

The critical spirit in everyday object design: A study of Maywa Denki's creative method

by

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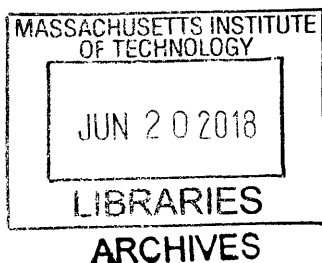
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**The critical spirit in everyday object design:
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Tingyun Yin

Thesis Submitted to the Integrated Design & Management Program on May 25, 2018, in Partial Fulfillment of the Requirements for the Degree of Master of Science in Engineering and Management

Abstract

Maywa Denki is a Japanese crossover creative company. It is an art studio as well as a toy design company. Maywa Denki saw the value of the meaning expressed in art works, and managed to turn such expression into the attractiveness of products. The possible connection of art and product design is to provide meaning for the public with skillful expression. Such expression has its own techniques, one of which used by Maywa Denki could be traced back to the technique used in ritual objects in traditional culture. Maywa Denki is a successful crossover company because it manages to promote individual expression. Inspired by Maywa Denki products, I proposed my own work "the Floating World". It is based on the observation of individual living condition and it includes graphic design, story-telling, object design and short videos. This thesis analyzed that technique of Maywa Denki, Maywa Denki's crossover product development path and described my own design work.

Thesis Supervisor: Maria Yang

Title: Associate Professor of Mechanical Engineering

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Chapter 1

Introduction

The process of product design is an opposite process of a business model, which means it begins with the question of what product could be sold to the customers, and ends with a reasonable manufacturing plan. What is expected to be created is not the product itself but the value of the product. If customers can not see the value of buying and using this product, then the whole business will end in failure. So the key question is: what is the value? This is a question without a certain answer. If we consider the reality and complexity of marketing, especially if we consider the difference between push or pull strategies, we will get different answers.

One typical example is a traditional market-driven situation. It involves methodologies such as market survey, customer research and interview, focus group talks, which could be generalized as the strategy of “asking customers what is their need.” Customer needs are the prioritized value, and product designers design products according to need lists, trying to understand potential customers through surveys.

Two different situations that are particularly significant today are technology-push products and platform products. They can both be seen as products that are generated from technological innovation. Here, what attracts people to invest their money is the novelty of a new technology, since a new technology itself could be of very high value. Of course, there are technologies that fail to turn into something practical, and such as technologies cannot practically benefit people’s life (for example, because of the limits of weather, insofar solar power technology did not make enough impact as it originally expected), but more and more today we believe that we are standing at a technological singularity. It is a time when technology products can return tremendous rewards. For example, the value of internet products and services, such as social media and mobile devices, could only be fully understood only after millions of users began to use them. That is to say, in this time of fast technology innovation, the design of a technology product/service can be a gamble but with the help of large investment and a strong marketing strategy, the final product or the service can be very valuable.

The above examples are the mainstream product development ideas today. Although I do not cover all the situations, such examples could be seen as major trends. Thus, from industry’s perspective, to realize the value of produced products is often through marketing strategy. In a “pull” strategy, what is mostly provided to customers are some speculated needs, and in practice, most of these needs are related to convenience: for example saving time. In a “push” strategy, what is placed at first are not customers, but technology and marketing promotion. It is predicted that the product would benefit customers because of the trust in the technology used.

Maywa Denki’s product development process surprisingly detoured from the mainstream approaches. When one first sees the objects made by Maywa Denki, one’s first response could be: “Why make the effort to make these? What is the value of these objects? Would anyone buy them?” Yet yes, Maywa Denki has multiple different business models. One of them is selling toy products. Maywa Denki is famous in Japan and East Asia, and its brand is accepted in major markets. Its best known product, “Otamatone,” has more than one million in total sales, and Maywa Denki’s performance group

collaborates with Yoshimoto Kogyo, one of Japan's biggest entertainment conglomerates. What is Maywa Denki's power that allowed them to capture the interest of the broader public? I believe this is a question worth investigating that would provide more insight for reflecting on product development approaches.

Chapter 2

Case study of Maywa Denki's product design approach

2.1 Maywa Denki product example

Let's take a close look at Maywa Denki's most popular product, the electronic instrument "Otamatone" (Figure 1) and ask a simple question: What makes it popular? From the outlook of the toy, it consists of two parts: a vertical stick with touch sensor that acts as the operation part of the instrument; and a face-like bottom part which acts as speaker. To play it, a player use figures of one hand to touch on press sensor for different tunes, with another hand constantly squeeze the face part to open and close the "mouse" of the sounder, so as to create very unique volume curve and tone color (Figure 2).



Figures 1 and 2 "Otamatone", source: Maywa Denki official site <http://www.maywadenki.com>

It is easy to understand from the customer's' perspective that the Otamatone has a playful appearance, like a tadpole; it also has a unique tone similar to frog croaking; and the operation of the instrument, though completely new compared to existing instruments, is at the same time easy for a person new to playing music to learn, as well as for a musician to play professionally. Also, a very specific but still important comment from players is that playing the Otamatone while constantly squeezing the tadpole face gives a mysterious feeling and is also humorous. In contrast to the tradition image of playing an instrument elegantly, to play Otamatone is something in between seriousness and absurdity.

When we look at it from a critical perspective, the gap between Maywa Denki and the majority of toy design companies is even more obvious. Otamatone is not a fast-come-fast-go product that a proficient design company could create in 3-4 months. There are hidden barriers: it's hard to imagine an elastic tadpole head as the loudspeaker, and it's even harder to imagine the operation of squeezing

to control the sound volume. The mechanism here goes beyond standard mechanical engineering design. How did Maywa Denki manage to develop such a mechanical idea? By squeezing the loudspeaker with the shape of tadpole head to create a voice similar to animal barking? A proficient professional designer could be very easily limited to existing archetypes. For example, the picture below (Figure 3) of a toy trumpet that could be bought on Amazon is a comparison. In such a design there is some innovative idea (the trumpet is built like assembled Lego pieces so that kids could create their own to some extent), yet it is clearly just a derivation of a normal trumpet, not a revolutionary product that challenges deeply-rooted stereotypes.



Figure 3 Toy trumpet, source: Amazon https://www.amazon.com/Quercetti-Saxoflute-Piece-Build-Instrument/dp/B000FIZ8YA/ref=lp_2599263011_1_1?srs=2599263011&ie=UTF8&qid=1526750338&sr=8-1

Let's take a look at Maywa Denki's own comment. Maywa Denki's leader, chief artist and designer, Tosa Nobumichi said in his instruction of "Voice Mechanic Series", "There are two reasons for the world-wide popularity of Otamatone: the first is its successful mechanism that interestingly combine the figures of a mechanical instrument and an electronic instrument; the second reason is the mana this piece of instrument bear. Its tadpole face looks like an ancient shaman mask." A surprising expression appeared here. Tosa used the word "mana". If we take Tosa's declaration literally and seriously, then the attractiveness of Otamatone is in its "mana", which seems to be unimaginable, in terms of the standard doctrine that the successful consumer products rely on for their functional performance and cost efficiency.

Everything around product design is about one question: what do consumers really want and how do we make it viable? And from Maywa Denki's practice we can obtain some critical experience.

2.2 Nonsense: Maywa Denki's core concept

Maywa Denki's official portfolio labelled its works as "Nonsense Machines". The word "Nonsense" expresses a composite feeling of "unexplainable", "absurd", "mysterious" and maybe "irrational" and "unreasonable", it is true that Maywa Denki's works could be seen as "irrational" or "unreasonable" from a perspective of pragmatism and empiricism. Particularly, if habitually focused on the function of Maywa Denki's products, a weird deviation from the efficiency principle can always be observed.

While it is imperative for prevalent industry designers to consider efficient mechanism so as to cost minimum materials to reach the same level function, it is worthwhile to consider why Maywa Denki openly deviates from such doctrines.

