

reflecting light
issuenr8-October2025
Perceptualfield

printing instructions

print on white paper (90g), black-and-white, recto-
verso on the short side, then fold into a booklet.
the dimensions of the printed fanzine are 11x21cm.
cut the margins on the dotted line to reproduce the
original dimensions.

nr 8



Reflecting Light Issue Nr 8 — October 2025

Perceptual field

Members of the research group: Emese Csornai, Henri Emmanuel Doublier, Jan Fedinger, Tomi Humalisto, Jan Maertens, Bruno Pocheron Ezra Veldhuis, Bram Coeman & Geert Belpaeme.

V.u. Geert Belpaeme

design in the arts. The research project *Reflecting Light* is financed by the HOGENT Arts Research Fund and co-financed by BUDA arts centre (Kortrijk), HAUT (Copenhagen) and Mad House (Helsinki).

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PERCEPTUAL FIELD

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E C S M O R N S A I
Dear Reader, At this time I had
the need to reconnect with the vibrancy of lighting
design, and I hope to elevate yours too. This 8th issue
is an experiment, bringing our 4 years of research to
a slow close.

*The experiment applying biodynamic craniosacral
principles directly to the current state of lighting
design in arts, and goes as follows:*

*If we say that lighting design
is in an isolated state, it is no
longer in its agency to inform the
surrounding flesh of performing
arts. Its repeated triggering of the
nervous system of the arts becomes
a systemic habit, with holding
tension, isolation, something that
bodywork terminology calls a
physical trauma. It will not be the
body's priority to deal with in the
face of other threats. However, in
my point of view, the unique agency
of theater is the capability and
willingness to voice the multiple,
cooperate in dynamic and non-
hierarchical ways towards a
common goal, and observed from*

its unique trait, not addressing the separation is a real miss.

Perceptual Field is a fundamental term used in biodynamic craniosacral therapy. It is an amount of space a practitioner can orient to, in relation to a system of a person in a hold. Some spaces, where tension is held, limit themselves to a fairly small space. The lack of perception of or connection to the surrounding spaces, the isolation conserves a perpetuated tension, like a short circuit of some sort. The rest of the system is on a higher level of well-being for the sole

reason it is interconnected. The multiple landscapes of the body contain the potential of health for this isolated space. This small and finite space can meet its exterior through a mediated encounter. When possible, increasing the perceptual field can result in a greater systemic balance.

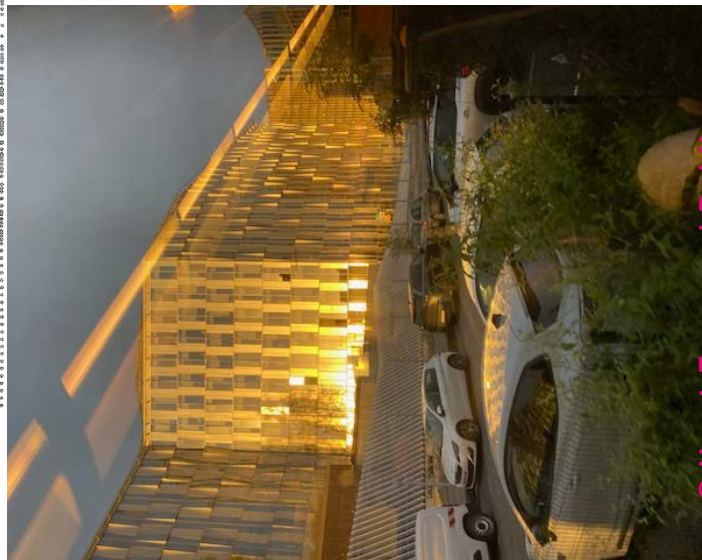
I felt inspired to apply this principle to our Reflecting Light fanzine project: I wanted to extend our gaze to a life-span of a lighting designer, to the solid state dimming era and beyond. a mentor and disciple reflections, to PhD researchers discussing about researching perception.

I would like to say that my lively feeling of lighting is in a much better place after the process of preparing this fanzine for you. Let me endorse Tomi Humalisto's writing opening up on multiple fronts of perception, expectations and reflection around low lighting,



bluen





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and his interview with an alumni and fellow lighting designer Ilmari Paananen on 'Remarkable sunsets'.

Contributing to my lively feeling was having made interviews with

- Nanni Vapaavuori and Caroline Mathieu who are close to defending their Phd-s based on their researches of light and perception. The one of Mathieu is happening shortly at PILAR.
- Nadia Lauro who gives a measure to well delivered dreamscapes and experimenting with materials in designing immersive environments in- and outside theater, and whose book is currently being published at Serralves Foundation in Porto.
- John Macfarlane who was a lighting designer and technical director, in the 70s in the USA, and Canada where he later became a professor at SFU, and could put so many things in a broader context by talking about his career and relevant interrelations.
- Ellen Knops who is my mentor in lighting design and upon my visit to Amsterdam had a long walk in Westerpark with me and discussed what felt relevant in small and big gestures of humanity in theater and what decades of theater work means in a human life, and vice versa, what a human life means in theater.

You will find extracts from the text of the upcoming piece 'Campfire' of Ezra Veldhuis and Bosse Provoost pondering upon consciousness.

We know the proof of the pudding is in the eating- the long term turnover can be estimated after you

had a conversation about this fanzine after you held
and read it, *dear Reader*, ...
I wish this issue serves a broadening of our view on
how we see, what we look at, what our knowledge
allows us to understand and how we participate in
creating connections.

is. In the theater I will never be able to fully replicate that richness. That realization inspires in me a deep awe for the subtlety and complexity of the light that surrounds us every day. EMESE CSORNAL: I read the movements of others very carefully. I like to play with images I see around myself, to fragment them, challenge my color perception. I like to imagine space and representation transforming into one another. I think many of these ways of looking were in me already but working with lights parented those ways. I wave in front of my eyes to know if I am unfocused because of LED lighting. I use my hand to determine the direction of light. I think the big change is that I understood the intention is direction, quality and color, and the more clear it is, the better we can relate.

Is there a practice, a question or collaborative method you wish was more broadly practiced or asked relative to your work?

TOMI HUMALISTO: I feel that exercises in visual and spatial awareness for performers during the rehearsal process could, at times, help foster mutual understanding between different starting points within the working group. They might even ease tensions between those who work toward the stage and those who work toward the audience. These practices could offer a shared language → not just of movement or text, but of how space is perceived, shaped, and inhabited. EMESE CSORNAL: Collective reflection, and factual description. I like to ask people to look at something specific in a rehearsal, and I like to do that too for others. While working with Bilawa Respati I tried for a couple of days to think of present tense as exclusively as possible. It was a very good practice.

Is there a question you would like to ask our readers?

HENRI-EMMANUEL DUBLIER: Are you aware of the quality and changes in lighting when you watch a show? TOMI HUMALISTO: How well do you remember your perceptions of a performance afterwards? What kinds of things do you recall clearly, and what fades more easily?

Do you have any methods for imprinting certain moments into memory? EMESE CSORNAL: Can you catch one of your icons Nanni Vapaavuori talks about? Can you remember a moment of not being able to make sense of what you see? Would you be willing to discuss these with someone?



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integrated part of the performance. I personally recognize a paradox in how distinctly lighting design should be perceived as a separate element. On one hand, some performances have a very holistic nature, where emphasizing a single component may not be appropriate. On the other hand, I support the skill and development of analytical perception in experiencing performances, where understanding, for example, the specific use of light and its impact does not diminish the experience of the whole. Through this latter observation, I arrive at a more personal wish: I hope that both my own and others' lighting designs could be more clearly seen in terms of their connections to the overall performance and its dramaturgy.

What do you see closely related to your work outside of theatre?

EMESE CSORNAI: Comic books and illustrations, I am so fascinated by their reduction! Film and animation, I have tried to bridge the two visual worlds. Also, unsurprisingly but maybe worth mentioning: formal patterns and semantics of spoken language.

