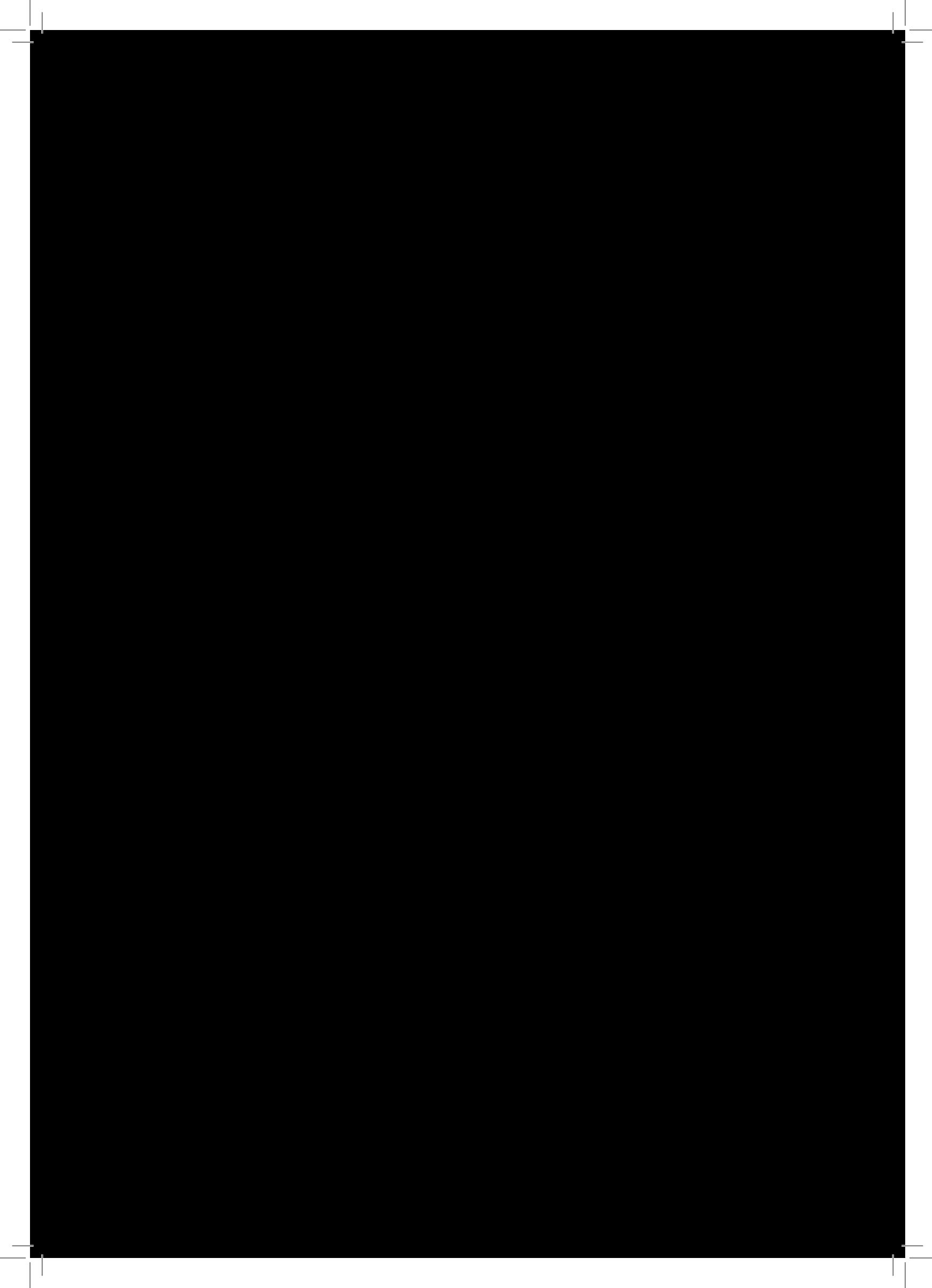
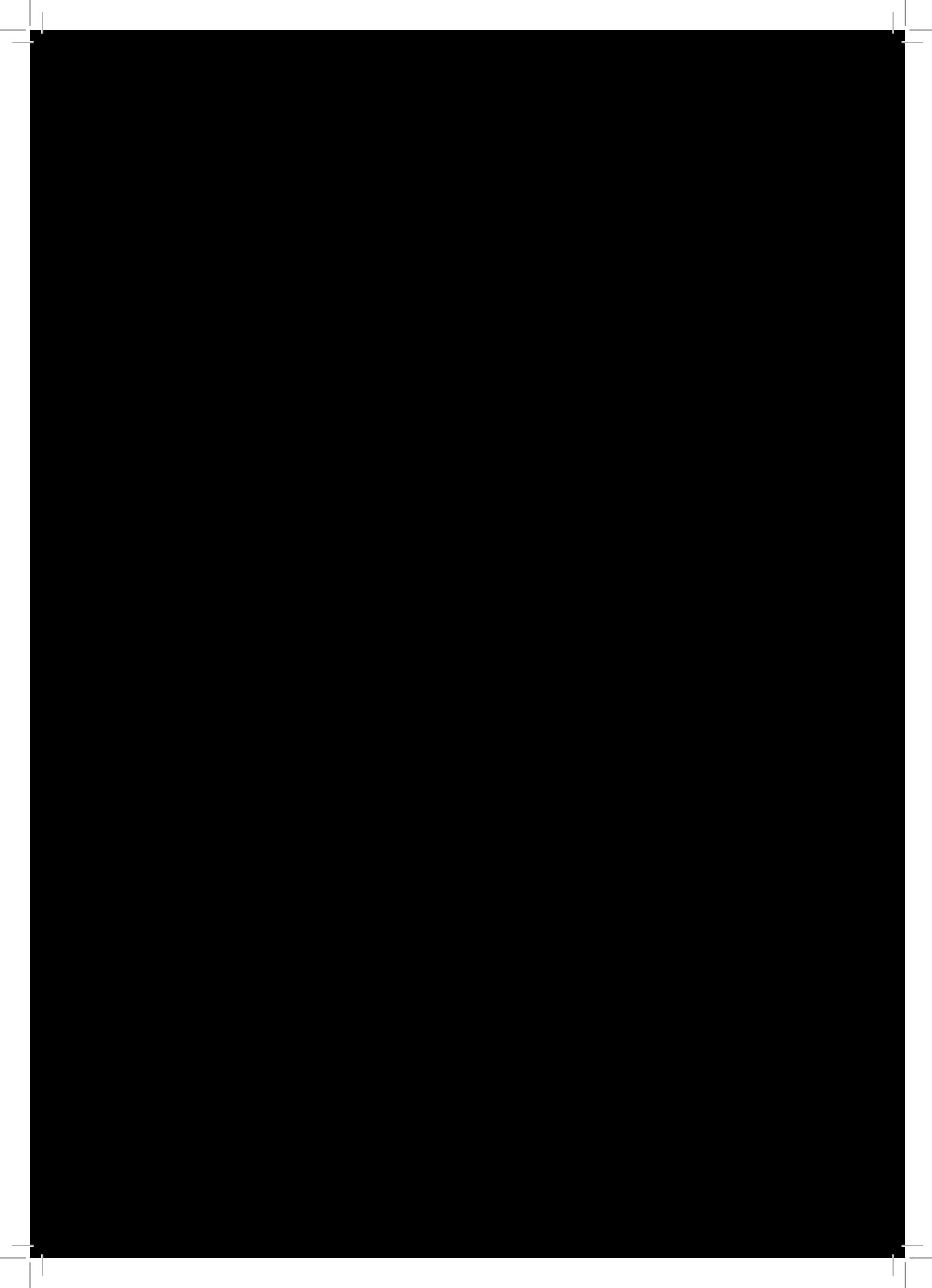


CITIES





DARKEN- ING CITIES:

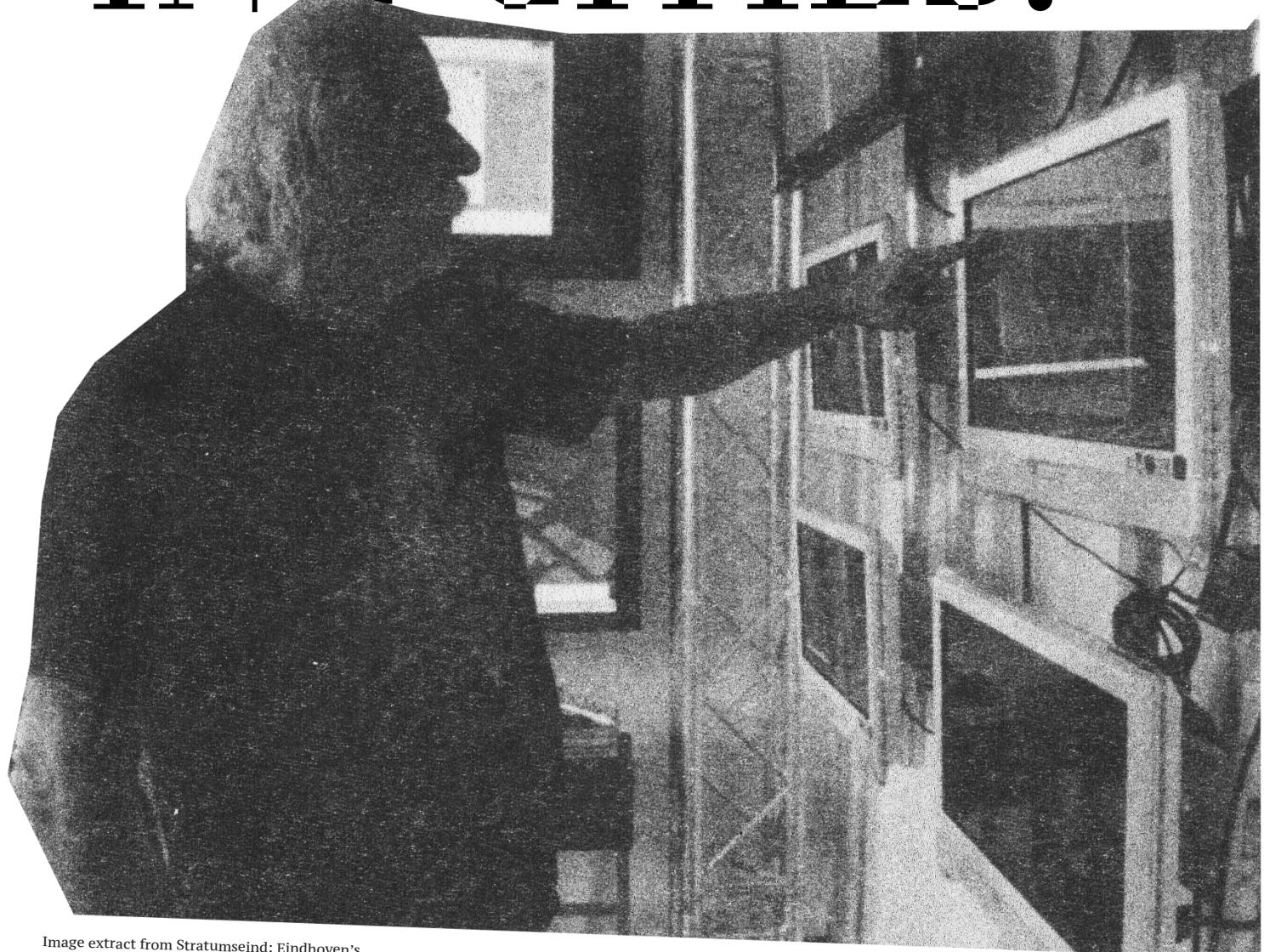
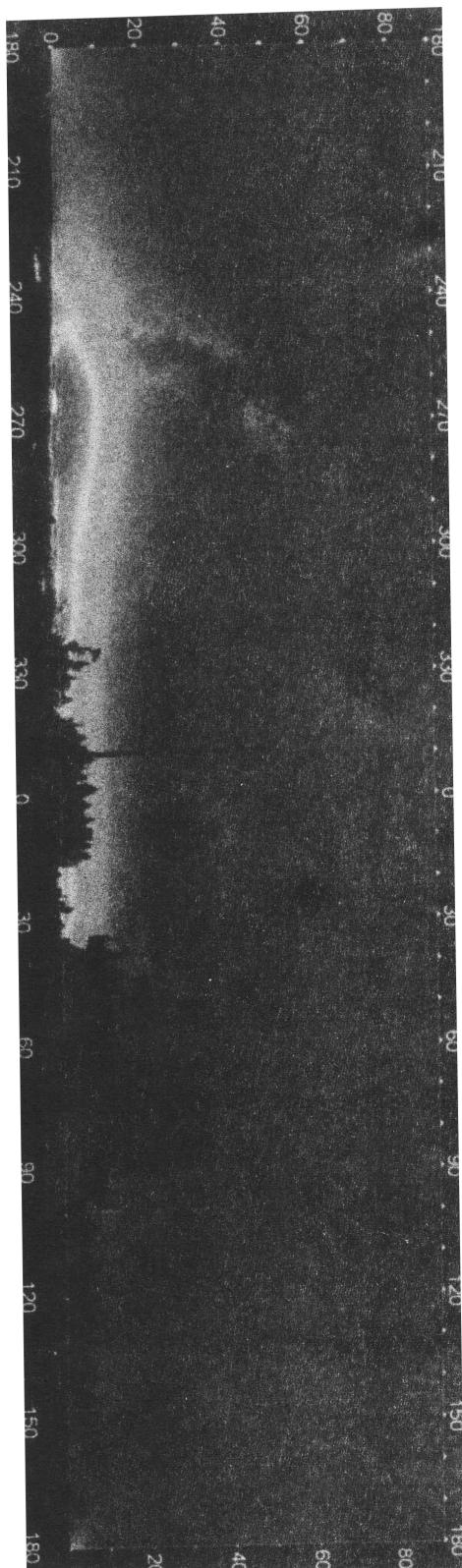


Image extract from Stratumseind: Eindhoven's
Data Street, article by Merlijn van Dijk

SHORT
INTRODUC-
TION



Light pollution measurement around OMM,
taken by Chad Moore (Night Sky Team,
US-National Park Services)

Have you ever tried to go and find the darkest night? The one where you can stare into a sky so full of stars that you can't even see a single constellation anymore? If you haven't yet, let me tell you that in order to find it, you'll have to go as far as you possibly can from any city light. Actually, artificial lighting has become so present in our daily life, that darkness has almost become a luxury. But while the topic of light pollution and dark skies preservation is starting to be more talked of, unpolluted dark skies are seen as something "out there", outside of human activities which, as you probably know, seem to be defined by artificial light. But why is it that urban darkness is seen as dangerous or creepy while natural darkness is seen as beautiful and mysterious? Why am I afraid to walk alone in a park at night while at the same time I am purposely walking away from the bonfire to enjoy the quietness of the sleeping forest we are camping in? In this thesis I will explore the relation and duality between the urban space and the wild space, the artificial and the natural, all within the topic of light and dark. Why do they have to stay separate entities? I will first try to understand the fear and nervousness surrounding urban darkness. The nyctophobia of western cities. I will dive into the history of illumination through medieval and modern cities. How is it that urban darkness has become a space which seems to be synonymous of illegal or marginalised activities? And how did the '24 hour' city help emphasise, hide or divide?