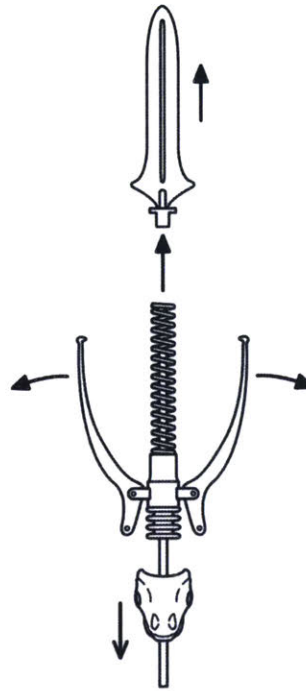
Some of Maywa Denki's most cost-a-lot & function-a-little products are listed below:

1. Hai-Gyo (lungfish): Hai-Gyo (Figure 4) was Maywa Denki's first work. The player moves the cylinder pump of this water-gun-like installation, then the fish bladder encased in the glass container will shrink and expand. Hai-Gyo was made when Nobumichi Tosa was a university student and it was said to represent his outlook of the world.



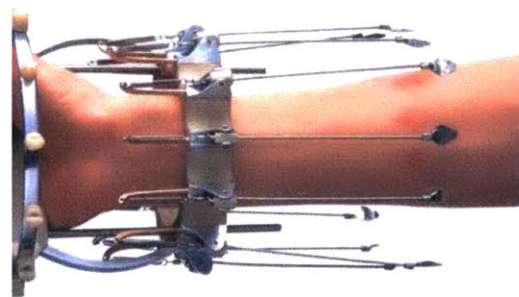
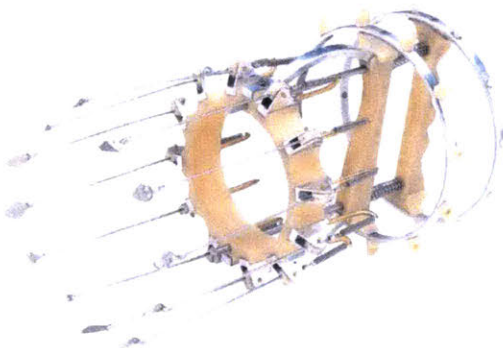
Figure 4 "Hai-Gyo", source: Maywa Denki official site <http://www.maywadenki.com>

2. Ray-ray-ken(lightening sword): Ray-ray-ken (Figure 5) is a sword that could be either held by hand or posited on the ground as a lightning rod. Its blade part and handle part is joined together by a steel spring with steel clips. When Ray-ray-ken is struck by a lightning, the clips would loosen and thus shoots the sword towards the god of thunder in the sky (Figure 6).



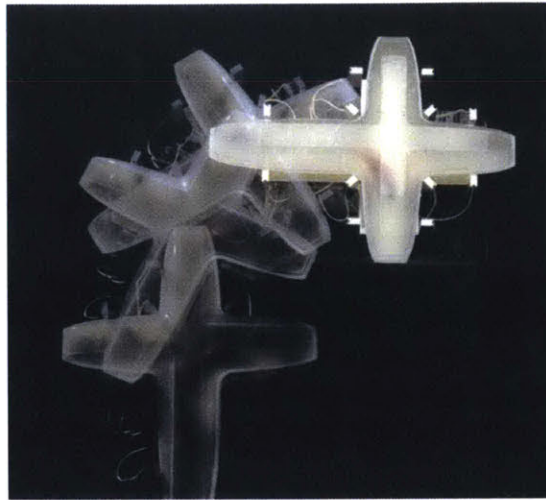
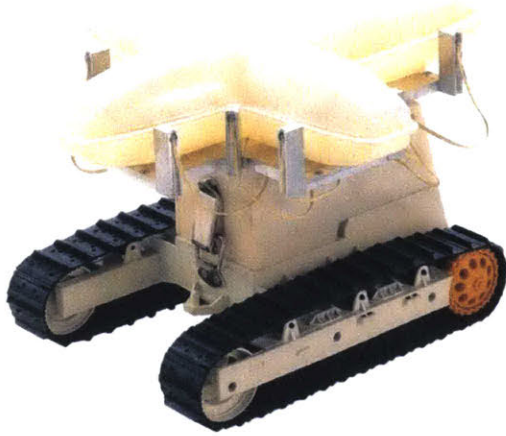
Figures 5 and 6 "Ray-Ray-Ken", source: Maywa Denki official site <http://www.maywadenki.com>

3. Ring-Ring: Ring-Ring(Figure 7) is a do-it-yourself fish scale tattoo machine. The user stretches his arm through the steel rings and grip the plastic bars at the end from inside. Then the steel rods clamp onto one's upper arm and give a fish-scale like bruise (Figure 8), as stamping some so-called "temporary fish scale tattoo".



Figures 7 and 8 "Ring-Ring", source: Maywa Denki official site <http://www.maywadenki.com>

4. Sei-Gyo(Holly fish): Sei-Gyo (Figure 9) is a cross-shape fish sink placed on the top of a small tractor car. The electronic controller inside the car causes it to move to the same direction according to the movement of the fish in the sink (Figure 10).



Figures 9 and 10 “Sei-Gyo”, source: Maywa Denki official site <http://www.maywadenki.com>

5. Voice Vibrator: Voice Vibrator (Figure 11) is a strong motor that could be carried on the front chest. The vibration of the motor causes resonance inside the singer’s body, thus the singer can easily sing vibrato and tremolo even though he has no idea on the relevant knowledge (Figure 12).



Figures 11 and 12 Voice Vibrator, source: Maywa Denki official site <http://www.maywadenki.com>

Among all the Maywa Denki’s work, it is Ray-ray-ken that gives me a feeling of being shocked at the first sight. There is an apparent paradox included by the design: on one hand, it seems to apply some standard design from a typical electric circuit, as its structure clearly constitutes a closed electric circuit when it is being struck by a lightning, and the electromagnetic effect will cause the clips to move. On the other hand, however, the intention of the whole mechanism is to shoot a sword to a non-existent god responsible for that lightning strike. Therefore an interesting question would be how the device designer, Tosa Nobuminch, conceived this design concept: on one hand he was applying modern electromagnetic knowledge, on the other hand he was designing for a very primitive, superstitious belief that it was some god in the sky generates lightning.

Normally it is believed that there is a deep disconnect between mythology and science&technology, yet Ray-ray-ken was trying to combine the two. Some deep connection between the rational mechanical mind and sensitive artistic mind is implied here.

The same integration is also showed in the design of Sei-Gyo. From technological perspective, it is a well-structured interaction device designed for a special controller, which is the fish contained within it. When viewed from a different perspective, it looked like some god was possessing the cross and the mysterious moving path was obeying its will. The fish encased in the sink could be explained as an intermediate creature between man and god, which was a common practice in ancient shaman culture. Observing animals was considered a necessary steps to talk to the sacred spirit in shaman culture.

Here Maywa Denki emphasizes on “nonsense”. Declaration about “mana” could be seen to have a huge effect on its products. Yet why do “nonsense” and “mana” lead to something that is accepted by the public consumers? It is too hasty to conclude that it is because of irrational consumers’ desire to be entertained as both Maywa Denki and its consumers are serious in producing and appreciating. Therefore, in order to understand the core of Maywa Denki’s design, it is necessary to study on the ideas behind “mana”. Maywa Denki is not a believer of myths; yet Maywa Denki’s design approaches gave rise to an effect/phenomenon that was similar to myths telling. To understand Maywa Denki’s declaration that “mana” is a key figure of its products, a background study on real mythology is necessary.

2.3 Exploration of Maywa Denki’s philosophy and expression technique

2.3.1 A brief introduction of Japanese mythology

It may sound a little strange to study on mythology for the research of product design. However, I take Tosa Nobumichi’s words seriously. “Nonsense”, which means something mysterious and unexplainable is the key notion concealed in every product of Maywa Denki. Thus “Nonsense” is the trigger that lead to the unique attractiveness of Maywa Denki’s product design. Then the question is: although the relation between Maywa Denki and mysterious subjects of mythology is certain, is that relation related to universal experience that designers learn from, or is it just some personal fondness that is too unique to be adopted by anyone other than Maywa Denki? No conclusion could be drawn before in-depth study into Maywa Denki’s internal thoughts, which obviously includes ideas in relation to mythology.

Another thing that is worth mentioning before discussing Japanese mythology is that Maywa Denki never labeled itself as a company under the subject of “traditional myth” or “traditional culture”, which means like any modern global commercial company, it talks to customers around the world, it talks to an universal modern human. If such premise was clearly identified, then it should be understood just like a western layman of a completely different culture, Maywa Denki doesn’t believe in the existence of any specific ancient god, yet it might still extract some ideas from Japanese Mythology -- but what are these ideas? I think they are not of any specific character, ontological objects or knowledge contained in the mythology, but a logic system, and its arrangement on such elements: human, god, living creatures, still objects---what are their relationships and which are designated to a more basic place.

