The Art of Removing the Superfluous

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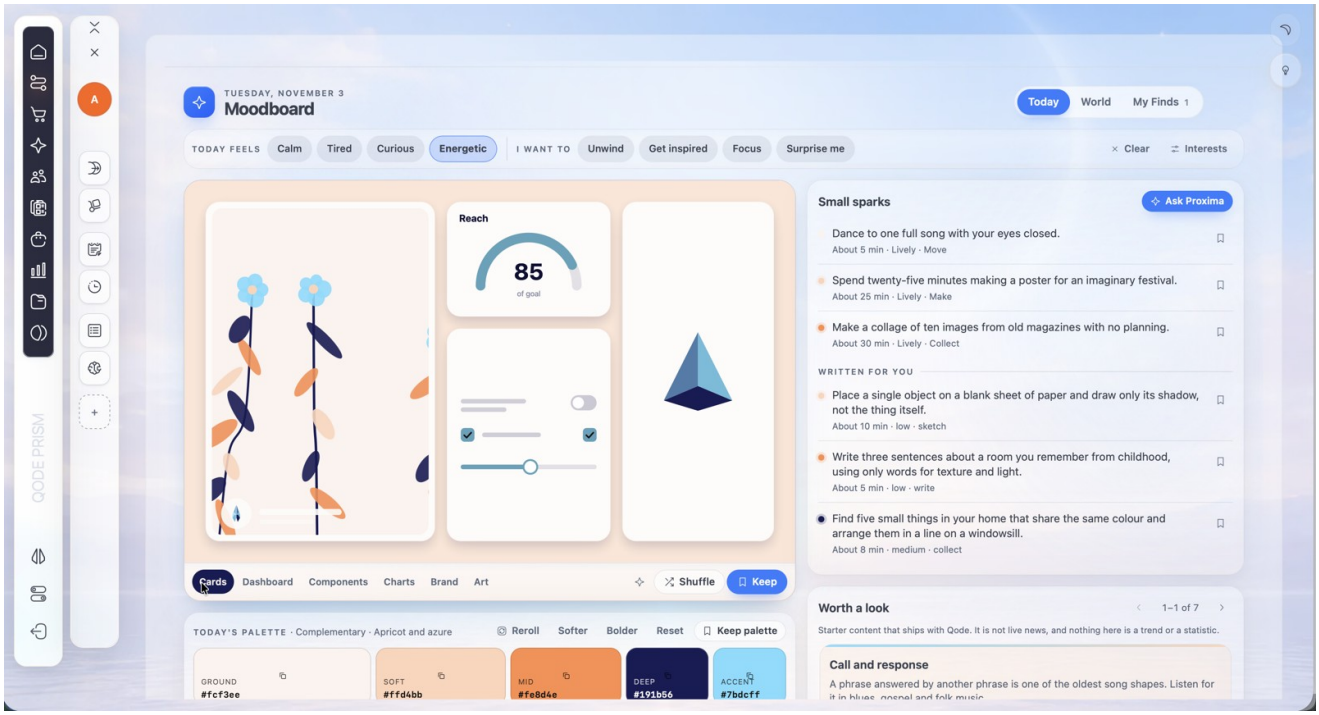
Why can a few colored circles sometimes tell us more about design than a magnificent photograph? The story of a working technique that, twenty years later, turned into a research hypothesis and found its place in Qode Prism.



Imagine a beautiful interface. Precise proportions, harmonious colors, meticulous typography, perfect spacing. Now imagine that instead of magnificent photographs and expensive illustrations, it contains strange little houses, crooked flowers, and scattered geometric shapes.

Pictures that seem like they could have been drawn by a child.

Not the most convincing beginning for a story about good design, right?

But I've been occupied with one question for quite some time: what exactly makes a visual composition beautiful? The objects themselves that are in it, or the relationships between them? And can we evaluate the quality of design if we deliberately deprive it of attractive content?

We're accustomed to perceiving beauty as a property of the depicted things. A magnificent seascape makes a travel agency website more attractive. A professional photograph adorns a catalog. An impressive render creates the feeling of an expensive product even before a person has figured out what they're actually being offered.

All of this works. But there's an interesting trap here: sometimes we admire not the design, but the photograph that the designer successfully placed in it.

I call the reverse approach **Semantic Subtraction.** This is our working name for the method, not an attempt to pass off our own observation as a new scientific theory.

Its essence is to deliberately reduce the semantic richness of an image so that color, shape, proportions, rhythm, and spatial relationships come to the foreground. In other words, remove part of what the image tells us about, and see what remains of its visual organization.

