



TransVision: Exploring the States of the Visual Field in the Age of Extreme Augmentation

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TransVision: Exploring the State of the Visual Field in the Age of Extreme Augmentation

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Abstract

Human perception has long been influenced by technological breakthroughs. An intimate mediation of technology lies in between our direct perceptions and the environment we perceive. Through three extreme ideal types of perceptual machines, this project defamiliarizes and questions the habitual ways in which we interpret, operate, and understand the visual world intervened by digital media. The three machines create: Hyper-sensitive vision – a speculation on social media’s amplification effect and our filtered communication landscape. Hyper-focused vision – an analogue version of the searching behavior on the Internet. Hyper-commoditized vision – monetized vision that meditates on the omnipresent advertisement targeted all over our visual field. The site of intervention is the visual field in a technologically augmented society. All the three machines have both internal state and external signal.

Keywords

Wearable; Speculative Design; Augmented Reality; Vision; Tactile Art; Soft Robotics

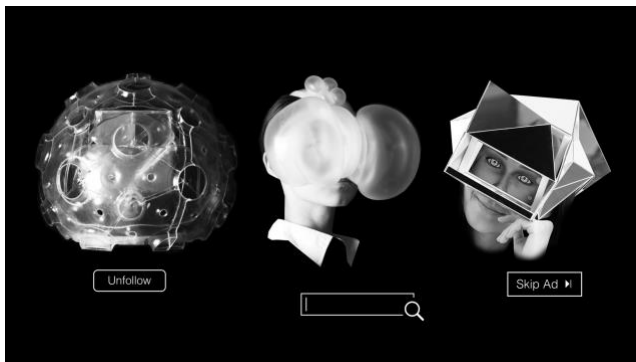


Figure 1: Hyper-sensitive vision (left), Hyper-focused vision (middle), Hyper-commoditized vision (right).

Hyper-allergic Vision Syndrome

The modern society has observed an increase in allergies and intolerances. Hypersensitivities are emerging not only medically but also mentally. Technology has this mutual reinforcement effect that people tend to become less tolerant because they interact even less with people who

have different backgrounds and opinions just because of the structure of the Internet’s ability to connect selectively and to filter information. Digital media as mediator reinforce people’s tendency of overreacting through viral spread of information and amplification of opinions, making us hypersensitive to our social-political environment. Similar to patterns of intolerance to signals that we see with our immune system, we also see with our mental responses to our environment, to mental stimulation, and to the distribution of the sensible. Under the current social-political media condition, we devise more and more structures in order to aggressively filter this environment both in terms of digital media and in terms of physical interactions like what we eat. By creating an artificial allergy to redness, this machine manifests the nonsensical hypersensitivity devised by digital media.



Figure 2: Symptoms of Hyper-allergic Vision Syndrome: tendency of overreact, politics of anger, filtered communication landscape, severe symptoms may include total separation and isolation from the red world.

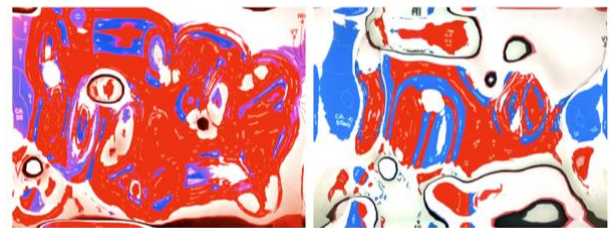


Figure 3: Viewing American presidential election map with red allergy. Create allergy: Expand (left); Cure allergy: Shrink (right).

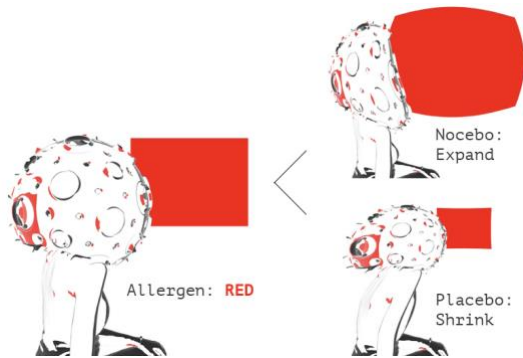


Figure 4: The helmet can be wear in two modes: nocebo mode and placebo mode.

Nocebo effect occurs when negative expectations of the patient regarding a treatment cause the treatment to have an even more negative effect than it otherwise would have. In this mode, the helmet is a machine that gives you the experience of sensory hyper allergy. Whenever you are exposed to red, the red expands in your visual field. This effect is similar to social media amplification: digital media has this effect, when you are looking into something that bothers you, you tend to find other people that share the same emotion, and then you exchange messages, memes, photos, and become more and more angry. That's why we are living in the politics of anger. People tend to find like-minded people, thus a trivial issue get amplified and becomes intolerable.