"Darkness symbolised the decadence that had to be overcome in order to create a city of responsible, autonomous, rationally oriented, liberal citizens."
(Extract from "Gloomy Cities" by Tim Edensor)

I will then look at the astronomical sublime and how darkness is perceived in the natural or wild environment. Humanity has been inspired by starry skies all over its history so could we argue that the loss of the night sky is not dramatic only to the ecosystem but is also a real cultural loss? The wonder and the beauty the dark sky have inspired artists, astrologists, sailors, myths, storytellers of

"Sky Guide", award winning application.
Augmented Reality Stargazing:
Available for free on the Apple Store



"A starry sky is beautiful and inspires a sense of wonder, yet there is also an immensity and vastness that inspires a sense of awe. (...) It has temporal and spatial dimensions that we can comprehend abstractly, but its scale is difficult to fully grasp. Put more simply, it is the epitome of the mathematical sublime in nature."
(Extract from Re-envisioning the Nocturnal Sublime" by Taylor Stone)

all times. The "International Dark-Sky Association" actually makes the protection and preservation of night skies a "moral duty" for the present and future generations.

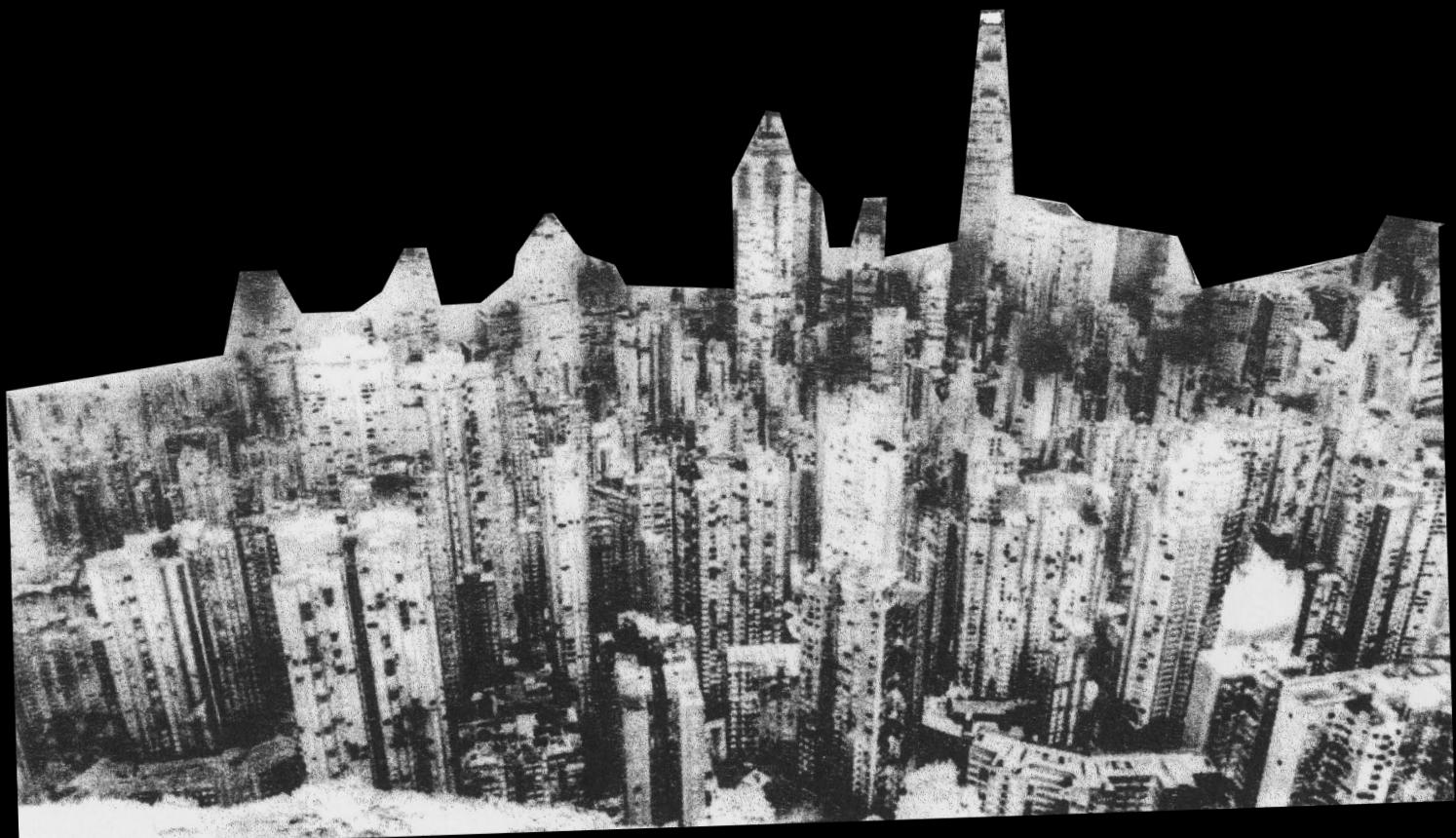
I would like then to show why placing the night sky as something which belongs outside of the cities, in nature, is actually reinforcing the dangerous dualism that sets humans outside of nature. As William Cronon said: "By imagining that our true nature is wilderness, we forgive ourselves the homes we actually inhabit". In that sense, the restoration of urban dark skies should be definitely taken into account when designing the urban nightscape.

I will argue that the urban and the natural can and should coexist not only when it comes to "the greener cities" but also when it comes to "darker cities". We will see how designers - such as The firm Concepto (introducing "dark zones" into the city core of Rennes, France) are thinking of new ways to implement light in cities, and how artists - such as Thierry Cohen (with his serie "darkened cities") are helping bring awareness towards the issue of light pollution and the perception of darkness. Because although design solutions need to be found, making cities darker also implies that western society puts a break to its nyctophobia and start perceiving urban darkness differently.

Image by Pieter Kers
Shadow Channel, Sandberg Instituut



URBAN DARKNESS:



Bright City Skyline, Hong Kong night life

A LITTLE
BIT OF
HISTORY



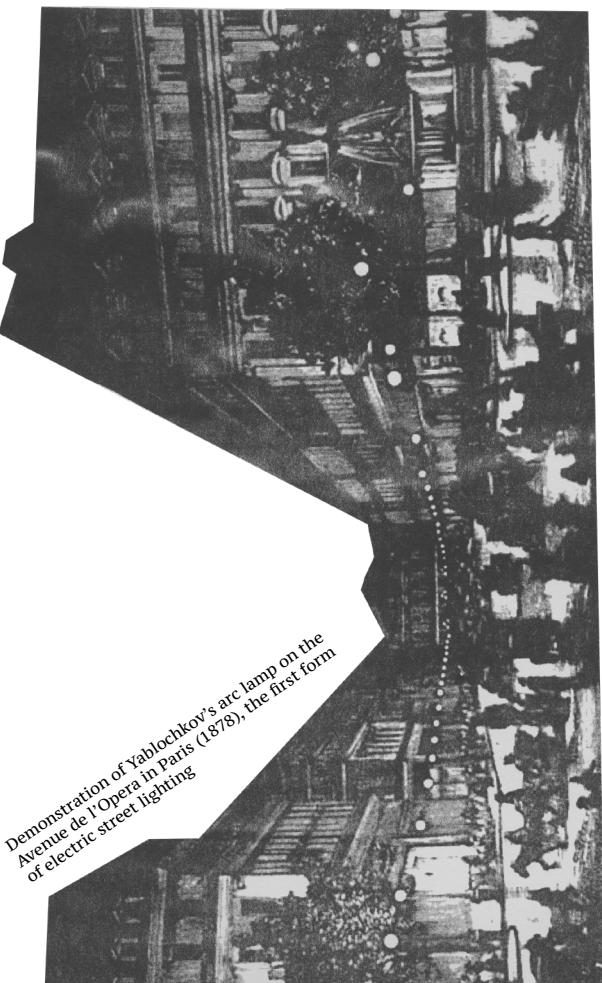
Las Vegas at night, Photo by Corbis

"In the beginning God created the heaven and the earth. And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters. And God said, Let there be light: and there was light. And God saw the light, and it was good; and God divided the light from the darkness."

(3rd Verse, Genesis)

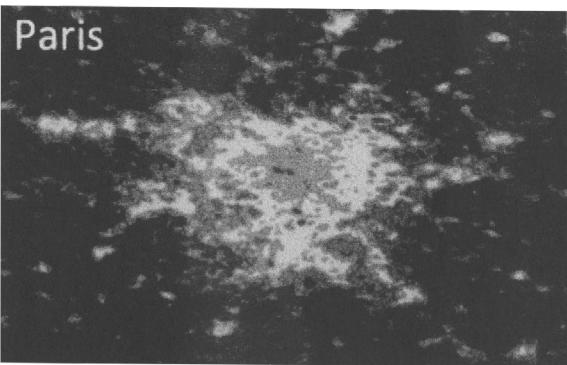
In medieval times, christian religion ruled over the western society and darkness was a common metaphor and symbol of the royaume of Satan. It was seen as the representation of the evil, sin, death. In darkness lured all the bad creatures, monsters, witches, ghosts and bad spirits. In medieval and early modern times those negative association to darkness are very present and fill the nocturnal experience of the religious and the believers. But not only the superstitious feared the dark. Without illumination it was adventurous to wonder outside your home in the pitch-dark night of the early cities. Many were the obstacles in the badly lit alleys: branches, trees, garbage, piles of rubbish, holes. The shadows also gave protection to the badly intentionate, and could hide the criminals, bandits, thieves or murderers. In the dangerous dark street an enemy could easily be mistaken for a friend so finding the right path deprived of sight was challenging for the brave souls that dared to wonder out during night time. These more concrete experiences in the physical world reinforced the prevalent nycophobia which was already well fed by the imagination of the population. Yet even if those times seem far away, the negative associations linked to darkness are slow to disappear. As Tim Edensor explains: "Metaphors have persistently been used to identify darkness with negative understanding of spaces and times and they continue to linger in the western mentality and language with terms such as: "Dark forces", "dark ages", "dark side", "dark tourism", "dark continent" and many more". Blackouts for instance are reported as calamity or crises when it is spoke of in the news. Actually the absence of light, for many, is synonymous with poverty, wartime, deprivation and so the symbolic value of light as something saving us from dark times becomes really powerful.

By the end of the 17th century the urban

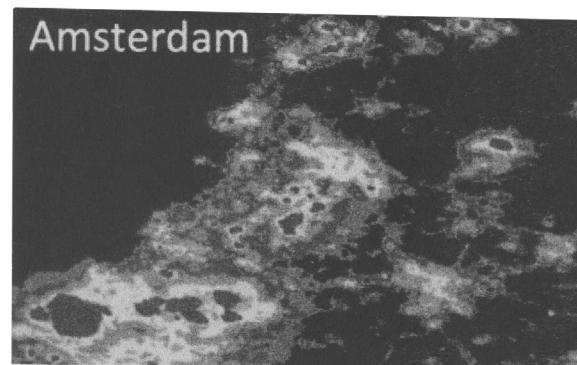


Demonstration of Yablochkov's arc lamp on the Avenue de l'Opera in Paris (1878), the first form of electric street lighting

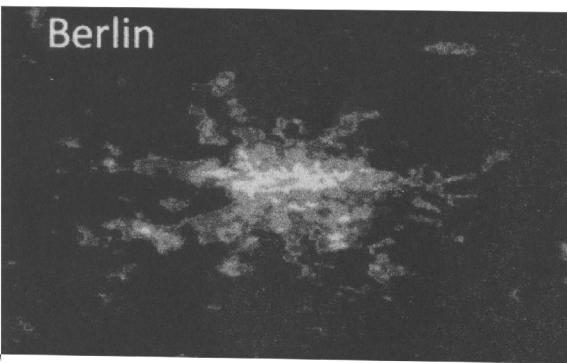
"from dark to light signified the passage from medieval ignorance to rational thought and science, a process that would "shed light on all things" in the pursuit of truth, purity,



Paris



Amsterdam



Berlin

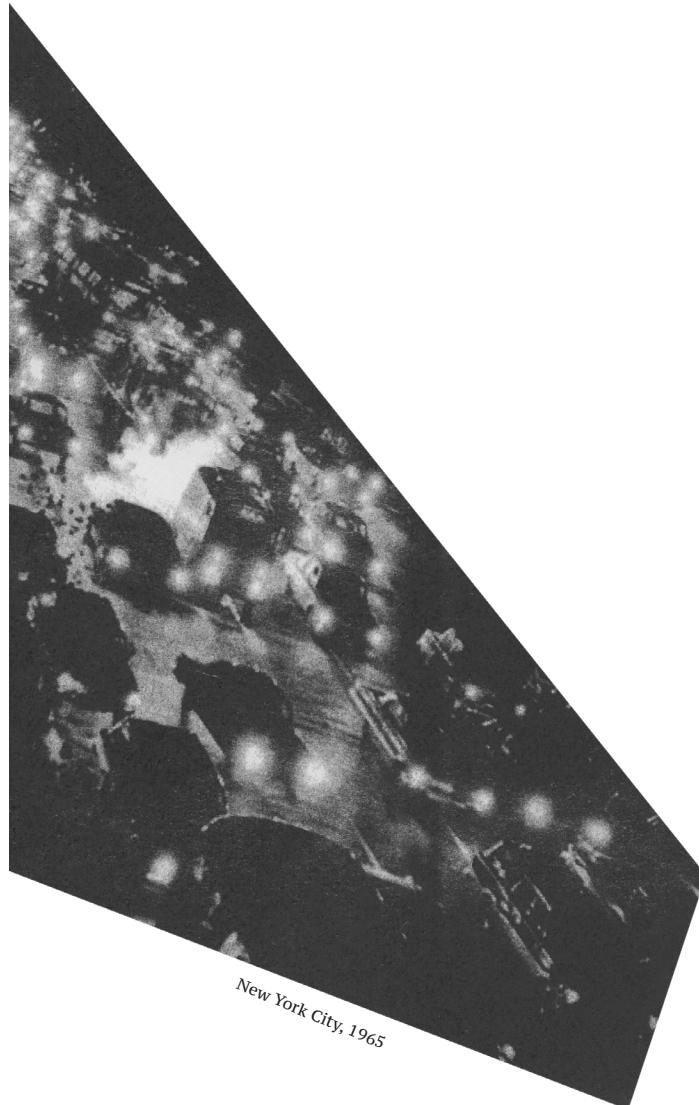
Upwelling radiance of Paris, Berlin and Amsterdam in the VIIRS two-month composite dataset, with a logarithmic color scale.
Data courtesy of the Earth Observation Group,
NOAA National Geophysical Data Center.

centers of Amsterdam, Paris, Turin, London and Hambourg were lit by reliable sources of street light. With these new coming technologies, night time became an extended time and space for social activities, new form of consumptions as well as giving cities a new reputation as more shops, cafés, bars, theater started to emerge in city centers. As we were able to push back the frontiers of darkness thanks to artificial lighting technologies, we opened up the night to all new perspectives.