The stories I witness in craniosacral bodywork, the language of dreams. A capella singing. HENRI-EMMANUEL DUBLIER: An instrumental and photographic practice. I continue to play the guitar and saxophone and compose music when I am at home. During the lockdown, my partner and I wrote six songs. I was not frustrated by no longer being able to create in theatres. I took the opposite mental approach to my usual one, which had been to move from musical composition to lighting composition. I take amateur photos with my phone when I find the light or colour contrasts particularly striking. I try to make these photos as true to life as possible, so I never alter the colours, brightness or luminosity afterwards. TOMI HUMALISTO: I don't feel that my work in lighting design is particularly directed toward any specific domain outside theatre or performance. But I am quite interested in visual art and history. Within performances, what tends to shape the work more strongly is the shared interest or thematic focus of the group—something I may approach with my own interpretations or angles.

Performances don't happen in a vacuum. They are always in relation to the surrounding society. And yet, when I look back, I notice a recurring thread in my use of light: a connection to perception itself. To how things appear. To how they can be distorted, fascinating, or unexpectedly revealing.

What specific way(s) of looking did you pick up through your work that you practice, perhaps outside the theatre?

EZRA VELDHUIS: When I started at the academy and began to focus seriously on painting, I noticed that my way of seeing changed. In everyday life, I started to pay more and more attention to how light falls on objects and is reflected—to shades, tones, shadows. That way of seeing is still a daily practice for me.

For example, I can spend a long time observing a ray of light falling through ribbed glass and constantly changing in intensity and shape due to the movement of a tree outside. Or I notice how new street lighting causes a kind of fragmentation, giving shadows a blocky pattern.

During these kinds of observations, I find a lot of inspiration for my work. At the same time, I realize how complex and layered our everyday light actually

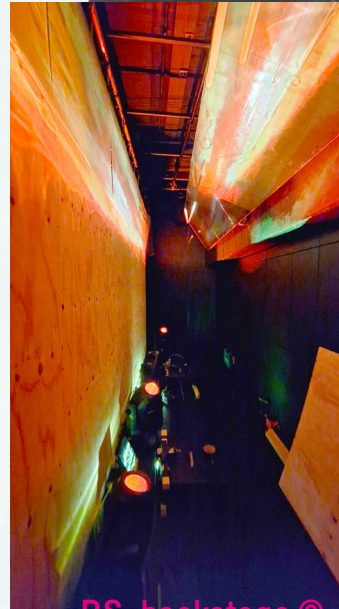


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Remarkable
Perceptual

Sunsets
-
imagination



RS_backstage ©
TomiHumalisto



Kira and light © Ilmari
Paananen

of a natural disaster
T H U M A L I S T O

Sometimes, for various reasons, performances linger in your mind. For me, a performance's memorability is often linked to its visual-spatial relationship with the audience and a certain intriguing sense of mystery in its execution. When I thought about a relatively

recent performance that also relates to observation and perception, it was easy to return to a familiar ghost – the performance *The Remarkable Sunsets – Remarks on the Unusual Sunrises and Sunsets Which Characterized the Close of the Year 1883*. The performance begins with a reinterpretation of the lecture by meteorologist George James Symons, who holds a candelabrum and reports on the disruptions and anomalies caused by the volcanic eruption. The audience takes on the role of the Royal Society, to whom Symons presents his findings. Later in the performance, the performer leaves the stage, and the audience experiences only sounds, infrasounds, and shifting shades of light and darkness. I wanted to interview Ilmari Paananen, who was responsible for the spatial and lighting design in the piece, about the solutions related to visual perception in the performance. Paananen defines himself as an artist who mainly creates performances and uses light, video, and various materials in his work. The following text shows my questions (TH) and Paananen's answers (IP).

TH: You were involved in the *Remarkable Sunsets* performance, staged at Kiasma Theatre in December 2024, which dealt with the observation of the effects of the Krakatoa volcanic eruption in Indonesia in 1883 from the other side of the world. What did you find important and essential to highlight in your spatial and lighting design regarding this event?

IP: I was invited to join the artistic team "to make something beautiful." At first, I doubted for what my skills were needed for, since the text in the performance, which was going to be on screen, describes the sunsets on the English coast so precisely. Would bringing light to the stage just be superficial and add nothing of value? Fortunately, the dramaturg Emil Uttu knew what they were asking for and from whom. After long discussions we achieved a beautiful result.

The performance is based on the article collection *The eruption of Krakatoa and subsequent phenomena. Report of the Krakatoa Committee of the Royal Society* (Symons, G. J., London, 1888). I was particularly inspired by a passage included in the performance, where Mr. Gerard Hopkins writes about the difference between ordinary sunset and the displays of 1883 on the English coast. For example, he describes green as follows: "The green is between an apple-green or pea-green which are pure greens and an olive which is a tertiary colour." And about the movement of colors: "The lilac disappears, the green deepens, spreads, and encroaches on the orange, and the red deepens, spreads, and encroaches on the green, till at last one red, varying downwards from crimson to scarlet or orange, fills the west and south."

The article collection also includes Hopkins's drawing of the positions of different colors on the horizon, as well as paintings by artist William Ascroft, whose bottomless deep hues of sunsets give you goosebumps. The volcanic eruption of Krakatoa took place far from Europe and from the observation that the performance describes. I felt that such a tragic event for its community, which caused many deaths and destruction, should not be made too

Is there an aspect of your work that you wish would be viewed more broadly, and if so, which and how?

EZRA VELDHUIS: During my Fine Art studies, I began to focus on painting. Gradually, this evolved into painted installations, in which I suggested a specific viewing perspective. I did this, for example, by creating seating areas or hanging a large painting in a small space, so that the way of viewing was directed.

In 2016, I started a series of painted installations in which I tried to paint rays of light. These rays of light formed spaces that were detached from any physical context—without a ceiling, walls, or floor. I consider these works to depict 'in-between spaces': otherworldly environments that consist solely of light.

A few years later, I was invited to create a lighting design for a theater performance. In one scene, the audience watches for five minutes as the light slowly changes: from lighting the stage, the focus shifts to revealing the theater auditorium and its technology. Since then, scenes like this have become a recurring theme in my practice, both in my own work and in collaborations where I create the lighting design. For me, it is important not only to light something up, but I also like to make light itself the subject.

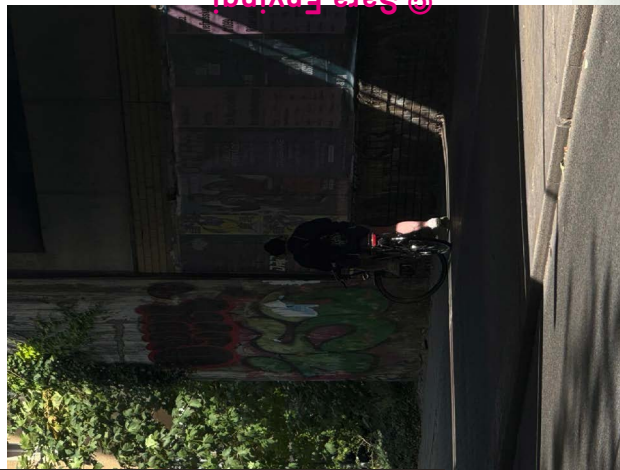
In my current designs, I continue to explore the question of how light can exist on its own and how it influences our perception of space and time.

EMESE CSORNAI: I think all of my work looks better when it is looked at more broadly. I am not sure if I could name an aspect, but I have a relation with dynamics on stage, with the relative speed of body and space. I see everything in motion. Whenever the work is looked at with expectations of staging choreography, this relation to dynamics is named as too much, but that is not the right place to view it from.

