88% of my own photographs evoke an emotional colour, opposed to a rough 36% of the anonymous ones. I noticed during this research that the strongest colour associations came from the pictures giving me the strongest emotions, from which I deduce that the colour is linked to an emotion and the emotion itself is often perceived as colour.

Some anonymous pictures would give me a colour sensation, but then there would be an element in the picture that resonates with a personal memory or experience. A person who looked to me slightly like Ringo Starr from the Beatles would feel dark blue, like a lot of their songs; a snow-covered landscape would give me a 'wintery' black emotion of withdrawal; or a scene would look like a place I have been to, and then evoke the colour I feel when thinking of that place. An example would be photographs from my journey to Japan.¹ Many of the photographs from Google that show scenes from Japan give me a range of greys and greens similar to the ones that my own Japan photographs evoke.²

It seems that photographs that do not 'do' anything to me, that do not trigger an emotional response whatsoever, will not provoke a colour association.

This is most strongly illustrated by the fact that the selfies I took myself to send to my boyfriend

1



0910P



0972P



0992P



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2



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0909G

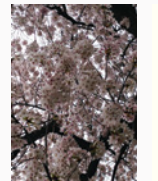
while we were apart for months almost all give me a colour; they remind me of him and how I felt back then. Selfies of other people, with one exception³ (she looks like someone I know), do not seem to do anything to me. Neither do pictures of strangers, not even cute kids — which are supposed to affect me, as a woman in a reproductive age range. The only people I do not know personally but who gave me a colour association are Audrey Hepburn, Jon Hamm — the actor impersonating Don Draper in *Mad Men* — and that random guy that reminded me of Ringo Starr.⁴ It is evident that they can affect me because I have seen them before; I associate films or music pieces with them. Some of my neurons have been preoccupied with them previously, as it were.

Of the 72 pictures from Google that evoked a coloured emotion, only 16 display a colour, a colour range or a single element with a colour that resembles the emotion, roughly 22%.

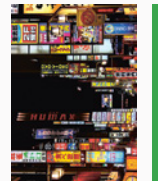
Of my private pictures, 190 give me a colour; 45 of those pictures (roughly 23%) have colours that correspond with or contain an element linked with the synaesthetic response.

For example, the ladies sitting in a café in Paris might evoke a red colour purely through the coke bottle we see on the table,⁵ which is present in all our minds through the red colour of the brand. Concerning the photograph of an old house in Strasbourg,⁶ there seems to be a clear link between the window panels displayed and

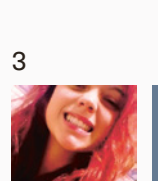
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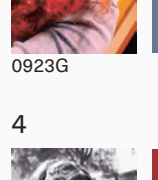
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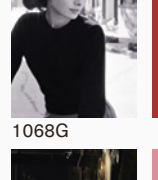
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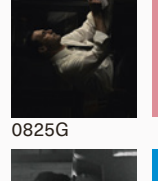
0923G



1068G



0825G



0025G



0058P



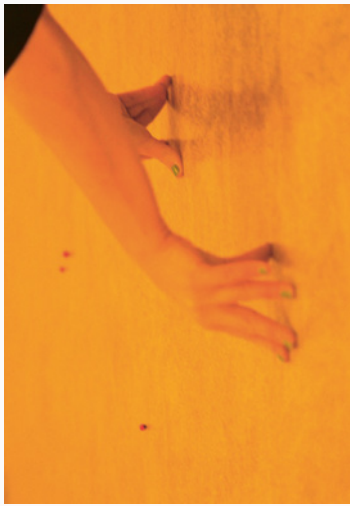
0116P



0179P



0380P



0399P



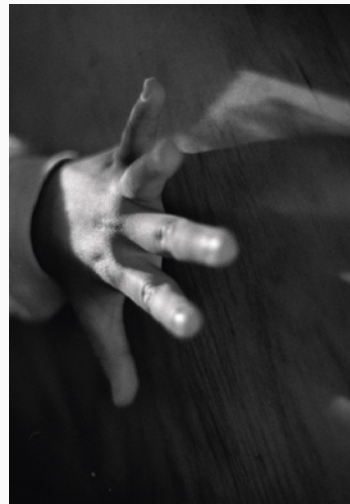
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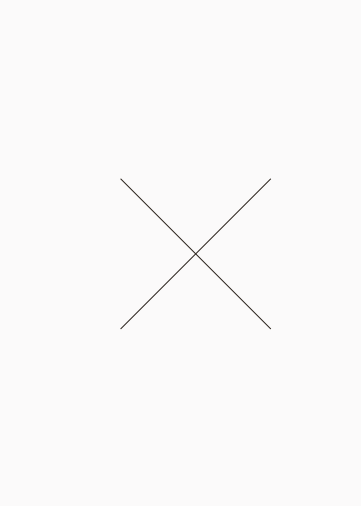
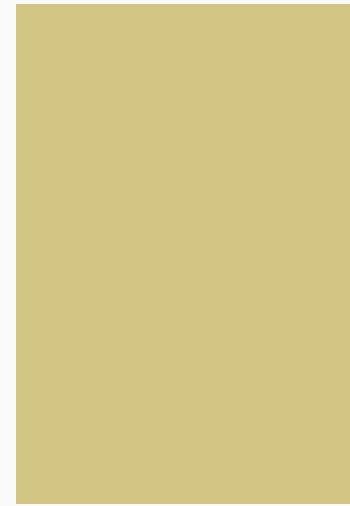
0767P