> *Sometimes, to see the beauty of a composition, you first need to remove the beautiful things from it.*

I arrived at this conclusion quite some time ago, although initially it had nothing to do with cognitive science. The question was much more prosaic: how to finish work faster and not go mad in the process.

I've been passionate about drawing since childhood. I attended art school, studied painting, graphics, sculpture. In Russia, art school is usually supplementary education, not an art institute. But it provides a wonderful opportunity to understand theory and work with your hands for hours, studying form, light, volume, perspective, and material.

I loved that feeling when you start with a completely shapeless lump of clay, and a few hours later a quite recognizable object emerges before you. Or when the first lines appear on a clean sheet of paper and you suddenly realize that the image already exists—only in your head for now, but completely distinctly.

I began professionally working in design much later, around 2006, while still a student. I worked part-time as a designer, dealt with IT, created illustrations for books, logos, websites, and corporate identity elements. My university education developed in other directions, and over time marketing was added to design. By the late 2000s, these two areas had become so intertwined in my work that separating them became rather pointless.

At that time, the internet was not yet an endless warehouse of ready-made visual content. Images, of course, existed, but finding a suitable, high-quality one suitable for commercial use sometimes turned out to be a separate adventure. Especially if you're only developing a concept and don't even know what exactly you'll end up needing.

So I came up with a rather primitive way not to waste time on this.

I simply drew rectangles, circles, triangles, lines, and colored spots.

A large gray rectangle here. A couple of blue circles there. A long horizontal strip, a bit of free space, another accent.

And meanwhile, my imagination was already filling in completely different things: mountain landscapes, lively bars, European city streets, beautiful architecture, interiors, sun-drenched terraces.



I understood perfectly well what should be in place of each figure. I could see the future composition and evaluate it even before the actual images appeared.

Funnily enough, this turned out to be a real relief. I no longer needed to interrupt my work and search for a photograph to make a simple decision about element placement.

The content appeared later.

At some point, I noticed that such layouts sometimes looked surprisingly good on their own. No expensive photographs, no complex illustrations—just a few coloured shapes. But once you got the proportions, distances and contrast right, there emerged a sense of complete composition.

This wasn't some great artistic discovery. Designers had been doing similar things long before I was born. However, for me it became an important part of my workflow and gradually influenced my own visual signature.

I liked the simplicity. Especially when a well-thought-out system was hidden behind it.

Around 2016, Vova and I founded **PCH** (which we would later transform into **AirQode**). And, contrary to what the name might suggest, we didn't start with digital technology at all.

Our first products were household chemicals and cosmetics from Asia. Real physical goods, with suppliers, packaging, labels, logistics and a huge amount of boring but necessary work. We also made websites—initially mainly for ourselves, sometimes taking small outsourcing orders. We moved completely into the digital sphere a bit later.

At one point I was managing a product matrix of approximately **five hundred items**.

Five hundred products, each requiring a label, an online shop card, a catalogue, promotional materials. And all of this had to be not just attractive, but coordinated with each other.

This is where my old circles came in handy again. We could develop visual concepts quite quickly, test them with simple shapes and extend successful solutions to entire product groups.

Working with Vova added a strong practical component to design thinking. We could discuss at length how beautiful the next label was, but if each new item required reinventing the entire system, it was a poor approach. Even if the result looked magnificent.

Since then, I've been increasingly interested not in individual objects, but in patterns that allow multiple objects to exist coherently.

In 2017, I seriously immersed myself in UI/UX, and with it—in research on human perception. At some point it became clear that knowledge of composition, typography and interface patterns alone wasn't enough for me.

Why does one interface seem understandable almost instantly, whilst another has to be studied? Why are some visual solutions pleasant, even though there's nothing particularly beautiful about them? What happens to a person's attention when too much information appears before them simultaneously?

At the same time, I was becoming increasingly interested in psychology in general. This coincided with quite a difficult period in my life, when interest in the workings of human consciousness ceased to be purely professional.

I wanted to understand why we sometimes lose the ability to concentrate, why interesting work suddenly stops bringing pleasure, why ideas arise at the most unexpected moments. And how much our thinking depends on the environment we create around ourselves.

One of the books that had a huge influence on me was "Flow" by Mihaly Csikszentmihalyi.

I liked that he viewed engagement not as heroic self-overcoming, but as a special state arising under certain conditions. A clear goal, feedback, matching task complexity to a person's capabilities—all of this affects the likelihood that we'll be able to immerse ourselves deeply in an activity.

And I remembered my own prototypes.