HENRI-EMMANUEL DUBLIER: The musicality of light! I came to lighting design through music. As a teenager, I was passionate about music. I was a guitarist, I played in a band and I studied electroacoustic music composition at the conservatory in Nîmes. When I discovered lighting, I immediately sensed that there was a great similarity between musical composition and lighting design. For me, it's the same process as composing for an orchestra. Each light source has its own colour and particular quality and fits into the overall texture of a compositional ensemble. In fact, we often use the same terminology to describe music and light: we talk about musical colours, warm and cold tones, brightness, reflection, etc.

The spatial arrangement of light is also similar to the arrangement of an orchestra. Like a conductor, we activate this or that source in space. We sometimes direct lighting plans involving a hundred light sources scattered throughout the space, like so many instruments or loudspeakers for this act of abstract spatialisation. We also set the tempo. There is the whole aspect of rhythm that we create with the timing of the crossfades, chasers, transparencies of the lights. I use computer software that is generally designed for sound to control my lighting. I find it more suitable and user-friendly for giving my lighting that musical dynamic.

TOMI HUMALISTO: When speaking about lighting design in performances in general—both in my own work and in the work of others—lighting design is often perceived as a tightly



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decorative on stage. The sense of distance became an essential part of the performance.

TH: I'm interested in the visualization you created for the performance, which from the audience's perspective at first seemed like a video projection, but after a while, it appeared to be at least partly something else. What was happening on and behind the image surface, and what was your technical solution?

IP: I aimed for the greatest possible sense of depth to create a feeling of distance—as in the description by Gerald Hopkins, where the consequences of ash carried thousands of kilometers are observed as sunsets on the English coast.

The trickiest question in spatial design was placing a 30m³ subwoofer (rotary woofer) on stage. I solved it by making the woofer and my own "light box" a part of the back wall. The back wall of the space was not continuous; there was a recess about 3.5 meters high and 4 meters deep. I extended the back wall forward to make it continuous, and the recess became the subwoofer and light box. The light box or light strip was 1.2 meters high and 8 meters wide—essentially an opening in an otherwise 7-meter-high and 8-meter-wide wall. The strip was there to create as horizontal impression as possible. In depth, it consisted first of frost cloth, then voile fabric, and finally Lee silk filter. The top and bottom were reflective material. Because space was so tight, the video projectors reflected through two mirrors onto the silk, which spread the beam horizontally. So, the silk was the first surface for the light, and the frost cloth was the last.

Initially, my intention was to highlight only this horizontal beam, but through experiments with layering different materials, the light became so three-dimensional that I could no longer see the physical depth of the light and surfaces myself—only something truly beautiful and inexplicable.

The video material is my own, generated with analog video synthesis. My videos usually look organic because you can feel the movement of my body in them. In this work, the movement in the video was based on the movement of my hand, with all its tremors. It creates a very organic moment on the canvas. For lighting fixtures I used the MA3 timeline feature. I programmed the colors of the moving heads and Titan tubes I controlled by faders, one fader for each color, which I operated by hand and recorded reacting to the video upon the video. In a way light fixtures supported the colors of the video, but on the other hand gave more contrast and richer image. Fader movement was recorded on the timeline and it played back in sync with the video. I generally don't like making cue lists with precise timings because it narrows my thinking. It's like making art with Excel.

The back wall was about 15 meters from the first audience member. In front of that, there was a full-stage black tulle, about 3 meters from the first audience member, onto which text material was projected at the dramaturg's suggestion. Between the tulle and the back wall was a vast empty space, which further created a sense of distance. The light strip seemed to come from afar.

TH: At times, I imagined seeing a landscape in the image surfaces of the performance. Then the clarity of the view would change; sometimes the image seemed to fade almost into invisibility, and at times, a kind of noise and expressive color tones mixed in. As an audience member, I sometimes had a strong feeling that I wasn't sure if I was seeing something representational or something abstract. At times, I even wondered whether I was seeing anything at all or just imagining it. During the performance, the image surfaces were also sometimes dark. What do you think about this audience experience—was it something you yourself experienced and aimed for?

IP: That's a great observation. I saw the work in a similar way myself. In the first performances, I couldn't help but notice the movement of my own hand in the light, but in the last performance, I realized I had let go of that and was amazed by what was happening on stage. I wasn't aiming for anything representational; I was making my own art inspired by the text. Of course, there were figures of sunsets, and someone might think the reflective surfaces imitated clouds, but judging by your and other audience members' experiences, the experience wasn't that one-to-one. What I was aiming for was the experience of distance, and in that, I succeeded excellently. The sense of depth was unreal. The video was no longer just video, nor the light just light, or the materials just fabrics. They all merged together in an astonishing way and created something greater than themselves. "Something beautiful".

TH: What interests you in observation in general? Is there something you notice yourself repeatedly pondering?

IP: I often ponder distance. I think it's the best way to control the intensity of a performance. Distance is also an important tool in gallery works. Things that remain further away can, for example, make the viewer reflect on their own living environment differently. Things that come closer may strengthen the sense of community. In my experience, watching a performance either creates space or takes space away from one's own thoughts. I prefer creating space for the viewer's own thoughts.

TH: Is there anything I haven't asked that you'd like to add?

IP: Well I just now realised, while reading this interview and the screenplay of our performance, that what Mr. Hopkins writes about the 1883 sunsets describes perfectly what I achieved on stage: "They differ in the texture of the colored surfaces, which are neither distinct clouds of recognized make, nor yet translucent media."

Thank you for the interview. It's nice to reminisce and write down my thoughts.

TH: Thank you for sharing your visual approach to this work.

The referred stage performance:

Remarkable Sunsets by Nenonen & Uuttu Et Alia

Piece: Tatu Nenonen & Emil Santtu Uuttu

Spatial and lighting design: Ilmari Paananen

Kira O'Reilly plays the role of G.J. Symons.

Premiere 12 Dec 2024 Kiasma Theatre, Helsinki

This artificial intelligence was reviewed and translated by the author using

*here-and-now scene. I think they too spend a lot of time elsewhere.
Maybe words just aren't the right things to share dreams with.
Perhaps colours are.
Octopuses have been found dreaming with the same tiny jerks
that humans make when they sleep, all the while fields of color
travel across their skins.*

{ It's getting light again. The sun is rising. }

Voice 6:

*The Inuit explain the northern lights using stories about events
that precede or follow life, such as the torches of the dead illumina-
ting the living during the hunt, or the games of unborn children.*

The Art of Not Seeing Everything: Lighting Design and Human Perception on Stage

T O M I S T O
H U M A N P E R C E P T I O N

Darkness and dimness are essential modes of experiencing light. For lighting designers in performing arts, this has long been a self-evident truth. However, in a broader context, the appreciation or justification of different degrees of dimness is far less straightforward. Our relationship with darkness and its borderlands is much more fraught than with light and brightness.

A good friend of mine frequently urges me to condemn the lighting design of performances he finds too dim — claiming that a dimly lit show is proof of professional incompetence. Years ago, I was mocked for my experimental infrared lighting designs in the Dark Project (2006–2007). When I entered the technicians' room, they joked: Oh, he came in, quick, switch off all the lights!

I must admit that although I often disappoint my friend who demands a kind of "inquisition of dimness," and I consider my infrared lighting designs successful, I still believe that the use of darkness and dimness in a performance must be just as well justified as the choices involving light and brightness. Some time ago, I had an engaging conversation with lighting design students about the relationship between light intensity and the artistic meanings of a performance. The question of whether stage events are sufficiently illuminated still seems highly relevant in the experience of young lighting designers. Many of those who participated in the discussion had encountered this dilemma either within a working group or through audience feedback: is there enough light on stage, or is it too dim?

In our conversation, the question of justifying dimness was further refined through a professional dilemma: Is dim lighting design a sign of artistic integrity or laziness disguised as integrity? Interestingly, the students recognized presentations of both extremes of this dichotomy among dim lit performances they have seen. They pondered how to evaluate certain harsh lighting concepts — were they brilliant in their bold simplicity, or were they artificial and superficial?

