

Master's Programme in Visual Cultures, Curating and Contemporary Art

# The Sacred Alga

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**Teo Paaer**

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<b>Author</b> Teo Paaer		
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### Abstract

"The Sacred Alga" is Teo Paaer's thesis for Visual Culture, Curating and Contemporary Art -Master program in Aalto-university. It consists of a report on the background work and concepts surrounding an upcoming installation, which is based on the concept of sacred alga. The thesis is divided to two distinct parts: the first part is a report on search for the rare freshwater red alga *Hildenbrandia Rivularis* and subsequent attempts to cultivate it. The second part follows the academic writing traditions in its exploration of concepts of 'sacred' and strives to discover when and why certain things becomes sacred.

The 'sacred' has a longer history with humanity than religion, and while the secularization process has led religion to lose its prominent role in Western society, 'sacred' has become a latent undertone. In modern times, 'sacred' has appeared in new forms and less obvious contexts, such as 'crystal healing', 'alternative medicine' or fascism. Despite its archaic nature and apparent absence in secularized capitalistic societies, it is this apparent absence that makes 'sacred' topical today.

<b>Keywords</b> alga, sacred, hildenbrandia rivularis, trentopohlia johlitus
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### **Tiivistelmä**

“Pyhä Levä” on Teo Paaerin opinnäytetyö Aalto-yliopiston Visual Culture, Curating and Contemporary Art-ohjelmassa 2022. Opinnäytetyö toimii pohjatyönä tulevalle installaatiolle, jonka lähtökohtana on Pyhän Levän konsepti. Opinnäytetyö jakautuu kahteen erilliseen osaan, joista ensimmäinen on raportti harvinaisen punalevän etsinnöistä sekä yrityksistä sen kasvattamiseksi. Toinen osa tutkii pyhän käsitettä pyrkien vastaamaan kysymykseen, miten jostakin asiasta tulee pyhä. Työkaluina käytetään kirjallisuuskatsausta sekä esimerkkitapauksia.

Kuluneen sadan vuoden aikana tapahtunut Länsimaisen yhteiskunnan sekularisoituminen on vähentänyt uskonnon merkitystä huomattavasti. Pyhän konsepti on kuitenkin uskonnosta erillinen ja sillä on pidemmälle ulottuvat juuret ihmiskunnan historiassa kuin uskonnolla. Modernina aikana pyhä onkin löytänyt uusia ilmenemismuotoja uskonnon rinnalle, esimerkiksi niin sanotut 'vaihtoehtohoidot' tai fasismi. Huolimatta pyhän arkaaisesta luonteesta ja näennäisestä puuttumisesta sekularisoituneessa kapitalistisessa yhteiskunnassa, on se ajankohtainen osa ihmisyyttä myös tässä ajassa.

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**Avainsanat** pyhä, levät, hildenbrandia rivularis, trentopohlia johlitus

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## **1. Preface**

I want to thank my supervisor Professor Laura Beloff for her guidance, Donny McCracken for helping with the language and my family for their awesomeness.

## 2. Preamble

This thesis is a report on the background work and concepts surrounding my upcoming installation, in which I aim to create an experience of 'sacred'. The thesis consists of two distinct parts: the first part is a report on my search for a rare freshwater red alga - *Hildenbrandia Rivularis* and is written in the first person. The second part follows academic writing traditions in its exploration of concepts of 'sacred' and strives to discover when and why certain thing becomes sacred. The start of the project can be traced back to Christmas Day 2018 when I saw a documentary film 'BBC: Operation Stonehenge: What Lies Beneath' (2014). In the documentary David Jacques presents his theory that part of the reason why the area gained religious importance might be because a rare red alga (*Hildenbrandia Rivularis*) inhabits Blick Mead spring, which lies 2km east of Stonehenge (Jacques et al., 2018, 126). The alga has a remarkable ability to change colour, which has led David Jacques to propose that it has been of sacral importance.

Jacques argues that since there is no reason to believe that conditions in Blick Mead have changed significantly over the past several thousand years (Ibid, 125) it is reasonable to think that the red algae inhabited Blick Mead during the Mesolithic period, when the area became a place of regular visits and settlements (Ibid, 127). The timescale in question is just astonishing: 8000 years, equivalent to 320 human generations.

I selected the theme for my upcoming installation and this thesis based on a gut feeling. The concept of sacred is seemingly distant and out of fashion in secularized Finland, but it has become more topical while I have been working on this thesis. It is still an undercurrent and often mistakenly overlooked as being connected to current phenomena, e.g. the rise of fascism (Arppe, 200, 39) or so-called 'alternative medicine'.

### 3. Rivers and *Hildenbrandia Rivularis*

In late 2020 I started the project to create an installation to study and possibly create the sensation of 'sacred'. The alga seemed the perfect medium since it inhabits qualities that were 'sacred' in elementary form. The plan for the installation was quite open at this point: my aim was to research both elements and the possibility to cultivate the alga, possibly on a concrete surface. Another element was the timescale; the almost unfathomable timescale of Blick Mead made me realise that in this context the installation should try to incorporate time in a similar form.

In 2020 I started to conduct background research. I wrote an email to David Jacques, who is the leading archaeologist at Blick Mead. He was kind enough to reply with some advice for books that might have something about the alga, as well as his own excellent book on the topic. The other leads fizzled out, but his own book, written with Tom Phillips and Tom Lyons, includes a whole section about the subject and, more importantly, the alga in question, which is named: *Hildenbrandia Rivularis* (*H.R.*). Now I knew the alga's name and I knew what I was looking for. I spent the next two months scouring through books about algae and seaweeds trying to find any mention of it. After countless searches I finally found a book called 'Freshwater Red Algae, Identification Guide to European Taxa, particularly to those found in Finland' by Pertti Eloranta and Janina Kwandrans. It had a short section about *H.R.*: it is a rare freshwater red alga of the taxa *Hildenbrandia*, and although the first studies date back to the 1800s it is not very well known at all, with very few samples collected and only a few studies conducted (Eloranta & Kwandran, 2007, 50). The book had two recorded findings of *H.R.* in Finland.

The fact that *H.R.* had been found in Finland made me to decide I should try to find it myself and possibly collect a sample so I would be able to cultivate it. The two recorded findings were in Karkkila and in Vääksy (Eloranta & Kwandran, 2007, 50). However, it was also mentioned in an environmental study of Mustio-river (Vuorinen, 2015, 14). As this was the most recent of the very few findings of *H.R.*, it was a logical place to start my search.

On a misty monday morning in August 2021, equipped with a pair of waders and equipment to collect samples, I started exploring the Mustio river. The river stretches 32 kilometres from Mustio Castle down to Pohja, where it connects to Skuruviken lake. Heavy bushes of strawberries, willows and such grow along the riverbanks, and huge alders grow so close to the water that they must be literally in the river itself when the water level is high. The riverbed is covered by clay (Länsi-Uudenmaan vesi ja ympäristö ry, 822/2020). Stones are exposed only in areas with heavier flows of water. The aforementioned environmental study of Mustio river describes the river biota as quite diverse and mentions it being the habitat of freshwater pearl mussels (*Margaritifera margaritifera*) and thick-shelled river mussels (*Unio Crassus*). A road runs beside the river for most of its course. In some parts just next to it, it's even possible to jump across the river.