When I needed to design a website, but instead spent hours searching for suitable photographs, I was essentially doing a different task. Sometimes necessary, but far from the most important at the current stage. Circles and rectangles allowed me to remove this obstacle and continue working on the concept itself.

Of course, the absence of a beautiful picture doesn't guarantee a flow state. And in general, "Flow" isn't a guide to selecting photographs for websites. But the book made me think about how much completely unnecessary effort we expend before even getting to the main thing.

> *In one case we create conditions for deep concentration. In another—we allow thought to move more freely between associations. A good environment should leave a person the possibility for both.*

Later I came across many studies that helped me formulate these observations more precisely.

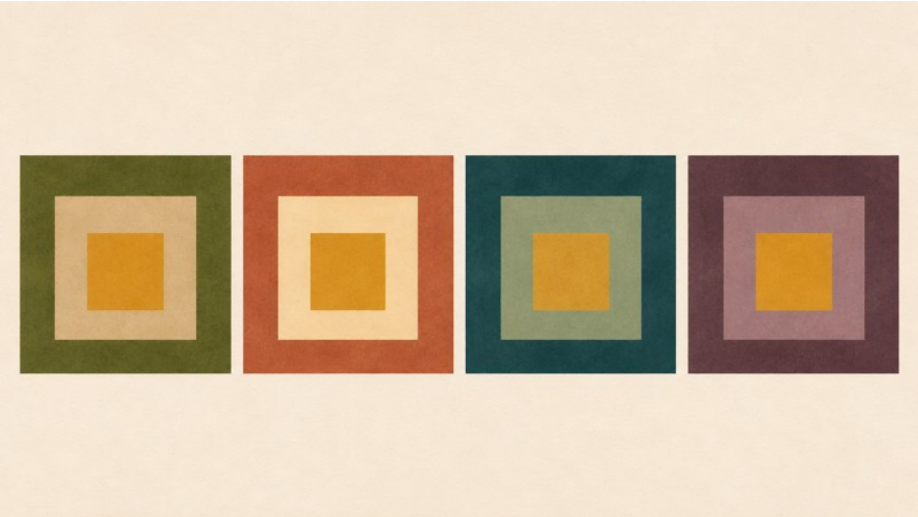
For example, in 2004 Rolf Reber, Norbert Schwarz and Piotr Winkielman published the paper Processing Fluency and Aesthetic Pleasure. They proposed considering aesthetic pleasure in part through the ease of processing the perceived object — *processing fluency.*

Symmetry, repetition, contrast, recognisability, structural regularity can influence how easily our brain perceives an image. And ease of processing, in turn, can contribute to positive aesthetic evaluation.

Of course, this doesn't mean that everything symmetrical is necessarily beautiful, and everything complex is ugly. Art is full of wonderful exceptions. But I was interested in the idea itself: beauty is partially connected to how we perceive an object, not only to its objective properties.

Another important clue I found in the legacy of Josef Albers, artist and Bauhaus instructor. His book *Interaction of Color,* first published in 1963, is devoted to the relativity of colour perception.

Albers used surprisingly simple geometric forms to show how one colour changes our perception of another. In his famous series *Homage to the Square* squares become practically a laboratory of colour field interaction.



Imagine that you can work with a single geometric formula for decades and continue discovering new relationships within it.

What fascinates me about this is not so much the minimalism as the discipline of investigation.

When the form itself is simple enough, it becomes easier to notice what the experiment was set up for in the first place.

In 2011, Karen Schloss and Stephen Palmer published a study on aesthetic responses to color combinations. They showed that evaluating the harmony of a color pair and the attractiveness of one color against another are not the same thing.

This is familiar to any designer in practice. Some coral color might be a beautiful accent on a dark blue background and be perceived completely differently on light lavender. And it's not that one of these colors suddenly became bad.

The relationships changed.

Perhaps this word best describes what I've been trying to capture in my prototypes for so many years.

We don't simply perceive things. We perceive relationships between them.

But then another question arises: what happens when the things themselves begin to demand our attention too insistently?

In 2017, John Henderson and Taylor Hayes published a study in *Nature Human Behaviour*: Meaning-based guidance of attention in scenes as revealed by meaning maps.

They studied how the semantic significance of individual areas of an image affects eye movements. The results showed that human attention in natural scenes is closely linked to their semantic content—often more strongly than can be explained by brightness, contrast, and other low-level visual characteristics alone.

This is an important distinction.

A person looks at a photograph not only because certain areas of the image are brighter than others. They try to understand what's happening, recognize objects, search for significant details.

A photograph of a beautiful bar can evoke memories of travels, meetings with friends, a favorite city. This is wonderful if we want to evoke emotion or tell a story. But if our goal is to study the arrangement of elements in a layout, all this becomes additional content that can compete for attention.