This critical tension reminds me of a sarcastic suggestion made by my own former professor, Markku Uimonen, to add

a new function to the list of lighting design roles: saving the performance through spectacular lighting. His critique was especially aimed at artistic laziness that neglects the expressive potential of light and instead focuses on audience-pleasing eye candy.

Both minimal and abundant lighting concepts can receive varying receptions from the viewer's perspective. Does the viewer even enjoy abundance, or do they become easily bored? Does the lighting design, in conjunction with other elements of the performance, produce a meaningful experience — or does the viewer wonder why they are spending their time on this performance?

Together with the students, we reflected on how the brightness and dimness of strict lighting design concepts are, in a way, just opposite ends of the same spectrum. The artistic justification of either solution in a performance can be examined with equal criticality.

In contemporary theatre and dance, a commonly minimalist aesthetic allows for performances realized with very few stage elements. In lighting design, this can mean using only a handful of fixtures or light sources, as well as utilizing natural light or the work-lights of the performance space. However, a minimal setup can also lead to challenges in light intensity. A small number of fixtures — or their inefficiency relative to the spatial distances — can result in a situation where it is not even possible to illuminate all areas of the stage well or brightly in the traditional sense.

By "traditional", I refer here to the convention in theatre of being able to effortlessly see the actors' faces, especially when they are speaking or singing.

It's important to note that minimalism in lighting design does not inherently mean dimness. A stage can also be lit with piercing brightness — even for extended periods or throughout the entire performance. If minimalism extends to the number of fixtures, it is still possible to achieve bright lighting using sufficiently powerful units. However, a small number of fixtures limits the possibilities for variation and transformation in the stage image. This kind of approach requires the lighting designer to have a strong sense of dramaturgy. A good example of this is Jani-Matti Salo's lighting design for the performance *Svett* (2021), in which he effectively utilized the power and good color rendering of a single ARRI SkyPanel

outward, and this traveller in this drawing is overcome by joy. Peeking through, he can now directly see the intricate workings of the cosmos.

I really like the suggestion of some celestial truth hiding behind the sky. Filtered and obscured and transformed through the atmosphere, the clouds.

Sometimes I imagine the inside of my skull as a night sky. My body an atmosphere, a medium, a filter. If only I could peek through the sky and see what is really there.

But that's the thing. I'm not in my body, I am my body. I don't see through my eyes,

I am my eyes. My body is not a vessel. Experiences not a result of synapses firing, but just that: the firing of synapses.

I am the sky. The world is seeping through me and I move through it and I am the world?

{ Someone has fallen asleep. The others speculate on what the sleeper might be dreaming about }

Voice 5:

I've heard it said that dreams are junk, that dreaming is getting rid of useless and disorganized information, dragging it to the trash and preventing it from clogging up your brain. I don't think I believe that's all it is. No, despite how boring hearing about other people's dreams is, I'm grateful for my own, and I like what I think they do.

I like how dreaming, remembering, imagining takes me offline. Meaning not in the here and now, but still somewhere. When we are offline, we are somewhere else.

And there, in the blending of memories with fabrications, in a sometimes wild and uncontrollable way, we shape narratives about ourselves, and we explore futures...

Like rats, who in their dreams show not only to replay paths taken earlier, but pre-play routes they haven't taken yet, exploring unknown roads to places where they've found food before. It's really true! It's amazing what you can see under a brain scanner. They actually go there and take these routes when they wake up! Lots of animals spend a lot of time just sitting around. But I doubt that what they experience is just a fixed monotonous slide of the

{ Later still. }

Voice 3:

I recently visited the Lascaux caves on vacation, with those animal paintings that are tens of thousands of years old. It was actually a lot more impressive than I had expected. The walls of the cave are uneven, of course, but they actually used those curves to suggest movement. The lines of those bodies had a kind of... elegance. You could see that the drawers had really looked long and hard at the animals they were trying to draw, that they were trying to capture something of that animal in those lines.

These drawings were not created all at once, but over thousands of years, next to and on top of each other. So you are actually looking at a dialogue between those who are thousands of years apart, and who nevertheless seem to have a shared understanding, or a shared reverence.

But what I found most remarkable was the play of light. You completely miss that in a photograph, but the drawings were made to be seen by the light of a flame. There is a whole play of shadows on those uneven walls... and you can just see them galloping.

And then they often had to share those caves with real animals! So you're sitting quietly in a cave, drawing, and suddenly a 600-kilogram cave bear comes around the corner.

I can imagine that there must have been a kind of closeness and intimacy with animals that anchor you in the world in a certain way, life, death, ecstasy, fear... I dunno. It may sound romantic, but I do feel that we may have lost something?

{ More time passes... }

Voice 4:

There's this beautiful drawing, I think it's from the late nineteenth century, it shows a traveller who has reached the end of the world. He sticks his head through the earth's atmosphere, looking



Dark_Project_IceCorner_IR2 © Tomi Humalisto

fixture without the lighting design feeling incomplete. Salo has discussed his solution in more detail in his online publication *Reorientations* (Salo 2024).

With a limited or low-powered setup, uneven light distribution across different areas of the stage can become more pronounced—especially in situations where performers unintentionally drift away from the designated performance zones. At the same time, an all-encompassing dimness embracing the entire stage can be achieved simply by dimming the lights, even if a large number of fixtures is available. In such cases, the dimness is even more clearly a conscious choice—presumably with a well-considered reason behind it.

Thus, the use of dimness is not inherently tied to the size or power of the lighting equipment. In either case, the experience of dimness is inevitable, and the viewer is compelled to evaluate the meaningfulness of their perceptual experience.

Unfortunately, the audience's experience and the impression confirmed by the designer's own sensory perception don't always align. The audience may report difficulty seeing and feeling fatigued while watching the performance. The effort required to see alienates them from the world of the performance, without them finding any justification or meaning in it either.

The lighting designer may feel slightly offended, perhaps shrug their shoulders, and defend the solution by stating that they believe it works—it's just not being properly seen. Sometimes similar feedback arises during rehearsals, voiced by the working group or venue staff. In these cases, the designer may feel much more hurt; criticism from peers feels like a deeper sign of mistrust.

This is a turning point—where paths may diverge or strengthen for the long term. Resolving this kind of crisis depends greatly on the designer's ego and the entire team's ability to engage in respectful communication about the relationship between design choices, observations, and artistic goals.

Ultimately, it comes down to honest and humble observation—and the awareness that perceptions of brightness and dimness are as numerous as the observers themselves.

If we focus for a moment on the reasons behind the experience of dimness, our perceptual capacity plays a

{ Later that evening... }

Voice 2:

(...) So these were like pocket knives, they look like a kind of construction kit.

There's claws, legs, spatulas, antennas, feelers... as if for every new activity: POP. They just add another limb or probe. These pocket knife creatures were probably the first animals to start developing senses, sensitive surfaces and screens that can take an imprint or image. Eyes and stuff. The first to encourage parts of their bodies to become maps or reflections of fragments of their surroundings. Eyes, but also antennas and ears, all sorts of things. Although I'm not sure if they actually have ears... I've heard of farms where they keep these pocket knives, where the mothers get one of their eyes clipped off. It makes them lay more eggs for some reason. Their babies will then in turn have their eye cut off when they become mothers.

Speaking of babies, I was holding a human baby recently. It could only see me once I got very close to it. Even then, I was probably only a mildly entertaining blur. It was definitely more interested in the lights in the room. I was told that this baby didn't make a clear distinction between itself and the rest of the world yet. I was told it could only see the colour red to help it find its way to a nipple. It's incredible to see a baby open up. To see it learn how to grasp and manipulate its environment. To see it learn how it can be abandoned. To see it learn that the mildly entertaining blur hovering above, is looking back at it. That there is an other.