Of course it did not happen all in a day. The process was slow. The electric bulb for instance only appeared in the 1880s. Before that technologies for street lighting were diverse and different for instance between the rich and the poor. (is it necessary to give more detail lines about the type of fuels that were used then?) Nevertheless, in what Foucault calls “the enlightenment era”, rather than staying home fearful of the dark, citizens of the early modern cities start going outside to enjoy the new possibilities and experiences that offered the lit night. The now transformed illuminated urban nightscape has earned the name “24 hour city”.

But just as the street light made nightlife more accessible, comfortable and easier for the habitants of the city, it also facilitated surveillance, promoting a safer space for the population.

Spaces don't have the same meaning by day than they do by night and governments start developing techniques to keep some sort of order and control in the urban night time. According to Robert Williams in “Darkness, Deterritorialization, and social control” there are three strategies that are used to reorder the space of the urban darkness: channeling, marginalisation and exclusion. The first one, channeling, is the use of illumination and advertising to direct our intention towards something in particular and intend to make certain



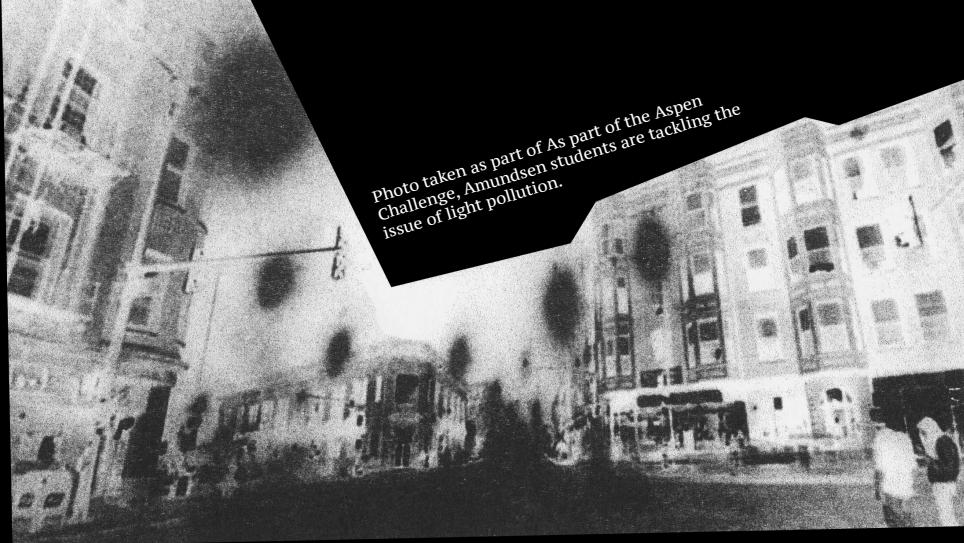
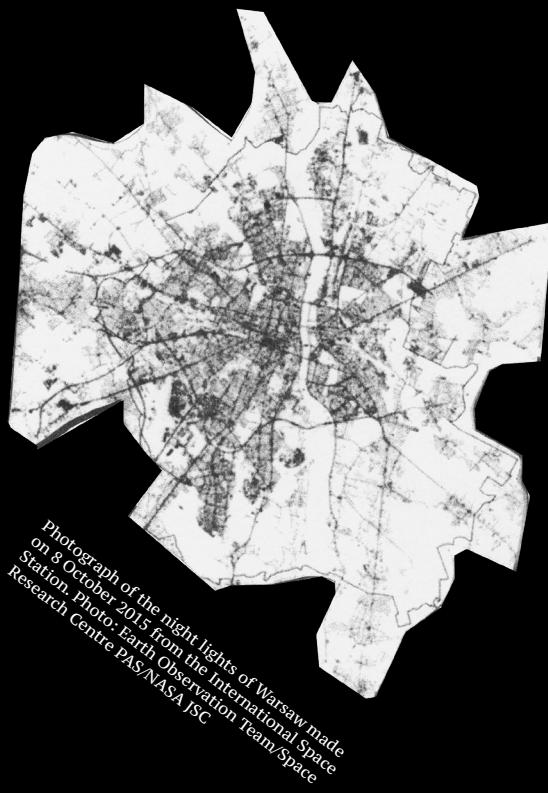


Photo taken as part of As part of the Aspen Challenge, Amundsen students are tackling the issue of light pollution.



Photograph of the night lights of Warsaw made on 8 October 2015 from the International Space Station. Photo: Earth Observation Team/Space Research Centre PAS/NASA JSC

"from dark to light signified the passage from medieval ignorance to rational thought and science, a process that would "shed light on all things" in the pursuit of "truth, purity, revelation and knowledge, embodying the ideals of "illumination, objectivity and wisdom".

(Tim Edensor, Gloomy cities)

spaces more favorable places to be at night. There is a typical hierarchy in how cities are lit at night. For instance the city center and big shopping street will be more illuminated than side streets. When you really think about it, the use of light at night gave the possibility to extend our time of consumption from day time to much later in the night. And so even after closing time, the use of brighter and more vivid lights are used to accentuate our desire towards shops or places of entertainment even past the darkest hour. Businesses always remind us that they are here and their products ready to be bought with colorful windows and advertising. We can observe a similar difference between the roads such as main arteries with a high traffic density in comparison to the other ones. The less important or centered a street seems to be, the less enlightened it is. And as much as we can accentuate with light, we can also keep things hidden without it. Often, in the nightscape, some buildings or architectural pride will be lit all night long as icons representative of the city, while the less beautiful neighbourhood or buildings are kept in the dark in order to keep them less visible. In a way lighting at night can shape a whole unique landscape and governments have the power to decide how it should look like.

As I mentioned earlier, even though the use of street light makes it favorable for us to travel from one place to another, most of all they allow surveillance and gives us a feeling of security for our own persona and properties. Marginalisation, the second strategy, in my opinion, is only applicable because of our long lasting nyctophobia. Its primal effect is to basically classify certain group of people as inferior or dangerous and geographically separate them from the socially "higher groups". In our cities nowadays, as mentions Robert Williams, we can observe two main types of marginalisation techniques which he calls official zoning laws and



photo by Mike Knell
A view of Hollywood from Mulholland Drive.

informal social codes. Zoning laws, he explains, are conscious decisions by local government to organise space within a city. They try to do so by prohibiting certain shops or commerce to open up in certain areas or in re-organising city center to attract tourists, and wealthy professionals townsfolk. In consequence it forces people with lower budget to retract further out of cities where places are more affordable. The second technique applied, informal social codes, happens through preconceived ideas and classification of people by race, gender, religion, ethnicity and many more. Discrimination obviously occurs as well during day time hours but certain neighbourhood or places will become off limit past the dark hours.

The last technique called the modality of exclusion is in some ways similar to the modality of marginalisation but its objective is to really create a clear separation between two spaces with walls, barriers etc. For instance in some pre-modern cities their gates were closed past a certain time of the day to protect from intruders and external threats. Nowadays you still can observe buildings or private houses surrounded by walls or floodlight with guardians to prevent outsiders to walk in. The flood lights enable you to easily see people coming or leaving past it. Its used in prisons for example but is also a common technique of surveillance used in the urban space. Often you will also find residential building which are open during the day but will then be closed during the night. To enter past its closing time it requires a key card, password and so on. Public space such as a parc can also be closed past dusk hour to keep a certain social control and keep the population safe. Another great example of exclusion is the bouncer. You might not see it that way nevertheless, he keeps you from entering a club in order to preserve a type of exclusivity for the party. Even though we could argue that they

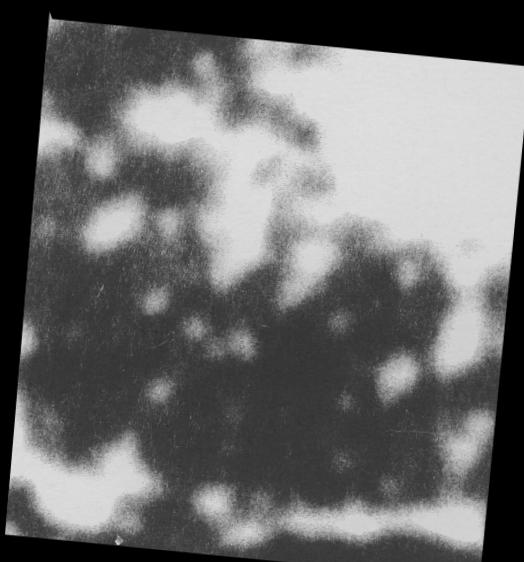
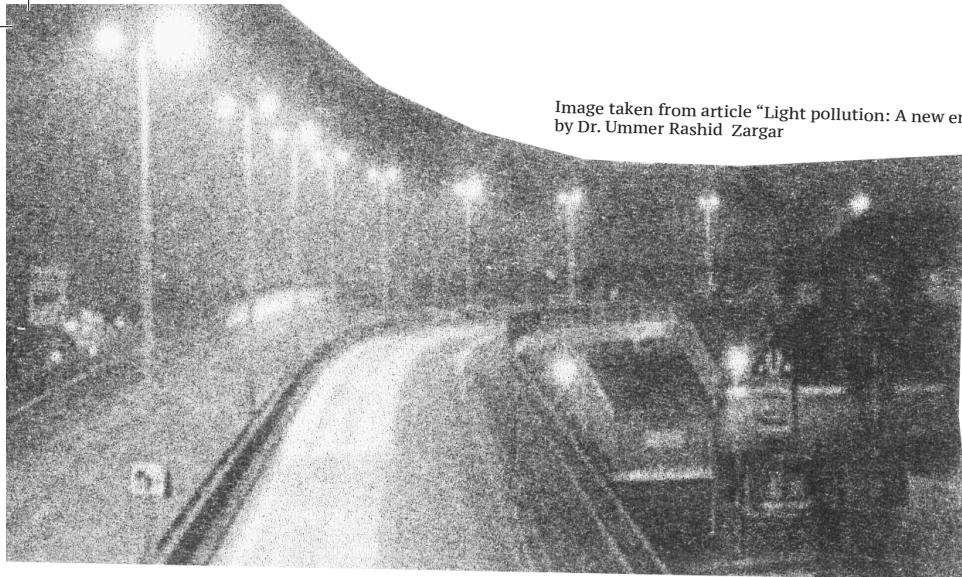


Image taken from "the blue Marble" website: DMSP and VIIRS images overlayed on an interactive Google Maps

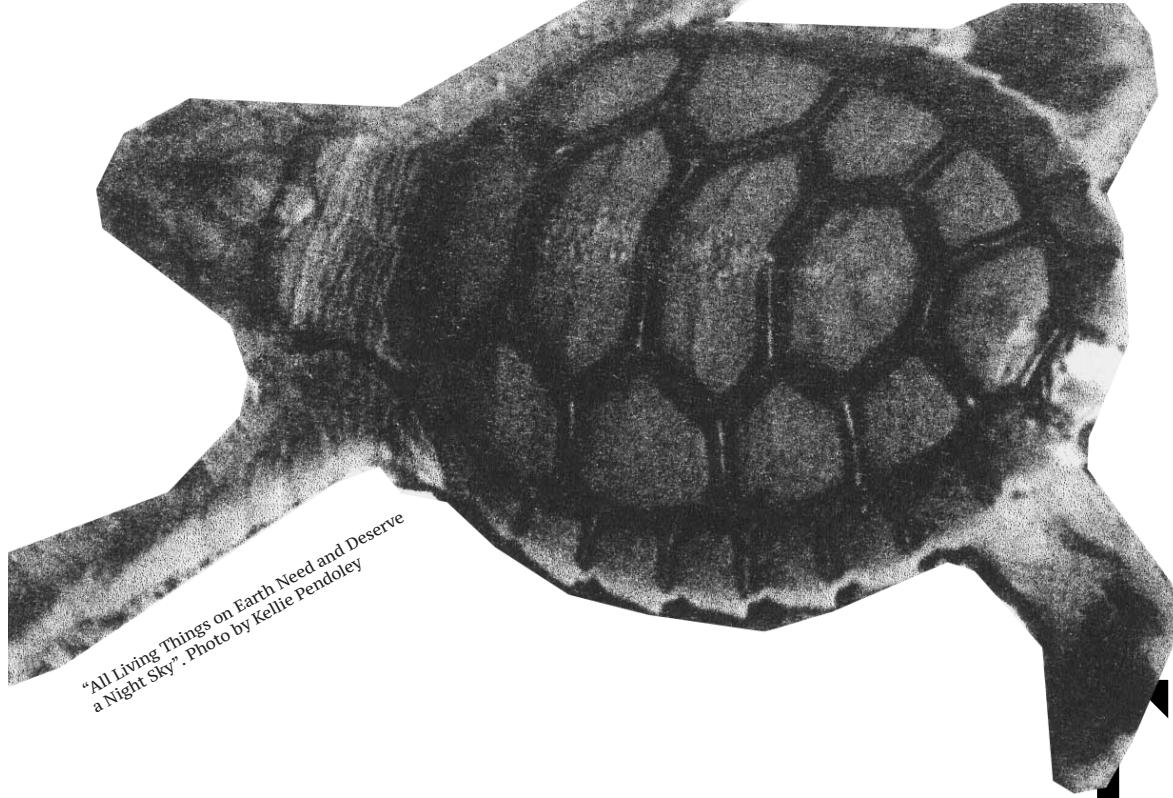
Image taken from article "Light pollution: A new emerging challenge" by Dr. Ummer Rashid Zargar



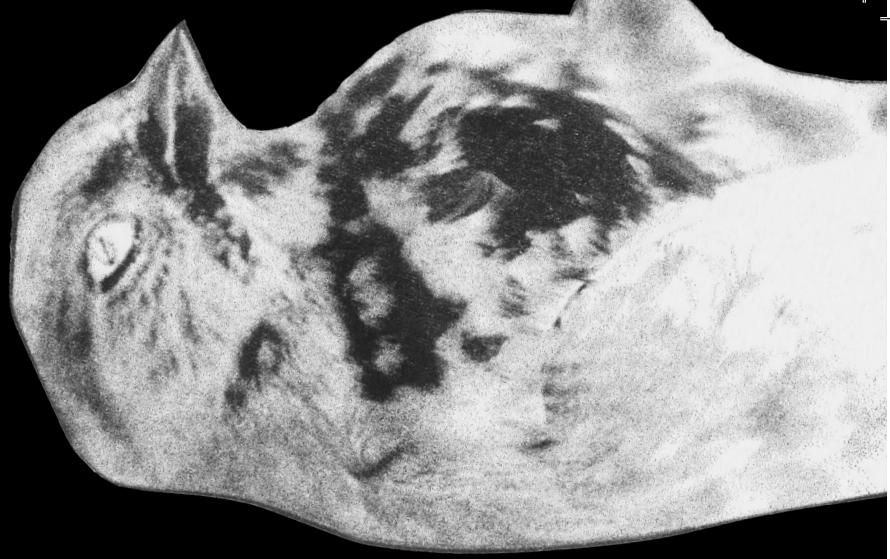
somehow keep us safe, these techniques are used to shape and order the urban night space but they create zones of social exclusiveness which we should be aware of.