A placebo is given to a person in order to deceive the recipient into thinking that it is an active treatment, and it actually makes the patient feels better both psychologically and physically. In this mode, the helmet becomes an artificial cure to this allergic. Whenever one encounters red, the red shrinks. This is similar to the filtered communication landscape caused by digital media, where we can unfollow the people with different opinions, and remove them completely from our communication channel.

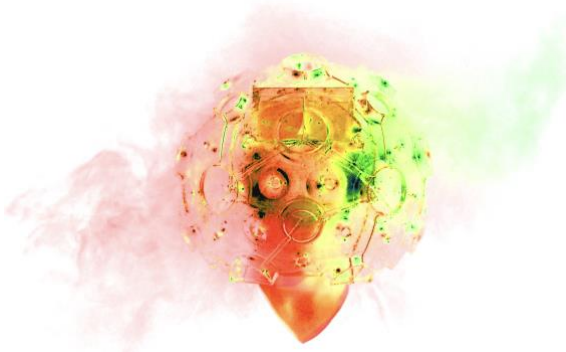


Figure 5: As a side effect, the helmet generates smoke and turns into a green bubble to neutralize red.

Video 1: <https://youtu.be/L4rbfNRSN7s>

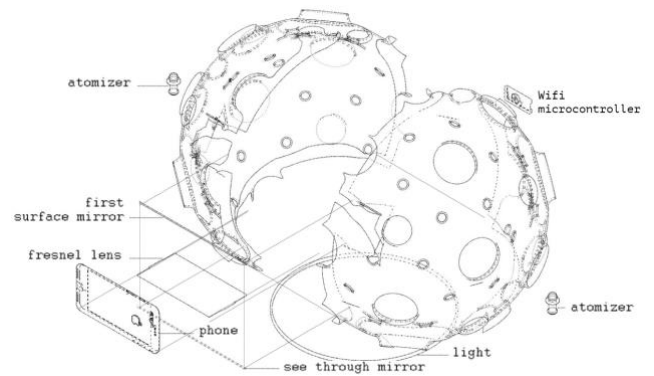


Figure 6: Construction of the perceptual machine.

The front part of the helmet contains a first surface mirror, Fresnel lens, and a see through mirror. With a phone in front, the lenses create an augmented reality experience. The shell has a 3-layer fly eyeball dome structure and is 3D printed with clear resin. An Adafruit ESP8266 triggers the light and atomizer to generate green smoke when red is detected from the phone. The App is created with Unity and OpenCV.



Figure 7: This kind of hyper allergenic environment undermines social interaction.

Overtime, this allergy becomes a form of identity. What people are allergic or intolerant to may be totally nonsensical, or do not have a scientific base, like the gluten free diet, or intolerance to certain political views. This kind of hyper allergenic environment undermines social interaction.

Everyday life becomes so intolerable, because there are so many signals that cause extreme reactions. People end up in a green room where everything is green, to isolate themselves from the red world. Everybody else in the room has the same allergy. This intolerance causes them to congregate with like-minded people to try to make everything agreeable. In fact, there are many rooms in the

world, some are totally red and some are entirely green. They are completely separated and the people inside one room never cross path with the other. Human communities become hyper fragmented and separated, they cannot find channels of communication between each other.

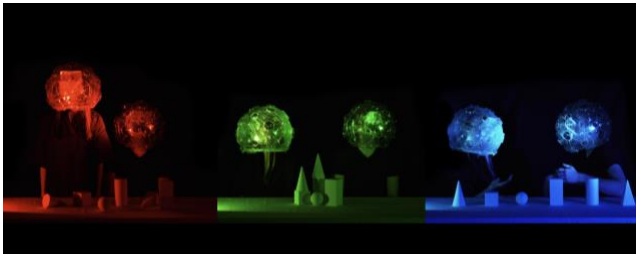


Figure 8: The red, green, blue rooms in the world. They are completely separated.

Tactile Vision

Vision works well when we have an overview of the total system, but the way we search in digital media is through little steps, from link to link — a tactile experience as we feel the landscape. We can never see it as a whole because it's not a continuous space. Instead, we look through a pinhole and build up everything without an overview. This searching function enables us to reduce the amount of chance and encounters, so we can just directly search for something in an extremely focused way and filter out everything else. This wearable is the extreme version of we possessing only one sense for one thing. With a pneumatic system made of silicon that reacts to the sensing of light in front of both eyes, the wearer gains stereovision to distinguish directions for navigating in space. Depriving all other sensory experiences and leaving only one signal channel, this hyper-narrow, focused, and filtered vision is an analog version of the searching behavior on the Internet.