If you open up to the world, it is a very confusing place without a sense of 'self' and 'other', without subjectivity. That applies to a baby, and it applies to that pocket knife animal.

That's why I believe that this pocket knife creature—some sort of 'proto-sbrimp' I guess—must have figured out the difference between its environment and itself. It must have developed a point of view to make sense of the flood of sensory input, so it could be confident that if it turned around it was not the world that started spinning. Yes... subjectivity must have been invented by sbrimp.

Campfire

Ezra Veldhuis and Bosse Provoost are currently working on Campfire, an installation-performance for the black box, which will premiere in 2026. ¶ The audience sits on stage around a cluster of lights, an element of the installation known as the Campfire, which hangs about a meter above the floor. Other elements include an arch of lights and light tubes that occasionally illuminate and reveal the technical ceiling. Meanwhile, voices tell stories about human and animal consciousness. ¶

The light and sound are transformed by these stories, just as you sometimes see spaces in your head during a conversation that are very different from the place where you are actually sitting and talking.

Voice 1:

I wonder if animals also find campfires 'cozy'? When I was in northern Canada, I once went outside during a snowstorm. We were staying in a cabin with a bundle of electrical cables running outside, which I followed so as not to lose my way. The wind was blowing at 75 km/h, it was -30°C, and I walked with my back to the wind as much as possible. It was one big white chaos and I could only see a few meters in front of me before everything disappeared. Without that bundle of cables connecting me to the cabin like an umbilical cord, I think I would have been lost immediately. It was the most hostile, disorienting environment I can imagine.

And yet some animals are at home there! So I wondered what sounds and smells an arctic fox picks up that allow it to orient itself? Maybe it found this blizzard a much cozier setting than a campfire?

I think that was the first time I considered that we, as animals or creatures, can share the same environment with each other and yet still inhabit very different worlds.

I read something about it later, and apparently there's a word for it: Umwelt. Every animal has its own kind of Umwelt; we all pick up different kinds of frequencies in our own ways. So even that cricket sitting a meter away from me right now: we share the same environment, but we inhabit completely different worlds.

significant role—beyond psychological effects, the personal performance of our visual system, its sensitivities and weaknesses, is crucial. Our eyes are not our only organs of perception; rather, our brain processes the information gathered by different retinal receptors into conscious visual perception. Still, research has revealed clear signs of specialization, sensitivity, and division of labor among the receptors themselves.

One phenomenon that clearly arises in lighting design is dark and light adaptation.

I was surprised by how poorly my own vision adapted to light in an experiment conducted with students, where light was gradually introduced into a space after complete darkness. My perceptual system still saw nothing when the first students already exclaimed that they could see something. Likewise, they began to distinguish colors in their perception much earlier than I did. This personal experience of visual adaptation served as a good reminder of how aging audiences might perceive the intensity and color of stage lighting.

In perceptual psychology, this concerns the eye's slow transition from full dark vision (scotopic sensitivity) to daylight vision (photopic perception). In dim conditions—between these two states—the eye's rod and cone cells both try to function as best they can (mesopic perception).

In performances, it's also important to consider the time required for perceptual adaptation. Our eyes do not adapt to darkness instantly—it happens in stages. The first phase lasts about 3-4 minutes, during which both types of photoreceptor cells become active. After that, cone cells reach their maximum sensitivity in about 7 minutes, while the rod cells responsible for night vision take approximately 20-40 minutes to fully adapt. Complete dark adaptation, in a fully dark space, takes nearly an hour.

After darkness, the eye's adaptation to light is faster, but a sudden increase in intensity can cause blinding glare. It's understandable, then, that the audience's physical perceptual system often cannot keep up with the changes and durations of lighting in a performance. This can be used intentionally—to surprise or conceal something from the audience. But if the required durations of different types of adaptation and individual differences are not acknowledged, the audience may not be able to see what is intended. Therefore, an audience's

experience of excessive dimness or glare can be genuinely true — not a sign of ignorance or malice. (Arnkil 2021)

Human vision is a complex phenomenon, and research continues to reveal new layers of complexity in the perceptual process. On the retina of the human eye, there are approximately 132 million receptor cells specialized for different tasks, of which 125 million are rod cells that respond to light intensity. Cone cells, specialized in color perception, also respond to light levels. In addition to rods and cones, other types of cells in the eye contribute to light processing—such as bipolar, horizontal, amacrine, and ganglion cells. (Arnkil 2021)

As mentioned earlier, the brain plays a significant role in how the information received by these receptors is processed into conscious perception. A good example of this is the invisibility of the blind spot: the brain fills in the missing visual information with a “guess,” and we don’t notice this gap while reading or watching a performance. The fascinating case studies of American neurologist Oliver Sacks (1985) offer a compelling glimpse into the brain’s remarkable efforts to construct perceptions of external reality—even when our senses or bodies are damaged. The brain adapts, adjusts, and optimizes itself. A research group at the University of Helsinki recently demonstrated that the human visual system is optimized not for detecting individual photons, but for perceiving very faint contrasts. One of the researchers, Dr. Markku Kilpeläinen, summarized the finding: “Our research shows that the human visual system has evolved to detect faint contrasts with extreme precision, which has apparently been more important than detecting individual light particles.” (University of Helsinki, 2024).

Returning to the context of performances, lighting designers often aim to shape performers and set pieces through their focusing choices of light, so that these elements don’t need to be illuminated with full brightness. The viewer may not notice that the performer on stage is not entirely in the light, yet their actions—and even facial expressions—are still conveyed. A set wall with a relief-like surface may not be lit with high intensity, but its texture is still clearly visible.

When a viewer experiences sudden, dazzling brightness, they may not realize that the impression of increased luminosity could be caused by the preceding dim lighting cue, or by intense glare from the stage floor or set directly into their



Coral Aubert Martindale



Joan Woodbury



Lynn Levine Rico



Phyllis Lamhut

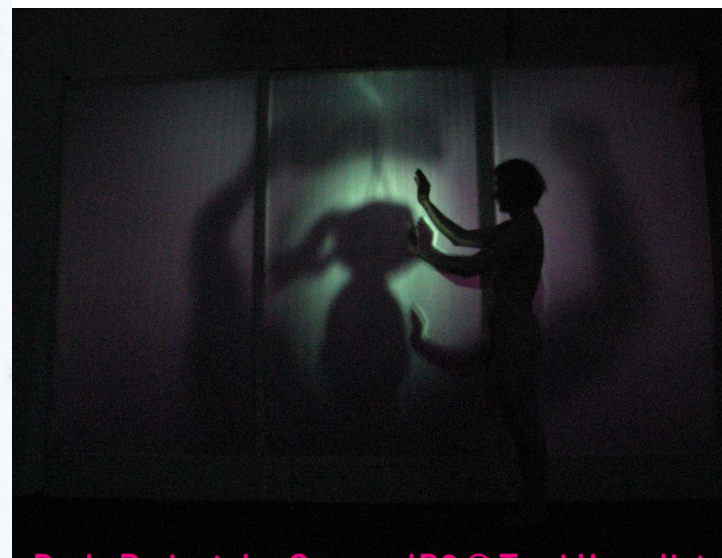


Al Wunder



Jeanette Stoner





Dark_Project_IceCorner_IR2 © Tomi Humalisto





first five years evening out the expenses. In the design concepts of those shows, because of the extensive timeline of it, there are wild innovations, probably ones that Edward Gordon Craig would have dreamt of as a future of his body of work while modulating gaslight on stage with molten panels on wooden frames. This projecting into the future is purely financial based, not dependent on actual fame. Nadia Lauro mentioned a three day staging with Coco Rosie at Centre Pompidou, that was for her rock&roll relative to her usual work timeline, and for the band it was some sort of sustained luxury.





best school for fast negotiation and collaboration skills. He would work with a contact improvisation based group in Vancouver that spun off Peter Bingham, Ahmed Hassan, Kokoro butoh-based company, Lola McGlockland and Jennifer Mascall, all very different people. It was easier to improvise the show than plotting it, he says. The intimate knowledge of the setup, the circumstances was the most important parameter. He literally had a person with a circuit board and him with cables in his lap, and they would be lighting and replotting the show on the fly. Macfarlane mentioned as an example technician who came to study at SFU when he himself retired. He triggers audio and lighting setup through Qlab, and he has intimate knowledge of all the operating system under his fingers. Now when he takes rehearsal notes, he can just correct his cues and run the show. That's like me improvising and putting the capability and adaptability way up! John says. I would not agree with him as I see not many improvising with light, but I do agree that if that toolbox falls on fertile ground, and in the hands of a person with good self-education in artistic collaboration, the possibilities are infinite. This nicely circles back to his method of limiting toolbox use as an educator.