I'm not claiming that Henderson and Hayes's study proves the effectiveness of my circles. It's devoted to a different experimental task altogether.

But it helped formulate an interesting hypothesis.

If the meaning of an image participates in the distribution of attention, perhaps temporarily reducing its semantic saturation would allow better study of other properties of the visual system.

And so what we now call semantic subtraction gradually took shape.

In the psychology of learning, there's another term I particularly like—*seductive details*.

These are interesting, attractive, but non-essential elements of educational material. They can embellish an explanation without helping to understand its content.

In 1998, Shannon Harp and Richard Mayer conducted four experiments with 357 students. Students who received materials with such details performed worse in the studied conditions at remembering main ideas and completing tasks requiring application of knowledge.

I like that this study challenges a fairly popular design belief: if we make material more interesting, it will automatically become more useful.

Not necessarily.

Sometimes the interesting interferes with the important.

This isn't a reason to throw illustrations out of textbooks or photographs out of interfaces. It's a reason to be more attentive to what task each element performs.

Around the same period of my life, Vova and I began seriously thinking about how to apply similar principles to business processes.

Around 2020, we developed the concept of **IMEC—Improve, Model, Execute, Control.**

We needed a simple framework, understandable to managers, that would help transition established client teams to new ways of working.

The task was challenging. People were accustomed to existing processes, even if they had long ceased to be effective. And new technology by itself doesn't convince a person to change habits. You can buy magnificent software and continue working exactly as poorly as before, only for much more money.

We wanted to offer a different approach.

And perhaps it's here that our character—Vova's and mine—manifested most vividly.

Because the IMEC philosophy turned out rather rebellious.

We mixed Stoicism, going back to Zeno of Citium, Japanese kaizen, Zen philosophy, and cyberpunk.

Yes, cyberpunk.

The result was a quite practical management method with somewhat unexpected philosophical relatives.

From Stoicism we were interested in the discipline of judgment and responsibility for one's own actions. From kaizen—continuous improvement, where changes become part of daily work rather than a grand event once every five years. From Zen—attention to what's happening, the ability to notice the superfluous and not complicate what can remain simple.

Cyberpunk added audacity to this mixture, without which it probably would have been too academic.

We saw technology neither as humanity's savior nor its inevitable destroyer. We were interested in how technology changes the capabilities of people and entire organizations, redistributes influence, creates new modes of interaction.

> *Technology doesn't have to be good or evil. It becomes an extension of human capabilities, and the consequences of its use depend on goals, power, constraints, and responsibility.*



It turned out to be a somewhat streetwise, at times even brash philosophy: ancient worldviews, Eastern practices, industrial pragmatism, and technological futurism.

But we didn't need to create yet another beautiful corporate ideology. IMEC had to help make decisions and improve real processes.

And here another similarity with design was discovered.

It's impossible to meaningfully improve a system without first understanding how it's built. And to see its structure, you often need to temporarily step away from the details it's overloaded with.

This doesn't mean details aren't important.

It's just that everything has its time.

Several years later, this principle turned out to be very close to the philosophy of Qode Prism.

When we began developing Prism, I felt less and less like creating yet another product existing solely for productivity. Another system that reminds a person about unfinished tasks, measures their efficiency, and demands constant activity.

After all, a person doesn't consist of work processes.

Sometimes we're focused. Sometimes we're tired. Sometimes we seek inspiration, and sometimes we just want to preserve a strange thought that came to mind over breakfast.