The darkness of the urban space has always been seen and used as a space for transgression. It allowed for secret meeting during time of war and rebellion, opened up spaces in which people could explore all sort of fantasies and experiences hidden from the judgement of society. Darkness allowed for subcultures to develop and question the norms. It created a space in which marginalized groups could openly talk, dream, hope etc. Graffitis, to me, are a powerful example of expression which is taking place in the hidden anonymity of the dark cities. As Robert William says: "Being socially marginalised is not synonymous with being intellectually disconnected". The darkness of the city has always been feared but it also allows for a certain type of resistance towards the oppression of society. Because of that, the opinion of the population towards the urban darkness may differ. Some want the security of a closed gate while others may argue that the public space should be equally accessible to all people. But no matter what the discourse is, the idea that the darkness is unsafe for those wandering in the city alone seems to stay prominent in the mind of the population. Whether this is true or a simple social construct reinforced by governments in order to better control the space still needs to be questioned and discussed further.

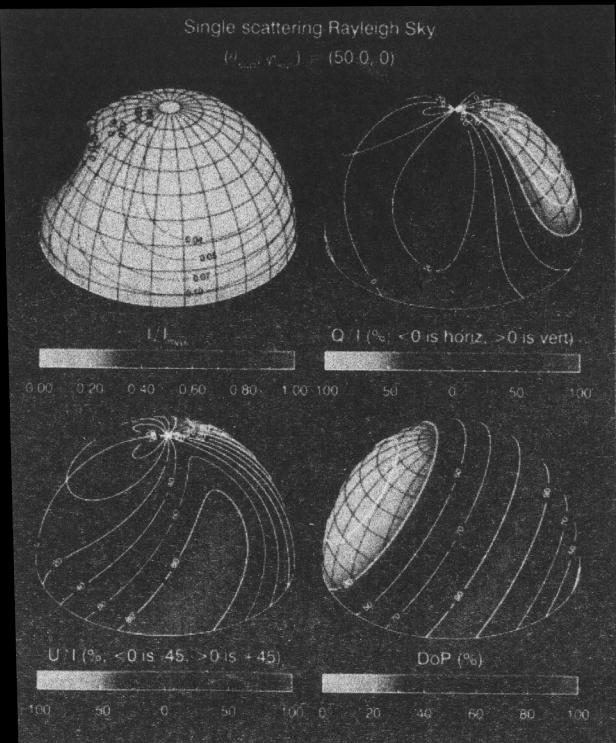
LIGHT POLLUTION:



THE NEGATIVE EFFECTS OF ARTIFICIAL LIGHT



"Plants and animals depend on Earth's daily cycle of light and dark rhythm to govern life-sustaining behaviors such as reproduction, nourishment, sleep and protection from predators. Scientific evidence suggests that artificial light at night has negative and deadly effects on many creatures including amphibians, birds, mammals, insects and plants."
(extract from website of the International Dark Sky Association, IDA)



Sky radiance distribution for single scattering by atmospheric molecules according to the Rayleigh scattering equations.

"Like most life on Earth, humans adhere to a circadian rhythm a sleep-wake pattern governed by the day-night cycle. Artificial light at night can disrupt that cycle. Our bodies produce the hormone melatonin in response to circadian rhythm. Melatonin helps keep us healthy. It has antioxidant properties, induces sleep, boosts the immune system, lowers cholesterol, and helps the functioning of the thyroid, pan-

We might not really realise it, but in our modern world, the night seems to be at the edge of extinction. Of course the sun will keep setting every evening, and it will leave space to the moon, the stars and a dark blue sky at night. But when was the last time you were able to actually see those stars? How far out of the city did you have to go in order to do so? Only a few places are left on the planet where the real darkness of the night has been left unspoiled, and only there, will you be able to see the magnitude of a real night sky. And believe me, when you look at thousands of stars, there are so many that you can no longer see constellations. Doesn't it sound unreal? - "Well but why does it matter, you may ask, I don't care about being able to see the stars. Light pollution is only a problem if you wanna see the stars!".

That's not quite true. Well, of course, we have more difficulty studying the sky. Many observatories have been left abandoned because of light pollution. But the constant emission of light during night time coming from cities, rural areas, highways etc has also been disrupting the ecosystems at night. Many animals are dependent on the balance between day and night in order to survive. And what we call "the city glow" has a huge impact on the life of nocturnal animals. In the last hundred years, we have been turning night into day. And other species have had no time to adapt. 1 billion birds are killed each year as a direct consequence of light pollution. In Florida, Sea turtles Hatchlings find the sea by detecting the bright horizon over the ocean. Artificial lights draw them away from the ocean and millions of hatchlings are killed this way every year. But it's not only the birds or the turtles. Fish, reptiles, insects, trees, plants, and even we are affected by the light pollution. Indeed, humans have also evolved to the rhythms of day and night and recent studies show that very few of us can experience true dark nights



A dead bird after it flew into an office building.
City lighting has dire consequences for wildlife.
(Photo by Michael Tercha/Chicago Tribune/MCT
via Getty Images.)

creas, ovaries, testes and adrenal glands.

"Nighttime exposure to artificial light suppresses melatonin production." (extract from website of the International Dark Sky Association, IDA)

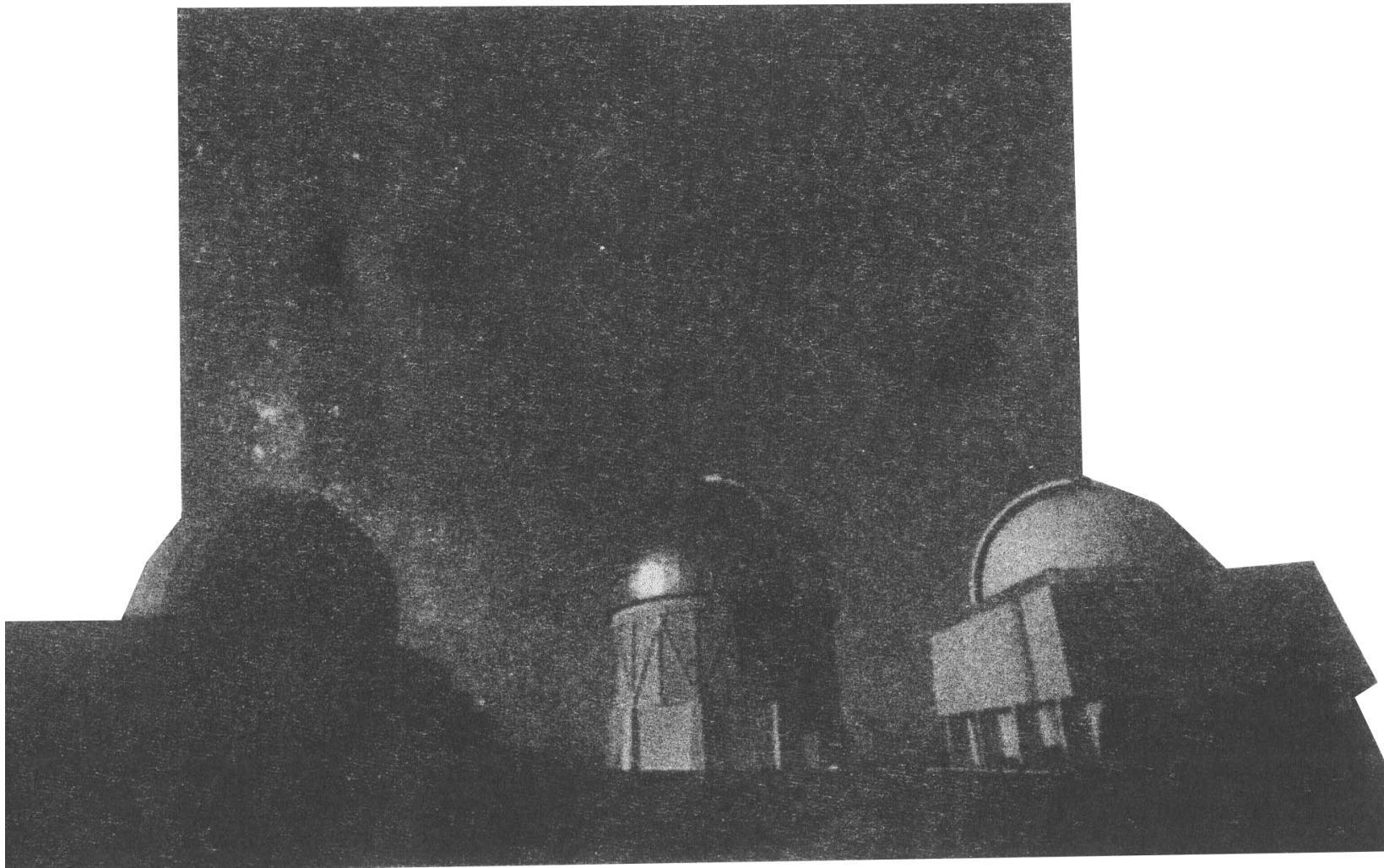
anymore. This might have a negative effects on our health which can increase risks for obesity, depression, sleep disorders, diabetes, and many more problems.

The effect of the light pollution is way greater than we actually realise and they have become a real concern of the environmentalists and advocacy groups such as the International Dark sky Associations. But rather than talking about how many billions of euros are spent each year in the lighting of our cities, or how impactful this is over our health, it seems that the main argument that is used to reach out to the population is the loss of our starry sky and the loss of the beautiful and cultural heritage the mysterious dark night brings.



the Cecropia moth *Hyalophora cecropia*, the largest moth species in North America! (Image © Mark Beckemeyer used under license CC BY-NC 2.0, from Flickr)

THE NATURAL DARKNESS:



Moonrise over the telescope domes on Cerro Tololo, with the Large and Small Magellanic Clouds visible and the Galactic Center rising. (Photo by Associated Universities for Research in Astronomy)

CULTURAL LOSS?

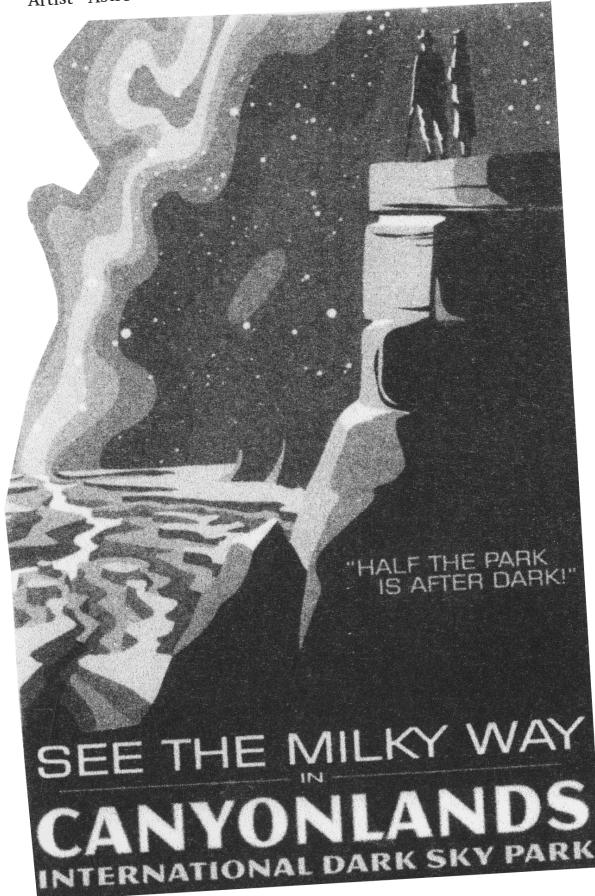


image composite highlights the pillars of the Eagle nebula, as seen in infrared light by NASA's Spitzer Space Telescope

"In early eras, the power of the stars inspired tales of ancestors, their quest for food, the animals we lived with, and the delicate balance needed to maintain life. The stars taught us the way to leave with each other and our environment. As our civilisation grew, the stars provided the basis for binding together hundreds, thousands, and now millions of us in commerce, in religion, in science and also in war."
(Extract of "The Power of Stars" by Bryan E. Penprase)

"After they had heard the king, they went on their way, and the star they had seen when it rose went ahead of them until it stopped over the place where the child was. When they saw the star, they were overjoyed. On coming to the house, they saw the child with his mother Mary, and they bowed down and worshiped him. Then they opened their treasures and presented him with gifts of gold, frankincense and myrrh."
(Extract of Holy Bible, New International Version)

Milky Way Poster Serie by Dr. Tyler Nordgren:
Artist - Astronomer - Night Sky Ambassador



All over human history among different culture and population, people have always looked at the sky. The dark sky filled with stars had people wondered since the most ancient times. Our ancestors started to recognise patterns and drawings in the stars, and each culture made up their own scheme to organise them and understand their movement. The stars are not simply far points of light but also tools that have been shared in all history. They have helped men find their way and follow directions, our calendars among civilisations have always been based on them, they have inspired myths and tales as much as they have represented deep values through civilizations.

When we look at the stars today, we probably have a comparable experience to the ones our ancestors did. We are staring at the same sky. It unconsciously brings a moving feeling to recognise emotions that have been shared through all generations. The transcendent view of a clear starry sky can move even the most rational city dweller. The stars brings us together as a species sharing the same planet, looking at the same sky. They make us feel small, or rather they make us realise how infinite the universe is.