Commercial area

In the interview with Nanni and Caroline we figured, researching the psychology of perception seems like a narrow field. The ambiguity, multidimensionality, and organic nature of visual perception likely contribute to that fact, and it is hard to conduct exact measurements in the field. It is fascinating how little we know about visual perception and how spread and multiple it is, how difficult it is to say something exact. New aspects of its mechanisms are constantly being revealed, and yet, the more we discover, the further away exactness seems to slip. Caroline mentioned from her research it seems 100 years ago we were a lot more sure about what we knew. Using Nanni's words, 'it resists precision! I think that is its very nature'. It would be very interesting for the industry to get exact. Dreaming forward from now, it would be great to have a research group of scientists and artists to engage in a broader exploration of color perception and perception in a broader sense.

At the end of our conversation with John Macfarlane we have been discussing futurism through Nanni's objective- I think in the worst of cases we do not allow any future to happen that we did not previously imagine. As an example for the contrary, John brought up Cirque de Soleil in Vegas, who are presenting a performance for twenty years, the

eyes. Similarly, soft, hazy light diffused throughout the space with the help of theatrical smoke can transform performers and objects into beings that appear and disappear in a strange, endless environment. These experiences typically generate meanings for the viewer. Lighting designers take pride in these manipulations of perceptual experience within a performance.

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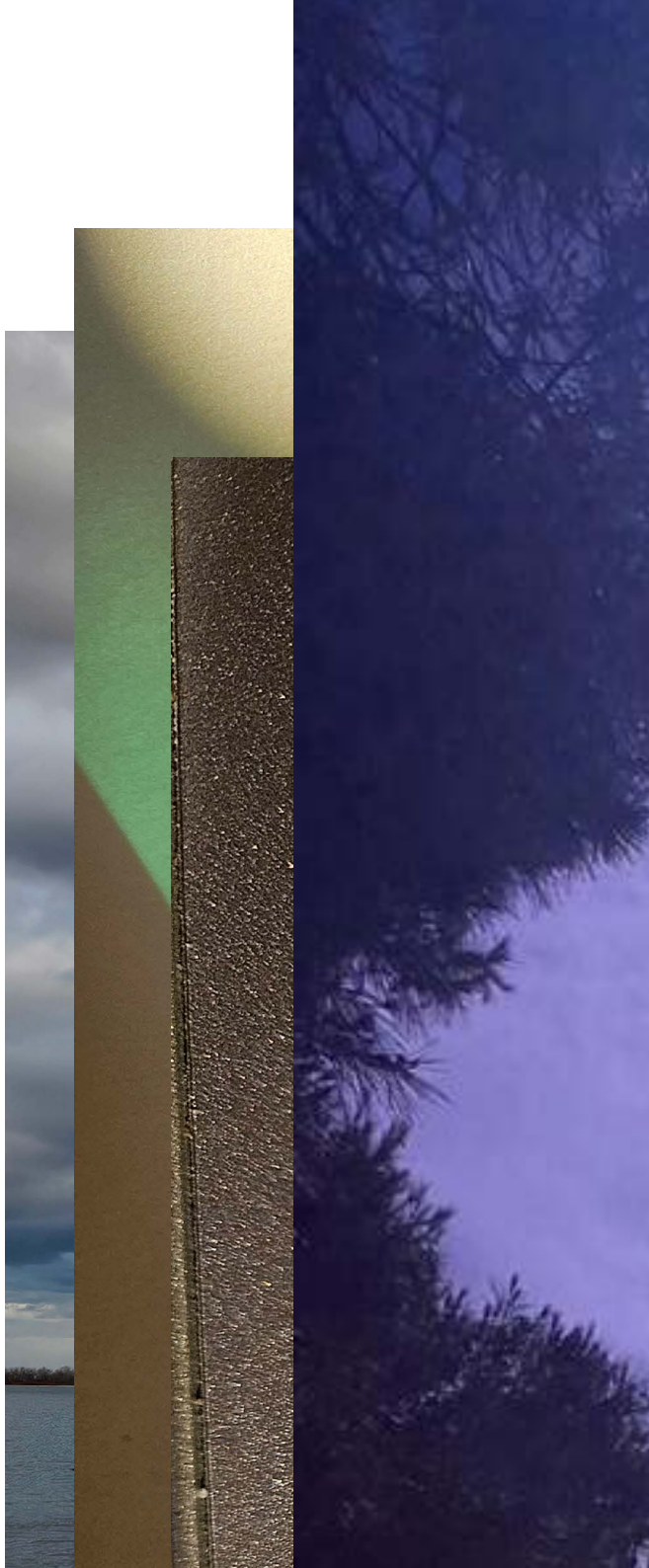
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This text was translated using artificial intelligence and reviewed by the author.





most recently 'Girls won't be Girls') that she finds an important and transformative narrative to be heard. It is her liberty, as she puts it, not to make high art but reward a socially stimulating, progressive work and make functional lighting.

Improvisation

I have witnessed Ellen Knops improvising lights at several occasions, always thinking she is the deer hunter of lighting design, she can do a lot with little and her timing is excellent. As I grew into lighting I had to notice it is really not common for lighting people to be good improvisers. What does a good improvisation do, and what makes a good improviser?

Nadia Lauro talked about working with Meg Stuart on the piece 'Crashlanding'. She talks about it as a brutal but very impactful experience, improvising as a set designer is not on the same timeline as the other artforms. She figured out though through the experience that the objects need to be open, unfinished, incomplete, which became a very important character of her artistry. This is a possibility, a space for the audience to project their own imagination. To see Meg improvising with objects, very free, many scenarios, fiction, was and is fascinating, she adds.. Lauro says through the collaboration she got very much in touch with the time-aspect and therefore the dramaturgical aspect of the performance, which is not very much taught in art school. She also realized how important the relation of the audience of the object is. She says after this she became the visual lady of improvisation, and worked together with Benoit Lachambre and Andrew Harwood on 'Not to know'. She created a total space, visual environment, costume and objects, being there from the beginning. Few objects with a little modus operandi, without her, as a space of potential. Finally her path of interest, of focus we may say is not improvisation, but these experiences gave great currency to her career of installation and stage arts.

To my biggest surprise John Macfarlane was working a lot with improvisation. Giving a more careful listen to him relating to the different technical environments over his career, assessing possibilities on the spot to allocate more rehearsal time and sacrificing something that is not artistic quality are as far as I am concerned all hard skills in improvisation. Also working by three people for Nikolai's work sounds like the



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historically there would also be in Germany.

Let me for a hot second grab a beautiful comment of John to reflect on the compartmentalization resulting in technological and societal changes.

He says about the crew running the resistance dimmers on the side of the stage:

'You might as well have been on stage because we were unconsciously syncing up with the performers in a stronger way than it happens now with many operators and lighting professionals.'

When we talk about societal changes, we cannot miss out on covid and the lockdown of theaters.

Ellen remembers examples of inventiveness and gestures of social sensitivity, and based on what I know of her, it is an important reason why she is laid foot in theater.