Picture 1. Mustio-river in September 2020 (Paaer, 2021)



I was driving along the road and trying to spot any areas that might look like a likely habitat for the H.R., but I was not sure that I would be able to recognize them, even though I knew from Eloranta's book that it needs stones to attach to. My plan was to stop as soon as I saw any bigger stones in the river. After driving quite a while, I arrived at a small pond below the old Åminnefors hydroelectric power-plant dam. The only access to the pond was through the hydroelectric plant's premises, but fortunately two maintenance personnel were glad to help me in.

The dam creates a wonderful 10-meter-high waterfall which lands in an afterbay. The afterbay is some 30-50 meters wide and is built to regulate fluctuating discharges from the hydroelectric power plant. To mitigate against the corrosive effect of running water, the afterbay has been clad with stones, mostly grey granite, but since there were also pieces of concrete and bricks, I can say that at least some of the material used has been demolition waste. The rocks closer to the waterfall seemed to be swept clean and it would be impossible for any algae to attach because of the heavy running water. A bit further downstream, however, I found the first promising-looking area. Along the bank there were multiple large granite stones, with more on the bottom of the river. I knew I should be looking for the alga on stones, and particularly stones that were submerged or almost submerged. Inspecting the stones proved to be a both slippery and freezing task. I found small pieces of flint that were bright red, but these proved to be parts of old bricks that the current had ground smooth.

I was only able to inspect stones that were less than one meter in the water, and I was not able to lift the larger stones. The murkiness of the water rendered visibility minimal, so I was only able to inspect stones outside of the water.

After inspecting the riverbanks near the dam, it quickly became apparent that finding any algae from the cold, murky waters of the Mustio river would be difficult. Even finding stones after the dam was quite challenging at times. The channel is quite deep, and the slope is steep, and stones in the water were practically invisible from the bank. However, during the first few days of the search I was able to collect some stones which seemed to have reddish growth on the surface.

After a disappointing first week of scouring the river, I revised my strategy. Since there were records of H.R. found in Finland, I decided I needed to get hold of those who had found it. This proved to be almost as difficult as finding the algae itself. Pertti Eloranta's book mentions that he had found H.R. in Karkkila and Vääksy. The other person who had possibly found H.R. was a biologist who had completed an environmental study of one section of Mustio river. After countless phone calls and multiple emails, I couldn't reach either.

Since the environmental study had been done on a 2 km-section about 5 kilometres before Äminnefors hydroelectric power-plant, it seemed logical that somewhere along those 2 kilometres somebody had collected a sample of H.R.T. The level of the river had risen from my previous trip and the water was as murky as ever. Downstream the river is murkier due to being a drainage basin for side streams (Länsi-Uudenmaan vesi ja ympäristö ry, 2020). The water temperature had also plummeted, being only 6 degrees Celsius. This hindered my ability to spend long times in the river. The flow of the stream is quite weak in the downstream part of the river, partly because of the dams and partly because of the lesser degree of elevation. This means that there are even less exposed stones. I spent the week inspecting the banks and the very few stones that I was able to find.

At that point I realised a major pitfall in my plan: the H.R. at Stonehenge took several hours to turn pink after it was drawn from the water and exposed to oxygen. It was likely that H.R. in Finland would have a similar quality and thus it would be virtually unrecognisable.

#### 4. Trash cans and *Trentepohlia Jolithus*

After some research I was able to conclude that the specimen on the stone sample from my first trip was not *Hildenbrandia*, but rather *Trentepohlia* and likely *Trentepohlia jolithus*. After my attempts to find H.R. I decided I should concentrate on *Trentepohlia* instead. *Trentepohlia* is studied intensively but information of its biology is still limited.

*Trentepohlia* is a genus of filamentous chlorophyte green algae in the family of Trentepohliaceae (Guiry, 2002). As currently circumscribed, the genus includes 40 species (Hoek et al., 1995, 623). Naturalist Carl Linnaeus (1707-1788) mentions *Trentepohlia jolithus* in Flora Lapponica, saying: “[*Trentepohlia jolithus*] lives in the European cold dark woods, over rocks in front of one or two years cut and supine” (Guiry, 2002). Which is accurate, since it mainly occurs on low altitudes in northern and central Europe, mountainous areas in Southern Europe, and is associated with cold and humid conditions (Rindi & Guiry, 2002, 39).

There is remarkable variation in the morphological characteristics of *Trentepohlia* in relation to environmental conditions. However, the most important characteristics on species level are the shape and size of vegetative cells and the presence of hair-like cells (Liu et al., 2012).

This species forms a deep red covering on the substrata, which makes it easily recognizable to the trained eye. The colour depends on the environmental conditions, ranging from bright magenta to dark brownish red.

The best growth and reproduction of similar species were observed at 10 and 15 Celsius with a light/darkness ratio of 16:8 (Rindi & Guiry, 2002). I couldn't find records of the best humidity conditions for *Trentepohlia*, but most records suggest that it needs high levels of humidity (Liu et al., 2012). Rindi & Guiry had observed that *Trentepohlia* reproduces itself by releasing biflagellate swimmers, which behave as asexual spores that produce new plants without sexual fusion, which means that it is possible for it to reproduce from a single specimen.

*Trentepohlia Jolithus* is widespread globally and grows on rocks, bark, concrete, dead wood, cement and several other substrata (Liu et al., 2021). It prefers mineral-based compounds, e.g., concrete, as its substrata (Rindi & Guiry,



2002, 51). It is often sighted on built structures such as buildings, bridges and sculptures, and most often occurs on old limestone walls facing north (Ibid. s.51). I have encountered *Trentepohlia* algae on surfaces that seem unlikely, e.g., on top of a plastic trash can (see picture 1.01.).

My own observation is that it is quite common in cities and built structures in Southern Finland. I have found a larger deposit in an area 15 by 15 metres in Karjalohja, Finland (see picture 1.03) I have inspected quite large colonies outside of Finland, e.g. in Rapallo, Italy (see picture 1.08). There are some known deposits that are much larger, the best-known of which is in Hailuogou, China, a major tourist attraction where almost an entire valley is covered in *Trentopohlia* *Johlitus* (see picture 1.04) (Liu et al., 2012).



Picture 1.03. An area of 15 by 15 metres covered in *Trentopohlia* *Johlitus* in Karjalohja, Finland (Paaer, 2021).





Picture 1.04. Massive colony of *Trentophilia* in Hongshitan (red stone beach), Hailuoguo, China. The red colour in the photo comes from *Trentophilia* colonies on top of exposed rocks. The current colony formed in 2005 when, due to climate change, the circumstances became optimal for *Trentophilia* (Liu et al., 2012). (Wallpaperflare, 2020).



