Between Thoughts
on the interconnectivity of things

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For Mom, Dad and Xuhui
Thank you for all your love and belief in me,
without your understanding and care I couldn’t
imagine anything in real today would ever have
the chance to happen.

For grandma,
I miss you.
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Abstract
My furniture designs are sensory tools that offer a bridge between our mental world and the physical world. With a strong belief in systems of interconnectivity and equilibrium, I use my designs as tools to calibrate awareness to the flow of changes that occur as enduring undercurrents in our everyday lives. Using as stimuli basic mechanisms of measurement as well as sensory cues, my works are antennae to our perception, inviting finely-tuned attention to the subtleties of response between our body and the physical environment. In the process of our participation, we come to see the dynamics of action and reaction at play and anticipate for further awareness.
The taste of the apple... lies in the contact of the fruit with the palate, not in the fruit itself; in a similar way... poetry lies in the meeting of the poem and reader, not in the lines of symbols printed on the pages of a book. What is essential is the aesthetic act, the thrill, the almost physical emotion that comes with each reading.¹

- Jorge Luis Borges

Things are related. Existing in the same world, we are all contained by the huge fabric of space in which everything is in delicate balance with each other.

Things are related to us. Through the portals of the senses and memory, we are constantly in communication with our immediate physical surroundings and through this relationship emerging the "poetry" of our lives.

¹Jorge Luis Borges, *Obra poetica*
Perception as a Connector

What is perception? What role does it play in our being? It is a synergy of our body and mind, depending not only on brainwork, but also our embodied sensation,

2. According to Merriam-Webster dictionary, it is “an awareness of the elements of environment through physical sensation” that is “interpreted in the light of experience”.
I had some dumplings for dinner the other day. Dumplings are symbols of Chinese fast food. Packaged in plastic bags for quick preparation, one can cook them in a pot of boiling water and swallow them without even needing to look at them individually. This ritual of consumption happens smoothly and seamlessly, while we're still checking our phones on the go. For me, the experience of having dumplings represents much more beyond the act itself. It's closely related to my memories of being with families for the Spring Festival, the Chinese New Year according to the lunar calendar. I still remember the sounds of laughter and chatting, the hot steam touching and heating my face when I reached my mouth to the bowl, the moment of chicken oil flooding to my teeth upon the first bite, followed by the salty, slippery feel of the mushroom filling my insides. Tightly related to the atmosphere of festival and reunion, having dumpling is now a symbol of home and happiness to me.
This experience now stands out with emphatic power to me. It is not only based on the ingredients of a boiled dumpling, instead, it’s a comprehensive result from both my sensation on this physical object and my memories based on it. Same to everyone, we put our body into the material world and carry on this interaction process incessantly. The optic-haptic incentive from our body becomes a cue as a synergetic episode where a series of sensations ignite emotional connections. A new experience is always built upon the interface between the ongoing material reality and the world processed through our body in the past. In other words, all our earlier perceptions pile up to be the base of the current one.
It seems, to some extent, that the rituals of our daily lives are prescribed, following a stable track of repeated experiences or lessons.

Right now, sitting by a window in the RISD library, with my notebooks, drinks, pens, and a pile of paper scattered on a wide desk, I focus on writing this essay. At this moment, it’s hard for me to tell which specific object is solely influencing my perception of the environment. The distant view, light from the window, floor material, the wood of the desk, and eraser in hand begin to merge perceptually. Each individual element is taken into account subconsciously but none of them holds the center of my focus.

In fact, without noticing, my attention constantly shifts. When I feel thirsty or get stuck in the middle of writing, I feel the need to wet my lips. In this instance my attention transfers from writing to the cup of water. At the moment of drinking, my head lifts; so does my sight. I then noticed cars passing by and students skating outside. Seconds later, as nothing has happened, my focus smoothly shifts back to writing.
I consider this a typical excerpt from daily life. It is composed of parts that appear repeatedly, a thousand times over. The objects overlap in the foreground, middle ground, and in distance forming the entire environment. Enmeshed together, they begin to lose their clarity. When a certain routine is formed, although it may contain several steps, we tend to package the experience without analyzing the individual elements. The details mentioned in my library writing experience are hardly noticed -- instead, they form an ambience, a condition that could be called a “neutral” status for living, or as described nowadays - the ordinary life.
We easily get bored by this endless repetition and in search of something "new" to enrich our bland lives. It is in this search for newness that consumerism emerges.