The authoritative texts that officially compiled the ancient mythology of Japan were Kojiki and Nihon Shoki. Between them, Kojiki was the older one. Thus it is believed to be the more original text believed by many scholars. In Kojiki, the first chapter describing the genesis of the world is as below:

THE FIVE SEPARATE HEAVENLY DEITIES COME INTO EXISTENCE.

At the time of the beginning of heaven and earth, there came into existence in TAKAMA-NO-PARA a deity named AME-NO-MI-NAKA-NUSI-NO-KAMI; next, TAKA-MI-MUSUBI-NB-KAMI; next, KAMI-MUSUBI-NO-KAMI. These three deities all came into existence as single deities, and their forms were not visible.

Next, when the land was young, resembling floating oil and drift like a jellyfish, there sprouted forth something like reed-shoots. From these came into existence the deity UMASI-ASI-KABI-PIKO-DI-NO-KAMI; next, AME-NO-TOKO-TATI-NO-KAMI. These two deities also came into existence as single deities, and their forms were not visible.

The five deities in the above section are the Separate Heavenly Deities.¹

We should look into proper nouns to understand this chapter. In the first paragraph, TAKAMA-NO-PARA means “the plain of high heaven”, AME-NO-MI-NAKA-NUSI-NO-KAMI means “the deity who is lord of the sacred center of heaven”, TAKA-MI-MUSUBI-NB-KAMI means “high deity of Musubi”, KAMI-MUSUBI-NO-KAMI means “sacred deity of Musubi”.² In Japanese, KAMI is closest word to “god”. It is strange enough that these first three kami appeared in this world, and then did nothing at all, especially Ame-no-mi-naka-nusi-no-kami, who by its name seems to be the master or the controller of the world, actually just appeared one time in the whole Kojiki. What happened at the beginning of the world, as Kojiki writes is like this: First, the plain of high heaven appears (and it appears from nowhere), then three Kami came into existence; they were single beings; they were invisible.

The uniqueness of the initial gods in Japanese mythology is obvious: in many other genesis mythologies such as in the bible, the initial god is considered to be an active participant of the creation of the universe; yet for the first three gods in Kojiki, no creation happened and instead what is emphasized is that the gods are “single”, “invisible”, passive and distant from the active creating/processing/becoming process. In contrast to the biblical god who was initially passionate and thus directly responding to human readers’ wonder about how the world is created, Kojiki’s Kami were first placed at a very far distance, and what is reinforced by the mythology is that the gods are untouchable and inaccessible.

Then the question comes: “If the initial gods were distant and inaccessible, yet by their names they were the mysterious source of everything in the world, then how could it happen? What pressed the trigger of all the creating process? The whole Kojiki was trying to provide this answer. But if we hold this question here, we notice that in Japanese mythology it is the feeling of distance and strangeness that is considered as the inherent attribute of gods. The genesis of passive, neutral pure existence was prior to any creation process.

Many other examples could be extracted from Kojiki to prove that message: gods are strange distant beings. At the beginning of the world they purely existed rather than taking any active action. In the

¹ Philippi, Donald L, tr. *Kojiki* (Tokyo: University of Tokyo Press, 1968), p.47

² Tomoko Iwasawa. *Philosophical Implications of Shinto* (July 2015)

same chapter, after the existence of three major Kamis on the plain of high heaven, the fourth Kami, UMASI-ASI-KABI-PIKO-DI-NO-KAMI, came into existence from something sprouting like reed-shoots. The fact that a god arose from reed-shoots instead of reed-shoots arising from god clearly shows that: in Japanese mythological system god did not create things but existed along with things. A metaphorical relation was implied here, UMASI-ASI-KABI-PIKO-DI-NO-KAMI was something similar to reed-shoots. Again, the god was not only generated from an ordinary objects, but by a rather unimportant, distant and strange objects, the reed-shoots.

In chapter 4 Izanagi and Izanami married and gave birth to their first offspring, the first child of the great mother god and father god was a Piru-go, which means a leech-child. "They placed this child into a boat made of reeds and floated it away".³ It is a useless and passive being but Kojiki kept it in the record.

When Izanami gave birth to the fire god and burnt herself, the texts wrote: "In her vomit there came into existence the deity KANA-YAMA-BIKO-NO-KAMI(the deity of metal mountain prince); next, PANI-YASU-BIME-NO-KAMI(the deity of metal mountain princess)⁴ and the feces and urine of Izanami also turned some Kami. Again, in Japanese myths gods do not represent masters that gives out positive orders; Kami just exists passively like everything else. That is the reason why Kojiki recorded strange unwanted distant objects such as leech, vomit and feces, and how they were related to a Kami.

So what is the relationship between Maywa Denki and these mythological facts? I think Maywa Denki's core ideas of designing "nonsense object" precisely presupposes a distant point in the daily life, and this point provides people with a feeling of distance. Just like the Japanese mythology would look for Kami hidden in strange objects, Maywa Denki looks for inspiration from strange phenomena in daily life. Back to the example of Ray-ray-ken, the point is not that the device is taking some superstitious assumptions against scientific laws. The point is that there is a lack of control over unexpected natural disaster. That is why people creates mythology to get over such anxiety. Maywa Denki tries to draw attention to such psychological needs and asks the question of "why".

For Ring-Ring, although to make a tattoo is a common behavior today, but we still do not fully understand why people harm their skin to get a diagram.

In Sei-Gyo, it is whether the movement of fish contains any meaning that is not understood, and in Voice vibrator it is why people particularly value particular singing technique like vibrato and tremolo over mechanical sounds, which is mysterious.

This consciousness of "strangeness", of an inevitable minimum distance between the function of objects and its meaning is the inspiration of design, analogically in Kojiki the hidden, non-explaining and inaccessible gods were the initiators for the upcoming reproducing, creating and explaining processes.

2.3.2 The philosophy of treating objects as Kami

One perspective that particularly draws my interest in Japanese mythology is that of "still objects" (in Japanese, mono), which is especially used for man-made objects. Again, Japanese mythology is not a story of creating, and not a single creator god is mentioned in it. Then how did everything in the world, the nature, the animals, the humans, the man-made objects come into being? The answer lies in the

³ Philippi, Donald L, tr. *Kojiki* (Tokyo: University of Tokyo Press,1968), p.51

⁴ Philippi, Donald L, tr. *Kojiki* (Tokyo: University of Tokyo Press,1968), p.57

noun “musubi”(产巢日), for which the closest meaning is “the power of giving birth” or “the power of reproducing”.

In Jean Herbert’s book “Shinto,” which is a deep investigation on Japan’s native Shinto religion, musubi was described as “*the most enlightening word in Shinto,*” and it is translated as “*the spirit of birth and becoming; also birth, accomplishment, combination; the creating and harmonizing powers.*”⁵

In The Oxford Handbook of Japanese Philosophy, the essay “Philosophical Implications of Shinto” written by Japanese scholar Tomoko Iwasawa explains the etymology of “musuhi” (an alternate Japanese pronunciation of musubi) as follow:

“The Japanese word musuhi consists of two parts: musu and hi. Musu is a verb that primarily means “to come into being” (musu 生ず) as well as “to give birth” (musu 産ず). The word is also used in the sense of “steaming” (musu 蒸ず), and, further, is associated with the concept of “breathing” (musu 息). Uniting these multiple meanings, the word musu suggests the primordial image of constant appearing; that is, the ever-proliferating process of being. Also, the hi of musu-hi embraces various meanings, such as “the sun” (hi 日), “fire” (hi 火), and, more abstractly, “awe-inspiring mysterious divine power” (hi 霊). In sum, we may understand musuhi as “the vital force motivating whatever comes into being” or “the awe-inspiring mysterious divine power that is the origin of all beings.”⁶

Following this etymology explanation, Tomoko offers his understanding of the first batch of gods that appeared and hid themselves at the beginning of Kojiki. He comments on three specific gods in Kojiki. First, UMASI-ASI-KABI-PIKO-DI-NO-KAMI, the god who arose from something (and it remains mysterious what this “something” exactly was), sprouting like reed-shoots. Tomoko thinks of this god as a “concrete image,” symbolizing the abstract concept of musuhi, since that the reed-shoots sprouting up vigorously in spring is clearly a strong symbol of reproductive power. Second, TAKA-MI-MUSUBI-NB-KAMI and KAMI-MUSUBI-NO-KAMI, the second and third Kami. “Musubi” first appeared in their names as proper noun. Tomoko considers them to be the two gods embodying musubi. This, despite the fact that they appeared, did nothing, and then concealed themselves. Tomoko offers that their mere existence brought into being the universal power of musubi, and musubi triggered the process of becoming. Musubi from here on would take responsibility of all the genesis activities. And finally, for the first god in Kojiki, AME-NO-MI-NAKA-NUSI-NO-KAMI, Tomoko limits its mentioning only once at the beginning of the book, so it seems that the god just arose and then hid himself forever. Such an existence of a god whose meaning was only ambiguously reserved in its name demonstrates the special Japanese attitude that worships unknowability. Being incomprehensible by human beings is at the core of the definition of being of god.