Picture 1.05. A close-up photo of the stones in Hongshitan (red stone beach), Hailuoguo, China. (Zhu, 2014)





Picture 1.08. Trentophilia on plaster in Rapallo, Italy, 2022 (Paaer 2022)



Picture 1.09. Trentophilia on concrete in Reposaari, Finland, 2021 (Paaer. 2021)





Picture 1.10. Trentophilia on rocks, Lönnhammar, Finland, 2021 (Paaer, 2021)



Picture 1.11. Trentophilia on concrete elements, Helsinki, Finland, 2021 (Paaer, 2021).



## 5. The first cultivation experiment



Picture 1.12. Trentopohlia on a sample collected from Mustio River, Finland, 2021. Total length of the sample 4,5 cm. (Paaer, 2021).

The first stone sample of Trentopohlia was too small to provide a sample which could be cultivated (see picture 1.12). It had also formed a tough bond with the rock and could not be extracted. However, I was able to find a Trentopohlia Juhlitus colony in Helsinki Finland, which was large enough to collect samples from. The colony was formed on top of a plastic container (see picture 1.13). The concave form on the container had created a basin that collects water, dirt and other residue. This has created a suitable habitat for Trentepohlia alga. I inspected the specimen multiple times during 2021 – 2022 and even though the basin froze and dried the alga survived. The container is used to store gravel and is in use, so presumably the lid is opened multiple times per winter, which causes the basin to empty. The container is in an inside yard and is in shade most of the time. The deep and vivid colour of this specimen is noticeable. There isn't a

typical strong bond between the specimen and the substratum. The specimen was merely a soft layer on top of the muddy dirt layer, approximately 0.5mm deep. Even on areas where the alga was directly connected to the surface, it hadn't created a bond with it.



Picture 1.13 *Trentophilia Jolithus* in Helsinki, 2021. The photo has not been altered and represents the colour of the specimen quite accurately. The colour of the specimen is strikingly vivid in real life. (Paaer, 2021)

I collected three samples of the specimen. The setup for cultivation was rudimentary: three small plastic containers of which one had a small piece of hard plaster, the other had a sponge, and the third had a piece of concrete. The containers were placed on a window shelf, which offered natural light in approximately 16:8 light/dark ratio. The specimens were watered with regular tap water. Since the samples didn't only include the alga but also the residue, my estimation was that there might be enough nutritive material for the alga to survive. The plaster and concrete pieces were placed in containers to alter the alkali value since *Trentophilia* requires a high pH value (Rindi & Guiry, 2002).





Picture 1.02 The first setup to cultivate Trentophilia. (Paaer, 2021)

The first attempt to cultivate Trentophilia was unsuccessful. The alga didn't attach to plaster nor to the concrete and didn't show any signs of reproduction or life during the 4-month cultivation period. My own assessment is that the alga needed more nutrition and moisture. After 4 months the experiment was ended.

## **6.The second cultivation experiment**

During winter 2020 – 2021 I collected a second set of samples: 7 different samples from 7 different locations in Helsinki and Espoo. These samples were collected on surfaces that were concrete, plaster or natural stone. The most common surface was white plaster (3 samples). Almost all of the surfaces were facing north or north-east, similar to the study I previously referred to (Rindi, Guiry, 2002. s.51).

The cultivation process started straight away after collecting the samples. Cultivation was implemented in three phases:

- 1.) Cultivating the sample on an agar plate
- 2.) Splitting the sample into multiple colonies and growing them on separate agar plates
- 3.) Growing the individual colonies on separate concrete slabs.

The agar plate consisted of purified water and 0,01% growing medium and agar agar. These petri dishes were then sealed and watered every other day and placed in the terrarium with 16/8 light/dark cycle. The terrarium was a 50-litre terrarium with a humidity reading and thermometers, which allowed me to inspect the conditions inside the terrarium. For a suitable substrate the concrete slab surface was thoroughly washed after the cast, so that the concrete glue was completely removed and stone material of 1mm was exposed and the surface was a bit rough. This treatment was done to mimic the texture of old concrete and was based on the observation that the algae preferred old concrete compared to new (Rindi & Guiry, 2002, 39).



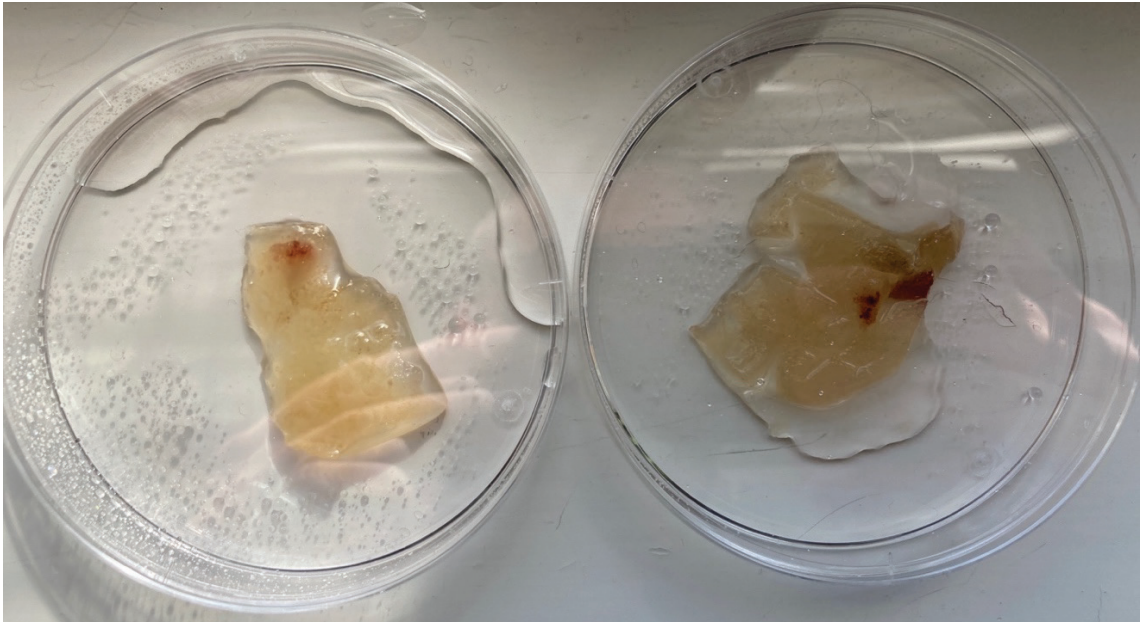


Picture 1.06. Sample 1. Trentopohilia on white plaster wall in Otaniemi, Espoo, 2021 (Paaer 2021)