Thus we find ourselves frequently bounced between the two statuses of boredom of ordinariness and the ecstasy derived from purchase. We’re almost bound by this dualistic logic that only by obtaining more can we gain the status of self-sufficiency – for a while. But soon again, just like any other routines, the excitement from purchasing decreases from repetitions – ironically it doesn’t put an end to consumption but only brings more, like entering a bottomless well.
Is there anything outside this loop of binary thinking? Beyond the two opposites are there other channels for a deeper connection between us and the physical world? I wonder. In fact, in the previous section I lied Not intentionally, but I naturally neglected some in-between moments hidden inside the flow: the coolness and comfortness I feel when my lips touch the first drop of water, or the scene of boys skating outside that evoked a series of images of the street I walked by during middle school. Although our behaviors are usually fixed to certain patterns, thoughts still pop up unpredictably together with ephemeral feelings to create short breaks for ourselves. Without noticing, all these trivial moments contribute to our mood and subsequent actions, or even tweak our perception of the “ordinary”.
The Weak Force
We easily see patterns and rules, and rely on setting standards or categories to make sense of the world more easily. We deciphered genes as software scripts, and divide human needs into five levels... looking for clarity and absoluteness. But the reality is, the world we inhabit is never rigid and stable; neither does an individual live according to an unchanging code. Instead, we are contained in a delicate but dynamic relation that balances everything and keeps flowing, which I’d like to name the “weak force”.
Weak is not a negative word; it reflects a quality of gentleness to our mind. The weak force is not in contrast to a strong one. It has its own delivery, through tenderness and vulnerability. Things that are extremely delicate barely stand in stillness. When confronting them, we sense a subtle doubt in our mind about their appearance. They possess a potential of something else out of sight, conjuring room for association. We will wonder if there is something that we haven’t discovered? Or what will it be if something happen to it? It’s a combination of soothing and anxiety, quietness and blast. It creates a field of tension that is not owned by the rigidity and absoluteness.
In Taoist philosophy, the world is kept in balance between two opposites: the “Yin” which means the shady side or the negative, and the “Yang” which means sunny side or the positive. The essence of the idea is not about the absoluteness of each symbol but the interplay between the two. There is no hard edge between them in space or an absolute end in time, instead, each aspect contains the beginning point for the other. In Tao Te Ching, yin yang is illustrated as followed:

“天下皆知美之为美，斯恶矣；皆知善之为善，斯不善已。故有无相生，难易相成，长短相形，高下相倾，音声相和，前后相随。”

“When people see things as beautiful, ugliness is created. When people see things as good, evil is created. Being and non-being produce each other. Difficult and easy complement each other. Long and short define each other. High and low oppose each other. Fore and aft follow each other.”

3. Chapter 2, Tao Te Ching, adapted translation from Chinese by author.
For example, in the *I Ching - a book of changes* a series of trigrams composed of the “Yin” (−−) and “Yang” (-----) symbols is used to represent different seasons and time of a year, from the shadiest ☽☾ to the sunniest ☽☽. Although on the summer solstice day we have longest daytime, the trigram for that day is not absolutely positive but with two “yang” symbols on top and one “yin” born from the bottom, which is ☽☽. Similarly, during the winter solstice day, there is one “yang” emerged under the shady surface and forms the trigram ☽☽. Thus the elements in nature are in a constant communication and subtle exchange with each other quietly as an undercurrent that might not be easily noticed by us. That’s how the “weak” is named.
苏子曰“客亦知夫水与月乎？逝者如斯，而未尝往也；盈虚者如彼，而卒莫消长也。盖将自其变者而观之，则天地曾不能以一瞬；自其不变者而观之，则物与我皆无尽也，而又何羡乎！且夫天地之间，物各有主，苟非吾之所有，虽一毫而莫取。惟江上之清风，与山间之明月，耳得之而为声，目遇之而成色，取之无禁，用之不竭。是造物者之无尽藏也，而吾与子之所共适。”