After the embodiment of musubi, a great reproduction process is carried out by the Kami couple, Izanagi and Izanamiare. Kojiki depicted the marriage of the gods exactly as heterosexual intercourse.

Descending from the heavens to this island, they erected a heavenly pillar’ and a spacious palace.

At this time [Izanagi-no-mikoto] asked his spouse Izanami-no-mikoto, saying:

“How is your body formed?”

⁵ Jean Herbert. *Shinto: At the fountain-head of Japan* (London: George Allen & Unwin, 1967), P.67

⁶ Tomoko Iwasawa. *Philosophical Implications of Shinto* (July 2015)

She replied, saying:

“My body, formed though it be formed, has one place which is formed insufficiently.”

Then Izanagi-no-mikoto said:

“My body, formed though it be formed, has one place which is formed to excess. Therefore, I would like to take that place in my body which is formed to excess and insert it into that place in your body which is formed insufficiently, and [thus] give birth to the land. How would this be?”

Izanami-no-mikoto replied, saying:

*“That will be good.”*⁷

Kojiki's depiction of the intercourse of the two gods is without any fictional conception, while Kojiki described the birth-giving activities of Izanami with tremendous amounts of supernatural details, which clearly demonstrates that the meaning of “musubi” is beyond pure biological reproduction power.

The various birth given by Izanagi and Izanami could be roughly classified into the following eight types:

First type: Izanami, the female Kami, gave birth to multiple offspring Kami. This type is the closest to a natural biological procreation and thus is the easiest to understand. The number of these offspring Kami are tremendous. Kami exists in every natural objects in the world and thus their mother Izanami is of infinite reproducing ability.

Second type: Offspring Kami gave birth to next generation offspring Kami, which was also biologically natural.

Third type: Izanami gave birth to multiple islands which constituted Japan.

Fourth type: Izanami gave birth to an animal creature. The only example was their first failure birth of “leech child”, for which the Kojiki text is *“Nevertheless, they commenced procreation and gave birth to a leech-child. They placed this child into a boat made of reeds and floated it away”*. If the action of floating the child away in a reed boat is considered seriously, it is reasonable to interpret “leech child” literally to a leech-like tiny creature.

Fifth type: some body parts, body fluid, secretion and excreta disengaged from Kami body incarnated into one or a couple of other Kami. Related excerpts were Izanami's vomit, feces and urine became multiple Kami in her sickness; Izanagi's tear on his wife's death turned into Kami; and in his fury he slayed the fire Kami the birth of whom killed his mother; the severed body parts (head, chest, belly, genitals, hands, feet) of which turned into multiple Kami.

Sixth type: man-made things carried by Kami turned into Kami after a conducting a specific action. When Izanagi bathed himself after visit to the underground world (Yomi), he threw his polluted apparels (stick, sash, bag, cloak, trousers, headgear, and arm-bands) into water and they all became multiple Kami.

Seventh type: man-made things carried by Kami became a living creature after a specific action conducted by the Kami. When Izanagi was pursuit by Yomi hags sent by his departed wife, he threw out two everyday-life utensils to block the roads and they became living plants; the hair-bond vine became grapes; the comb became bamboo shoots.

Eighth type: not a single entity procreated, but rather the contact of sacred things engendered another being. When Izanagi slayed his child fire Kami Kagu-tuti-no-kami, the blood adhering to each different

⁷ Philippi, Donald L, tr. *Kojiki* (Tokyo: University of Tokyo Press,1968), p.50

part of the sacred sword Ame-no-wo-pa-bari turned into multiple Kami. And as Izanagi gave himself a purification bath in the river, with the washing of each part of his body came the existence of a distinct god came. This type could also be interpreted as when musubi came to function on either contamination or purification.

What might we understand if we carefully ponder on these eight types of procreation? First, beings are not distinguished into different classes or hierarchies in Japanese mythology. Deities, still objects, natural islands, animals, plants, everyday utensils, body parts, and humans (in later chapters of Kojiki the ancestor of human monarch was directly born by a couple of gods), all joined in an integrated procreating process. There wasn't any concept of degrading contained in this process, as still objects could turn into living creature and bodies; feces and vomit could turn into gods. Clearly there wasn't any notion of noble or base here.

Second, body and spirit are not contrasted to each other in Japanese mythology. There is no notion of regarding biological procreation to be dirty or vulgar, or oppositely, regarding creation by hand to be pure and sacred. The excerpt that particularly lists deities embodied from excreta even seems to intentionally smooth out the distinction between mortal flesh and the immortal Kami.

Third, in comparison to the inclusivity of the concept that almost anything could become the bearer or the result of the procreation activity, a certain triggering of the process is inherent in the side of activating itself. In the sixth, seventh, and eighth type mentioned above, a certain action, activity, or movement, mostly conducted spontaneously and coincidentally, is particularly emphasized as the trigger action that enacted breeding or creation. This idea could be deeply reflected in the high regard for spontaneity in Japanese culture.

If we allow ourselves a little abstraction, and turn back to the western Judeo-Christian tradition, we could posture that what is really excessive in western tradition in comparison to Japan is the highly strong distinction between subject and object, or the very firmly insisted gap between inner and external worlds. Deeply-rooted notions such as souls are immortal and flesh equals dust; creation depends on subjective creativity; the outer world is akin to still materials waiting for free operation are quite prevalent. Japan very interestingly developed an exactly opposite approach for creating: in contrast to relying on subjective creativity, Japan bases an attitude of appreciation towards objects, or if we use another word, things (in Japanese, *mono*). That is: creation comes from respectfully paying attention to common objects (*mono*). One should give up one's subjective preference when one appreciates objects. Instead, one should spend time just looking at the existing surrounding. Only with a full understanding of existent ready-made everyday objects could one make any further creation.

Thus, Japanese people developed a materialism culture that is in contrast to the Christian/ Puritan idea of repressing sensations of the material, so as to pay attention to god. We might think of Epicurus' idea as representing the extreme polar of western version of materialism: that is to deny god, and enjoy life and sensations of material. Japanese version of materialism is neither Christian nor Epicurean. It goes one step further, thus might be a more radical dialectic: it considers objects (*mono*) to be god (*Kami*), as showed in mythology that sacred things could be blood relatives of gods. The way

of doing this is through ritual. They develop a system of almost speechless rites to worship Kami through interaction between human and sacred objects.

2.3.3 Sacred objects and archetypes of Maywa Denki's product

Shinto, Japan's indigenous religion, scarcely applies universal rituals to universal ritual objects. Usually, a local Shinto temple (Jinja 神社 in Japanese) holds a special local ritual to worship a particular local Kami. During these religious events, there is rarely any preaching. Instead, people gather together to interact with the sacred objects in silent rites, which bound the community tightly with the Kami. Some examples provided below could provide a plot of the huge passion infused in ritual objects:

Onbashira Festival(御柱祭)⁸

Onbashira festival is a local ceremony which happens every 6 years at the Suwa Shrine in Suwa lake area of Nagano Prefecture. "Onbashira" basically means "sacred pillar". In each corner of the four major shrines of Suwa Grand Shrine stands an Onbashira that is made from a whole momi fir tree found in the nearby sacred mountain. The biggest pillar/log can reach up to 17 to 19 meters high, and weigh more than 10 tons, which are usually taken from a fir tree which is more than 200 years old.