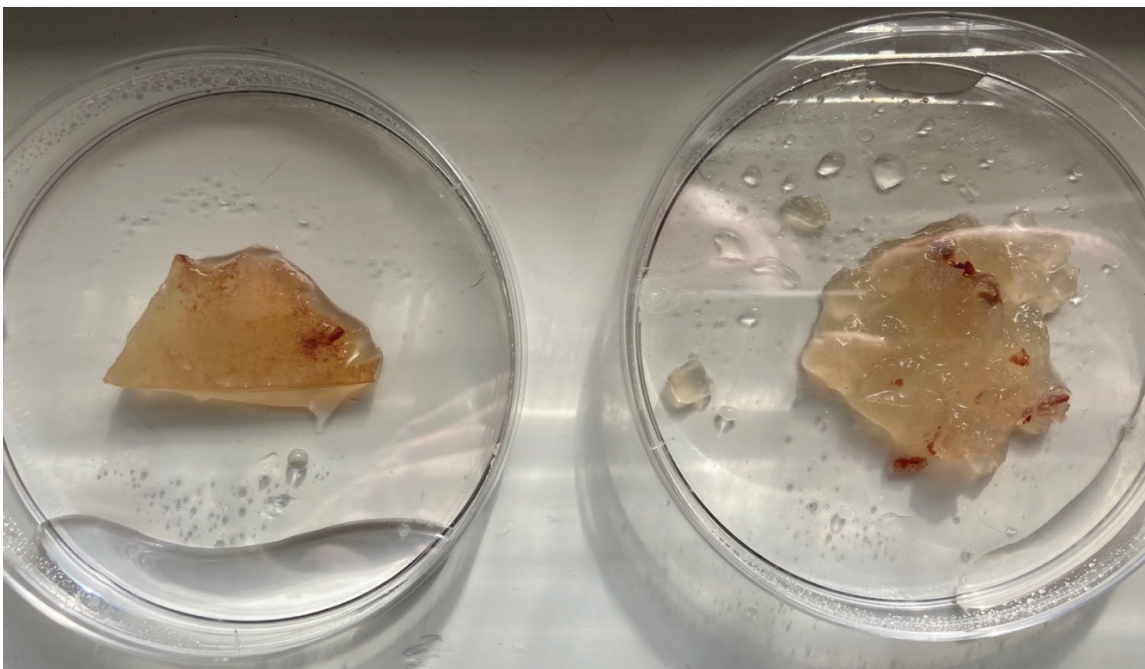


Picture 1.07. Sample 2. Trentopohilia on concrete in Helsinki, 2021 (Paaer, 2021)





Picture 2.00 Trentophilia Jolithus on agar plate (Paaer, 2021)



Picture 2.01. Trentophilia Jolithus on agar plate (Paaer, 2021)





Picture 2.02. *Trentophilia Jolithus* colony on a concrete slab (T.Paaer, 2021)



Picture 2.03. An agar-plate with multiple *Trentophilia* colonies and visible contamination (T. Paaer, 2021)

After two weeks of cultivation there was a significant growth to be seen. The originally invisible samples had now grown into bright red colonies, approximately 5mm in diameter. At that time all the colonies seemed healthy (See picture 2.00).

After three weeks the first signs of contamination were seen. Two different fungi could be seen on 4 samples out of 7. After five weeks fungi had overcome the algae on 3 samples and only one sample was without any traces of contamination. There was the possibility that the original samples were contaminated and providing sufficient mediums for the fungi to grow brought the problem to my attention. It was also possible that the contamination happened while transferring or handling the samples.

After the two cultivation tests I was able to conclude that cultivating *Trentopohlia Johlitus* is possible. However, to scale up the process it needs to be done in laboratory conditions with no contamination of the colonies and extra care needs to be taken when handling the samples at every stage of the process. Sanitizing the samples should also be considered. An agar-plate seems to be optimal to start the cultivation. Based on these tests, when the colony is big enough it can be moved onto the concrete slab. The concrete slab can contain large amounts of water, which helps to regulate the humidity. Overall, cultivating the alga proved quite a challenging task. When the conditions were optimal, other species took over and when the conditions were too harsh, or it was not regularly watered, the alga simply died. The alga needs stable circumstances to survive, although in its natural habitat it seems quite resistant.

During summer 2022 I was struggling to combine work, family-life, and investigations. Growing algae requires dedication and punctuality – both of which I was seriously lacking. After a six-week cultivation period, I decided to stop the experiment. The alga was not thriving, quite the contrary. I was not able to create a sufficiently automated watering system so the alga was depending on me to water it, and I was doing a poor job. I also realized that Finland's summer, with almost 20 hours of light per day, coupled with the extreme heat in our apartment, was not the ideal circumstances for the algae either. Some of the algae was destroyed by our 1.5-year-old daughter, who ate it. By that time, however, I had already started the second part of my project – to gather material about the concept of 'sacred'.



## 7. The Sacred

### Definition of *sacred*

1.

a: dedicated or set apart for the service or worship of a deity

b: devoted exclusively to one service or use (as of a person or purpose)

2.

a: worthy of religious veneration: HOLY

b: entitled to reverence and respect

3 : of or relating to religion : not secular or profane

*sacred* music

*Merriam-Webster dictionary*

*“[...] the sacred, is perhaps the most ungraspable thing  
that has been produced between men”*

(Bataille, 2004, 243)

‘Sacred’ is an evasive subject. It escapes the moulds and definitions one tries to set for it. It is a subject that one tends to have an instinctive idea about, an idea that seems natural and cohesive, but which fails upon further inspection and analysis. It is an elementary principle, such as ‘good’ or ‘bad’ or ‘evil’, all of which create an imminent idea of their essence but are complex and hard to fully dissect. One could argue that the nature of sacred eludes any strict definitions and explanations, and would, if this would happen, cease to exist the moment it was fully explained and dissected. Thus, in this thesis, I’m not trying to create a

universal definition of 'sacred' but rather present different perspectives of it. One disconnection between these views is that 'sacred' is often divided into two entities: 'sacred' and 'profane'. Sometimes there is also a third one: 'neutral'. This is rarely explicitly stated and is often only implied. There have been some critical views of 'sacred', but in this thesis I am not going to concentrate on that matter, but rather take it for granted that such a phenomenon exists. The aim in this thesis is to create a perspective on 'sacred' that is comprehensive enough for this context.

I am aware that I have a particular view on the matter of 'sacred', which is modern, Western, and influenced by Christian culture. It is possible that my view is biased and that the premise of this thesis somewhat restricted and not very inclusive. However, there are some characteristics of 'sacred' that seem to be somewhat universally common, albeit not exhaustible.

One definition of 'sacred' is introduced by Veikko Anttonen in his dissertation work (Anttonen, 1991). My interpretation is that Anttonen's theory is an amalgamation of previous theories and thus a good introduction to the matter. In Religious Studies, 'sacred' is often seen as a set of rules that define and divide 'sacred' and 'profane', and Anttonen's theory utilizes this division. He proposes that the rules of the division should be the subject of the study – not 'sacred' per se. Anttonen describes 'sacred' as a relationship that is dependent on the context and cannot exist without a social context (Anttonen, 1991, 41). Anttonen points to how the Finnish and Nordic etymology of the word 'sacred' underlines its connection to 'border' and 'division'. He sees religious practices of 'sacred' as merely one highly defined and separate case. He emphasises that any definition of 'sacred' needs to be based on an empirical and theoretical base which can be methodically retraceable. Veikko Anttonen claims that 'Sacred' as a category is the only common nominator to all different theoretical structures and theories in Religious Studies (Anttonen, 1996, p. 41).

A practical approach to define 'sacred' is that something is 'sacred' when it is or has been considered or treated as 'sacred' by somebody or group, according to their own definition of 'sacred'.