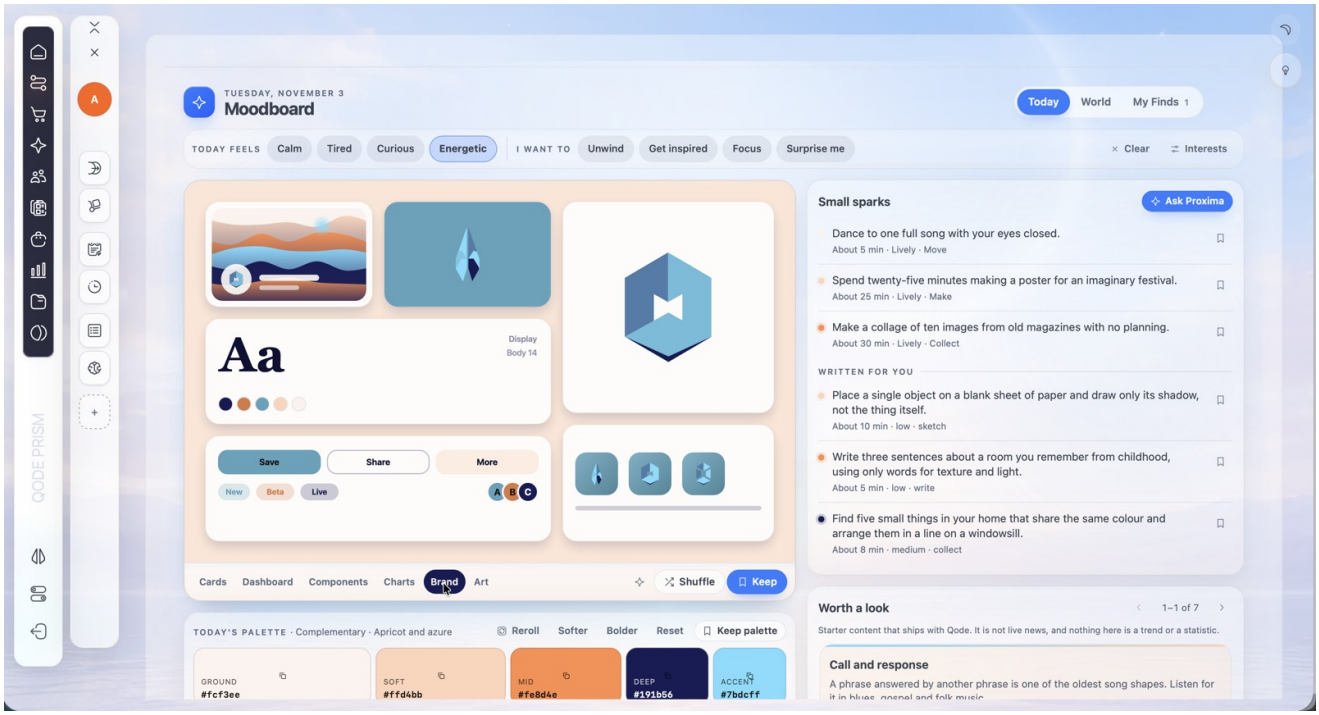
It always seemed a bit unfair to me that modern digital products can account for almost everything except how much a person actually wants to interact with them.

Artificial intelligence, of course, opened up enormous possibilities here. But along with it came the tempting prospect of filling every free centimetre of screen with new content.

Another recommendation. Another card. Another notification. Another perfectly generated image.

And then we wonder why a person is tired, even though they seemingly didn't do anything particularly difficult.

This is how the idea of **Moodboard** emerged—one of the elements of our cognitive triad in Qode Prism.



We conceived it as a small space for attention, inspiration, and visual exploration. A place you can look into without the obligation to immediately turn what you see into a task, project, or commercial result.

Choose a mood. Find an interesting palette. Get a small creative prompt. Save a discovery you'll want to return to.

And here my old circles came back into play.

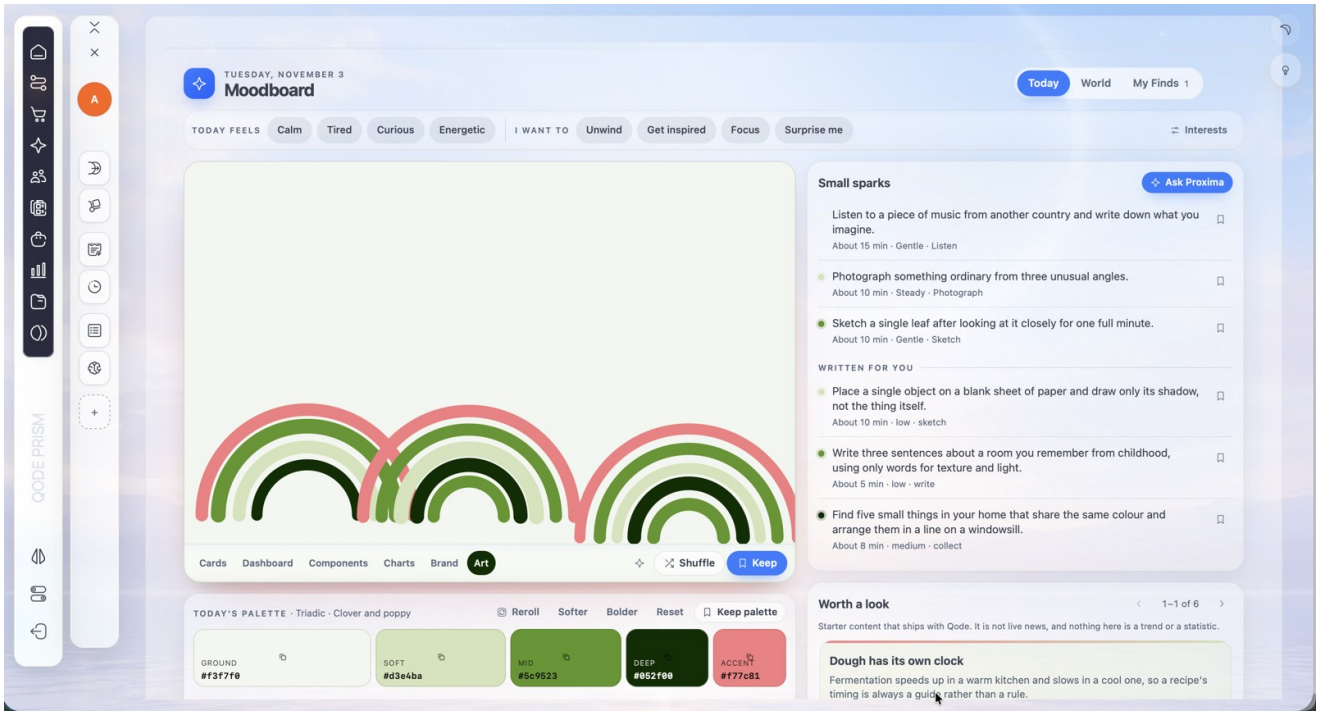
Only now they became part of a procedural composition generator.