The ceremony is made up of three parts: tree selection, Yamadashi and Satobiki. The selection of the tree for Onbashira takes place up to 2 years before of the formal festival. After selection, in Yamadashi, which literally means "coming out of the mountain," the log is taken down and dragged by thick ropes, held by hundreds of men, the parishioners sliding it the whole way down to the shrine town.

The whole process of moving the log completely relies on human power. The most dangerous procedure is the sliding of the logs down on a 60 degree slope with priests riding on it (Figure 13). One month after it reaches its destination, in the Satobiki session, the huge log will be raised at the sacred spot by ropes by hand, and some priests will keep riding on the log singing during the action (Figure 14). Both Yamadashi and Satobiki risk people falling from the log, and injuries and deaths happen regularly in the 1200 year history of the ceremony. Yet the rites insist on its original methods.



Figures 13 and 14 Onbashira Festival, source: Google image

⁸ Wikipedia. *Onbashira*. <https://en.wikipedia.org/wiki/Onbashira>

Shinsen and fire kit

Ise Grand Shrine (伊勢神宮 Ise Jingu) is the “center shrine” and the most respected shrine among all the Japanese shrines. Ise Jingu preserves many rituals that last for more than a thousand years. Ise Jingu includes two major groups of shrine temples, Naiku (内宮 inner shrine) and Geiku (外宮 outer shrine). Naiku is dedicated to worship the major goddess Amaterasu (the great deity who shines in the heaven). Geiku, which is 6 kilometers away from Naiku, is dedicated to worship the second goddess Toyouke-Omikami (the deity of agriculture, rice, harvest, and industry). Apart from that, in Geiku at the northeast corner, a special hall called Mikeden (御饌殿) is located, which is the place where sacrifice to Amaterasu Kami is deposited. Everyday freshly prepared sacrifice will be cooked two times at morning and evening, then transported and placed in the altar inside Mikeden.

The sacrifice is called shinsen, which is a couple of dishes of certain types of specially selected food. Every dish uses only one food material, which is simply cooked (mostly just boiled in water), and then delicately laid according to strict traditional rules. The types of food, their appearance, and the cooking methods of the sacrificial food, along with the type and appearance of the holding dish are all strictly regulated, and no changes are not permitted.

The water and fire for cooking Shinsen are required to be extremely pure, thus to light the fire a special set of fire kit is put into use. The ritual objects of making the fire are hi-kiri-usu (火きり臼) and hi-kiri-gine (火きりぎね) (Figure 15). Hi-kiri-usu is a piece of wood plank with a line of pre-cut grooves, while hi-kiri-gine is a cross of a vertical stick and a horizontal hand bar connected to it with rope. By moving the hand bar upwards and downwards, the stick spins and thus drills into the plank. The appearance of the set is so cautiously preserved that it is the same shape as a thousand years ago.

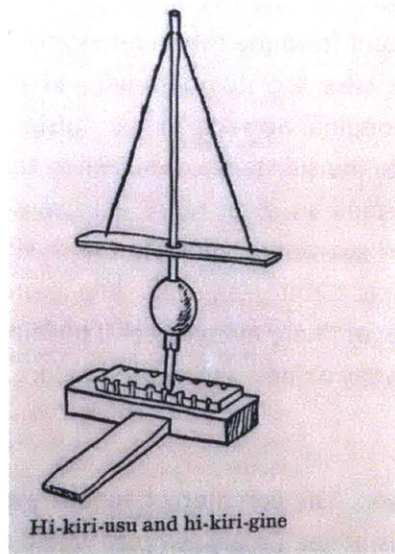


Figure 15 Hi-kiri-usu and hi-kiri-gine, source:

Jean Herbert. *Shinto: At the fountain-head of Japan*. (London: George Allen & Unwin, 1967), P.485

Ise shrine Shiki-nen-sengo

The two major temple group in Ise shrine, Naiku and Geiku, are both designed from the form of stilt barn (the terminology in Japanese is 高床式倉庫, taka-yuka-shiki-souko) of the Yayoi period. The architecture style is marked by a very thick roof made of piles of cypress bark, and two sturdy giant wood beams crossing each other at the top (Figure 16).



Figure 16 Ise shirine Naiku architecture, source:

<https://matome.naver.jp/odai/2138081177876394601/2138081529479463603>

The appearance and the craft of the architecture in Ise shrine are strictly preserved. In 692 AD, about 20 years after the original establishment of Ise shrine, Jinto Tenno, the female emperor at that time legislated a rebuilding rule called Shiki-nen-sengo and for the first time rebuilt the shrine while completely keeping every detail the same. According to the Shiki-nen-sengo rule, a vacant piece of land is to be kept beside each Naiku and Geiku. Every 20 years, on such vacant land a new group of buildings is established, and they entirely duplicate everything of the old, including all the sacred objects protected inside, such as the sacred sword and sacred mirror that is said to be directed gifted to the emperor by the Amaterasu Kami. And simultaneously, the previous buildings are to be demolished.

We can understand the rule of Shiki-nen-sengo from two points. First, the unique respect on sacred objects of Japanese culture is different from the conservative attitude of protecting everything that is traditional, because if that is the case the demolition of the old building would be a huge blasphemy, akin to replacing the original artifacts in the museum with the contrafeights. Second, despite that it shows indifference to the substance of buildings, to maintain more than 1200 years of shiki-nen-sengo actually demonstrates an even more excessive will of conservation, as the true meaning of such sustainability is to guarantee the look, the style, the craft, and the purpose of the building to be exactly the same as 1200 years ago. And more interestingly, such temples are archetypes of ancient rice barns, an ordinary everyday civil building. The reason for this could be the culture of worshipping Kami in everyday objects as analyzed before.

Kayu ura (粥占)

Kayu ura means rice-gruel divination. The ceremony happens every year in the middle of January, when a large pot of rice porridge is boiled (many temples would add various beans) for a long time until it becomes a paste. There are two types of divination implements. The first type is a branch of willow with a slit at one end, which is called Kayubashi (粥箸). Kayubashi is thrown into the porridge while boiling. After the porridge is well cooked, it is taken out, and the pattern of rice adherent to the split is interpreted as the future fortune. The second type of implement is a bunch of bamboo pipes. They are similarly thrown into the porridge while cooking, and after the porridge is ready, they are taken out and split into two halves so that priests could count how much rice each pipe contains.

Kayu ura is mainly for the divination of agriculture harvest of the following year. In many temples tens of Kayubashis or bamboo pipes are used, each representing a single type of grain.

Such divination with materialistic sacred objects like rice porridge is never replaced by divination with more abstract factors like cards or numbers. Rice porridge is especially a secular and common thing that relates to everyday life of everyone. Again, the privilege put on ordinary things close to human life is a unique aspect of Japanese culture.

In Maywa Denki's product design, one can also see a strong inclination to regard objects as ritual objects. Many of Maywa Denki's designs could almost be seen as modern mechanical versions of traditional sacred objects with a long history. By just comparing the shape and the form of the products and the traditional objects, one can easily notice their connection. A couple of examples are shown below: Ray-ray-ken is similar to Kusanagi (a legendary Japanese sword); Na-Uchi-Bou is related with Buddhistic ferule; Sava-O with noh mask; Saw-two-bow with Japanese bow (Yumi); and Hariseng-Bomb with the paper fan.