## **8. A Literature review**

This short literature review surveys a few different approaches to 'sacred' which are relevant to this thesis. These are mainly in chronological order, which allows us to track how the approach has progressed. The 'sacred' is defined quite liberally in this context, and some authors speak about e.g. 'holiness', but they utilize it in a way that can be seen as similar or indistinguishable from 'sacred'.

### **William Robertson Smith (1888-1889)**

In his 'Lectures on the Religion of the Semites' (1888-1889), William Robertson Smith draws the first lines to distinguish between the sacred and the profane. Robertson Smith studied 'sacred' through Ancient Gods and Sacral places, and he claimed that the reality of ancient culture is unimaginable for us, since the traditional connection to these cultures has been lost. According to him, this prevents us from studying 'sacred' through our current culture and leaves the long and complicated history of 'sacred' murky and unresolved. When studying Semitic culture, he came to the conclusion that the border between 'sacred' and 'profane', as well as between clean and dirty, is unclear. 'Sacred', in the sense of 'separated', 'marked' and as a restricting attribute, was connected both to clean and unclean things. He claimed that this contamination of categories was due to 'sacred' being based on an immemorial concept of 'taboo' – the concept of prohibition. Robertson Smith's argument is that certain restrictions exist regarding how one can use and be in contact with both 'holiness' and 'uncleanness', and that breaching these restrictions involves supernatural dangers. The difference between these two doesn't appear in relation to ordinary life, but in their relation to the gods (Robertson Smith, 1888-1889, Additional note B.). According to Robertson Smith, 'sacred' belongs to the gods and "uncleanness is shunned because it is hateful to the gods" (Robertson Smith, 1888-1889, Additional note B.). It is noteworthy that almost everything connected with reproduction, disease, and death is affiliated to dangerous superficial agencies. One could see this as having a connection to how diseases spread, and how taboo restrictions could

have served as a tool to prevent this. “The affinity of such taboos with laws of uncleanness comes out most clearly when we observe that uncleanness is treated like a contagion, which has to be washed away or otherwise eliminated by physical means” (Robertson Smith, 1888-1889, 447). These kinds of ancient traditions are still present today as a relic of prehistoric superstition. Menstruation has had a strong taboo affiliation in most cultures, and Robertson Smith argues that this is due to a terror of the supernatural influences associated with it. The fact that menstruation blood is one of the strongest charms in many cultures would support this claim.

The relationship between humans and superficial agency in Robertson Smith’s writing could be described ‘quid pro quo’. He states that the ‘holy’ (or ‘sacred’) is not ‘free to a man’, and one could interpret this in a way that ‘holy’ and ‘taboo’ both have trade-offs, as well as restrictions and rules that need to be obeyed to prevent the dangerous nature of these affairs manifesting. The personalised nature of these agencies is interesting and something that has been slowly disappearing from Western religions, but it is apparent in cultures that have e.g. spirits with personality traits. One example from a Western culture could be the ‘Devil’ in the Finnish pagan tradition, in which the ‘Devil’ has a lot of human personality traits and the relationship between humans and the ‘Devil’ or ‘devils’ is often based on a bargain. However, there is still a clear layout of power between the two, with the ‘Devil’ almost always coming on top.

Another interesting point in Robertson Smith’s comparison between ‘holy’ and ‘taboo’ is the ambivalence between, or even the lack of the concept of, good and evil. Taboo restrictions can be seen as a social power system, but Robertson Smith underlines the apparent dangers involved and entangled with these powerful magical agencies and presents these restrictions as more of a safety guide than necessarily a system of social hierarchy (of which they are as well). Although Robertson Smith’s perspective is that of a Victorian-era Evolution-Christian’s, his ideas have affected later thinkers such as Mary Douglas and Georges Bataille, and his thinking is elemental to religious studies.



## **Émile Durkheim (1858 - 1917)**

Durkheim seems like a logical continuum from Robertson Smith. Where Robertson Smith can be seen to have founded Religious Studies one can claim that Durkheim founded sociology. He based his theoretical understanding of religion on two main thoughts of Robertson Smith: gods are part of society and rituals are symbolic of the organic bond between people and gods (Anttonen 1996, 46). His primary mission in 'The Elementary Forms of Religious Life' (1912) is to use (Australian) Aboriginal culture to explore religion as a social phenomenon. To Durkheim, who studied religion through society, religion and society are inseparable to a point where he asks if "the God and the society are only one?" (Durkheim, 2012, 201). The society creates itself through self-representation, which is actualized in material signs, which Durkheim calls 'emblems', to which the society attaches its sentiment. This theory has created critique, since some consider it a logical loop: one needs a society to create a religion, but also a religion to create a society (Arppe, 2000, 7). There are negative sides to a constellation where a god is the collective representation of a society, such as violence, sacrifice and death. For Durkheim, this creates a problem, since he believes that society is inherently 'good'. To circumvent this problem, Durkheim loans the idea of the dualistic and ambivalent nature of Sacred from Robertson Smith: sacred consists of two different kinds of powers: good ones (which create respect) and negative ones (that create a sense of fear). However, since the idea that society would include these negative aspects of sacred is troublesome for him, Durkheim tries to further explain and circumvent these in multiple different ways.

He states that 'sacred' and 'profane' are things that can't be defined through hierarchy, and that they need to be defined through their heterogeneity; "the sacred and the profane are always and everywhere conceived by the human intellect as separate genera, as two worlds with nothing in common" (Durkheim 1995, 36). This heterogeneity is absolute and universal. However, he then also states in the same context that this doesn't mean that a being can never pass from one to the other, and the fact that this happens only demonstrates the fundamental duality of the two realms. He gives an example of this

metamorphosis: in rites of initiation (to adulthood), a young man leaves the profane world and enters the circle of sacred things (adulthood). This transformation is to be understood as an elemental transformation; the young man dies and is reborn (as a side note it is interesting how this ritual differs from childbirth, which belongs more in the realm of 'taboo' and 'profane'). For Durkheim these two worlds are in hostile confrontation and this antagonism means that transforming from one to the other needs to be absolute. Mystic asceticism tries to get rid of all that is left of the profane and uncouple man's attachment to the world.

The connection and the bond between the two entities is such, according to Durkheim, that the 'profane' must not and cannot touch the 'sacred', but this doesn't mean that the two would not be able to communicate with each other, because if the two would not be able to have a relationship with each other they would find themselves obsolete (Durkheim 1912, 38). I interpret this to mean that they cannot exist alone but only in this duality. Durkheim sees a similar bilateral dependency between gods and people; without the gods the people will perish and without offerings and sacrifices the gods will die (Durkheim 1995, 36). This bilateral relationship is also present in his concept of sacrifice, which is based on Robertson Smith's idea that sacrifice is an eating ceremony where 'the man' offers 'food' (whatever they are sacrificing) to the god(s) (Durkheim 1995, 411). Durkheim sees the act of sharing food to be an act of sharing blood or flesh, which thus creates a bond of kinship between the participants (the fateful and the god).