0823P



0970P





0232P



0635P



0820P



1222P



1227P



1234P



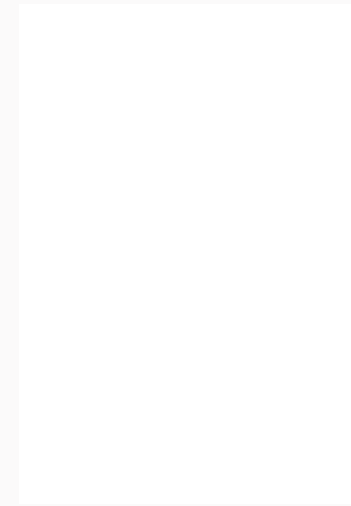
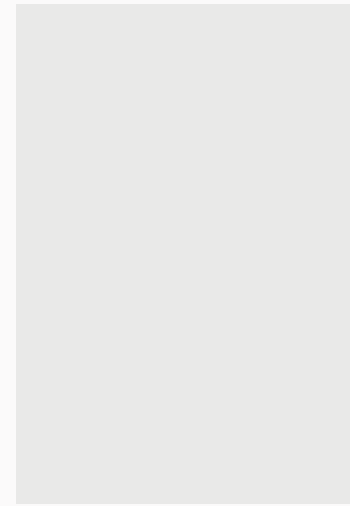
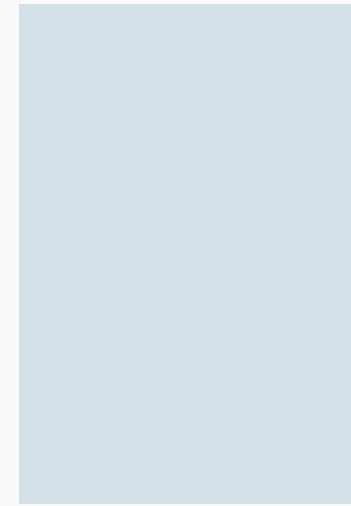
1238P



1243P



1263P

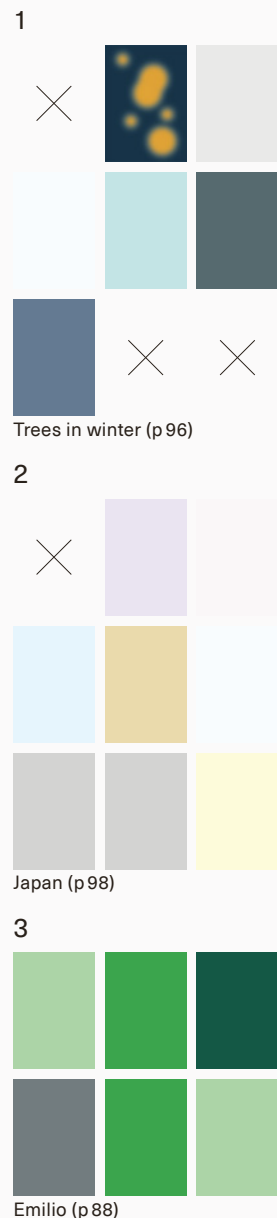


Some subjects do clearly evoke similar colours, but not enough to speak of a strong and reliable correlation. Out of twelve categories, I consider that no more than five provoke a considerable amount of similar colour reactions—the only subjects for which most of the images evoke a similar colour are trees in winter (blue tones)¹ and Japan (pastels).² I observe that these do indeed seem to induce a similar emotional colour response in many cases, but not in every instance. This could be further investigated by doing more research with comparable material.

What surprised me was that my own child would not appear in a consistent colour, as I always get the same colour whenever I think of him in daily life. There even is a photograph that does not have a colour association at all. Looking at the category for longer, I see that the young Emilio evokes green tones,³ and that is indeed how I saw him in the first years.

The Emilio of today is of a deep, rich, saturated reddish earth colour, heavy, with a powdery structure. I can see that the more recent images do create that colour.⁴ This shows that the emotional response is indeed linked to the very situation (here we touch on the essence of photography) and not to the person that is depicted.

As to the image in the middle,⁵ why is there no synaesthetic response to someone so dear to me?



I remember shooting that picture in a forest near my hometown a few days after my boyfriend of many years left me in the summer of 2014. It was unexpected, degrading and extremely painful.

I was overwhelmed by it and, being hardly able to cope with the situation with my son around all day during the holidays, I decided to do many activities to keep us busy. We went to a forest nearby with a dear friend; that is where this picture was taken, with Emilio looking at a bird.

I am guessing it is because I felt so much pain and did not have any time to process what had happened that there is no colour association. In difficult times as much as in situations with sensory overload, my synaesthesia seems to fade or even disappear completely. That could be an explanation as to why this image has no 'feeling'—the situation I shot did not have any—or rather: not a tangible one.

I find the same phenomenon in the category of self-portraits.⁶ I am not a selfie person but all of these, which were on my phone since I sent them to my boyfriend when he was far away, were part of my photographic archive and so some of them were chosen to complete the database.

To my surprise, the first selfie has no colour. I remember what that situation felt like: it was a few days before my graduation in June 2015. I was under immense pressure to get my book

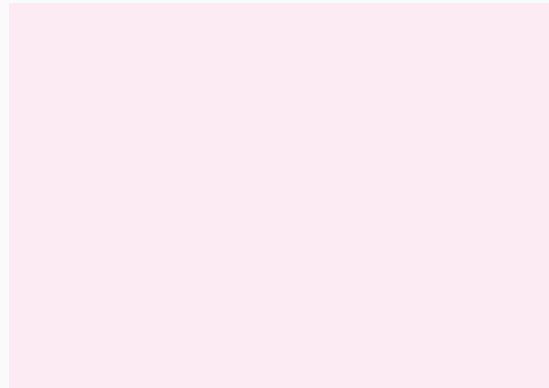
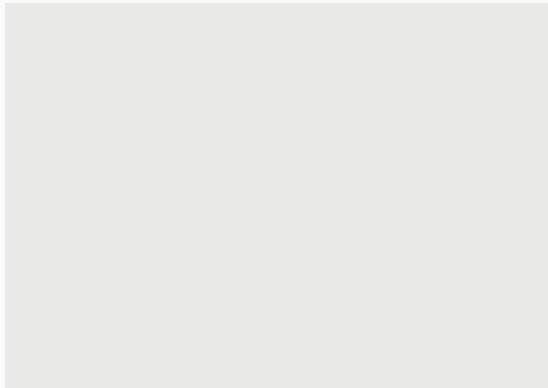
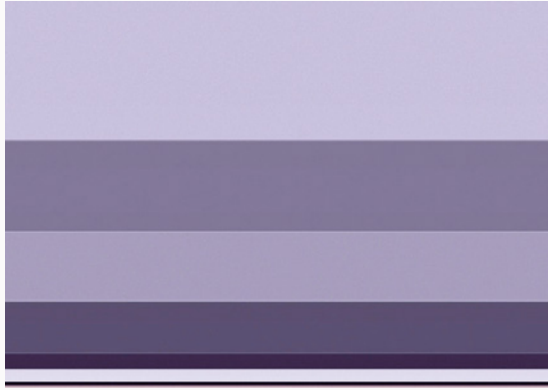