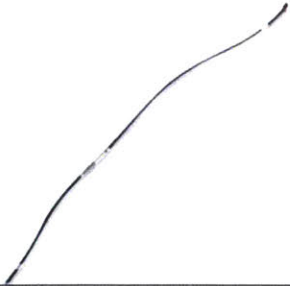


Group	Maywa-Denki product with similar shape	Tradition ritual object
1	Ray-ray-ken 	Kusanagi 
2	Na-Uchi-Bou 	Buddhistic ferule 
3	Sava-O 	Noh mask 
4	Saw-two-bow 	Japanese bow(Yumi) 
5	Hariseng-Bomb 	Paper fan 

Table 1 Comparison between Maywa Denki products and ritual objects

Similar conclusions could be drawn if one looks at design sketches of Maywa Denki. In Nobumichi Tosa's public speech, he described his design process as different from engineers: *"At first I did not start thinking about engineering; instead I began with my imagination of shapes."*⁹ Some of his sketches are below (Figure 17):

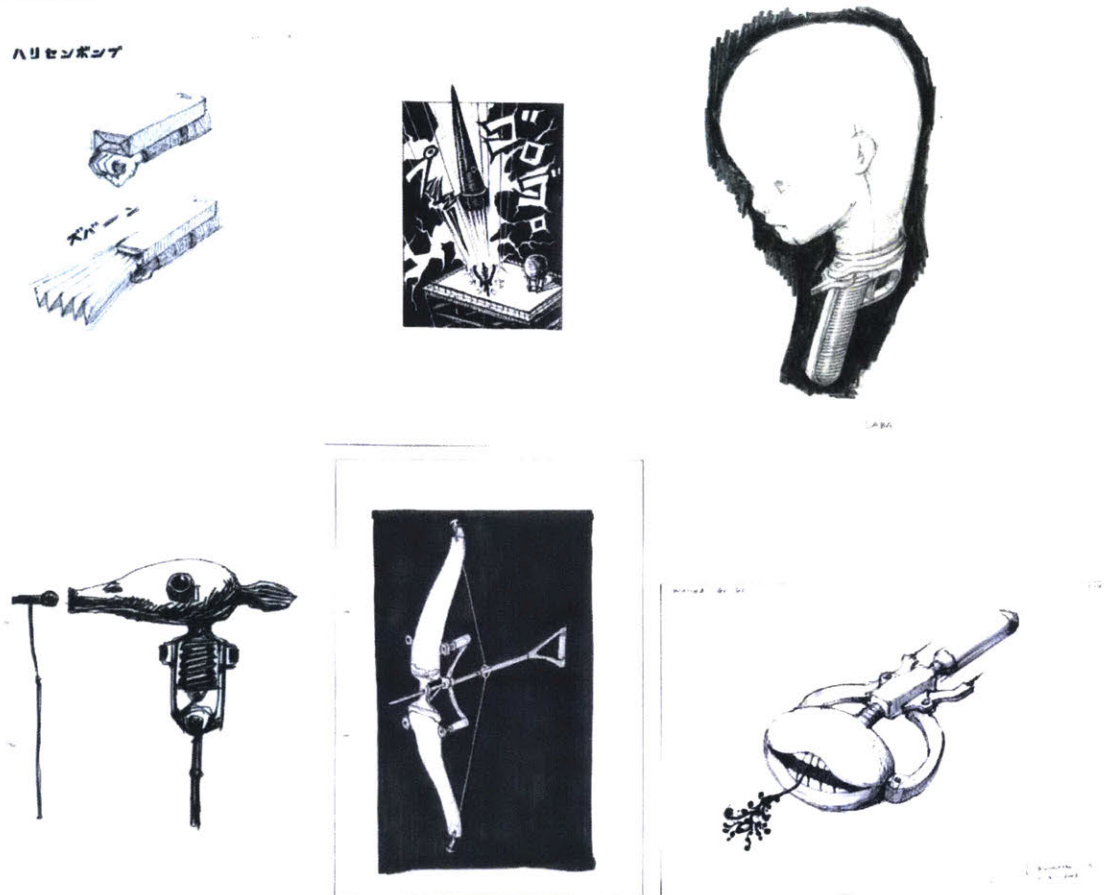


Figure 17 Maywa Denki sketches, source: Maywa Denki official site <http://www.maywadenki.com>

It is clear from these sketches that the starting points of Maywa Denki's designs are images that can't be completely reduced to mere use. Yet Maywa Denki's intention is neither on pursuing a "cool" or "exciting" exterior look, as many of its products are by no means a "cool look", and might be too indirect to arouse an instant stimulation on desire. Maywa Denki's design intention is rather to somewhat efficiently express a feeling of the mysteriousness of everyday objects. I think it is proper to say that Maywa Denki's products are similar to ritual objects: although they have an announced proper use, they always contain something that cannot be explained by mere function, and that their real purposes are deep and concealed. Now it is easy to understand Maywa Denki's propaganda slogan, "nonsense machine", as they are actually building products with unspoken ritual meanings.

2.3.4 Ritual theory and the technique of ritual objects

It is not enough to assume a relationship between Maywa Denki's products and ritual objects. The question that takes one step further would be "what does it mean that the objects produced by

⁹ Tosa Nobumichi. Talk in TEDxSeeds 2010. <https://www.youtube.com/watch?v=GsggRCvblZE&t=203s>

Maywa Denki are ritual objects?" The question of causes and effects of rituals remains a controversial constant.

Among all the related theories, one of the most noted was established by Jane Harrison who was among the first batch of thinkers with a "ritualist" title. She actually built a holistic theory explaining the relationship between myths and rituals. In her theory, rituals were regarded as more primordial human practice that preceded the existence of myths. Myths were in return claimed to be posterior invention that is constructed to explain the meaning of rituals.

Jane Harrison's insightful observation is that there is a genealogical relationship hidden behind myths. Branch myths of the same ancestor myths have minor differences in characters and stories, but they share a comparatively stable skeleton. Harrison boldly assumes they are all related to an original ritual, and in this ritual a procedure of behaviors is conducted, which becomes the plot of myths. Harrison notes the examples of the Greek myths of the infancy of Zeus and Zagreus. In Zeus' infancy, his mother Rhea hid him from his father Kronos who wanted to swallow him. Then she gave him to Kouretes, a band of young men, who hid him in a cave on Mount Dicte, and danced in armor to pipes, beating their feet and clashing their shields to cover up the sound of Zeus' wailing. In Zagreus' infancy, he was also deposited with the Kouretes, but he was killed by Titans, his father's enemies. The Titans stole the infant Zagreus from Kouretes, tore him apart and ate his flesh raw. But Athena managed to save his heart and revive him.¹⁰

Harrison managed to assume a proto-ritual behind these two myth. Such ritual had the following procedures:

1. A child is taken from his mother and carefully tended by men called Kouretes. To guard him they dance over him an armed dance...
2. The child is for some reason expelled from his family members, forced to be hidden, made away with, and to an extreme killed.
3. The child reappears, is brought to life again.¹¹

Harrison successfully found evidence of recording of such a ritual in archeology and did a comparative study to support her hypothesis. If Harrison's theory is convincing to a degree, then it means rituals are not performance of myths, but that ritual is the original element, and myths are explanation for rituals. So, for the relationship between Japanese myths and rituals, it is not that the mythology emphasizes the sacredness of objects that generate multiple rituals worshiping sacred objects, but that, rituals with sacred objects are the original and more permanent factor, based on which myths were conceived.

There must be some autonomous importance in ritual and ritual objects. For Harrison because her case studies were mostly rituals related to dance and performance, she simply made an ambiguous reference to "*the emotional impulse of primordial human*" as the core of rituals. So her idea is that primordial human beings are more impulsive than us, and they were deeply emotionally driven. When they felt their inner impulse, they did not choose to defer their instincts like modern people, but rather

¹⁰ Eric Csapo. *Theories of Mythology*. (Massachusetts: Blackwell Publishing, 2005), p.146

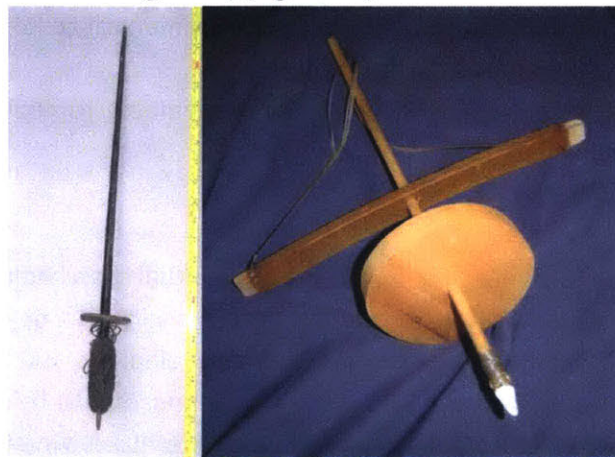
¹¹ Eric Csapo. *Theories of Mythology*. (Massachusetts: Blackwell Publishing, 2005), p.149

improvised with their actions and voices, and they were inclined to make such utterances together as they were usually tightly bound, and that became the beginning of ritualistic behaviors.

Harrison's reasoning might be problematic here as she places emotion at a fundamental place without further examination. Emotion can be a reactive mind structure rather than being autonomous or self-driven. It is reasonable to ask a further question: what sustains constant passion in rituals? There should be some autonomous factors in the form of rituals that trigger emotion.