It is interesting to see how our perception of darkness within this particular context gives it a completely different meaning. It is not anymore a subject of fear or transgression but rather something beautiful, vast and mysterious. As much as we try to free the cities from darkness, in the wild, it has become our moral duty to preserve it so that people can enjoy the transcending experience of staring into a clear dark sky. Many sites and parks have promoted their natural darkness at night for scientific and educational purposes but also for tourist and leisure activities. City folks are travelling to these remote areas, away from the glare of artificial illumination in order to reconnect with

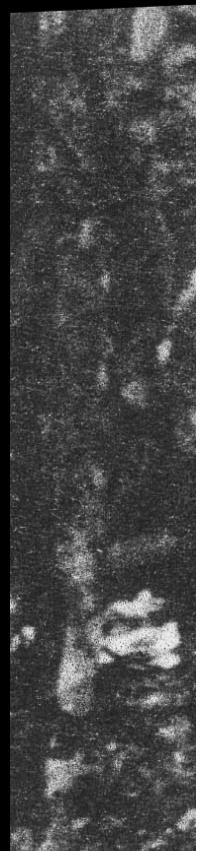


Light Pollution Level - 1,
Goblin Valley State Park, UT

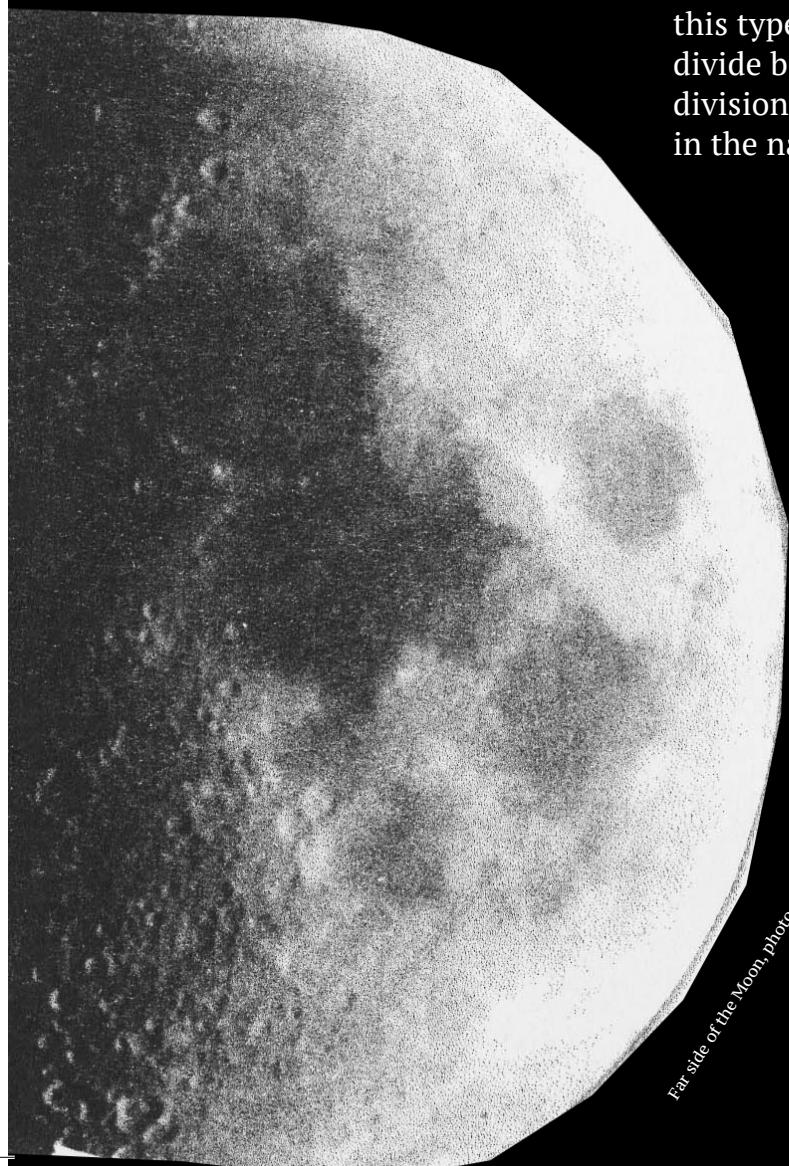
"if the milky way is mediocre, then billions of other galaxies must be very much like the Milky Way, just as one city suburb looks much the same as another city suburb, with numbers in this range, perhaps we aren't so distinctive! But then, again, is distinctiveness, uniqueness the really important thing? Isn't wonderment still in place at the thought of an unplanned, unintended transition from non-life to life, the impersonal to the personal, quite irrespectively of how often it happens in the universe?"

(Extract of "The Aesthetics of Sky and Space" by Ronald W. Hepburn)

nature and look at the millions of stars that are each night hidden behind the red vale of urban light. The poster serie "Milky Way" by Tyler Nordgren is a good depiction of this promotion. In his posters are represented various national parks of the united states at night time. The images are in various shades of blue and give a quite a peaceful representation of the natural darkness. Two characters are always standing in the picture, in full admiration of the immensity of the starry sky. The slogan say: "See the Milky-Way in...". The artist represents exactly the astronomical sublime dark sky activists are trying to promote and protect. But isn't this type of promotion actually emphasising the divide between the natural and the urban? Same division that seems to exist between the darkness in the natural context and the urban context?



Far side of the Moon, photographed by Apollo 16

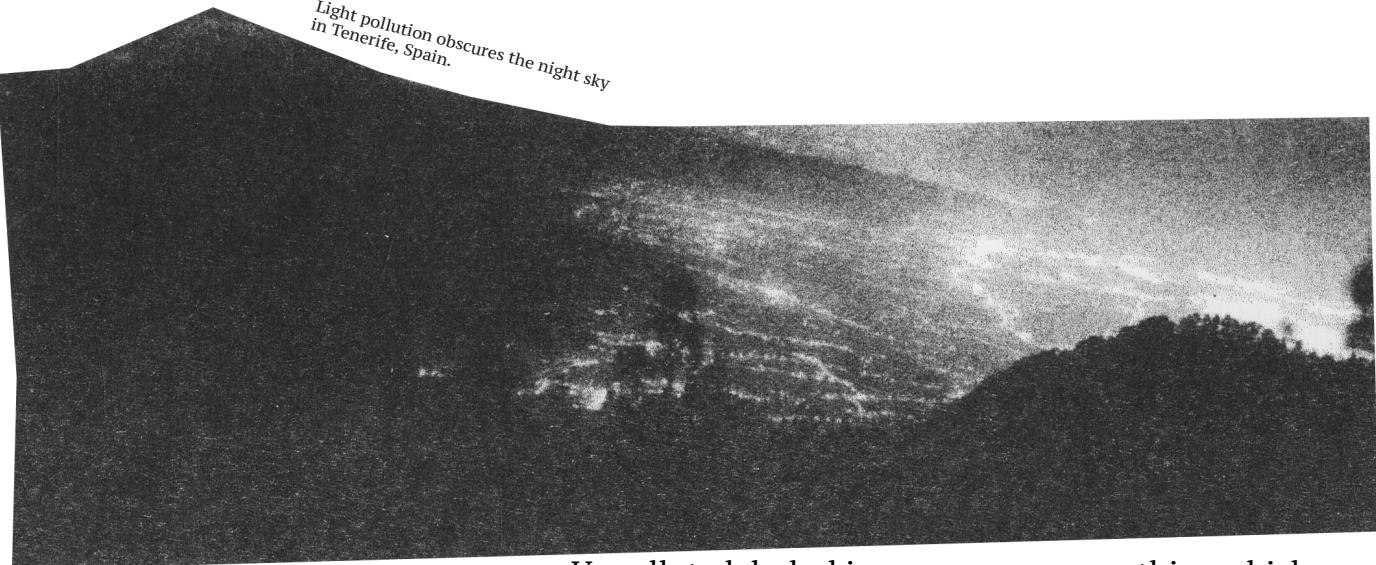


DUALITY:



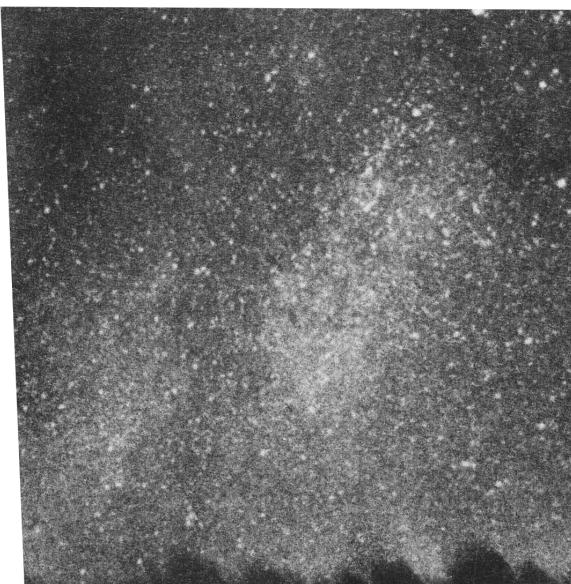
Six Dutch tourists standing near the bower of the bower bird in the territory of the Kwau Village of Arfak Mountains in the Republic of Indonesia

NATURE
AND
CULTURE



"wilderness embodies a dualistic vision in which the human is entirely outside the natural. If we allow ourselves to believe that nature, to be true, must also be wild, then our very presence in nature represents its fall. The place where we are is the place where nature is not. If this is so—if by definition wilderness leaves no place for human beings, save perhaps as contemplative sojourners enjoying their leisurely reverie in God's natural cathedral—then also by definition it can offer no solution to the environmental and other problems that confront us. To the extent that we celebrate wilderness as the measure with which we judge civilization, we reproduce the dualism that sets humanity and nature at opposite poles. We thereby leave ourselves little hope of discovering what an ethical, sustainable, honorable human place in nature might actually look like." (extract of Cronon "the trouble with wilderness")

The two pictures (left / right) were taken roughly at the same location. The one on the left was taken in 1970 while the one on the right was taken in 2012. As you can see the picture on the left has little or no light coming from outside sources.



Unpolluted dark skies are seen as something which belongs “out there”. Outside of built areas, outside of human activities. And it isn’t so surprising if we consider that urbanisation with its street light, high density traffic, all night lit shops and monuments, is the number one threat of the natural darkness. They simply don’t belong together. This image though is reinforcing the conceptual idea that nature and culture are two separate things and it results in a geographical division between the wilderness and the built environment which has been a concern of the urban-focused environmentalists. Indeed, the wilderness has been romanticized and idealised. Cronon argues, in his essay “the trouble with wilderness”, that the idea of the wild is actually a social construct which emphasizes the division between human and nature. Nature then becomes a luxury for urbanite in search of adventure. This is a dangerous idea though because if we consider that humans don’t belong in nature and that nature doesn’t belong in the human world, then how are we to protect and care about our own home and the environment we live in?

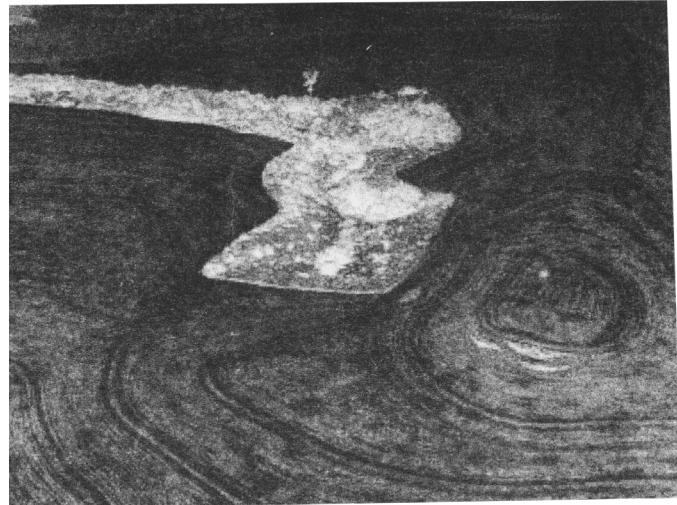
A very interesting point Cronon also makes in his essay is that by preserving the myth of the wilderness as a nature untouched by human kind, we, westerners, are likely to reproduce mistakes from the past. He argues that the notion of wilderness can, as its worst, become a new form of cultural imperialism. To better picture what he means, he gives the example of the tropical rainforest which has been one of the most famous icons of untouched land since the 1970s. For Americans and Europeans, the rainforest symbolises true unspoiled nature. But for many environmentalists, protecting that forest too often means protecting it from the native people who live there. Cronon says, I quote: “Third World countries face massive environmental problems and deep social conflicts, but these are not





On the other hand, the picture on the right has a lot of artificial light sources. In most cities, light pollution has gotten worse since the 1970's.

"We cannot mistake image for reality, despite NASA declarations that it offers "a realistic view of the planet." Such assertions of hyperrealism ignore, even obscure, the context and politics of producing images like City Lights. Various choices shape what viewers (can) see. In this case, NASA technicians produced City Lights not, as it may appear, from a single photograph taken from space; rather, they compiled, mapped, and colored new satellite data to make the image more like a photograph." (extract of "The Trouble with Darkness" by Sara Pritchard)

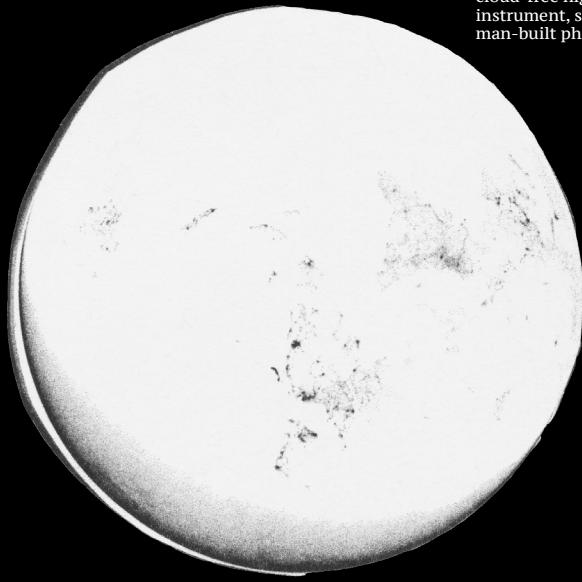


Aerial view of an area deforested by soybean farmers in Novo Progresso, Para, Brazil, in 2004

likely to be solved by a cultural myth that encourages us to "preserve" peopleless landscapes that have not existed in such places for millennia." Could we now read Cronon essay by replacing "civilisation" and "wilderness" by "artificial light" and "natural darkness"? Sara Pritchard in her recent essay "the trouble with darkness" basically shows that we have been placing our night sky in the exact same position as we have been placing the wilderness. She mostly writes about the picture "the city lights" or "the Black Marble". The image was released by NASA Suomi satellite in 2012 and was showing the planet earth at night. But even if it seemed like a real photograph, we must not forget that all images are produced. That one was no exception. It had been altered in various ways in order to dramatizes the contrasts between light and dark.