- 苏轼，宋，《前赤壁赋》
“I asked: "Do you know the water and the moon? Water passing as it, actually doesn't disappear; the moon is subject to change in order to be full and insufficient, eventually it doesn't increase or decrease. (But) looking at things from the standpoint of change, then heaven and earth cannot remain the same for even an instant. Looking from the standpoint of not changing, then neither external objects nor the self has any limit. So what reason is there for envy? Moreover, between heaven and earth, all things have their own ascription. If a thing does not belong to me, even the slightest amount I can’t take. Only as for the clear breeze over the river along with moonlight shining in the mountains, if the ears catch one it has sound, and if the eye experiences the other it has color. It never ends and never exhausted. Such is the Creator's limitless storehouse, for me and you to enjoy.”

-SU Shi

4. SU Shi, Song Dynasty, *the First Ode for the Red Cliff*, adapted in translation from Chinese by author.
The ability to perceive this subtleness is our gift, although most often it occurs unconsciously. We keep associating our senses and behaviors with the physical environment to establish reference and meanings.

So when we enter a space we can get a feeling of it within the fraction of a second, utilizing the synchronization of our senses instead of intellectual analysis. For example, from the smell on the street we are able to perceive the dangerous level of the area, even without seeing anything that really signals danger. The perception may come from a childhood memory or fear, or the smell and images of bad food, or even the imagined smell from a crime scene in a movie. All the information tagged as related permeates through our senses and triggers our behavior upon it. French phenomenological philosopher Merleau-Ponty noted: “An atmospheric perception also involves judgements beyond the five Aristotelian senses, such as sensations of orientation, gravity, balance, stability, motion, duration, continuity, scale and illumination. Indeed, the immediate judgement of the character of space calls for our entire embodied and existential sense, and it is perceived in a diffuse, peripheral and unconscious manner rather than through precise, focused and conscious observation.”

fig.4
A lacquered plate with a piece of thin, white paper. The delicacy and vulnerability of the napkin promise a coming feast.
It’s both interesting and humourous that the part of memory that is most charged with emotion aligns with these “weak” senses: the fragrance we smell when passing another person; the space emerged while a poem is being read, the humidity of a room when we listen to an old song, a piece of thin paper on top of the plate before it’s being stained by food, etc. Softness and resilience, ephemeral meeting and a long-lasting aftertaste, a vulnerable look and the tension hidden behind… all contradicted words came together and connect to our deepest mind by these “weak” voices that are frequently on the margin of our attention.
A full range of sensations constitute the experience of such a condition, but they are closely interwoven and cannot be easily correlated to a specific physical attribute of the physical space. But on the other side, this neutral “reference condition” only stands when it is not looked at head-on; when it remains as a distant background and keeps flowing to maintain itself; the moment when it is under our scrutiny the “normality” starts to vanish, like we tend to notice more details and oddness from the photo of a scene than from the scene itself.
In my research on seating, for example, I found the seat height is much related to our perceived level of privacy – we feel and behave as in public or being authoritative when we sit high-up on a bar stool or a throne, and will immediately feel cozy and a comfortable privacy when we sit at a lower height. Thus I try to indicate the influence from the height switch by designing a chair with two seat heights that functions as either a high stool or a low armchair which is shifted by simply rotating the chair upside down. With an initial push from our hand, the chair will complete the rotation itself because of the momentum. It creates a moment for us to witness the smooth but drastic change of the object’s character.