Actually, observing Japanese ritual objects could offer an inspiration for furthering ritual theories, as they retain relatively complicated, permanent, and autonomous forms that are free from arbitrary interpretation. In the example of ritual objects listed in section 2.33 in this essay, the shape of hi-kiri-usu and hi-kiri-gine could offer some clues.

The shape of hi-kiri-usu and hiri-gines is actually a set of pump drill fire kit that existed all over the world. There are two things to notice: first, they were indeed mainstream practical tools in a certain period of history; second, and yet, for a long time in Japanese history, they became out-of-date implements that were rarely in practical use. It could be proved that pump drills were popular tools by the evidence of archeology and anthropology. The following pictures are pump drill collections found in the geographic discovery period in British Museum and Native American Museum, Indiana, US. The former one was found by a missionary in Solomon Islands from 1877 to 1903 (Figure 18), while the latter one is a photograph of contemporary pump drills used by native Americans in 2006 (though it's not for starting fire but for drilling holes) (Figure 19).



Figures 18 and 19 Pump drills, source:

http://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?objectId=505315&partId=1; <http://visions.indstate.edu:8888/cdm/ref/collection/nativeam/id/36>

Ancient Japan had a far more developed industry than Solomon Islands or Native Americans. Even before the invention of matches, daily fire starting was dominated by portable tools like flint stones, which means pump drills were out-of-date inventions that were eliminated in daily life after middle ages. In other words, being a ritual object at one time necessarily means it was a practical tool in the past, and then it lost its practical use, and can currently be deemed useless.

In summary, to turn an object into a ritual object needs following steps:

1. Object first was a tool, had a practical use/purpose;
2. Object lost its use in a changed context;
3. Myths for useless object was conceived;
4. Object became part of a ritual.

This seems paradoxical, because right after a common-place object lost its practical use, it became part of a ritual. A conceiving procedure then started, finally resulting in a particular myth that accounted for the lack of meaning from previous practical activities, hence guaranteeing its sacredness. This is the secret of attractiveness. At the beginning, it is exactly uselessness that embodies a powerful explanation or origin story. In a broader sense, it is at the beginning exactly the loss of practical use that could trigger a development process of a system of meanings, and it is the idea hidden behind Maywa Denki, as it alleged itself with making “nonsense machine”.

If we go further, questioning how ritual objects become ritual, the premise of the engendering of a meaning system is exactly the loss of the original purpose of the objects. There could be a further question, which is what makes/defines the status of an object lacking its use? People tend to be naturally purpose driven animals that even consider natural materials also as useful things, which means an object without any use is not an intuitively clear notion. As implied by the development process of ritual objects, an object without any use does not mean a natural object is without human interference, but that, in contrast, it means that when an original use/purpose encounters a brutal interruption in a changed context, then the use/purpose of the object suddenly becomes invalid. In other words, what is actually performed in rituals is the how of dealing with the inconsistency in the purpose imbued in the use of objects.

Maywa Denki knows well the formula that lost use equals meaning. Actually, in order to explore the possible systems of meanings, it deliberately performed the abruptness of the common sense relationship between a tool and its use. The following table presents examples of comparison between Maywa Denki’s Ray-ray-ken and a group of tool objects:

Object name	Its meaning	Its purpose
Sword	The shape of a sword	Hurt/ beat people
Lightning rod	The shape of a lightning rod The scientific theory of thunder	Prevent lightning striking
Myth book of thunder god	The myth of thunder god	Explain thunder
Ray-ray-ken	The shape of a sword The shape of a lightning rod The scientific theory of thunder	Hurt/beat thunder god

Table 2 Comparison between Ray-ray-ken and common tool objects

Maywa Denki was deliberately playing with the standard understanding of tools and their uses. By improperly placing the means and purposes of the original tool object, suddenly their “practical use” was lost, which opened up a way of an alternative meaning system.

2.4 The path of Maywa Denki's product development

2.4.1 Starting point of Maywa Denki's creative path

From a general perspective, the enigma of Maywa Denki is the starting point for Maywa Denki. The enigmatic "nonsense" suggests that starting point. I think Maywa Denki's nonsense is real nonsense, which means it does not secretly regard absurdity or chaotic feeling as enjoyable entertainment, but rather, it is sincerely devoted to challenge the normal need-satisfaction mindset.

Maywa Denki's starting point could be summarized to be a naïve trial of solving a question that is obviously a too-big question. In the Naki series, the question is "why does the image of a fish haunt my nightmare?", "What is 'I' and where is 'I'?" In Voice Machine series, it is "what makes pure sounds become voices?" In the Edelweiss series, it is "what is the female gender? What is the male gender?" These questions are too big, and even traditional and contemporary philosophers have lost interests. Maywa Denki did not step back from these questions, but curiously offered some alternative answers to these questions with their own unique style of product design.

Maywa Denki is giving its own explanation for too-big questions that lack specification. These explanations themselves matter. Those explanation have modulated the modality of meanings, and new meanings which lead to new conclusions and new concepts for designs.

That is the secret of creation by Maywa Denki. Creation is not the creation of an answer, but rather creation of supplementary explanation of questions. Creation is always an excessive answer or solution, in which an alternative cause-effect system could emerge.

2.4.2 Otamatone: example of Maywa Denki's complex product development path

Reflecting on designers' design development path, the enigma of Otamatone's initial concept design is: where did the idea of making an instrument with a spherical resonance structure (the rubber tadpole head) come from? This is question that could only be fully answered after chasing back to Maywa Denki's whole product development process. According to Tosa Nobumichi's public lecture¹², the idea of Otamatone arose from a series of previous work: Otamatone's antecedent is Chihuahua Whistle, which is the offspring of Dingo and Seamoons; Dingo and Seamoons belong to the product series called "Voice Mechanics Series", and the whole Voice Mechanics Series come from a single product called Sava-O in Naki Series.

To make it less confusing, there are two things that as a design company Maywa Denki maintains. First, Maywa Denki design products are products in series, which is like writing novels in chapters. Until time of writing this essay, Maywa Denki has four product series: Naki (which means fish) series, Tsukuba series, Voice Mechanics series and Edelweiss series. In Maywa Denki's practice, the concept contained in the name of series is generated before the design of any single product, and the concept of the series acts as the context for developing any product contained in it. For example, the Edelweiss Series was based on a science fiction novel, and all the products contained in Edelweiss Series are developed

¹² Tosa Nobumichi. Talk in TEDxSeeds 2010. <https://www.youtube.com/watch?v=GsgRCvbLZE&t=203s>

from fictional probes in that novel (not directly probes, but developed from probes, like obtaining a particular shape from probes in the novel).

Second, Maywa Denki designed products based on its previous products. It rarely proposes any individual project which comes from a sudden outsourced stimulation; this is especially incredible as in modern society a defaulted condition for any commercial organization is to maintain sensitivity to market and to pay close attention to customers. To be self-indulgent is intolerable, yet Maywa Denki somehow manages to keep a high level of autonomous expression, as well as to run the company stably. How could Maywa Denki make it?

Back to Otamatone's specific story, it is necessary to have a detailed review of its development history as presented below:

1. Back to 1990s, as a young art student, Nobumichi Tosa came up with an idea of building Naki series as an artistic approach to answer the specific question "Who am I?", the principles of design of Naki products are: 1 Compare oneself to a fish, and the world to a small sea where a fish lives, then, ask oneself "Who am I?" to find the answer from the point of a fish. 2 With the theme of "one item = one message," create a product to express the answer. 3 Examine the results as a whole and show the total image of one's self.¹³
2. Among all the Naki products, there's one specific product called Sawa-O. Sawa-O is a pistol-grip-operated ventriloquist doll (Figure 20). When the performer presses and releases the pistol trigger, the doll will open and close its mouth. The performer can pretend that the doll is speaking to himself (Figure 22). Sawa-O is thus an equipment that could apply for self-to-self talk, or as Nobumichi put it, "*Sawa-O's voice was not evoked by machines, but out from inside of myself. When I performed as a singing Sawa-O (Figure 21), it could be possible to observe my own voice from an objective angle. Soon this objective consciousness to observe the inside of a man was enlarged and I finally decided to extract the human voice out of one's body to make a robot.*" To answer the question whether the voice come from a man's inside or come from the Sawa-O mask, something other than his inside, Nobumichi Tosa tried various efforts: he launched a CD album called "Samba" using Sawa-O's falsetto voice, and in public performances he built a huge Sawa-O mask to sing as if he himself was a Sawa-O (in the third picture below). The experience was described as "*I felt like I was not me, but possessed by another being when I was performing. I got inspired by the possession situation and decided to make robot with human voice.*"¹⁴

¹³ Maywa Denki official site. <http://www.maywadenki.com/products/naki/what-is-naki/>

¹⁴ Tosa Nobumichi. Talk in TEDxSeeds 2010. <https://www.youtube.com/watch?v=GgRCvblZE&t=203s>



Figures 20, 21 and 22 Sawa-O, source: Maywa Denki official site <http://www.maywadenki.com>

3. As the successor of Sawa-O, Voice Mechanics Series was built. The first product in the series was Seamoon, which was a woman-like robot with bellows sending air into its artificial rubber vocal chord (Figure 23). After Seamoon Tosa Nobuminch had discussion on dogs' bark, and a dog-like barking robot called Dingo was built (Figure 24). With its principle of segmenting dogs' bark into an "Ah" sound with the dog's mouse open and an "Woo" sound with the dog's mouse close, Dingo could simulate a vividly "Ah-woo!" barking, and its mechanism was simplified into a mini toy called Chihuahua Whistle, which was as simple as a combination of a breached ping-pong ball and a rubber-end whistle (Figure 25).