It is noteworthy that in Durkheim's writings the negative side of 'sacred' is regarded only as a dialectic necessity without an independent status, and is often dislocated from society, where the positive side of sacred is something that emerges from the society.

### **Rudolf Otto (1869 - 1937)**

It would be hard to not include Rudolf Otto on this list of people who have studied, participated, and produced work in this field. However, due to his strict Christian view of the matter and controversial legacy, I will merely skim the more interesting theories and terminologies from his work, rather than go into it any deeper.

Otto underlines how 'sacred' has gained moral attributes in modern times and how its meaning has shifted to meaning 'completely good'. Otto sees this as inaccurate since the 'holy' or 'sacred' also contains a clear overplus of the meaning (Otto 1924, p. 5). He then fabricates the term 'numinous' to mean these emergent qualities of 'holy' that are left when it is stripped of all moral and ethical qualities. For him, the key part of existence is mystical and irrational, and 'numenic' is connected to this irrationality and thus cannot be fully rationally explained. He extends 'numinous' to be its own category as well as 'a state of mind' (Otto, 1924, 5). Interestingly, he also states that it is fruitless to discuss the sensation of 'holy' with anybody who hasn't experienced the sensation. He also states that the experience of 'holy' is above the aesthetic sensations one might get from a piece of art (Otto 1924, 9). This is partly due to the fact that the irrational sensation of 'holy' is 'a priori' and cannot be expressed by language. In this context Otto is especially interesting because he separates 'holy' from the moral compass, and one can see some of the roots of the moral and ethical ambivalence of 'holy' start forming in his texts.

### **Georges Bataille (1897 - 1962)**

One could claim that Bataille started as an unorthodox Durkheimian. While Durkheim uses society to explain 'sacred', Bataille uses 'sacred' to explain society. Bataille uses a similar division between sacred and profane as Durkheim, but emphasizes subjective experience and the unconscious as well as the profane part of the sacred. He further develops this division by applying it to society, dividing it into homogenous and heterogenous parts (these terms can also be applied to different parts of sacred) (Bataille, 2004, 138). The 'profane'

and 'violent' part that Durkheim was trying to exclude is what Bataille is most interested in. This heterogenic part consists of what is excluded from monogenous society; excrement, filth, waste, outcasts, perversions, and so on (Bataille, 1998, 102). Bataille also pointed out that the 'sacred' and 'profane' are not static, but can change places (Anttonen, 1996, 77). The commune is often understood as the base of social structures in French Sociology, and Tiina Arppe has pointed out that, unlike his predecessors, Bataille had a negative view of communality (Arppe, 2000, 21). This affects how he approaches Sacred as a social structure; it shares the same negative essence. Bataille shares Rudolf Otto's mythicist view that 'sacred' cannot be studied by regular scientific methods. He claims that the only means to study 'sacred' is through 'Inner Experience'. Although he comes from a background of French *fin de siècle* philosophy, this view is reminiscent of mysticism. Tiina Arppe's explanation of 'Inner Experience' is an experience of the impossible, and beyond the means of discursive knowledge (Arppe, 1992, 69). Although Bataille is not the most relevant writer in the context of this thesis, he widened the concept of the 'sacred' by applying it to different phenomena, such as fascism (Bataille, 2004, 137).

### **Mary Douglas (1921 – 2007)**

In her book 'Purity and Danger: An Analysis of Concepts of Pollution and Taboo' (1966), Mary Douglas takes a similar approach to 'sacred' as Bataille: she questions the previous approaches and takes a keen interest in the profane side of 'sacred'. To her, the paradoxical claim by Eliade that 'sacred' is both 'sacred' and 'defiled' needs to be de-mystified, and she claims that anthropologists are the only ones who mix the two and that the theory is based on racist views towards so-called 'primitive cultures'. Where Durkheim and Robertson Smith separated so-called 'primitive cultures' from Western culture, Douglas draws parallels between the two and argues that similar cultural categories apply to both. Douglas questions Robertson Smith's idea of 'sacred' being an ambivalent entity as well as the idea of 'taboo' serving as a hygiene norm (Douglas, 1966, 8). She also claims that Durkheim's idea of 'sacred' being contagious is due to

'sacred' being in danger of being contaminated, and that is why it needs to be restricted. In the context of this thesis, her claim of the importance of anomalies is particularly interesting. She claims that an anomaly challenges the existing categories and needs to be resolved by re-arranging the categories or by erasing it. Interestingly, she also equates anomaly to ambiguous, claiming that although the two seem to have differences, in practice they are similar (Douglas, 1966, 38), which resonates with her discontent towards Durkheim's and Robertson Smith's mystical ambiguousness. She claims that people perceive the world through categories which determine what is considered abnormal and how it should be approached.

### **Julia Kristeva (1941 - )**

Julia Kristeva is not particularly relevant in the context of this thesis, but since her work has influenced how 'sacred' is perceived and one can see her in conjunction with Bataille and Douglas, it is fitting to briefly address her thoughts. Kristeva's approach is to apply a psychoanalytic and feminist view to the profane part of 'sacred' (Kristeva, 1993, 187). She connects the profane side of 'sacred' to phobia and psychosis, complementing Freud's thoughts about the similarities between 'sacred' or religion and obsessional neurosis (Kristeva, 1993, 188). Since Kristeva focuses merely on the profane side of the 'sacred', her own work is not very present in this thesis, but her influence can be seen in some parts.

In this chapter I have tried to give a perspective on 'sacred'. In the next chapters I will apply these perspectives and theories first to the case of Hildenbrandia Rivularis and then to Trentopohlia Jolithus. My perspective on the matter is that of an artist, so I take certain liberties regarding how I apply these views for my own use, which is a practical approach and not methodological. One can trace a certain progress in how 'sacred' has been seen in this literature review, but I am not favouring more modern views of the matter: rather I utilize them as I see fit.

## 9. Hildenbrandia Rivularis in the context of Sacred

*"Any given system of classification must give rise to anomalies, and any given culture must confront events which seem to defy its assumptions. It cannot ignore the anomalies which its scheme produces, except at risk of forfeiting confidence."*

(Douglas, 1966, 40)

H.R. is able to change colour from being almost invisible to assuming the most striking shade of magenta. This transformation happens when a substratum with H.R. is moved out of water. The effect is rather slow and takes approximately 2 hours. UV light will eventually fade the colour, but this will take several months. If the stone is kept hidden from UV exposure the colour remains intact. The colour depends on the conditions where the algae has grown (Jacques et al., 2018, 126), specifically on the composition of light-harvesting phycobiliprotein pigments that mask the green of the chlorophyll. The red phycoerythrins are a green, yellow and red light absorbing group, and the phycocyanins absorb blue, green and yellow light (Jacques, et al., 2018, 124). David Jacques has proposed that because of these qualities the algae might have had a sacred or religious importance during Mesolithic times, when the area of Stonehenge was first inhabited, and he even proposed that it might be the reason why the area became the most important religious area in Great Britain. Even though Jacques doesn't elaborate further this theory, one can see a few reasons why these qualities might have had religious importance during the Mesolithic era.