Moodboard uses geometric shapes, colour patches, simple decorative elements, abstract interface blocks. Images are often deliberately primitive: little houses, flowers, stripes, unclear geometric constructions.

Individually, they don't claim to be works of art. Some look frankly absurd.

But try placing the same elements in different visual systems.

On a light background they might look soft and calm. On dark blue—sharp and expressive. In a strict grid of cards—technological. In a composition of brand materials—like quite convincing brand identity.



What changes is not so much the content as the way it's organised.

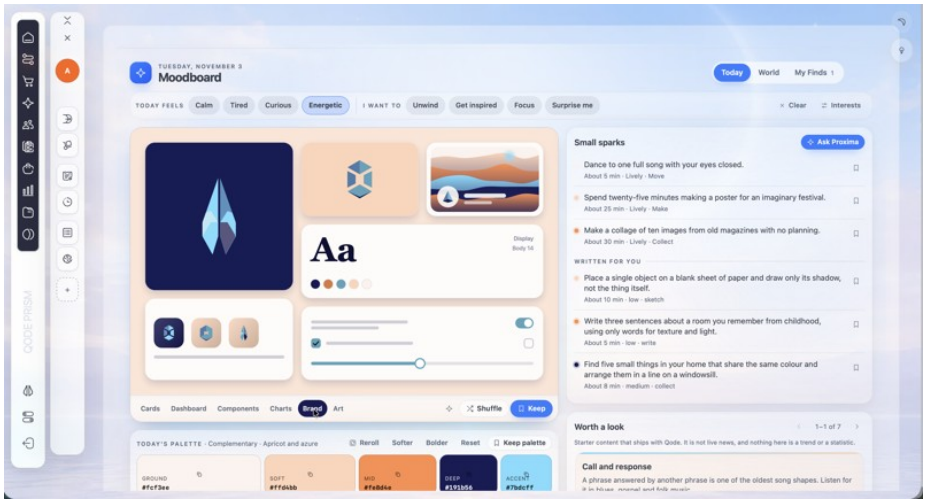
And that's exactly what I wanted to show.

In 2024, researchers from Nanjing Forestry University published the work [The Effects of Layout Order on Interface Complexity: An Eye-Tracking Study for Dashboard Design.]

They studied how the orderliness of element placement affects perception of interface complexity and visual search efficiency. To do this, researchers simplified real dashboard interfaces, created experimental variants, and tracked participants' eye movements.

The results showed that more organised layout can mitigate the negative impact of visual complexity. Moreover, what mattered was not only the number of objects but also their mutual placement.

This is a particularly interesting work for us. The researchers applied abstraction to study interface structure rather than get distracted by random features of its content.



Of course, it would be dishonest to claim that science has now proven the benefit of our Moodboard specifically. We haven't yet conducted our own controlled experiments that would allow us to draw such a conclusion.

But the scientific foundation gives us quite reasonable questions that are interesting to seek answers to.

Will users better notice colour relationships if we remove representational images from the composition? Which structures are perceived as more harmonious? How does visual search change with the same number of elements but different proportions and placement? Is it possible to create algorithms that help explore composition rather than simply generate another pretty picture?

