Second Skin: An Antithesis to Hermetic Architecture

by

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A. B. Social Studies
Harvard College, 2012

Submitted to the Department of Architecture in Partial Fulfillment of the Requirements for the Degree of Master of Architecture at the Massachusetts Institute of Technology.

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ABSTRACT

This exploration is framed around 3 near-future scenarios where the world has been transformed by environmental disasters. Basically our immunological bubble has been broken. For years, we have tried to control our environment by creating a separate homeostatic interior. And in the process of trying to achieve physical comfort, not only have we standardized our sensorial conditions into a homogenous experience, we have also destroyed the larger environment. While most of us knew that this bubble was going to burst at some point, none of us were prepared...

Now in the post bubble world, we have slowly come to the realization that the answer is not to create bigger or better bubbles. Instead, we need to develop a second skin. Operating at the body scale, this series of prosthetics teaches us how to reintegrate our senses with the environment. They restore our natural ability to interact with air, water, and heat in a world post hermetic seals. Rather than simply protecting us in another mini bubble, they function as a layer of mediation between us and our environment.

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[P-unit] Thank you for always being my biggest fan and most steadfast rock of support. Thank you for letting me live like a 12-year old despite being already 29. Thank you for loving the most selfish and stubborn human being in your world. And most importantly, thank you for giving me this one wild and precious life.

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[Thesis Readers] Mary, thank you for teaching me the benefits of dissatisfaction and looking at it as a blessed unrest. Mark, I am in debt to your humor and insight, which were both critical in resolving several roadblocks this semester. Jessica, your unique and refreshing perspective helped me understand design beyond architecture. Thank you all for giving me your time and letting me pick your brains.

[Sam] You save my butt. Every time. Thank you. Whatever you are doing right now, please keep doing it. Your obsession, honesty, and humility towards your own work are so rare and necessary. I am constantly inspired by you. Don’t stop.

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[Thesis Helpers] Dijana, Ching, Soyeon, Jonathan, Zain, and Natalie, thank you for putting up with my insanity. I cannot thank you enough for all the physical, emotional, and intellectual support throughout thesis. I don’t need to say more because you already know <3.

[Classmates] Thank you for being there as I grow, fall apart, and grow again. Thank you for doing the same and letting me know that I’m not alone.
ACT I: AIR
10:45 AM.
You just missed the last morning train that takes you from the residential compound to the office headquarters in downtown Beijing.
This means you would have to take the bus. Usually that would be a nightmare.
The sweating.
The pushing.
And the continuously recycled heavy air.
But today it’s not so bad. You can see it on the second skin of those who are passing by. Only the edges are darkened.
This specific model of second skin is almost like a neck brace of some sort. It is meant to protect you from PM 2.5 but at the same time correct your fetish need for sterile purity.
As you step onto the bus, you can see the membranes turning slightly darker as it traps more fine particles from the air.
Like watercolor, the particles slowly soak up the surface of your extended skin.
ACT II: WATER
You can hear the sound of the water gently hitting an external surface.
It's low tide hour in Miami but you put on your second skin anyway.
They encourage you to wear it for at least 6 hours a day even if you don’t plan on going outside. It’s supposed help you get used to being submerged.
The weight of the water.
The feeling of waves crashing onto your limbs.
Although the second skin shelters your body, it also re-trains your body to deal with wetness and instability. Moisture dumbbells of the 22nd century.
When you had decided to stay, you didn’t realize what this meant.
Steps are heavier and movement is slower.
Life shifts and slips with the tides.
You had lived in a bubble for so long that you forgot most of the world is actually covered in water.
ACT III: HEAT
You ring out your second skin and feel the liquid being squeezed out from the interior membrane.
This is your sweat from the day before.
Not too bad, it was only 38 degrees yesterday.
Today is another story. In Kuwait City, second skins are tailored mostly to your arms and shoulders.
Like some kind of heat armour, they deflect incoming sun rays and protect your skin from being burnt.
You adjust your left arm as you make your way outside. It's not the most comfortable.
The second skin doesn't magically cool down your body. It reduces the temperature and absorbs your sweat.
But you can still feel it:
the heat, the haze, and the taste of something drying up.
But you suppose that’s the point of the second skin...enhancing and adjusting your tolerance for discomfort.
RESEARCH
CONTEXT ANALYSIS
“Burning coal has been linked to the largest number of air pollution deaths in China, causing 366,000 premature deaths in 2013. In the winter, more families are turning on their heaters—and most of the energy used to run them comes from coal-fired power plants that send tiny particles of charred dust into the air.”

“Beijing’s indoor air quality in 90% of the city’s offices is just as bad as the outdoor breeze. What’s more, the report found that 12% of the worst performers in Beijing were LEED-certified office buildings.”

“China is to halt almost every major building project in Beijing in a bid to tackle the city’s air pollution crisis.”
CO₂
EYE IRRITATION
COUGHING
SWOLLEN AIRWAYS
LUNG DISEASES
HEART PROBLEMS
DIGESTIVE DISORDERS
SKIN DAMAGE
“The basement flooded again a couple weeks ago. It’s getting worse. It’s not only our building. We’ve driven through 2 feet of water on a main road a couple of towns over.”

“Sea Level Rise Is Creeping into Coastal Miami. For many property owners in Miami, raising their homes and buildings may be the only solution. But raising a building is not cheap. Just lifting a single-family home can cost up to $100,000 and raising a small apartment building can cost hundreds of thousands of dollars.”

“In Miami, some neighborhoods now see street flooding on a regular basis, whenever the high tides coincide with a new or full moon. And that’s not taking into account unpredictable events like heavy rainstorms or hurricanes.”
MATERIAL EXPLORATION
PENCIL SKETCHES
PATTERN STUDY
MEJI PERIOD KIMONO

CONTEMPORARY
US MILITARY UNIFORM
15TH CENTURY
ITALIAN BODY ARMOR

VICTORIAN CORSET
AND DRESS CAGE
BIBLIOGRAPHY


SHITS & GIGGLES