Picture 3.00. Hildenbrandia Rivularis on a flint from Blick Mead Spring. (BBC, 2014)

In his book 'Rite of Passage' (Honko, 1964), Lauri Honko looked at correspondence between topographical anomalies and sacred sites in historical Finnish paganism. He gives examples of how a single fir tree among birches might assume a superficial significance, or some peculiar looking hill or rock might become important or sacred because of its distinguishability. Sometimes these were created on purpose to mark a significant event or incident, e.g. cutting all the branches off a tree except one, which would point to the location of some event. Mary Douglas has also brought up the importance of 'anomalies' (Douglas, 1966, 38) and how 'anomalies' challenge societal codes and thus force a societal reaction, which can be 'positive', meaning a change in social structure, or 'negative', meaning that there is an attempt to erase the 'anomaly'. Douglas sees 'anomaly' as similar to 'ambiguous', with both challenging society's borders and rules, thus making them dangerous and powerful at the same time. This transgressive nature of anomalies is also manifested in another way in the case of H.R.: the colour change is caused by transferring it from one medium to another, from water to air. Based on both Honko's and Douglas's ideas of 'anomalies' being a base for 'sacred' qualities, it is easy to see why H.R. might have been seen as a prominent and important anomaly.



The vivid magenta shade of H.R. is prominent, and something that is rare in nature. Robertson Smith has underlined the significance of 'blood' as a sacral and taboo element in a religious context (Robertson Smith, 1888-1889, 447). The connection between the colour of H.R. and blood is evident, albeit one can only speculate how people during the Mesolithic era would have perceived the colour.

Robertson Smith has underlined the importance of traditions to the 'sacred'. He states that myths and mythology derive from ritual, and that the ritual and the shrine are fixed while the myth is variable. This would mean that 'myths' we consider ancient are younger than the rituals and the 'sacred' locations they relate to (Robertson Smith, 1901, 32). The tradition strengthens the 'sacred's' status in society, even though the meaning and the myths surrounding it might be subject to change. The history of Stonehenge reaffirms this theory since the area has been a site of religious importance for thousands of years and during multiple different cultures (Jacques et al., 2018, 80). Presumably the Blick Mead spring that H.R. inhabits hasn't changed much in the last 8000 years, and presumably the alga has been living on the same rocks for centuries or even millennia. On 7 February 2018, the Daily Mail reported on a new set of genome tests in the context of research that was carried out in 1997 by Oxford University, where the researchers compared the genome of current residents of Bristol to that of the famous "Cheddar man" fossil. The so-called 'Cheddar Man' is a human male fossil found some 75 kilometres from Stonehenge, in Gough's Cave in Somerset, England. It is estimated to be 9100 years old. Fascinatingly enough, the same Daily Mail article mentions that the Oxford Researchers managed to find a current resident of Bristol who was a very distant relative to Cheddar Man. The shared stationary nature of generations of both humans and algae is striking: this would mean that the alga and the humans have been habiting the same area for approximately 320 human generations.



## 10. Trentopohlia in the context of Sacred

In 2019, China Global Television Network published a news article on the aforementioned Trentopohlia Juhlitis deposit in the Hailuoguo valley in China – rocks covered in Trentopohlia deposits are described as “Sacred Rocks” (China Global Television Network, 2019). The article does not elaborate on why or how these rocks are described as being ‘sacred’, so one can only hypothesize. Based on the pictures, the colony or colonies is massive and particularly brightly coloured, so one could apply Honko’s aforementioned theory of an anomaly being a basis of ‘sacred’ status. The vast scale of the colonies strikes one with awe. According to the same China Global Television Network article, the valley has become a major tourist attraction and is considered to be ‘breathtakingly beautiful’. Rudolf Otto has claimed parallels between ‘sacred’ and ‘beauty’ (Otto, 1917, 8), so considering the unique nature of the colony, its apparent beauty and the fact that it is a major attraction, one could argue that these characteristics would qualify it as being related to ‘sacredness’.

One less obvious approach to Trentopohlia’s possible status as ‘sacred’ is through its displacement when it grows in a city or in a man-made structure, e.g. on a bridge or on a concrete wall. Mary Douglas describes the phenomena of ‘trash’ and ‘filth’ in ‘Purity and Danger’ (1969), and Julia Kristeva defines this even further in ‘Powers of Horror’ (1982), where she states that ‘filthy’ is not an adjective per se, but rather requires the subject to have a relationship to ‘the border’ and, to be more exact, needs to be outside that border. By growing on a man-made structure, Trentopohlia challenges the borders of where it is natural to grow and where society ‘allows’ it to grow. By Mary Douglas’s definition, it is considered ‘filth’ and is often cleaned off those structures. Bataille sees ‘sacred’ as inseparable from abjection, defilement, and dirt. According to him, the very high and the very low are an intimately linked and separated homogenous or profane realm of society. (Pawlett, 2008, 3). The heterogeneity of ‘sacred’ and ‘dirt’ can only be defined through monogeneity, and it only exists through homogeneity, through an endless string of negations, and is thus always abstract. It reveals itself only after the homogenic world has been created (Arppe, 83, 1992). This manifests in Anttonen’s aforementioned idea of ‘sacred’ being not

what is defined by the border of 'sacred' and 'profane', but the border itself (Anttonen, 1991, 41). Although this reasoning is quite abstract, one can argue that since *Trentopohlia* challenges the borders of social norms by growing in 'wrong' places, it has qualities that can also be seen as 'sacred'.

These two different cases of H.R. and *Trentopohlia* are at the opposite ends of their timelines. H.R.'s history is so long and old that we have lost touch with the possible cultures and traditions it would have been involved in, and thus we are uncertain of its possible history as a 'sacred' entity. However, its location and qualities suggest that it might have had a 'sacral' role during and after the Mesolithic period. *Trentopohlia* doesn't have such a context or history, but if the aforementioned Hailuogou colony survives long enough, it is possible that it would gain 'sacral' qualities.

## 11. The sensation of Sacred

*"While [sacred] is complex, it contains a quite specific element or 'moment', which sets it apart from 'the Rational' in the meaning we gave to that word above, and which remains inexpressible or ineffable-in the sense that it completely eludes apprehension in terms of concepts. The same thing is true (to take a quite different region of experience) of the category of the beautiful."*

(Otto, 1917, 7)

Since the aim of the installation is to create a sensation of 'sacred' for the audience, it is good to have a closer look at what constitutes this sensation of 'sacred'. In his main work 'The Idea of the Holy' (1917), Rudolf Otto saw parallels between 'sacred' and 'beauty' (Otto, 1917, 8), partly because both have been considered synonymous with 'good' but also because there is a similar element of sensation in both. An argument can be made that the sensation of beauty is close to the sensation of 'sacred', and in some cases they can be hard to fully separate from each other. Otto claims that the sensations of beauty and 'sacred' both need to be experienced and cannot be fully explained nor taught, since they are "of the spirit" (Otto, 1917, 7). Later in the book he introduces the concept of 'numinous', which he describes as a "Mysterium tremendum et fascinans" (fearful and fascinating mystery) which includes the sensation of 'awe' as well as ganz Andere, 'the wholly otherness'. There is a similarity between Rudolf Otto's 'Mysterium tremendum' and the 'Religious Experience' W. James scientifically described in his book 'The Varieties of Religious Experience (1902)'. A Religious Experience has been described by M. Jodie as "ineffability, a noetic quality, transiency and passivity" and states that "one does not feel like they are in control, rather it appears one's own will is in abeyance" (Jodie, M. 2019).