![Diagram showing seat height vs. privacy](fig.7)
In our day-to-day existence, we take for granted things happening repeatedly and let them flow without noticing. While when a tiny clue sets in, an everyday act like to press-open a door handle and enter a light-washed room can become meaningful. It is transformed into an experience of sensory consciousness. These small twists, when placed on top of the neutralness, can bridge our sense to a deeper/richer layer of the ordinary life, like a drop of water on wooden table that magnifies its grain and fiber. I aim to create this bridge or “antenna” that pulls our attention to the nuance and vivid connections between things.
In a conceptual project, for example, I made a freestanding frame that can be carried around in space and fixed to be a frame for a certain “view”. With the device, we can bring anything surrounding it into our focus: maybe potted plants on window sill, a little collection on the bookshelf, or even a pile of clothes waiting to be washed. The frame is not to be looked at; instead, it is a description to the context where it has been set. It is this channel that pulls the original background to the front and brings it into our attention. At this point, it starts to play the game of interchangeable relations between peripheral reference surroundings and focus.
As a further step, I made a set of measures from reclaimed wood that was once a beam of an old church. They’re a group of wood blocks from one inch to five inches adding up together to form one foot. The measure is not marked with any number; the object itself bears the information. Thus the duality of the object connects both the material world and the abstract (conceptual) one: when our daily objects are put together with these measures, they start to reveal their sizes; when we combine the measures with our body, we notice dimensions of our body as well. It generates a very intriguing notion to me that we start to know more about things when we put them in comparison with others as references - just as we notice the movement of clouds through the grid of windows. Moreover, we could always interchange the reference with the thing in focus and put the previously “measured” object further in comparison to other objects. For example, once I figured out my lower arm is about eight inches, I began to use my arm as a measurement for surroundings: the width of a table, the distance between two walls, etc. In reverse, the dimension of these objects become more closely related to my own body rather than just a collection of numbers. The behavior of measuring then, becomes a means of perception rather than an analyzing tool.
We have all seen a sunset and very often are amazed by its magnificence and the vivid, varied colors. The glow is not solely formed by sunlight. To look at the empty sky is to look at innumerable particles of dust, water drops or even cinders which are all necessary to construct the magical scenery. Moreover, the reason we gaze sky for millions of years without boredom is not because it’s guaranteed to be pleasing to the eye. It’s an impermanent, unpredictable flow that intrigues us - without our knowing, the constant morphing clouds accumulating to form a memorable scene in a may suddenly disappear again.
Thus we need to talk about time. It is the key element informing the flow of perception. We live in an accelerated time when countless information passing by us. Multiple stimulators in the form of eye candy bombard our visual landscape and allow no time to digest or even recognize what we feel. Consequently, we numb our senses making us passive receivers of excitement.
Before we totally lose our ability of anticipation, think about a journey, a long one. It can't be realized in a second. To the contrast, it might take days, weeks, or months to prepare. The materials we read, the offices we run to, and the calendar we look upon again and again. herein lies the delay between desire and realization, leaving us room for anticipation. This process of approaching, gaining, losing, regaining and re-losing cycles with enough looseness for our sense and thinking to find traction.
I try to loosen the relation between the action and the response in my own design to foster this mood of thinking and wondering. In my tea table design, for example, I constructed the table surface with more than one hundred oak blocks of one-and-half square inches. With a thick layer of memory foam underneath, each block reacts on the pressure from hand individually, thus as a whole form it has an organic cell-like behavior. In order to enhance the haptic intimacy between this object and people, I shaped the top of each block with the same slight curve but alternated the directions of placement to turn the surface into a three-dimensional woven pattern. As people start to approach the object, there emerges a special moment when they press down on the surface and realize there is a time delay before it returns to flatness. It’s a short moment of pure witnessing, just like watching rippled water going back to quietness slowly after a rock plunges into it in a millisecond.
In my weaving exploration project, I made a furniture piece that could be transformed and used either as a stool or a bed. Instead of highlighting one of the two “terminated” statuses, I gave prominence to the in-between moment when the condensed stool is stretched out and the neon-orange color strips are revealed through the top white layer. The dramatic effect is generated by its textured volume and the bold color that we don’t often use normally. I realized that this contrast in color and form to the normal surroundings alienates the object from the environment but also in return symbolizes the object as a trigger for events happening around it, then normalize it. A self-directed “performance” in reality finally blends itself together with the surroundings to a new level of reference condition.