One was the theater Carree in Amsterdam. In the time when people were allowed out, they knew they couldn't do their programme because the distance would only allow 350 people. They would invite theaters of 350 seats to play their program in their house. She felt that it was heart-warming. Another was 'Theater Kapsalon'. It was at the end of the lockdown period, everything was open except for hairdressers and theaters. At one point hairdresser salons opened up too. Theaters organized one day, each theater put a barber chair on stage, and a person's hair was being cut while there was a performance taking place. This is how all theaters were turned into a hairdressers salon for one day.

Once she performed with Studio52nd at Podium Mozaiek which used to be a church. Churches were already open. There was a progressive left wing preacher making a beautiful talk about cooperation, and after the performance took place. It was a consequence of three better known theater makers dropping the idea on national television, and it seems like there was a general readiness both on the performance makers and the audience side.

Ellen Knops says she is very happy with the works she has seen in these years at work, and the artistry she could bring to life. Now she feels a bit more relaxed about making a creative equilibrium over a longer scope of time. This allows her to make different choices and priorities, work motivated by other factors than artistic finesse. Her knowledge allows her to find good and simple ways of staging that enhance the meaning of the act. Thanks to her professional routine she can prioritize rehearsal time, and she can make the children staging their stories at Studio52nd shine, and highlight the performance 'Boys won't be Boys' (and



E C S M O R N S A E I

My conversation partners, Ellen Knops, Nadia Lauro, Caroline Mathieu, John Macfarlane and Nanni Vapaavuori spoke with me in support of my attempt to create a wider perceptual space around perception itself, theater work and lighting. Each conversation was uniquely beautiful, but due to limitations of space I made a thematic extract.

The icons, the circumstances of perceiving

Archetypal images are a focal point in the creative and analytical processes of Nadia Lauro, Nanni Vapaavuori, and Caroline Mathieu.

Many decisions in Caroline's PhD research were formulated relative to the state of research in psychology of perception. She questions the influence of specific colors. Mathieu collaborated with a psychologist using neuro-measure tools such as 'empatica' to measure galvanic skin response, distinguishing between participants' states of rest and arousal. She created an artistic environment of homogenous color impact, with participants laying down immersed in light of a specific color.

Red and blue seemed in the first experiment to be equally arousing and green less so, according to measurements. However, the questionnaire filled in by the same participants showed different results, and blue was identified as the most relaxing color. The relationship to each color turns out to be shaped by our understanding which is tainted by personal experiences, and cultural imprints, it feels like there would be much more room to study just that difference. Claire Petitmengin developed an interview-technic called micro-phenomenology which is a special technique to investigate lived past experiences. It focuses on past experiences, because the present one would be influenced by the act of questioning. Caroline integrates the method in her ongoing research, and a way to expand the vocabulary to describe colors.

Nanni Vapaavuori is deeply interested in perception and the pre-conceived pictures or icons as she calls them. Not only on the level of the meaning, but also based on what presumption we may have, we create the images we acknowledge. We focus on things we already know, and we need to be helped out of this orientation, without even being aware of it.

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is literally like looking in a Richard Pilbrow book today.

Lighting design is a dance like dance is. To be able to replay is an astonishing difference.

I am always bemused when other lighting designers talk about how they work, Macfarlane says.

Next to this giant technological leap, a sizable societal transformation took place too. Ellen Knops shared her impression of the fluctuation of time and sentiments over her three decades of working in theater.

'I realize I talk a lot about waves, but there is something about a decade,' she says, and she illustrates her point with a story: 'In the first decade my pregnant colleague had a show in Melkweg Amsterdam. When I asked her how the strike-down went, she said it was awful. When she asked the technician to lift a roll of marley, he said well I thought you were already with two, and he left. That response felt like a woman, especially pregnant, has no place in his team.'

Ten years later, another colleague was pregnant, as some women are, but it did not really show. I told the technical team she is not allowed to lift anything because she is 8,5 months pregnant. They told me they were all assisting their wife's home birthing so her colleague is in expert hands. If anything happens, they can drag the baby out. This was a beautiful big shift.

Ten years later, last year, I feel that people think (also a generational thing) that me still working in this field is absurd, and I should retire. Mainly the technician colleagues but some others too.'

These stories somehow contain the essence of the three decades for her. She doesn't know exactly why it is going downhill, and unsure how to inform this wave, if she can at all.

Tools and methods are shifting among generations, she continues. It became less common to coordinate between technical departments and programming, but it creates friction and loss of quality. This is interestingly mirroring the conversation with John. As the control becomes more compact, the need and necessity to take the technical needs in consideration become a generic management and organization, solely manpower and workflow discussion. I would say it is less holistic.

At the Staschouwburg Amsterdam in 2023 the technical crew went on strike on the premier, that was a last measure. It is a very hard move to make, therefore assumes a fair amount of escalation. This happens a lot in theaters. There are regional differences: in France and Belgium there would be a talk,

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Presuming what we will see is the base of what we will see- this is the concept of focus.

Color is one of the many aspects of perception she observes. With a background in interior architecture, she is interested in spatial perception, and the creation of that with the multiple artforms, and how she as a lighting designer can contribute to that. Factors such as posture, time of the day or year and other peripheral parameters of our perception all play a meaningful role in shaping the final perception.

Nanni inhabited an old tuberculosis sanatorium built in the 30s, remote and lately sold out, giving a possibility for some artistic intervention in-between. She wanted time and space to work with natural light, opening her observatory and representation of natural light to the public over two nights in midsummer. In Finland there is no darkness this time of the year. She was working at nights for a month, circulating with the sun, observing the variables of perception- the night, tiredness, the building complimenting horizontal placement. She allowed herself to stay on the border of conscious and unconscious, experimenting with objects changing perception, for example with a beeswax mask, always inviting guests to observe alongside her. She found in discussion there was a big heterogeny of experiences, and without question hence presumption, more genuine impressions came up and opened perspectives. Discussing the different experiences created a big space for the individual impressions and a verbal negotiation around sensations we are seldom invited to talk about.

Napping as a calling upon creative ideas is a practice Nadia Lauro learned herself, to get her out of the fixation of responding, and welcoming ideas. This practice allows her to be confident with the pondering on the indirect, and she can call this state in rehearsals too. One work of hers, the Limo from Consul & Meshie with Antonia Baehr and Latifa Laabissi, was popping up through this practice very early in the process. In other works it can be different and will in the end suit the needs of each collaboration.

The work is not the translation of the words, she states. 'The work, the material, has an autonomy outside the words. I give a title to the space, that is another name than the one of the piece. I name things so I own it, it is not a translation of the idea. When I have an idea, I use my tools to communicate it in images. This depends on the needs: Of mine to understand it or the others whom I work with. It can be drawing, 3d, or prototype. I invite collaborators to the atelier, so they see the landscape emerge, get in relation with the materiality.

By prototyping in the studio, space and dancers can get to know each other better. They can inspire one another. This results in



partnership through the process.'

'Autonomy is a consequence not an input'

Continues Lauro.

She likes to go to the first rehearsals, to discuss broadly. Her participation has an overall dramaturgical significance. She works with societal issues and in a collaborative way, enjoying when discussion emerges in the process, collective observation takes place. She talks about Yves Godin as an exceptional collaborator, Listening to the project, having a strong visual voice, relating on the conceptual level, good artistic exchange, autonomy in listening to the global work. She adds Letitia S kyrky is a very good collaborator with comparable qualities.

Lauro's goal is to emancipate the audience's gaze, she keeps her awareness around the personal viewpoint from conceiving her ideas- not to trap the gaze in a direction and objective. This is, for her, a political objective.