Both 'Mysterium tremendum' and W. James's 'Religious Experience' have a clear connection to another experience - The Stendhal Syndrome, also known as the 'Florence Syndrome'. The Stendhal Syndrome is a condition that includes multiple different symptoms that are experienced in the presence of a

beautiful piece of art (Palacios-Sánchez et al, 2018). These symptoms include dizziness, tachycardia, heart palpitations, shortness of breath and psychiatric symptoms ranging from hallucinations, both visual and auditory, to paranoid persecutory delusions and depersonalization disorders (Palacios-Sánchez et al, 2018). It was first described by Graziella Magherini in her book “The Stendhal Syndrome” in 1989. However, the Stendhal syndrome’s status as a disorder has been questioned ever since, and it is not listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).

Even though there is no real scientific definition for the sensation of ‘sacred’, one could combine some of the aforementioned characteristics and describe it as ‘being in awe of the otherness’ (of something). For the context of the forthcoming installation, this description is sufficient enough, although it creates quite a stiff challenge. A good example of this could be the aforementioned Hailuoguo valley, which seems to have the qualities of great beauty and ‘otherness’.

## 12. The Installation

*“..it appears after the fact that art could no longer live  
if it did not have force to attain the sacred instant by its own resources”*

(Bataille, 2004, 241).

Since the forthcoming installation is in the context of art and ‘sacred’, I’m briefly addressing art in the context of ‘sacred’ in the following chapter.

I have not yet decided on the final form of the upcoming installation that will utilize Trentopohlia Jolithus and the concept of ‘sacred’. However, it will hopefully be a public art piece in a city environment. As I concluded in the previous chapter, to achieve the sensation of ‘sacred’ one needs to have the audience experience a sensation of awe, or of something ‘numinous’, the ‘wholly otherness’ that Rudolf Otto described as the sensation of ‘sacred’.

Mircea Eliade states in his essay “Art and the Sacred” that sacred is not as obvious in modern art as it was in the art of the Middle Ages, and that one does not recognise it immediately and easily. Eliade goes as far as claiming that the Modern Artist (this was written in 1964) is by nature areligious, and has by their own will abandoned Religion, but that the sacred has survived buried in their Unconscious. “The Modern Man has lost the possibility of experiencing the sacred at the conscious level, but he continues to be nourished and guided by his unconscious”. George Pattison shares a similar view in ‘Crucifixions and Resurrections of the Image: Reflections on Art and Modernity’, where he states that “[Art] can either envisage as a kind of a substitute for religion, that is as a modernity’s repository of ‘eternal values’ (as in aspects of Soviet culture) or as conjuration of a new religion (as in New Age aesthetics)”. Pattison refers to Walter Benjamin’s ideas of how technology has changed art and claims that the tension between the original work and the techno-social happening around it are, in fact, a renewing religious experience for our time, and that it can ‘elevate’ an art piece to become spiritual or ‘sacred’ (Pattison, 2009, 16). Walter

Benjamin's and George Pattison's ideas share similar sentiments with Rudolf Otto's 'numinous'.

Georges Bataille draws interesting parallels and connections between 'sacred' and art in his essay "The Cruel Exercise of Art" (1949), as well as in the surrealist magazine Documents in 1939 – 40. In both cases neither the parallels nor the connections are very apparent. What he is doing, is trying to lower art from its metaphorical pedestal so that it is in the gutter. My interpretation of this is that by lowering art to the 'profane' spectrum of the heterogeneity of 'sacred', it would be able to operate through and between society's social borders. This would further allow art to change to modify the borders of what is acceptable in societies. Maggie Nelson offers a totally different view in her book 'On Freedom', where she offers a point of view that feels to me like a modern counterargument to some of the views I have explained before. In a chapter about art, she argues that "art is not a sacrosanct realm, a 'state of exception'" (Nelson, 2021, 35). I interpret this as a counterargument to the demand that art should be an 'exception' and operate outside and between the social borders of what is acceptable. However, the parallels between art and 'sacred', in the sense that both operate close to these borders, is apparent.

### 13. Conclusions

In this thesis I have tried to answer the question of how something is transposed from ordinary to 'sacred'. Durkheim's answer to this is that 'any object can be treated as 'sacred', and it needs only receive the emotional investments of a particular social group to be venerated' (Durkheim, 173, 195). However, to Bataille, this is not enough, and he seeks a subjective, intimate experience of the 'sacred', claiming that the 'sacred' can only be experienced and cannot be abstracted nor defined (Bataille, 1998, 101).

This thesis also serves as a groundwork for the upcoming installation on both practical and theoretical levels. On a practical level, I was able to establish a method to cultivate the *Trentopohlia Johlitus* alga. The method can be scaled up to allow it to be utilized as work progresses on the installation. It has also made me think about the challenges ahead and consider collaborating with a biologist who would have previous experience of cultivating algae. On a theoretical level, my understanding of the subject changed and grew substantially during the writing process of the thesis. My art practice includes substantial theoretical groundwork for this exact reason.

The long history of 'sacred', which stretches to the beginning of culture itself, is a testament to the inseparable relationship we have with it. Even though the last 100 years in the Western world has seen a process of secularization, the history of 'sacred' is much longer than that of 'religion' and the former has survived without the latter. There has been some recent research into alternative forms of 'sacred' that are emerging in Western Societies, e.g. by Terhi Utriainen, who has researched the modern fascination towards Angels (Utriainen, 2017), and Bataille, who claimed that phenomena such as fascism is due to smothered urges to carry out 'sacral' sentiments (Bataille, 2004, 137).

## 14. Future research

I'm fascinated how the themes and underlying mechanisms of sacred can apparently be found anywhere I am looking. I'm currently writing an essay with Avreno Heikka about hospitals, hospitalization, and medicalization, which is the basis of an upcoming film project. One of the parallels between this project and my thesis is how Foucault sees restriction and confinement in the context of hospitals, which can be understood as delimiting people by using space (Foucault, 1975,140), and which have similar attributes as restrictions in the context of sacred and what I have been addressing in my thesis.

Writing my thesis also led me to re-write an old essay about Physical Labour, its toll on one's body, and how it affects to one's view of the body. I hadn't previously seen the apparent context of sacrifice in the matter, so I'm currently re-writing it and introducing ideas of sacrifice and how that can be seen as an underlying theme in Work Safety texts and courses.

One interesting future prospect is whether one could use algae to colour concrete. I am the co-founder in a company (Art-Betoni Oy) which specializes in the chemical colouring of concrete, and we have been looking into the possibility of finding alternatives to our current methods. Algae might be an interesting alternative as it has an array of positive qualities; it's non-toxic, biological and co2 negative.



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