One of the important alteration was that all natural light sources (auroras, volcanos, fire, etc) have been removed from the image. That of course amplified the divide between nature and culture as well as the divide between countries and continent. While Western Europe is shining from a million light, Africa is standing almost in full darkness. Pritchard argues that Africa appears darker because of the removal of all natural light sources but also because of its proximity to europe. She explains that this was no innocent choice to select the hemisphere of the planet that had the biggest contrast in order to map light pollution. But she finds this choice quite unsettling considering racism, imperialism, and development. To sum it up, looking at an image such as "city lights" as a map of light pollution will make westerners think of polluted areas only being in the urbanized world while they forget the problem of darkness as a synonym for poverty in most of the third world countries. So while activists and scientists tend to see artificial lightning at night as something bad and natural darkness as

The Black Marble : The Earth at Night
A global composite image, constructed using
cloud-free night images from the VIIRS
instrument, shows the glow of natural and hu-
man-built phenomena across the planet



"Dark night skies, or "natural night-sky brightness," should be recognized, celebrated, and ultimately protected. But we should do so in a way that advances both environmentalism and social justice. Otherwise, we have learned little from the history of conservation over the past 150 years." (Extract from "the Trouble with Darkness" by Sara Pritchard)

something good, we may forget that darkness can also represent low standards of life. So even if it is done without bad intention, an image like city light, or the dark marble, might, says Pritchard, actually help justify the conservation of certain dark territories to the expand of the population living there.

As we can learn from both Cronon and Pritchard, if we continue to divide natural and artificial, by placing the night sky as something that should be seek and protected outside our cities, we might face dangerous repercussions. Indeed by doing so, our solutions to solving light pollution are taking the shape of preservation and conservation instead of focusing on resolving this problem within the boundaries of our own urban spaces. Contrary to what we may think, finding our ways in pitched black cities is not this only way to solve light pollution.



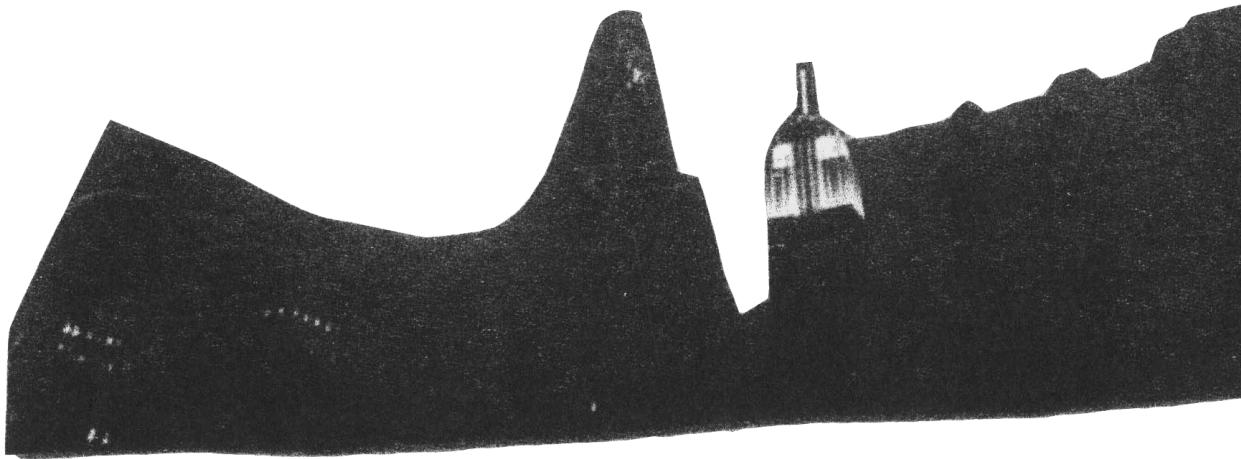
Global City Lights
Image by Craig Maynes and Robert Simmon, NASA GSFC.
Based on data from the Defense Meteorological Satellite Program

RECONCILIATION:

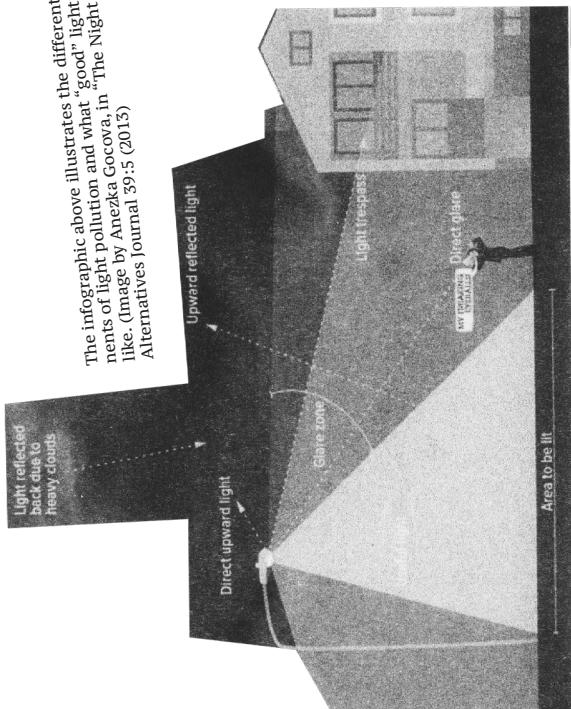


The Manhattan skyline during the 1977 New York blackout

BRING-
ING DARK
SKIES BACK
INTO OUR
CITIES



The infographic above illustrates the different components of light pollution and what “good” lighting looks like. (Image by Anezka Gocova, in “The Night Issue”, Alternatives Journal 39:5 (2015))

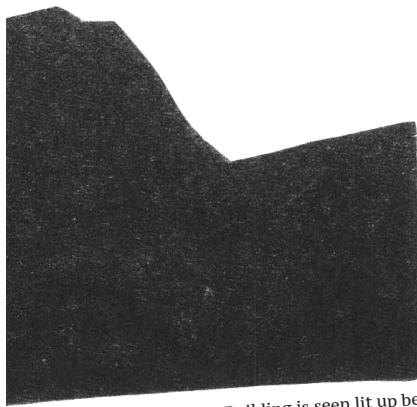


“The recent economic downturn across Britain has stimulated local councils to decrease expenditure on street lighting by reducing the number of lights used and cutting back on lighting up times. Responses to these disruptions to the customary ubiquity of pervasive illumination have been angry, exemplified by one local newspaper alleging that such policies heralded a ‘return to the dark ages’ in encouraging criminal and anti-social behaviour in the darkened streets (Attlee, 2011). (...) these panicky reactions also reveal the persistent nyctophobia that characterises fear of the dark across the urban West.”
(extract of “Gloomy Cities” by Tim Edensor)

While protect and preserve our dark sky in more remote places is most certainly something that we should be doing, as Pritchard explains, it is also important to consider the issue to be something that we can tackle from and for our own cities. By that I mean not only see the dark skies to be something to be preserved in nature but also something that we could make reappear into our built areas. The dark skies are not extinct, they are simply hidden and they could be restored. So just as we are trying to make cities greener I think that we could and should try to make cities darker.

Some associations such as “IDA - International Dark-sky Association” are trying to bring out awareness towards how such a change could be possible, by promoting what they call the four “R”: “lighting in the Right place, at the Right time, at the Right level and in the Right spectrum”. That simply means using our lights in a smarter way. The thing is, in most cities we use light quite poorly and in many cases they are just not necessary. On their website they promote various light designs and simple solutions we can adopt to better contain the negative effects of light pollution such as “Glare: excessive brightness that causes visual discomfort, Skyglow: brightening of the night sky over inhabited areas, Light trespass: light falling where it is not intended or needed, and Clutter: bright, confusing and excessive groupings of light source”. But so even if those very practical solutions exist, tackling light pollution also means that society current mentality towards urban darkness should shift from something seen as negative to something seen as positive. Otherwise cities might face negative reactions from citizens while trying to take measures, as Tim Edensor briefly exemplified in his essay:

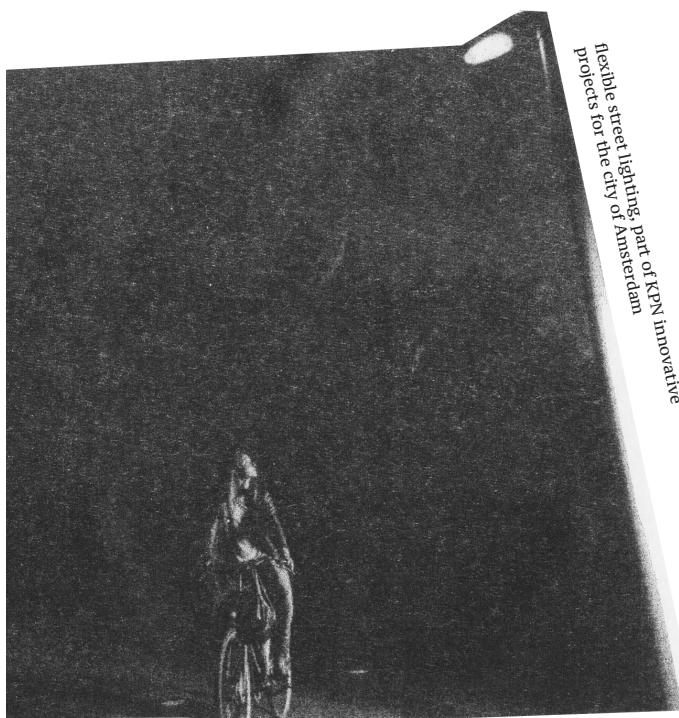
Today we are contained within the limitation of our illuminated spaces. We avoid dark places in cities. As I already mentioned before they are seen



The Empire State Building is seen lit up before Earth Hour in New York, during which lights were turned off for one hour to show support for renewable energy.
Photograph: Eric Thayer/Reuters

"Restoring urban dark skies can be understood as an act of reorienting the ecological and cosmological sense of a place for cities and their inhabitants, of reconnecting the urban with the natural. It allows the incorporation and fostering of the full spectrum of values associated with darkness, from efficiency and sustainability to a connection to nature."

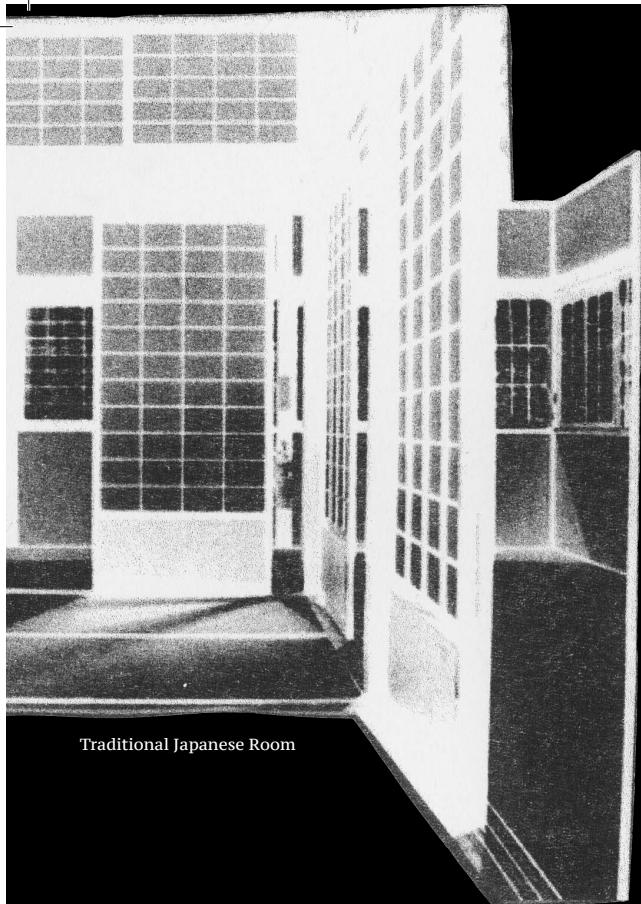
(Extract of "Re-Envisioning the natural sublime" by Taylor Stone)



flexible street lighting, part of KPN innovative projects for the city of Amsterdam

as dangerous and scary. But maybe bringing in the poetic and positive conception of the natural darkness inside the realm of the urban space could make people more inclined for a change into how cities are currently illuminated. As Pritchard says: "bringing the night sky back into cities is in act of bringing a positively valued features of darkness into urban settings, and allowing us to see past our lighting technologies". By doing that not only we would be clearing our skies from pollution, but we would also symbolically reconcile the urban and the nature by making them work together instead of against each other.

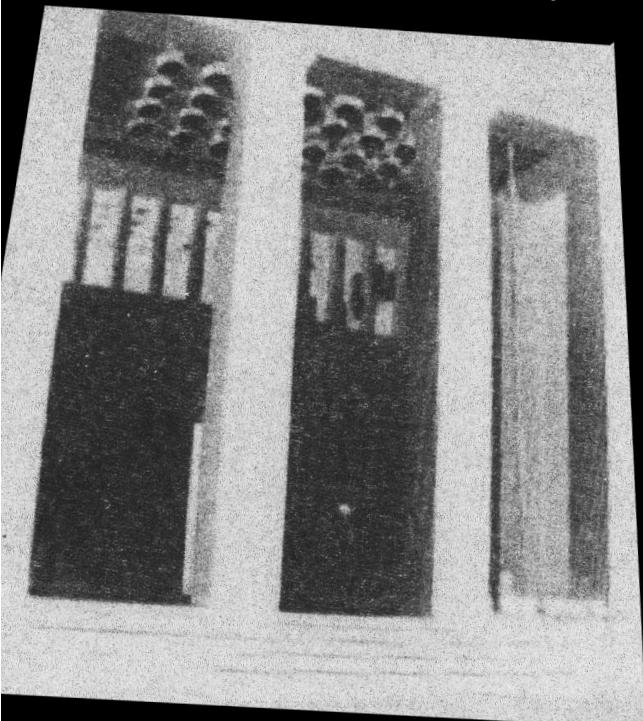
So, in my opinion, bringing the darkness into the urban space means fighting two fronts simultaneously: first it is about organising cities's illumination taking into accounts the issue of light pollution and secondly and most importantly it is about helping a societal change of mentality when it comes to our urban conception of darkness. The second point is of course extremely delicate since, as I have already mentioned, darkness negative connotation has been around for centuries. Fighting such a deeply engraved social construct is no small task. But I believe that it starts with words, paintings, poems, designs. Artists have always played a great role into depicting change and influencing certain ideas. And the issue of light pollution has started to spread among some of them which are now envisioning the return of darkness into the urban. It the case for instance of the firm "Concepto" who has imagined what they call "the dark grid" as the new urban illumination plan of the city of Rennes and Lorient in France. The "Dark Grid" is a wink to the french initiative of the green and the blue grid (TBV) which has been officially put into place in 2007. The idea of the TBV is to constitute and protect dense zones in which the biodiversity is preserved and find ways to connect them in order to



Traditional Japanese Room

"Dark night skies, or "natural night-sky brightness," should be recognized, celebrated, and ultimately protected. But we should do so in a way that advances both environmentalism and social justice. Otherwise, we have learned little from the history of conservation over the past 150 years." (Extract from "the Trouble with Darkness" by Sara Pritchard)

Photo from project by Studio Füsün, "Updating Germany" at Architecture Biennale Venice 2008



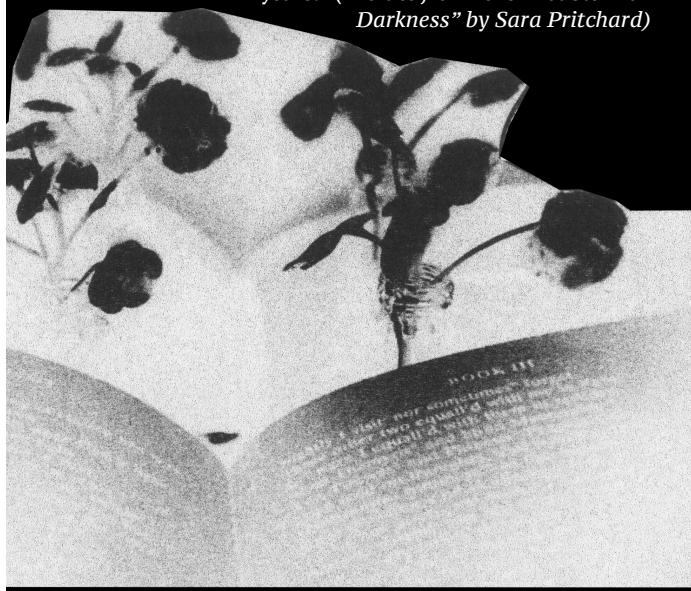
allow the movement and travel of species and the blossoming of diversity and ecology. This project is of national scale and a major tool for land-use planning. Similarly the idea behind the dark grid of the firm Concepto was to gather data about natural or rural space which were already preserving the natural darkness at night together with those who were illuminated (mostly by roads) and create a plan of preservation and connexion of those nocturnal space to allow to the good development of the wildlife. Concepto imagined systems of illumination which are changing through time and seasons. In the urban space of Rennes they suggested that some spaces (such as university campus, supermarkets etc..) should be deprived of light during certain hours of the night. For parks or garden paths will be lit only when detecting human presence. In Lorient they decided to remove the road light of main entering highway which is surrounded by wildlife. surprisingly, the city received no complain at all from its inhabitants.