0015P



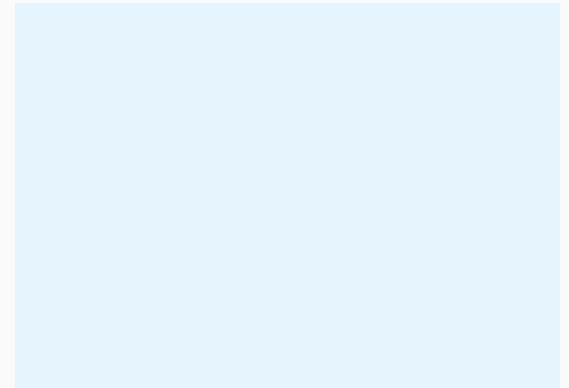
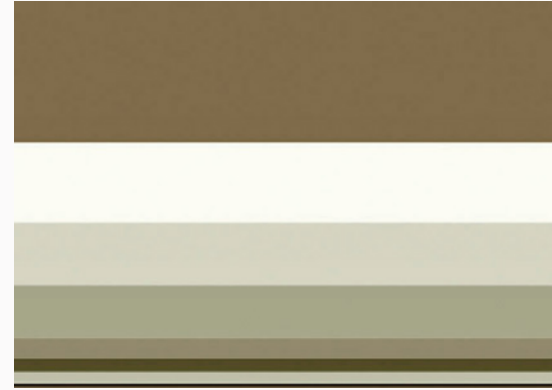
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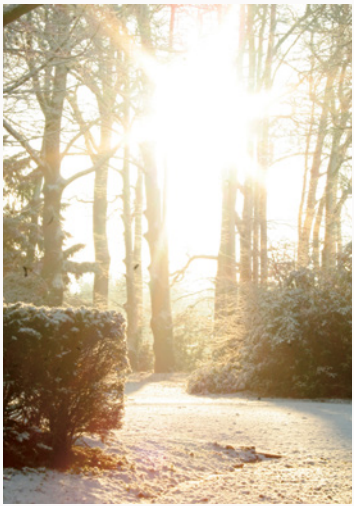


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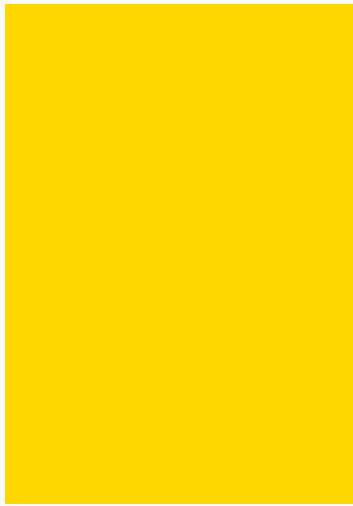
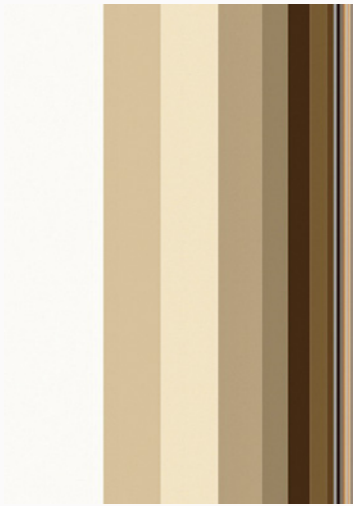


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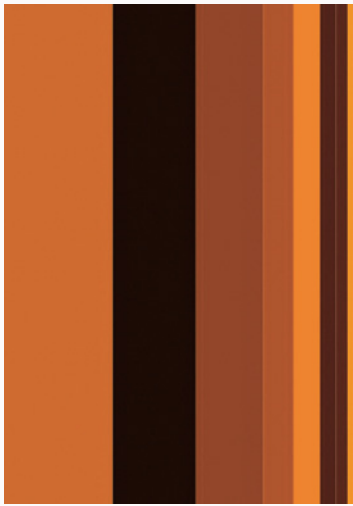