We can already answer some questions with computational methods. Others will require user experiments, measurements, and statistics.

And this truly excites me.

Much more than the opportunity to write on the homepage that our algorithms are "based on neuroscience".

Speaking of neuroscience.

There's one thing I truly hate: when the word "science" is used as decorative wrapping on a marketing product.

Especially now, when a huge number of pseudo-nutritionists have discovered a new trendy label—"biohacker."

Just yesterday, a person was selling dubious nutrition advice, and today they're already optimising mitochondria, managing neurotransmitters, and promising to unlock the body's cognitive potential.

It sounds considerably more impressive.

Though sometimes it resembles an attempt to cover dog shit with a beautiful Christmas napkin and declare it a festive dessert.

The napkin, of course, might be magnificent.

But the contents won't change because of it.

I'm particularly amused by magnesium, which some biohackers manage to sell as practically a nutritional supplement for intelligence.

I have nothing against magnesium. It's an important mineral involved in energy metabolism, muscle function, the nervous system, and many other physiological processes. Magnesium deficiency can indeed cause problems, and its correction is sometimes necessary.

But between "necessary for normal body function" and "makes you smarter" lies quite a large distance.

In 2024, Advances in Nutrition published a systematic review and meta-analysis of studies on magnesium and adult cognitive health. The authors found only three suitable randomised clinical

trials on supplements and concluded that the available data is insufficient for confident conclusions about their effect on cognitive abilities.

This doesn't make magnesium useless.

It makes promises that research hasn't yet confirmed unfounded.

If a person isn't used to thinking, a jar of magnesium is unlikely to do this work for them. And if thanks to advertising they also come to believe in their own intellectual exceptionalism, the situation might become even more amusing.

I'm not against biohacking as an attempt to rationally study one's own physiology. I'm against trading science-like promises disguised as science.

That's precisely why we're not going to claim that Qode Prism treats depression, restores neural connections, or turns a person into a genius thanks to a correctly chosen shade of blue.

We want to explore how the digital environment can help attention, creativity, and working with information. Where possible—relying on verifiable mechanisms. Where data is insufficient, we should say so.

I think this is far more honest than endlessly decorating a product with scientific terms.

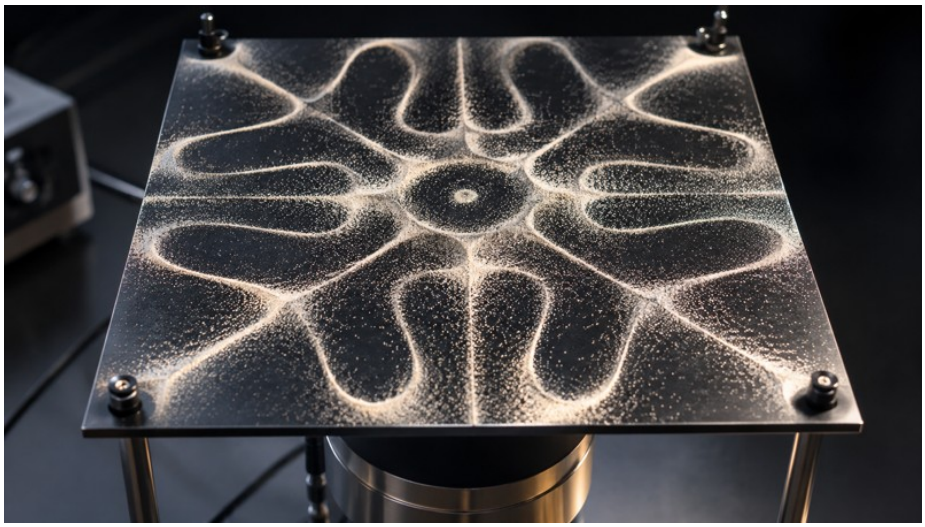
However, I have another favourite illustration of why sometimes the absence of something can tell us no less than its presence.

These are Chladni figures.

In the classic experiment, sand is sprinkled onto a thin metal plate and the plate is made to vibrate. At certain frequencies, standing waves arise, and the sand grains gradually collect along nodal lines where vibrations are minimal.

And before your eyes, a beautiful geometric pattern appears.

The frequency changes—the configuration changes. Some lines disappear, others emerge, symmetrical patterns form, sometimes remarkably complex.



The physical explanation of this phenomenon is well known, and the experiment is still used in university acoustics demonstrations.

But I'm particularly drawn to one detail in it.

We see sand collected along nodal lines. However, we perceive the entire structure thanks to the relationships between filled and empty areas of the plate.