In a similar initiative, the two light designers Chris Lowe and Philip Rafael started what they called the "Dark Art Movement". They explore the relation between dark and light in their designs and gave several talks and seminar around europe to bring awareness to the positive use of dark and shadows in lighting designs. They are defending ideas which resemble those of Junichiro Tanizaki who published in 1933 the beautiful text "Praise of Shadows" in which he express regret towards the spreading of the western illumination. He offers a magnificent depiction of the quiet and simple japanese house in which the right balance of light and dark provides a multitude of shadows of different magnitude. Through his text he immerses us in the beauty and celebration of darkness echoing the longstanding Danish tradition called "Hygge" in which people, with the use of candle and fire lights,



Glow-in-the-dark cycle path near Eindhoven, in the Netherlands,
to commemorate the life and work of Vincent van Gogh.
By Dutch artist Daan Roosegaarde

"Dark night skies, or "natural night-sky brightness," should be recognized, celebrated, and ultimately protected. But we should do so in a way that advances both environmentalism and social justice. Otherwise, we have learned little from the history of conservation over the past 150 years." (Extract from "the Trouble with Darkness" by Sara Pritchard)



Pages of "Paradise Lost" illuminated by plant light

"Dark night skies, or "natural night-sky brightness," should be recognized, celebrated, and ultimately protected. But we should do so in a way that advances both environmentalism and social justice. Otherwise, we have learned little from the history of conservation over the past 150 years." (Extract from "the Trouble with Darkness" by Sara Pritchard)

create a warm and poetic atmosphere bringing people together around drinks and food. When I read about that danish tradition, funny, it reminded me of the blackout which took place in my neighbourhood in Amsterdam in early 2018. It's funny how very dependant we are on our lights. We are not used to being in a dark city. And even if all these lights at night are human made, artificial, there is something very much unnatural to this scenario. So you start looking for forgotten candles you might have used last christmas and if you're lucky you'll find a full pack somewhere hidden in a drawer. From your window you can see the dark flats in the facing buildings starting to reappear from the obscurity. Inside people's home, candle lights. In some there are a lot, in others just a few. It creates a pleasing image. Peaceful, cozy. It brings out a feeling of home, community. You can be certain that during that power cut, your neighbours have helped each other so that nobody had to spend the whole evening in the dark. People whom you might have never met before smiled at you from their window in a sign of compassion and understanding. Everybody is going through the same thing, the same evening. It connects people that are sharing that experience. Brings back a sense of community in a city where you probably don't know the person that lives above you.

This poetic image of the blackout might be just the one we need to recreate if we want to restore urban darkness. It also shows that bringing back darkness is not about making the city fully dark but simply darker. A beautiful example is the one kilometer long glow in the dark bike path created by the Designer Daan Roosegaarde - in collaboration with construction company Heijmans. As a tribute to the painting of Van Gogh "Starry Night" this cycle path near Eindhoven is working with solar panel technology and is just bright enough for

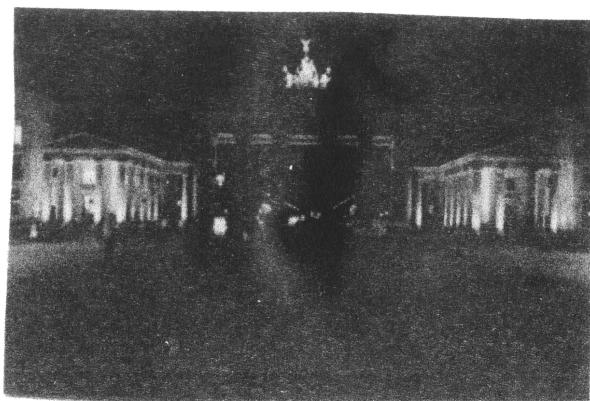
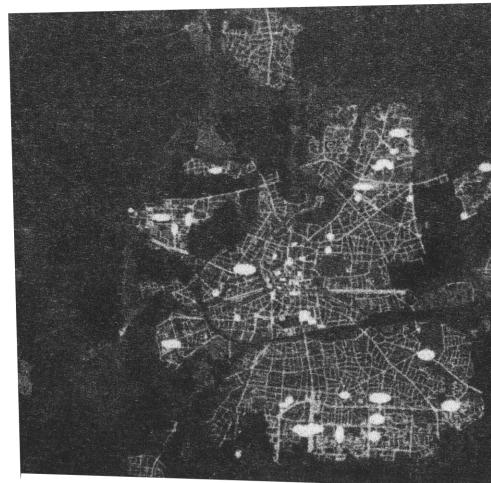
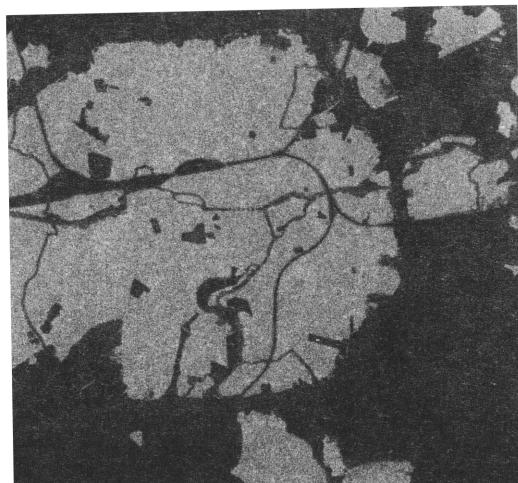


Photo from project by Studio Füssun, "Updating Germany" at Architecture Biennale Venice 2008

the cyclists to see the road but dark enough so that it does participate to light pollution.

But not only solar technology shows promising results. In Massachusetts, scientists have found a way to give plants the same luminescence of the fireflies. They believe that one day, with such technology, those plants will be able to illuminate a workspace. Not only the emission of such light would be less dramatic for light pollution, but just as the solar panels it could help us restrict the energy waste. And tackling the angle of energy waste to talk about light pollution is another way designers and artists are raising awareness. Firms such as german based Studio Füssun have been demonstrating the waste we spend over all night illuminated buildings and monument during the Architecture Biennale of Venice in 2008 by shutting off the night lights of the German Pavilion in Berlin and reusing the same amount of energy into a room. People walking in the room could better understand, feel and visualise (if they could even open their eyes!) what that energy actually represents in term of voltage and power. In Lyon, the architect Jérôme Donna worked on the nightscape of the courthouse. This impressive building has been an emblem of the city since it was built in the 19th century. In order to save energy and reduce the light pollution Donna came up with a beautiful solution to light this monument. He worked on a temporal nightscape in three stages throughout the early night. Each stage is a different way of illumination, and so a different vision of the building for the spectator. Stage one, from nightfall to 22h30, shows the magnitude of the building. It is completely lit up. Stage two, from 22h30 to 23h30, illuminates the columns only. Stage three, from 23h30 to midnight, also puts the focus on the columns but this time it is using an effect of black light by lighting the long wall behind them. And finally at midnight the show ends and is swallowed

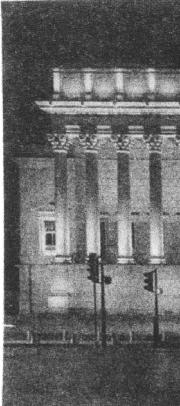
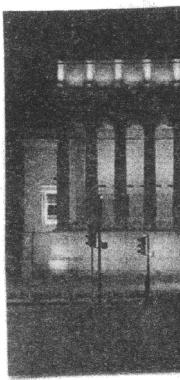
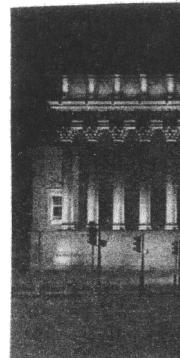




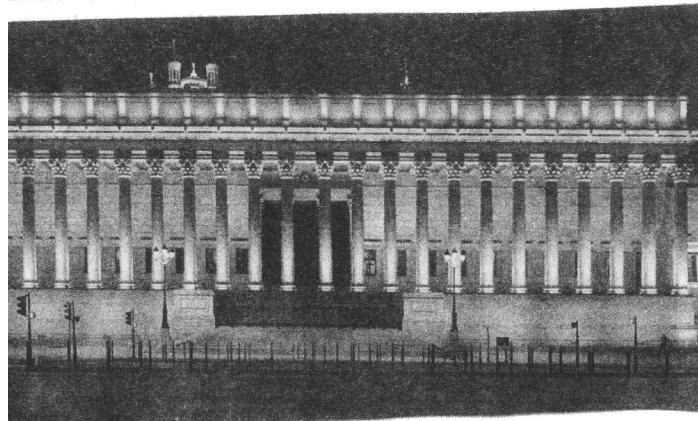
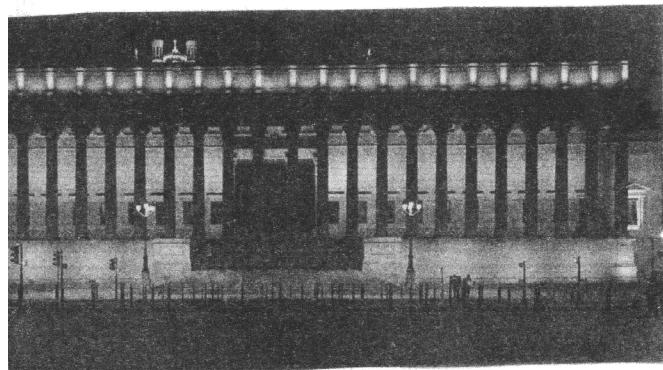
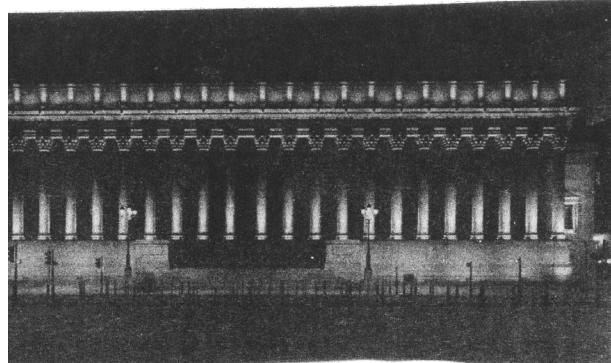
Image from project by french based studio Concepto
for night light master plan in Rennes, France



Photo from project by Studio Etsun, "Updating Germany" at Architecture Biennale Venice 2008

by darkness. The courthouse will reappear the next morning with the first light of sunshine.

As you can see from these various examples, the design and art community are trying to find solutions to shine a different light on darkness. Through single events, performances, research, ideas and old traditions they all have the same objective: changing our vision of darkness to reimplement it as something good that deserve a space in our urbanised world. On a wider cultural spectrum I think it is important to also mention people such as James Bridle who published a book called “the New Dark Age” talking about computation and understanding of humanity through data. But also painter such as Pierre Soulage who worked on the color black using light to reveal different reflections in the color and wrote many essays and theories about the role of darkness and light. The novelist Ben Lerner depicted a beautiful and poetic image of the impressive blackout in New York which occurred in 2003. Maybe we could also mention the name of one of the master of the Sandberg Institute in Amsterdam called “the Shadow Channel” in which students seem to reclaim the darkness. All those more indirect references count to bring to the public a more positive or at least a different perception of darkness.



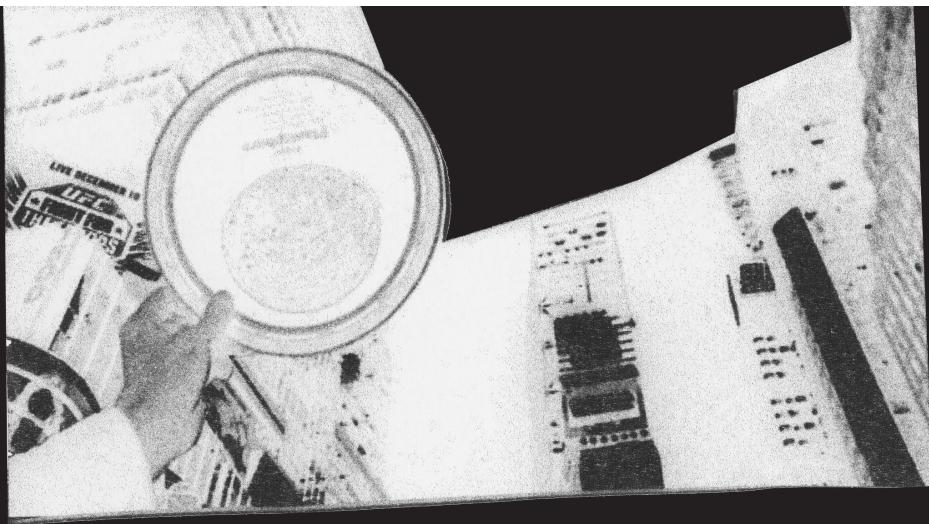
The three Lighting Design stages of the Lyon Courthouse

TO CONCLUDE:



Light pollution sky glow over South Yorkshire

WHERE DO WE, WHERE DO I, STAND IN ALL OF THIS?