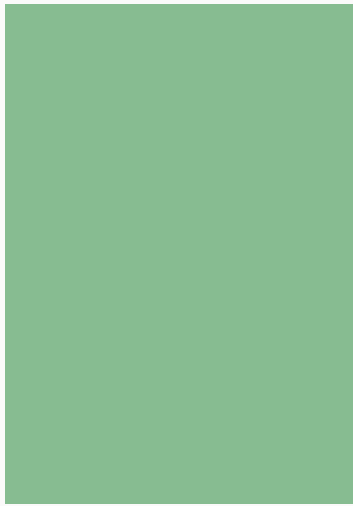
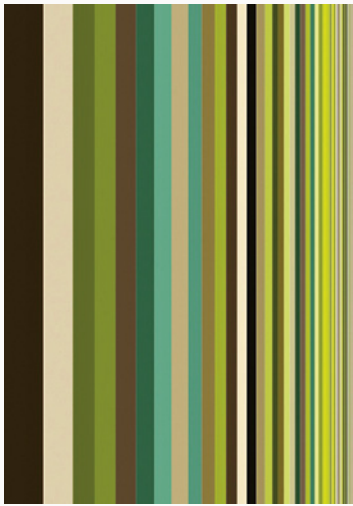
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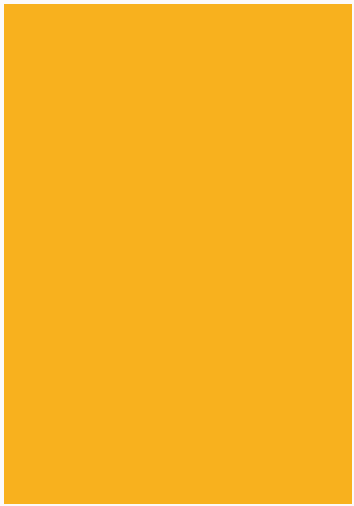
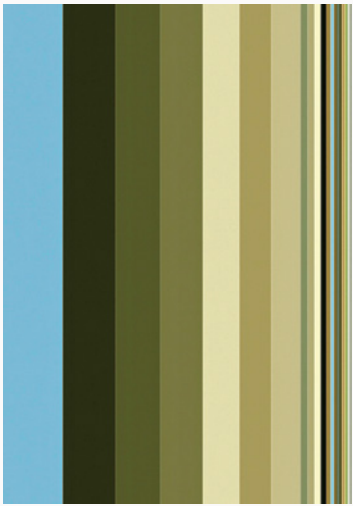
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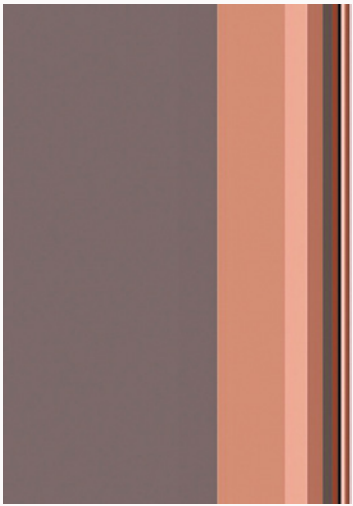
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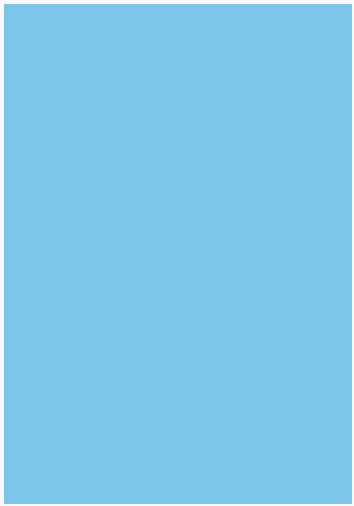
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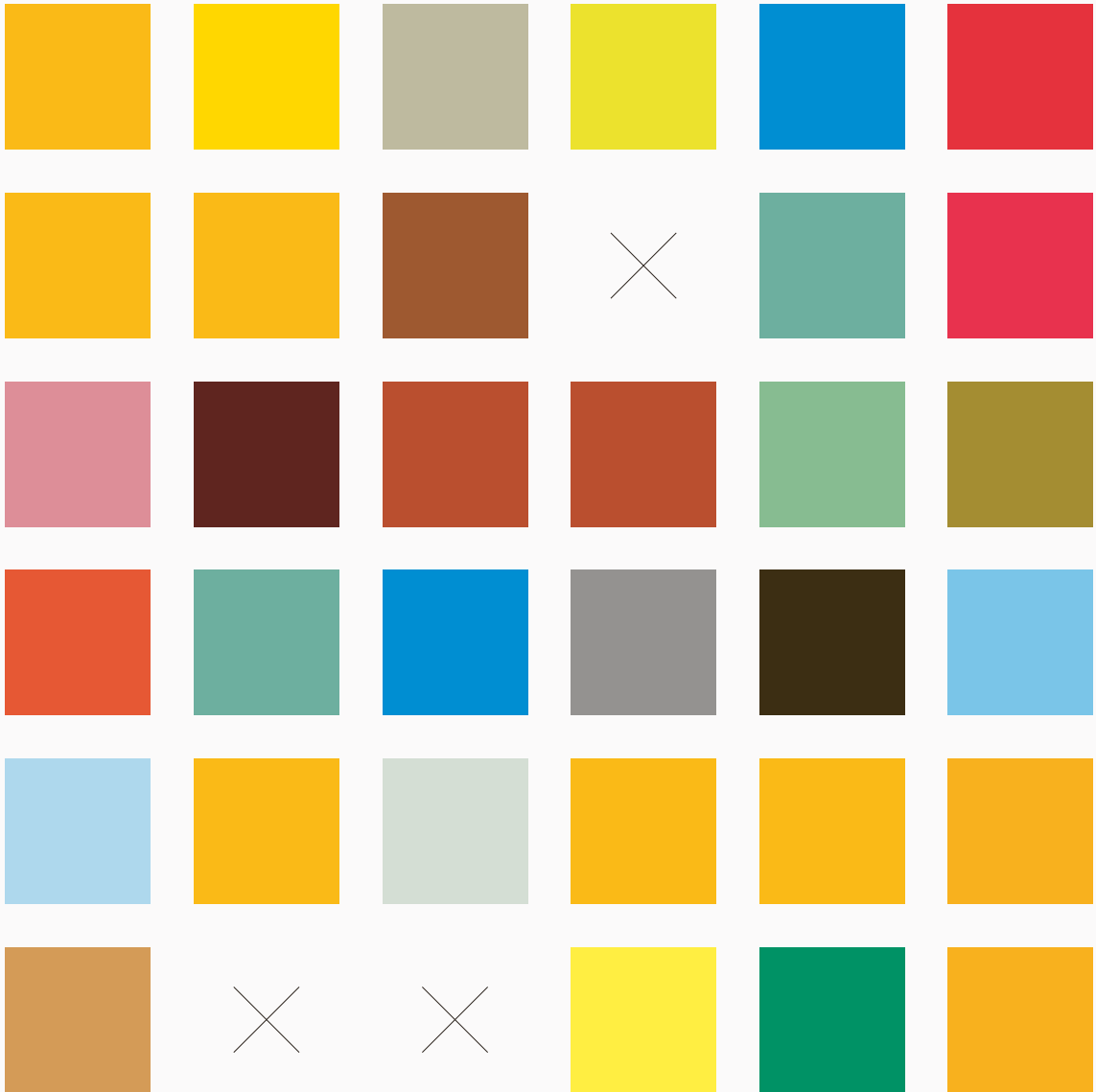