John Macfarlane came to the same conclusion about autonomy, and integrity following another path. His career working as a technical director, freelance lighting designer, and later as a professor at SFU in Vancouver spans over 50 years. He has grown into the work starting from preparing University lectures as a teenager, that gradually expanded through working as an audiovisual technician aside his studies at Pennsylvania University where the innovative performance groups of music, dance and theater at the time would perform. The same gradual process took him to New York to build a technical workshop for a former church that turned into a private sponsored performing arts venue in Garment District. There he worked with resident companies, Such as Joseph Chaikin's Open Theatre, Nikolais-Louis dance company that was cutting edge into contemporary, and Multi-gravitational, the first group to move in harnesses and ropes and members of Seminal Jazz.

After he travelled as a technical director over a year and over the world with Alwin Nikolais group.

His gradual expansion of understanding the needs of complex multimedia performances made him unique in his expertise in Vancouver. As a teacher he recognized how his knowledge was informed by the meticulous technical communication in this big shift of technical equipment and their use. He mentioned his colleagues in the artworld who write software to accommodate

tall one moving levers on the top, and they literally mechanically connecting and disconnecting dimmers to get mastering, and things like that. Every place you went to had a different system. When I came back to Vancouver and ended up at SFU with a bizarre strand board, with a 3-scene preset, and dimming components pre-dating solid state components. It was called a Saturable reactor dimmer (when you dim down, you go to blackout by switching off the circuits, roll down whatever master you've been working on, but if you flipped up the blackout switch too quickly, all lights went on because it hadn't finished the cycle of dimming the dimmers. And you couldn't transfer a cue from one scene to the other because they weren't equivalent.) These systems had no digital feedback, none of those things.' This was 7-8 years from the Portland company. There was a high failure rate, dimmer units would keep failing.

And these have strong implications from a point of view of a lighting designer, which are more obviously concluded by studying the history of lighting design than living it.

'There is an enormous design difference having those damn units on both sides 15 feet off stage, and people talking about what they are doing, and your dreams as a designer have to meet the real world, what is physically possible.

In the Nikolais shows we were running 16 carousel projectors, he imagined the design as a moving continuum, and we run this by punching buttons on a little custom-built slide controller, and we are years away from 3-projector systems when they're running on triples where one loaded ready to go, one is changing and one is operating.

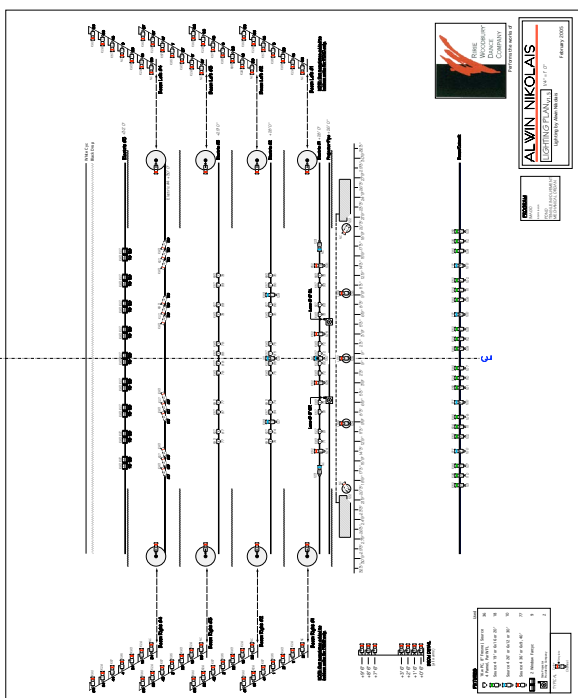
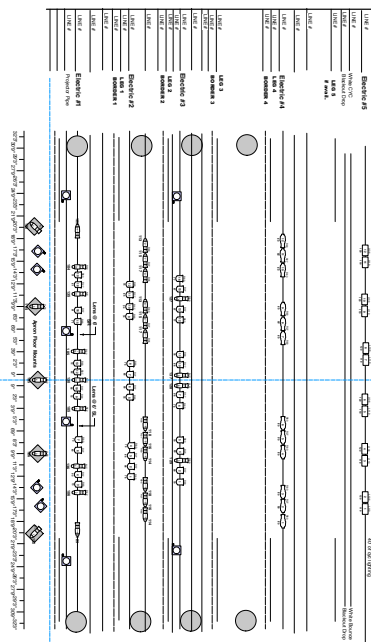
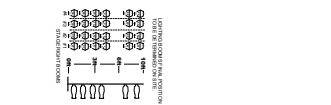
People would come backstage and say: we would like to see your computers- and we would just bow our heads.'

In the meantime George the stage manager got the cues in a binder and every sheet had a plastic wrapper around and he had a grease pencil and he was making his best guess at what percentage everything was going to be, and Nikolais was making adjustments to level to the space.

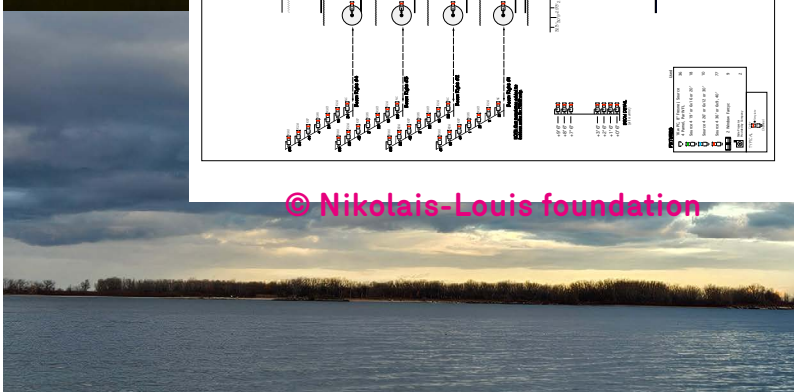
It is not like you just casually say- can we go back to cues? And that is a crucial difference.

'In order to revisit cues one has to run the manuals up to that point that are built on that preset before I switch to the next preset, and 'is it worth it to see it?' becomes a very important time management question.

With memory boards came a world of difference. On the level of design prep, after you got that plot hand drawn, now you have hours of work to put together your charts and hanging positions and so, before any of these visualisation softwares and softwares that implicate the fixture's attributes, like MacLux come along. It



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their needs, or artful users who bring their examination of reality to the virtual platforms. In all these cases previous experience informs the sophistication of their choices. That also means that the multiple capabilities of software are invested when over time a hardware or their real life effects are studied with creative intention.

This observation fully compliments the research of Nanni Vapaavuori and touches upon the one of Caroline Mathieu- our focus, our view is refined by our examination of reality. In this examination we conclude facts that bias or hijack our vision, we will see or not see a possibility or a phenomena based on our previous experience. Hence educational comparisons could be made of solely virtual and reality-based study environments regarding their creative potential.

Macfarlane was brought to reflect on his previous observations on this change of eras from the viewpoint of a teacher: Students are first restricted from using color changing instruments, to learn how to do that without touching a color diagram on a screen. By working with gels, they can understand the effect and work with it in a more sophisticated way. Without forcing oneself not to rely on those aids, one gets messed up. And to see that phenomena from another angle, John also mentioned his observation of lighting design he appreciates: In the design work of people I really admire, he says, there is nothing there that I don't know why it is there. It stays consequently relevant, the light piece integrated with the whole. To create awareness of that mentality, I always ask students when they are asking for certain equipment how it is justified, and keep the playing with an instrument outside of productional involvement, he says.

Time in multiple ways

Macfarlane generously described the reality of the equipment change in lighting from the 60-s into the 2000s. 'In Portland we had a tiny lighting board, and there was a company called Electronics diversified which was right at the beginning of solid state dimming systems. I met the principal technician of this company on Salt spring island a couple of years ago, and he talked about how they were modifying them on the fly with designers and tech people who were asking for different functions. Meanwhile, still in operation within a few years, I'm working touring to theaters where you literally had two guys running resistance dimmers on the side of the stage talking to each other. One short guy moving levers on the bottom and one