Throughout this essay I have been trying to understand not only the impact of light pollution but also our relationship to darkness. Our conception of darkness plays an important role in the preservation of our skies and it has become clear that we should find ways to protect them not only in the natural space but also in our built areas.

All the design examples that I have mentioned above show that preserving the starry skies in urban areas is no utopia. We are slowly but surely starting to understand not only the impact of artificial lighting, but also the solutions. New modes of illuminations are spreading, smarter, more responsible. In the west, today, more than ever before, designers and architects have been trying to reconcile our cities with nature. But being granted permission to change or intervene in the public space isn't done in the blink of an eye. Of course, turning off a monument's light for a night, building a bike path, or changing the whole lighting plan of a city are projects of different extent. But they all have in common that they are happening in the public area and modifying a previously set space. So not only they need authorisation from the city but also very often from its citizen.

Writing this thesis I have been feeling rather intimidated. What could be my play in all this? But I realised that before you can change the public sphere, you first need to change the public. Bringing back darkness in the urban space will not only take talented designers and architects. We will also need talented artists, storytellers, musicians, poets. The issue of light pollution is not only about changing the regulations of the cities. It is also about changing the mindset of the people in it.

Clearly this is not restricted to design and architecture. It is a collective work which needs to be brought to life by the broader cultural scene. A dialogue needs to start from culture in general in

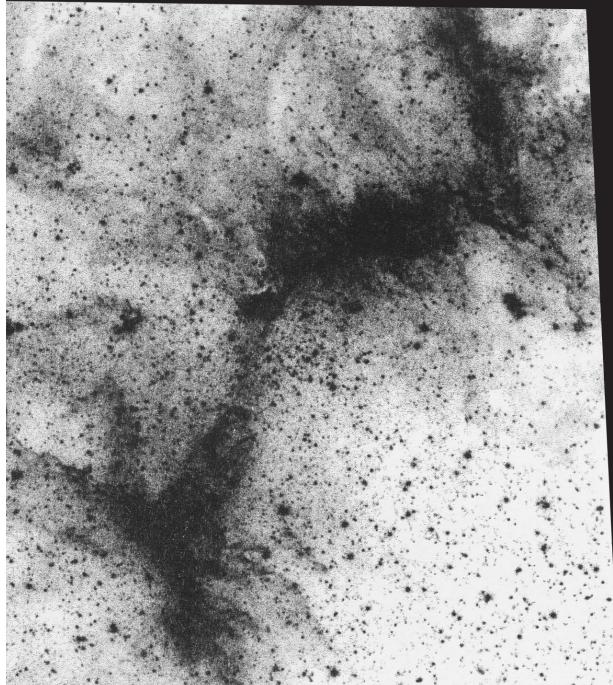
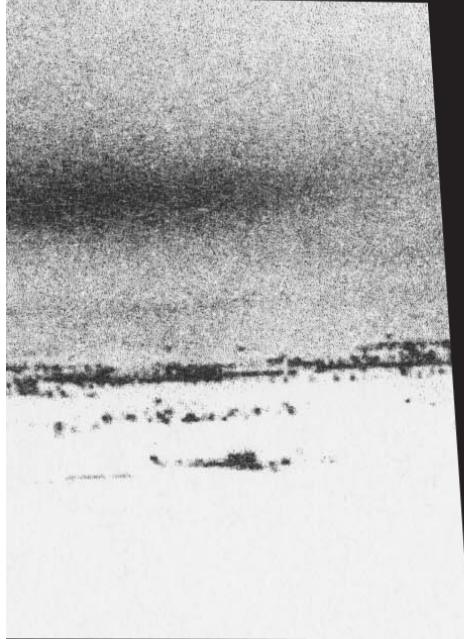
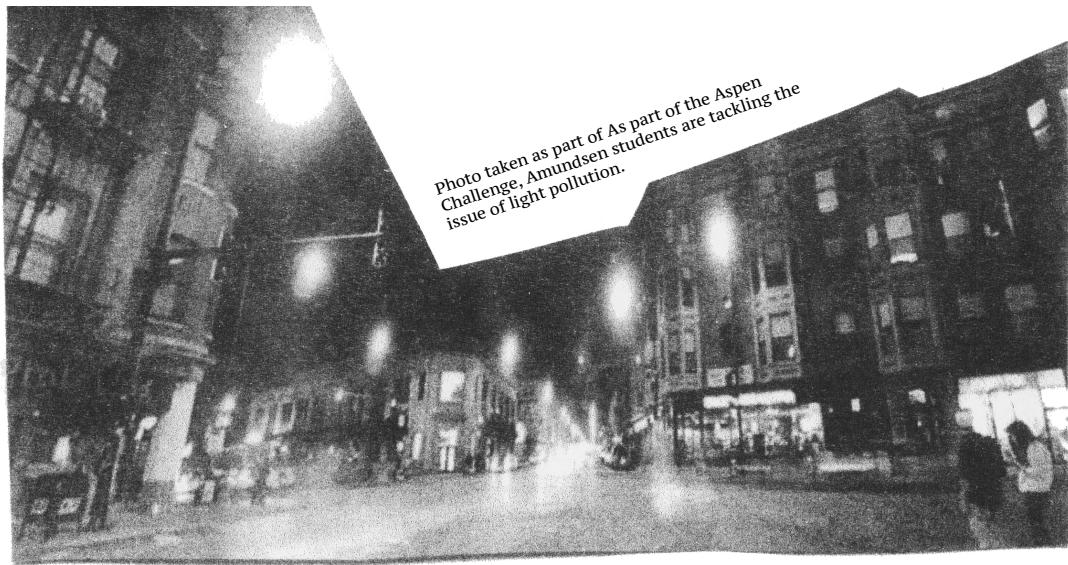
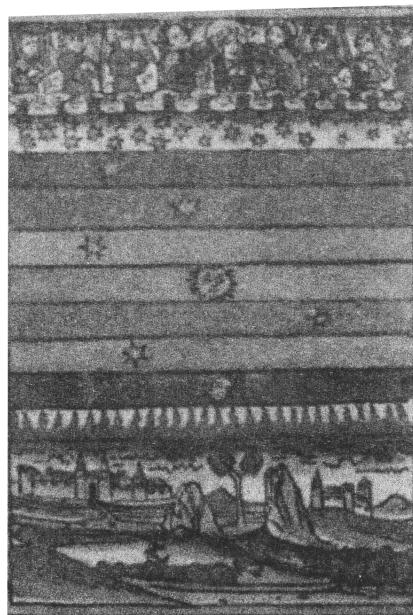


image composite highlights the pillars of the Eagle nebula, as seen in infrared light by NASA's Spitzer Space Telescope



Light Pollution Level - 1
Eureka Dunes, Death Valley, NP, CA



Early Celestial Calendar
Photo Extract from the book "The Power of Stars" by Bryan E. Penprase

order to materialise the solutions through architectural or design projects. Before you can redesign the urban nightscape, you will first need to talk to the people walking its streets everyday. And nothing will happen if they are not ready to listen.

I realised that, as a graphic designer, I can generate new narratives about the light, about the dark, to help not only bring awareness but also create a new conception of darkness.



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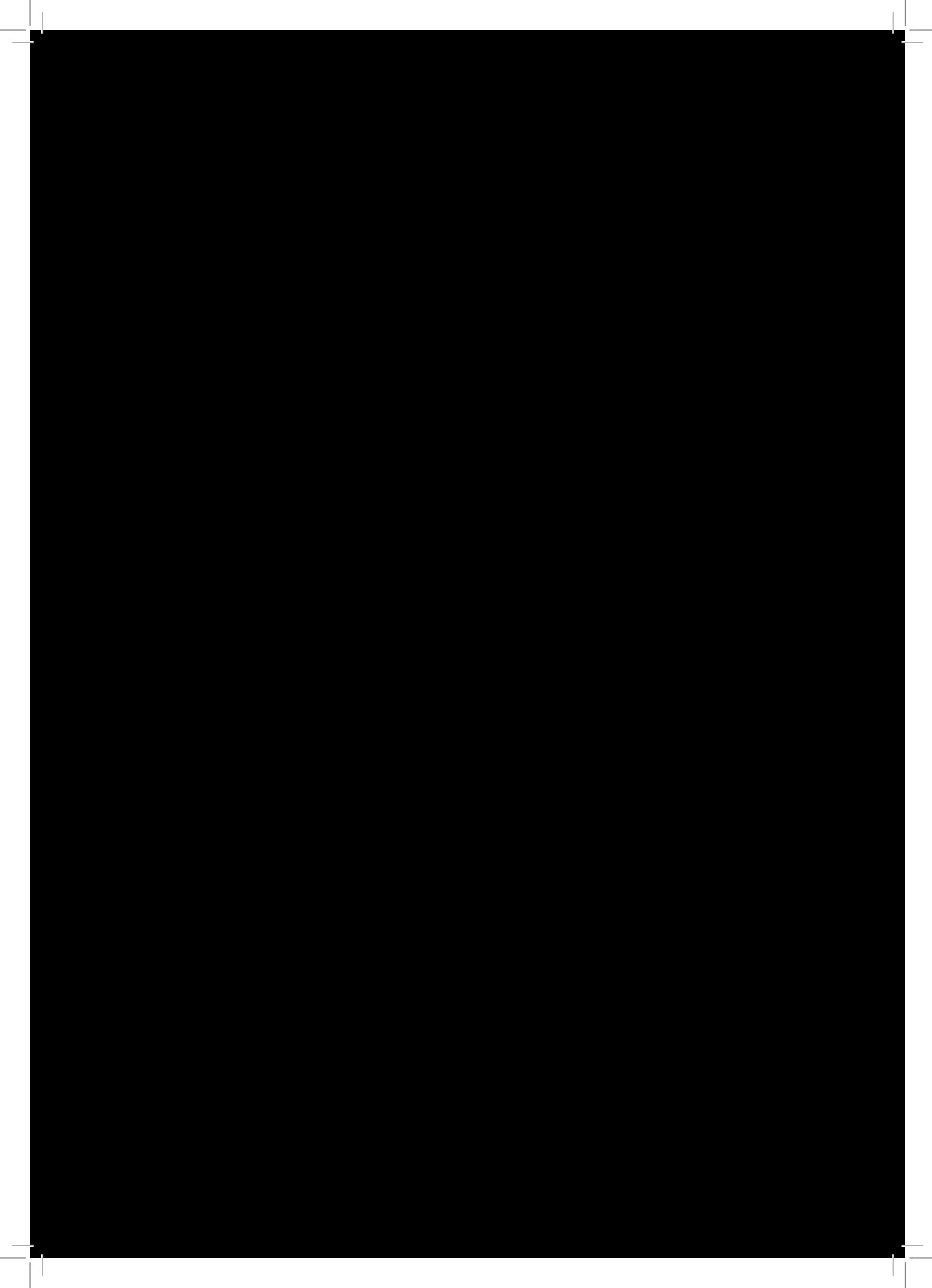
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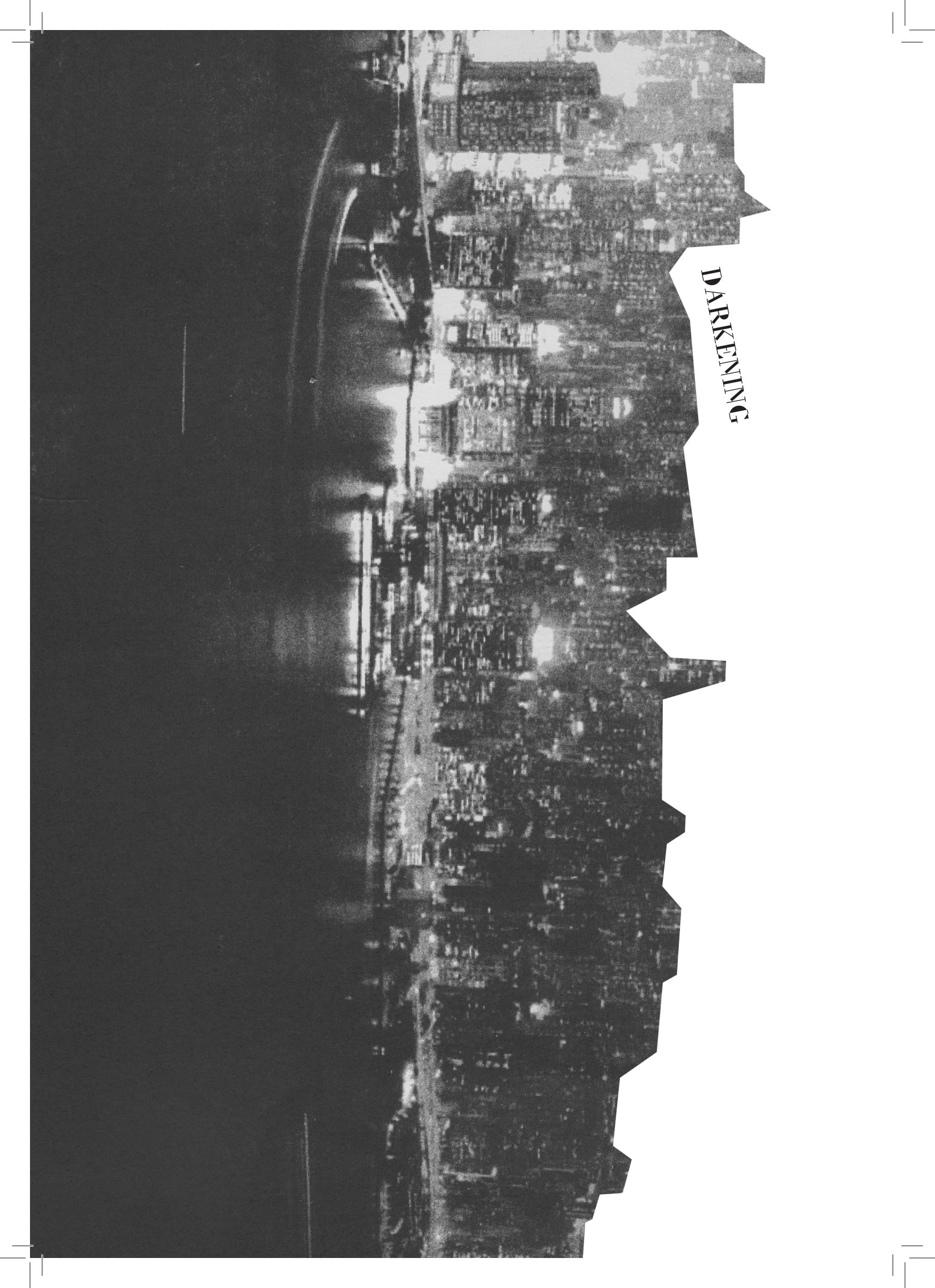
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DARKENING