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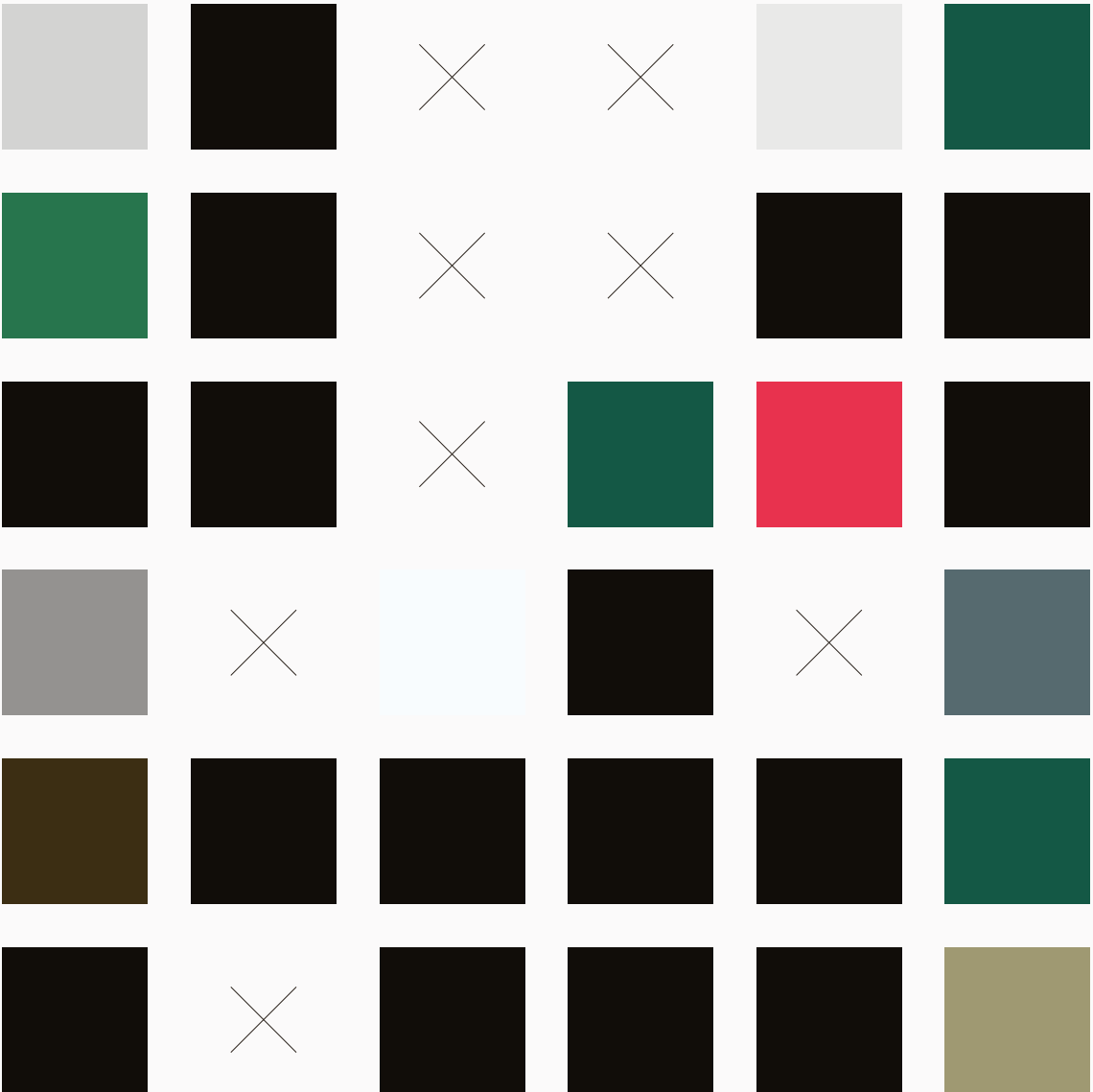


0505P





1359P



There are changes in emotional response over time. This is valid for some images more than for others. Some changed almost on a daily basis, while others seemed to be very static and coherent in the responses they triggered.

When trying to understand what I see, I have to distinguish between the images that clearly seem to have a strong and rather consistent emotional response, such as the portrait of the young man in the bathtub, and the ones that do not have any strong emotional response.

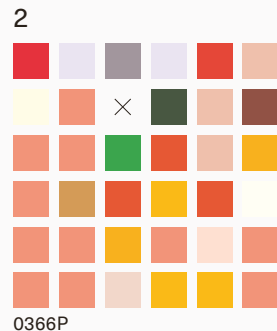
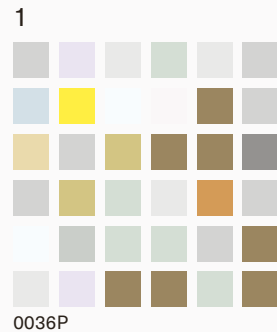
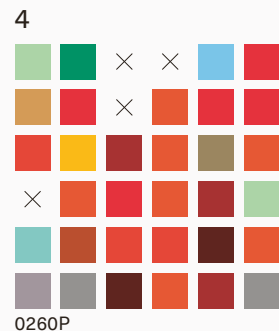
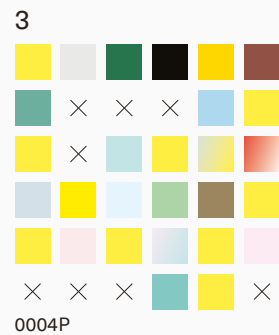
The bathroom shot is consistent,¹ I think, because we did not know each other very well and did not spend much time together: I quickly realised that he was not to be trusted, which is reflected in the grey shades of uncertainty that I feel. The time we spent together and thus the memory of him are limited, that is what I think makes the emotion so precise. Same with the photograph of my room:² I only lived there for a few months. It was a very exhausting time and I remember how soothing that place was to me, how much I enjoyed its light and peace. Both seem to produce a consistent colour range as a response because the memory evoked is precise and emotionally limited. I do not experience a multitude of feelings when I remember that person or that room.

Other images do not seem to trigger any consistent response, such as the photograph of my father, my son and my uncle together in Paris.³ This might be because that scene unites many

motifs and therefore triggers many different emotions: it makes me think of Paris (mostly blue-greyish and soft pink shades), but it also shows three individuals that have different colours to me. Furthermore, it symbolises family life, which makes me feel like a child, embedded in that structure—the colours of my childhood come up: warm orangey-yellows, soft tints that expand in space. All of these colours recur in the emotional response. It seems as if depending on my focus on a given day, I had different emotional colour responses: one day, for instance, I saw Paris in the shot, another day my father.

Sometimes the colour associations would grow more consistent during the test period. One example is the young man who is cleaning the floors in a building in Rotterdam:⁴ a complete stranger, but every time I saw his image he became a bit more of a personality. A scene that looked more grey in the beginning because it was an unfamiliar place turned slowly into a pulsating red, changing from a warm orange to an almost brownish dark red—the colour the young man slowly took on inside my mind.