Figure 9: Searching for light with tactile vision

Video 2: <https://youtu.be/IOEvmTMtyHI>

When surfing the Internet, there are two modes of being there: one is wondering around, which happens a lot at the beginning of the Internet. One can easily get lost in the vast landscape of information. As media becomes more efficient in delivering information, it gives us the tool — searching — to limit this wondering, hence we become more focused and targeted.

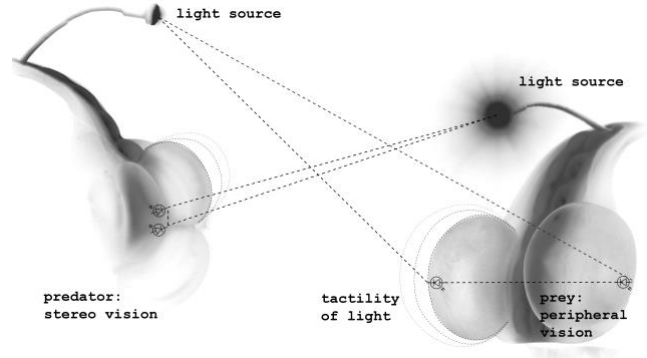


Figure 10: On each side of the eye locates a photodiode to sense the light, and a pneumatic system made with elastomer to react according to the sensor. The mask breathes gently when the light is far away and rapidly as the light gets closer.

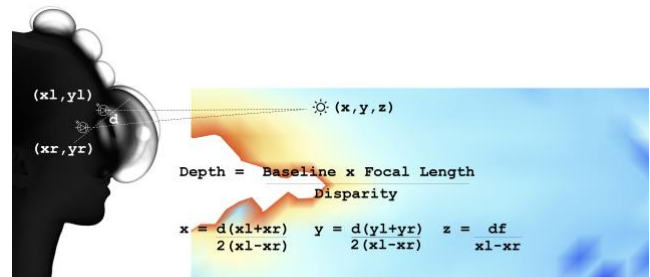


Figure 11: Like the two eyes we possess, the distance in between the two sensors forms a stereovision. Hence the location and depth of the upcoming light can be distinguished.



Figure 12: A pneumatic system made with elastomer that inflates/deflates in various speeds according to the intensity of light.



Figure 13: Like a dating App for cave animals.

The anglerfish lives in what is easily Earth's most inhospitable habitat: the lonely, lightless bottom of the sea. They have a piece of dorsal spine tipped with a lure of luminous flesh that protrudes above their mouths like a fishing pole, which lures the prey close enough for the anglerfish to devour them whole. Similar to the predation behavior of the anglerfish, the high intensity light sprouting from the middle of the mask is a cue, or a lure, for others to find them in total darkness. Light, the single signal here, is a communication channel and a trap. Only responding to single stimuli may be an efficient way to find things, but may also be a very easy way to get trapped or fooled. Similar to searching, when you are only interested in one thing and only looking for it, you lose the capacity to see things in context to make more informed decisions. Like moth into flame, this hyper specialized vision, with light as the only stimuli, is very efficient, but also very easy to be tricked.

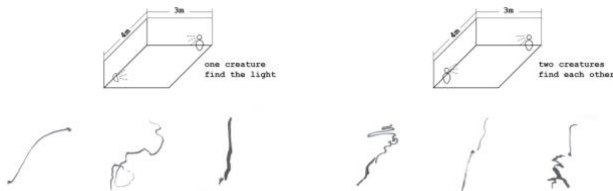


Figure 14: The participants draw the route they've passed.

We invited people to experience the tactile vision in a 3x4m room. First we let one participant try to find the light across the room. Then we let two participants try to find each other. They were asked to draw the route they've passed (fig. 14). The participants have no prior knowledge of the room and the position of the light. With the stereovision they were able to find the targets. Here are some of their testimonies: "The tactility of the elastomer and the fuzzy light kind of invite a sensory intimacy and eroticize the human relation to reality." "You really have to



move in space to achieve the incremental understanding of what is your relationship to the stimuli you respond to."