fig.18,19
The interaction with the object involves both the conducting impact and a delay in reaction. In a very short period of time we witness the outcome presenting itself. The “slowed-down” moment in fact maximizes the visibility of things that could happen within a certain amount of time, which interestingly also resembles a “speed-up” scenery of a flower blossom – both of these two cases involve a gap in doing which is filled by witnessing. By no doing, we leave room for sensitivity and a void for anticipation. This builds up a tie with the physical world on a deep level that is usually ignored by our cluttered minds. The process here is equally valued with the actual function.
One day while I was sitting on the toilet, I noticed my attention was drawn to a series of regular tapping sound with light echoes. Instead of being interrupted, I felt more of the quietness of the surroundings. The regular but slightly uneven taps between drops very much resemble the pattern of breath, or an old clock. As I realized the sounds were generated by water droplets from a leaking tap right at the drainage rim in the tub, I was excited for this random observation and association. I couldn't stop thinking about the relation between the size of the leakage inside the tap, water pressure, gravity and time. This is the beginning of my Water Drop project.
If we just listen to a perfectly working clock or something that never changes the tone or pace, after a while we start to automatically filter it out from focus and it blends into the default background of our sound environment together with our heartbeats, blood flowing, etc. But once a bit of randomness sets in – tiny tone fluctuation between each sound, a slightly varied time interval or a spontaneous echo sound every now and then, the experience transforms to an ongoing dialogue between expectation and response. In Water Drop, the speed of taps slows down over time but the accompanied echoes of dripping into a bottom container occur more frequently. It trespasses in and out of our focus – leaving us space for thoughts or rumination, but simultaneously calibrating our ability to notice happenings around us.
“What is the visual effect and atmosphere I want to bring out when people are 50 feet away? 10 feet away? and… 5 inches away? What will be the temperature upon touch?...” These are the questions I ponder during design to reach a finely-tuned perception to the subtleties of response between the physical object and our embodied sense. It almost resembles writing a script for a short film: the content should be precisely set but still with room for extemporaneous play.
Looking Back & Forward

“When we bump up against the limits of our own self-imposed cognitive reality the result is always a paradox.”

This is the beginning of my thesis.

6. Gary Zukav, The Dancing Wu Li Masters (overview of the new physics)
I still remember the moment when I met with this very sentence in the graduate seminar class. It almost enlightened me immediately to my long-time perplexity - the paradox doesn’t just exist on its own, it is the corresponding part to my thinking. Hence to me noticing the self-imposed cognitive boundary is the start to break it and set free my thinking.
The internship experiences in China and Germany prior to my thesis year were central to breaking open my “wall”. Beyond obtaining professional knowledge, I became curious about the perspectives of the designers I worked for, the life they carry with in a design career and the way they treat their own boundaries.

One very important discovery was that “designer” to them is not a profession as other occupations, instead it is a name describing the way they observe, the status they exists in the world – they constantly keep open eyes to the surroundings and whenever came up with an idea they live with it, breathe, eat, even bathe with. Through time, developing the idea and having it nurtures themselves. Thus in a way they have the method to break through whatever seems like a boundary or limitation since the cognition can always advance with richer observation.
Similarly, as we exist in this constantly changing world with excessive new things happen at the same time, instead of chasing after endless trends and ephemeral excitements, why don’t we return to ourselves, reading and burnishing our everyday intimacies and transgressions until they take on aspects of the epic?
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2. Lao Tze, *Tao Te Ching*, Translated by author from original Chinese texts, Acess from internet.
3. SU Shi, *the First Ode for the Red Cliff*, Translated by author from original Chinese texts, Acess from internet.