Many synaesthetes that associate colours with people describe that there will only be colour associations with familiar people or people that arouse strong emotions, such as for example instant sympathy. In this case, we might see a shift from a silvery shade of distance to a more or less constant response of an individual colour attributed to someone because that person on the image became more familiar.



Chapter 5

Origins

To find out what happens in my mind when I look at a photograph, I wrote down detailed descriptions of my personal reactions to certain images that I used for this research. I hope to make my thoughts and associations more accessible by describing both the photographic impression and the emotional colour.



0630P



Bonn, 2008

This is a photograph of a flower that fascinates me. I have always been interested in plants that have been and still are used as medicinal plants. Morning Glory Calistegia (*Ipomoea tricolor*) contains LSA, which is the natural equivalent to artificially produced LSD. Morning glory grows all across Europe, and is one of those nice little flowers that you might know but never pay attention to. LSA is a psychoactive component which, albeit weaker, induces effects similar to LSD. Psychoactive substances have been used by humanity for thousands of years, mostly embedded in healing or sacred ceremonies to access the divine through the use of natural substances. Psychedelic experiences were not unknown to our ancestors and are not exclusive to indigenous cultures on other continents.

The colour I feel when I look at this beautiful flower is a powerful blue, a strong colour that contains confidence and knowledge. Psychoactive substances can induce very strong visual experiences and the perception of multiple dimensions. If someone is under the influence of a psychoactive component, they perceive what they see and experience as reality. Many who have had such an experience are left with the question of where reality lies, what defines it and how much we can trust our senses. A lot of synaesthetes recall psychoactive journeys as altering and enhancing their synaesthesia, just as many a person without synaesthesia might suddenly see sounds or perceive smells as geometric shapes.

I find this fact fascinating, as it invites us to reconsider one of the most common criteria of synaesthesia (you either have it or you do not) and teaches us that an altered state of consciousness can allow access to new sensory pathways. The blue shade I feel might come from my medical interest in psychoactive plants. To me, these substances are carriers of knowledge which should be studied even if we cannot approach and understand their workings fully through the eyes of Western science. They give me an impression of major power, care and truth.



1456P



Sachsenhausen, 2004

This place is one of the most terrifying that I have ever been to. It is the former Sachsenhausen concentration camp near Berlin. I went there for a moment of remembrance when I was fifteen with a group of young Germans, Jewish Israelis and Palestinians. We visited the place and I remember feeling all void and weak while walking through the alleys and abandoned buildings. The place sucked all the energy out of me; when I had to read a poem out loud at the time, I almost fainted. I remember how my voice broke. This place silenced me.

It is impossible to capture the horror in images, especially not after so many years, but I took exactly two pictures that day: one of the gravel formations on the ground and this one of a tree. I think this image was taken in order to capture, probably unconsciously, what to me is the real horror of the Holocaust: that anything like this could happen while life was continuing unimpeded outside this hell. I often feel, as a photographer, that capturing the exact meaning of a situation is extremely difficult. Not in the sense of a narrative that would explain what is perceived in the image to someone else, but the meaning it has to oneself.

That day I was confronted with unimaginable evil done to humans by humans. I felt the only thing I could do to approach the essence of that situation was to capture the only beauty I could find there, because its contrast with the horrors would come closer to a description of evil than anything else I could have photographed that day.

The colour that I feel is absolute disconnection: cold, threatening grey, merging into the dirty white of pain and loss. A place like this takes everything away from me, all my positivity and energy, and leaves me with the bitter feeling that my love of life is an illusion, since it cannot stand against such horror and helplessness.

In this chapter, I tried to give a detailed description as to how the stories behind the photographs influence my synaesthetic reactions. While trying to find the right words, I notice how much my perception is intertwined with the colours of my emotions, and how big a role these colours play not only in my perception, but also in the way I remember situations.

My memories are connected to emotions that give them an individual tint. I wanted to investigate on where these colours exactly came from, and to guess which factors might possibly have influenced their appearance. I found out that many pictures that I cherished along the years have very distinct colours. And I understood how much I love certain photographs because they make me feel colours that just perfectly describe certain states of mind, such as the stone pavement¹ or the red shades of my room in my first apartment.² I wonder how much these memories have slowly gained a significance of their own through pairing with the synaesthetic colour responses: would I remember certain places as fondly were it not for the photographs that I took of them and that I have looked at so many times, deepening their meaning by repeating the colour reaction? Or is it just this phenomenon that we all know: that through images from our life, people and situations are vividly recalled, up to a point at which the real memory fades away and is superimposed by the projection of our current self onto a situation?

I know that I have kept many printed photographs of mine to put them on the wall, and many

1



0848P



2



0564P



followed me through a number of apartments without me ever questioning their presence. I suddenly realise that many of them have stayed with me because of the colour they make me feel: some of them giving me soft white shades of comfort, others uniting loved ones in a colourful harmony. Writing these lines, I look at the photographs that hang on the wall of the atelier and I feel all these shades inside of me, subtle carriers of powerful emotions. There are comforting and soothing white shades, powerful reds and serene greens that speak of harmony and connection.

Some images do not even have a specific subject — I might not even remember where and when I took them — but they could still give me a very precise colour that I might want to have close to me, and therefore hang it on the wall next to my desk. Some photographs are only dear to me because of my synaesthesia: sometimes the colours that come up describe a state of mind or an emotion with such accuracy that I feel words fall short next to this immediate visual precision.

Another side effect of searching for words to adequately describe what I see and feel when I look at my images is that I noticed a growing sensibility for my own synaesthetic reactions. Over the last weeks and months, while working on the texts for *Layers of Reality*, I grew more and more aware of my associations. I would be much more attentive as to when the colours appear, and instantly question myself about it:

Layers of Reality is an extraordinary glimpse into the unknowable: the subjective experience of another person. As individuals, we are trapped inside our unique points of view. Although traditional modes of thought teach us that there is one objective reality ‘out there,’ we must shift our paradigm to realise that each person experiences the objective world in *at least* slightly different ways. Differences in subjective experience are perhaps best illustrated in the phenomenon of synaesthesia¹, which cuts straight to the heart of *qualia*: the content of experience.