Figure 15: Fabrication process: laser cut the molds from acrylic sheets, pour Ecoflex 00-30 into the molds, leave it to cure then peel off carefully, assemble the top and bottom layers together with the tubes, actuate and check for clogs and openings

Commoditized Vision

"There are ceaseless bombardments of advertising nowadays. Images are converted into endless commodities manufactured to postpone boredom; humans in turn are commoditized. [1]" "From television to newspapers, from advertising to all sorts of mercantile epiphanies, our society is characterized by a cancerous growth of vision, measuring everything by its ability to show or be shown. [2]" The commodification of the visual field requires observers that can rapidly consume visual information. The downside of this is the extreme overloading of information that has to be packed into the visual field in order to make the most out of every second when we are looking at something. It prevents us from any kinds of contemplative relationship to the world. The meditative relationship to what we are staring at is no longer possible because everything has an overlay of commercial information trying to extract value from us. The visual field becomes a commodity that has real estate value. By creating the tension between meditative state and consumptive state, the third machine contemplates on how augmenting the visual field with new technologies affects our relationship to the world in this particular social-economic context.

This perceptual machine has two modes: Make Money mode and Spend Money mode.

Video 3: <https://youtu.be/5zrxAmf8rc>



Figure 16: In make money mode, the ubiquitous advertisement fills in everywhere (right). You can earn money by looking at these advertisements, but at the same time your eyes languish (left).

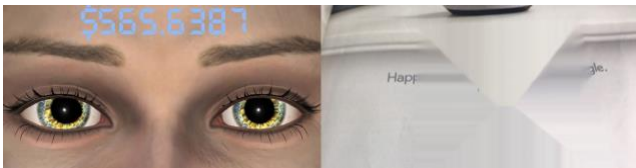


Figure 17: In spend money mode, advertisement disappears (right) and money drops accordingly, but your eyes are refreshed (left). You have some time until the money goes to zero where you don't see any commercials so that you can contemplate the world.

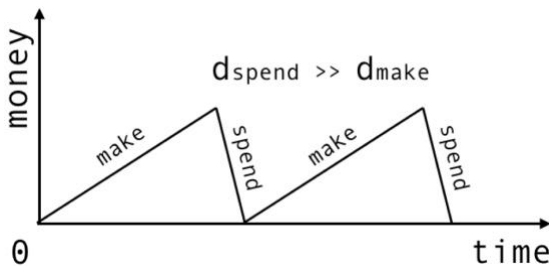


Figure 18: The gradient of the two modes are not equal.

It takes more time to make money than to spend money, so you have to look at the advertisement a lot more time in order to have a few seconds of contemplation. You have to manage your time in the world between looking at what you want and what makes money. Everyday activity becomes hampered by the fact that you have to convert vision into a moneymaking enterprise. Unfortunately, even when you have the ability to do these activities, you have to do it in a rush, because you don't have enough capitals.

Figure 19: The eye is a surface, a map, a landscape, an agency to convey the inner status of oneself



Figure 20: The reflective mirror reflects the environment. You become what you see.

Once the technology is able to colonize the site itself, we have no choice anymore. More efficient viewer becomes more efficient labor. Like Juhani said: “Perhaps, freed of the implicit desire of the eye for control and power, it is precisely the unfocused vision of our time that is again capable of opening up new realms of vision and thought... The technological extensions of the senses have until now reinforced the primacy of vision, but the new technologies may also help the body to dethrone the disinterested gaze of the disincarnate Cartesian spectator. [2]”

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Author Biography

Jiabao Li works at the intersection of emerging technology, art and design. Her work opens questions about technology's influence on human perception, identity, and emotion. Her research-based projects range from wearables, projections, drones, installations to scientific experiments. She holds a Master of Design in Technology degree with Distinction from Harvard GSD. Jiabao's work has been featured in Domus, TechCrunch, Yahoo, CCTV, Yanko Design, and The National. Her work has been shown in Milan Design Week, Dubai Design Week, SIGGRAPH, CHI, AR in Action, and PRIMER. She is the winner of iF Design Award, Fast Company World Changing Ideas Award, Future Cities Contest, ISWC Design Award, and Harvard Best Thesis Award.

Honghao Deng is a computational designer and artist. He holds a Master of Design Studies with distinction at Harvard GSD and has served as a research fellow in the City Science Group at MIT Media Lab. Recognition gained in the design and interaction community include: Golden A' Design Award, iF Design Award, Fast Company World Changing Ideas Award, 1st Place Future Cities Contest, Ubicomp/ISWC Design Award. His work has been covered by Domus, CCTV, ArchDaily, Designboom, Milan Design Week, The National, and Metropolis Magazine.