Where there's no sand, there isn't necessarily an absence of information. In this case, empty areas also help us understand the pattern of vibrations.

For me, this is a beautiful metaphor for design. Of course, the physics of standing waves isn't proof of a psychological theory of composition. But the analogy turns out almost sculptural.

When you work with volume, you quickly understand that the space around an object is no less important than the object itself. It helps you see form, sets scale, determines how light interacts with surface.

It's the same in graphics. A pause between elements can be more expressive than an additional line. Sometimes you need to remove one object for the entire composition to finally find balance.

In Gestalt psychology, the relationships between figure and ground have been studied for over a century. The classic Rubin vase illusion shows how the same image can be perceived now as a vase, now as two human profiles.

The image doesn't change. The organisation of our perception changes.

And after so many years of working with visual forms, I'm increasingly convinced that emptiness isn't simply a place the designer hasn't yet managed to fill.

> *Empty space doesn't have to be a flaw. Sometimes it's precisely thanks to it that other elements acquire form and meaning.*

Today we have technologies that allow us to create images, texts, music, videos, entire interfaces almost instantly. Artificial intelligence has made content production amazingly accessible.

And I consider this an incredible achievement.

But at the same time, we've found ourselves in a rather strange situation: adding something has become so easy that the necessity of adding it has almost stopped being discussed.

Why should there be an illustration here? Because we can generate one.

Why should the user see yet another recommendation? Because the algorithm can pick one.

Why can't we leave a bit of white space? Because it looks unfilled.

This logic doesn't work for me.

I want our products to be smart enough not only to offer more, but also to understand when it's better to offer nothing.

So that the system doesn't confuse human attention with a resource that must be continuously captured.

So that there remains room in it for chance discoveries, one's own thoughts, and simple human curiosity.

That's exactly why I don't want to turn Moodboard into yet another infinite inspiration feed, where immediately after each beautiful picture appears the next one.

I'm more interested in a small space that can be interacted with meaningfully. Where you can experiment with colour, save an idea, get a bit distracted, or return to something important.

Can such an approach improve users' subjective experience? Probably, under certain conditions. Can we prove it? We'll see. First we need to conduct good research and not try to fit the results to our own expectations.

This, by the way, has something very close to our old IMEC philosophy.

Observe, look for patterns, create models, test them and improve.

Without worshipping technology. Without magic. And, if possible, without corporate shamanism.

If the experiment shows that the idea doesn't work, then we'll have to reconsider it. And that's completely normal.

I've been working in design, marketing and technology long enough to understand: the most dangerous thing that can happen to a good idea is when its author stops allowing for the possibility of their own mistake.

And semantic subtraction for now remains both our design method and research hypothesis.

Perhaps it will help better understand composition. Perhaps over time we'll discover other interesting effects. Or perhaps it will turn out that some types of abstraction help a person concentrate, while others only irritate.

I like that there's still something to explore here.

And that it's not at all necessary to start with something grandiose.

Sometimes a few coloured shapes, a bit of white space, and the desire to understand why one composition seems convincing and another doesn't are enough.

There's probably some irony in this.

Once I drew circles because I didn't want to waste time searching for photographs. Now we have artificial intelligence capable of creating virtually any images, and I'm drawing circles again.

Only now quite deliberately.

And if I had to formulate the main conclusion of twenty years working with design, marketing and technology, it would turn out to be quite simple.

> *Good design is not the art of adding beautiful things. It's the art of understanding what is truly necessary.*

At Qode Prism we want to continue exploring this idea. Not for the sake of yet another spectacular interface and certainly not for the sake of being able to stick the beautiful word "neuroscience" on the product.

We're interested in the person in front of the screen. Their attention, curiosity, ability to learn, invent, doubt and find something unexpected in ordinary things.

Once I could have chosen the path of an artist, pursuing sculpture, painting and graphics. Instead, life led me into business, marketing, engineering systems and digital technology.

But the longer I do all this, the more clearly I notice that there's much more in common between these worlds than it seems.

After all, the artist, engineer and researcher are trying to do roughly the same thing: notice a pattern, give it an understandable form, and allow others to see what previously existed only in imagination.

And if for this it's sometimes necessary to draw a completely absurd little house — why not?

I can draw things significantly more complex.

I just now understand well that it's not always necessary

Qode Prism — a space for work, life, creativity and exploring ideas.

Semantic Subtraction — our working name for an approach to visual design based on deliberately reducing the semantic density of an image. Its theoretical foundations are connected to research on attention, visual perception, cognitive load and aesthetic evaluation. The effectiveness of the specific implementation in Qode Prism remains subject to further verification.