This wonderful piece of work sits at the cross-roads of art and science. *Layers of Reality* is a well-designed and systematic inner exploration into the structure of one’s own experience. Anna’s work brings up fundamental questions in the fields of psychology and neuroscience, some of which have been a pastime of philosophy for ages. Is knowledge gained through the senses? Can two individuals ever share the exact same experience? What becomes immediately apparent is that Anna’s reality is probably vastly different from yours. Anna’s experiences are similar to other synaesthetes with the same sub-type of synaesthesia (e.g. emotion to colour²); however, synaesthesia is characterised by its idiosyncratic nature³: every two synaesthetes of the same sub-type will have *different* experiences evoked by the *same* stimuli (e.g. the feeling of ‘love’ evokes the experience of blue for person A and red for person B).

What makes a person a ‘synaesthete’? While it is undoubtedly the case that individuals vary to extremes in terms of their subjective realities, not all deviations from ‘normal qualia’ are considered to be synaesthesia. From the perspective of a researcher, it is important to have strict diagnostic criteria to be able to compare across studies and make valid conclusions about a specific population. Importantly, the diagnostic criteria as inclusion for synaesthesia do not discount other unique types of experiences as valid in their own right. The use of criteria only highlights the importance of semantic clarity within the scientific context. A person is considered to be a synaesthete when they have a highly *specific, automatic, and consistent* experience in a sense that is *additional* to the sense being stimulated⁴. For example, upon hearing C-major, an experience of green is immediately evoked (sound–colour synaesthesia). This is not just any green, but a very specific shade of green (the pale, dusty green of grass dried out in the sun). Furthermore, a synaesthete is unable to turn off the green experience; the ‘greenness’ happens whether they like it or not. A synaesthete will experience the same shade of green each time C-major is heard, even across years. Developmental synaesthesia is furthermore characterised by the fact that synaesthetic experiences are present since early childhood. Acquired synaesthesia can happen due to brain damage, sensory loss or drug intake⁵.

As you may already note, some experiences are much easier to fit inside our framework

1

Rich, A. N. & Mattingley, J. B. Anomalous perception in synaesthesia: A cognitive neuroscience perspective. *Nat Rev Neurosci* 3, 43–52 (2002).

2

Ramachandran, V. S., Miller, L., Livingstone, M. S. & Brang, D. Colored halos around faces and emotion-evoked colors: a new form of synesthesia. *Neurocase* 18, 352–358 (2012).

3

Cytowic, R.E. *Synesthesia: A union of the senses*. The MIT Press (2002)

4

Rothen, N., Tsakanikos, E., Meier, B. & Ward, J. Coloured Letters and Numbers (CLaN): A reliable factor-analysis based synaesthesia questionnaire. *Conscious. Cogn.* 22, 1047–1060 (2013).

5

Brogaard, B. Serotonergic hyperactivity as a potential factor in developmental, acquired and drug-induced synesthesia. *Front. Hum. Neurosci.* 7, 657 (2013).

Visualising Synaesthesia

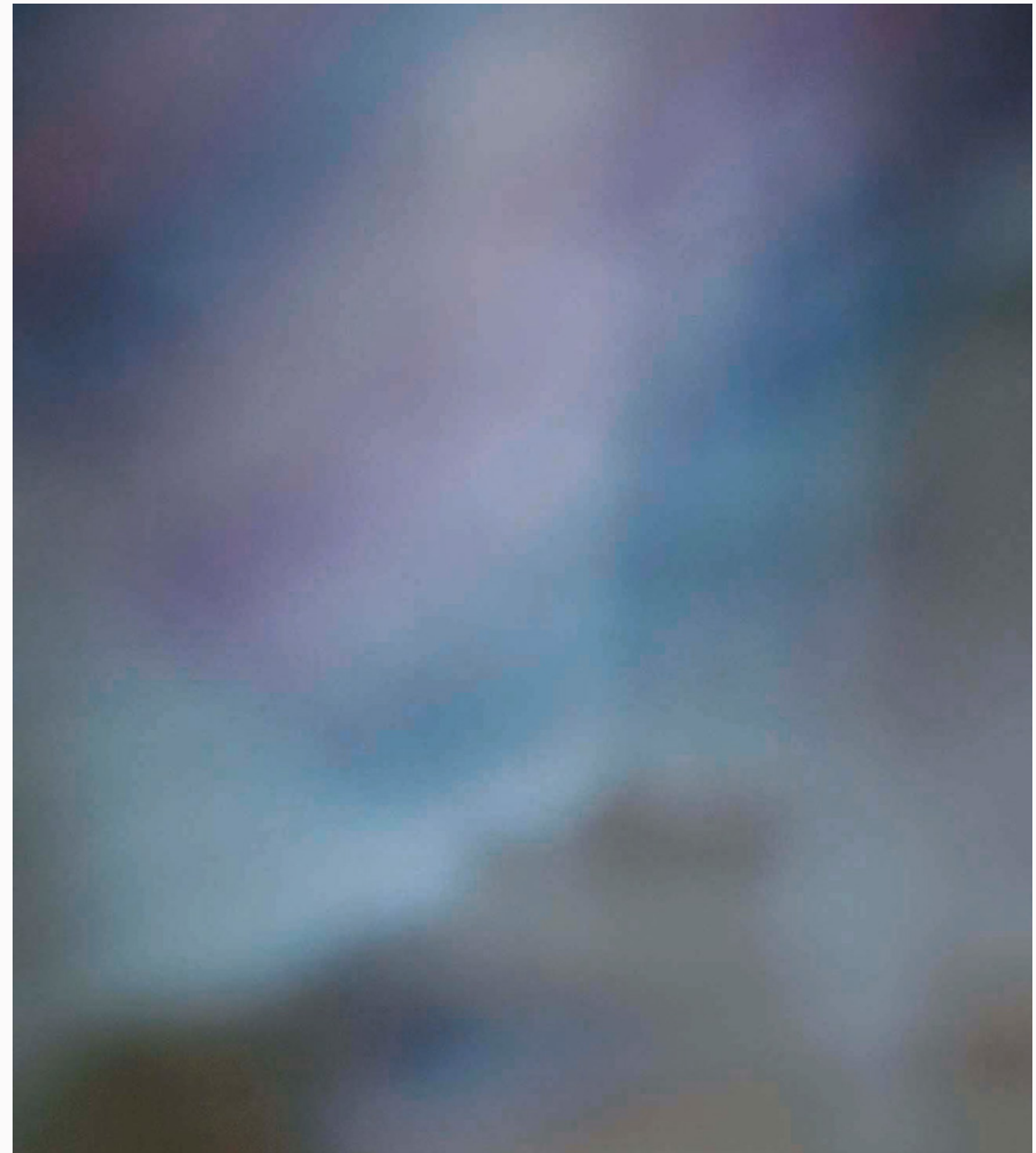
To help visualise the experience of synaesthesia, I tried to pin down different synaesthetic experiences and come as close as possible to reproducing them. I am curious to find out how close I can come to visualising my emotional landscape.

I personally do not think that there is a structural difference between the quantity or quality of my feelings and those of others, but there seems to be an extra 'layer' in my perception that I still have trouble imagining is absent in other people's perception.

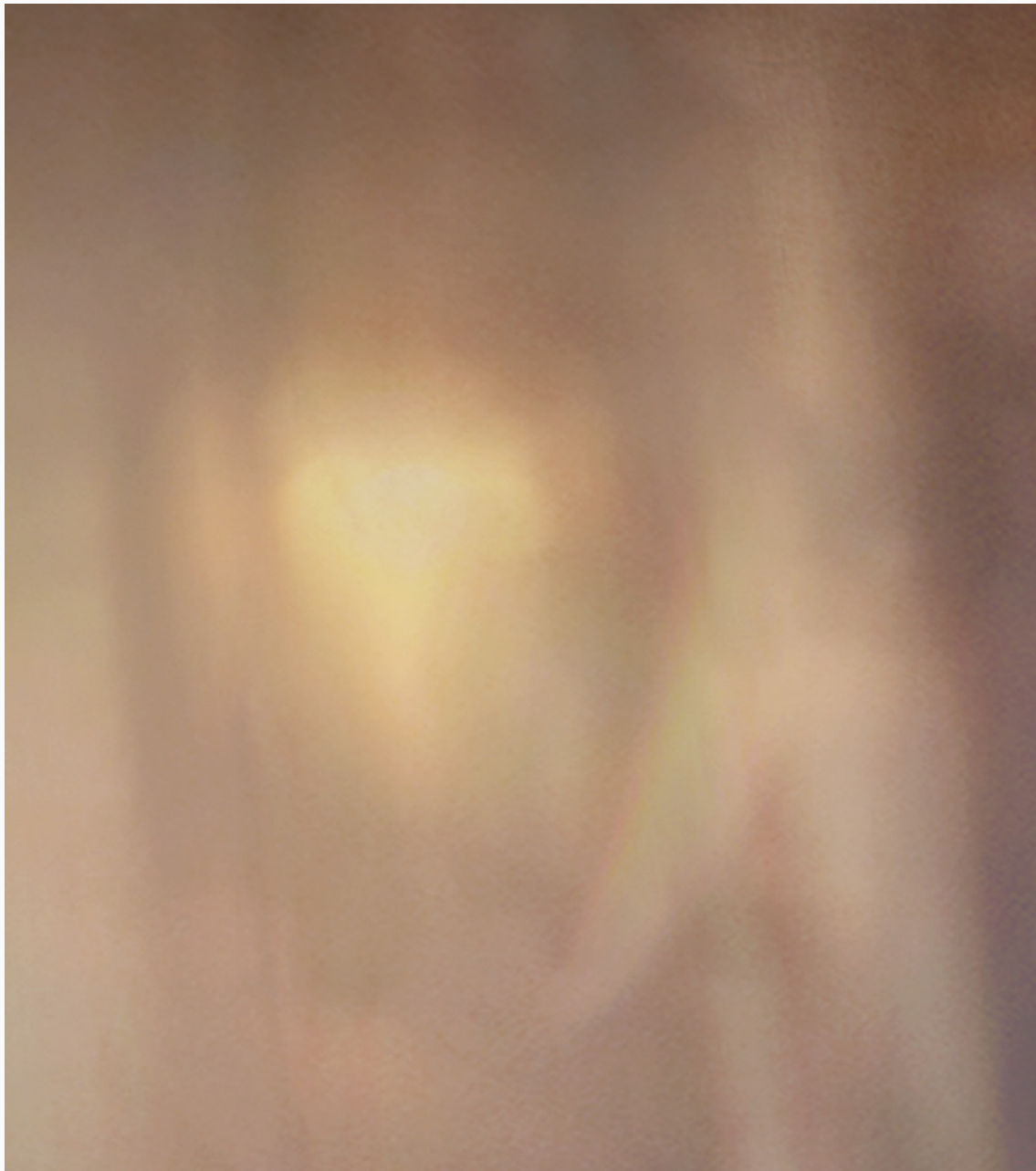
It is an impossible task to squeeze an emotion into a two-dimensional rectangle, and even more so a synaesthetic response, but I would still like to try to give an impression of how synaesthesia unfolds in my brain. Those images are what I 'see' inside



La dame à la licorne



Lange Haven, Schiedam



Madeleine

Coloured Emotions as Qualia

Synaesthesia from a Philosophical Point of View

Alexandra Spaeth, MA
philosopher

Anna Püschel studied photography at the AKV St Joost in Breda, the Netherlands, and fine arts at LUCA in Ghent, Belgium. Her work focuses on invisible aspects of human existence. She is currently doing a Master's degree at LUCA with a project about silence.

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EXCEED YOUR VISION

Synaesthesia means 'union of the senses'. It is a neurological phenomenon in which stimulation of one sense involuntarily leads to perceptual experiences in a second sensory or cognitive pathway. The perception of letters or numbers as inherently coloured, for instance, is a common form of synaesthesia. People who report a life-long history of such experiences are known as synaesthetes.

Little is known about the origin of synaesthesia. It has been suggested that the condition develops during childhood, when children are intensively engaged with abstract concepts for the first time.

Layers of Reality is both a personal and a semi-scientific research study of synaesthesia. Anna Püschel, a synaesthete herself, experiences colours when looking at certain images. In this book, she questions her conception of reality. Using a large database of images, she investigates her synaesthetic reactions in an attempt to understand how we construct reality.

With an introduction on synaesthesia by Sam Beekhuizen, MSc (psychological researcher) and essays by Erika Schippmann (psychoanalyst), Olympia Colizoli, PhD (neuroscientist) and Alexandra Spaeth, MA (philosopher).