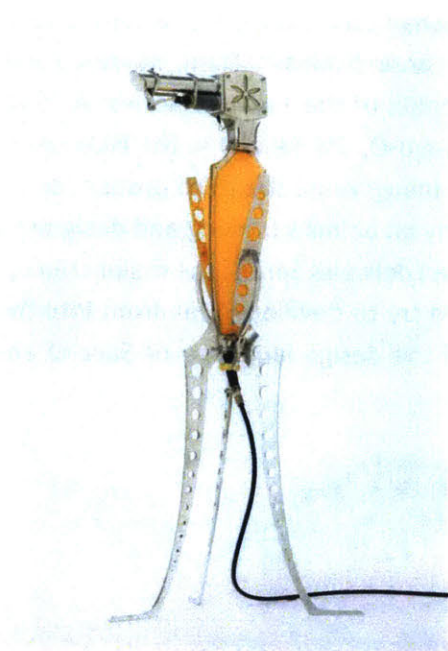
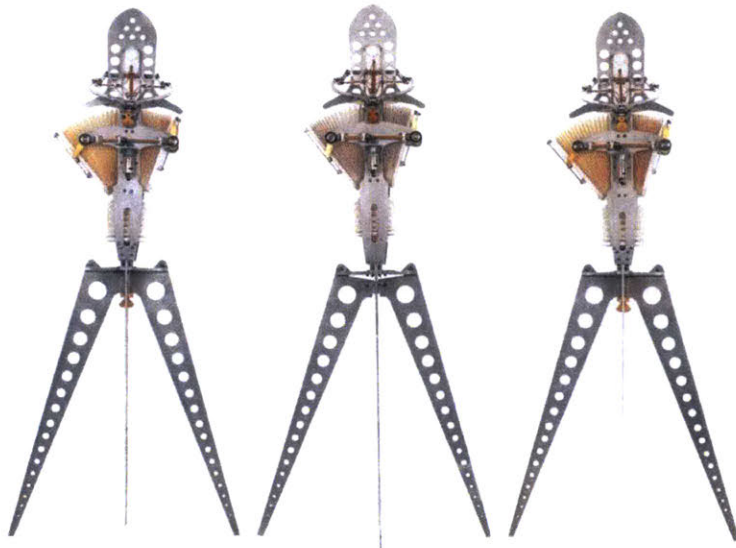


Figure 23 Above: Seamoons, source: Maywa Denki official site <http://www.maywadenki.com>

Figure 24 Left below: Dingo, source: Maywa Denki official site <http://www.maywadenki.com>

Figure 25 Rhight below: Chihuahua Whistle, source: Maywa Denki official site <http://www.maywadenki.com>

4. After establishing the prototype of a sound resource plus a spherical resonance structure in Chihuahua Whistle, Otamatone was finally build after rounds of sketches and discussions with contract manufacturers. It was finally settled as a tadpole/eighth-note shaped toy instrument with an electronic sound resource bar and a rubber spherical loudspeaker changing its voice when squished by hand.

Thus above is the whole development path of Otamatone, and it is surprising to think about how much content it contains. It could go back to Dingo and Chihuahua Whistle's spherical resonance structure, to Seamoon's study on the duality of voice that are both mechanical and biological, to Sawa-O's hint that human voice could be objectified into something other than the speaker himself, and finally to the Naki series' starting point, a rather general philosophical question "who am I?", and the methodology of exploring it through product design.

2.4.3 The overlooking plot of Maywa Denki's product development

Maywa Denki has a complex product development path in which the design concepts of multiple products intersect with each other. Maywa Denki has four series of products: 1) Naki Series (which means fish in Japanese), 2) Tsukuba Series (which means wave), 3) Voice Mechanics Series, and 4) Edelweiss Series. They were original inspirations of Maywa Denki. Naki is about making artwork that expresses a creator's deep feeling about fish. According to Tosa Nobumichi, the nightmare about fish was the initial drive of his creation. In college, he drew 1,000 imaginary fish with various shapes and published a book called *Otaku-Gyotaku*. Then, in graduate school, Hai-Gyo became the first work in the Naki Series. The second initial inspiration was to create mechanical instruments to start a band because "band music is a way to pass on ideas to public from an individual". Then, Maywa Denki developed Koi-beat and Pachi-Moku, which kicked off the opening of the Tsukuba Series. As Tosa Nobumich made musical performances wearing the mask of Savo-O, the Sava-O in the Naki Series stimulated the concept of the robot with human voice. Thus, it inaugurated the third product series Voice Mechanics. In that series, Maywa Denki carried out a study on animals barking and designed a series of toy instruments based on the results of the study. In the Edelweiss Series, the major concept is to "criticize on the excessive logics of the Naki Series" and to try to develop ideas from intuitive feelings. Below are some of the objects which have inherited the design language of Sava-O and barking dog machines (Figure 26 and Figure 27).

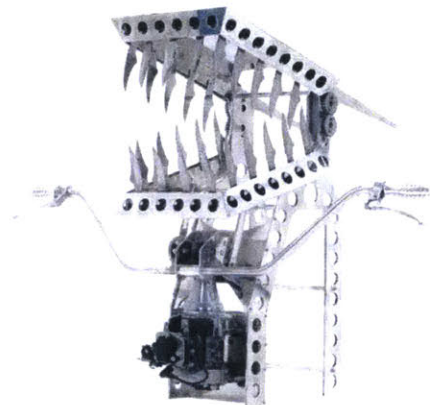


Figure 26 left: Flower Sawa-O, source: Maywa Denki official site <http://www.maywadenki.com>

Figure 27 Right: Puddle's Head, source: Maywa Denki official site <http://www.maywadenki.com>

Maywa Denki established relationships between its own designs, as all of them make up 4 complete series. Maywa Denki had starting points and initial methods as mentioned and analyzed in the earlier chapter, as it always pays attention to everyday objects and it has a methodology of how to bring about ritual meaning from everyday objects. Yet with self-reflection and self-definition Maywa Denki is always redefining itself.

2.4.4 Maywa Denki's business promotion: how expression reaches the public

The key point is: how does individual expression reach the public? Now, it is a time that not only companies produce systematically, but the public also buy products systematically from the stores. If Maywa Denki does not produce according to traditional channels then how could it push itself towards customers? How do its potential customers get to know it?

A simple answer lies here: Maywa Denki is a crossover company. It does not necessarily mean it is initially aimed to be a crossover, but rather, it tries all the possible marketing channels to promote itself to maintain its own focus. Maywa Denki is a company run by Tosa Nobumich so it is constantly developing only one idea.

I was fortunate to have had a short internship experience with Maywa Denki. As a witness, I was amazed by how delicate and flexible Maywa Denki's projects were. During my internship, Maywa Denki planned a sharply insightful joint exhibition with Muji, a giant stationery brand. The exhibition was meant to compare Maywa Denki products to Muji products under the same design theme. For example, the theme could be "a tool that assists thinking" or "a model of the world", but the path of Maywa Denki's thinking detoured from Muji. The exhibition was small, but the concept was very clear and the difference between the two companies inspired the audience.

The methods of promotion for Maywa Denki include exhibitions, concerts, lectures, educational workshops, and toy sales. In exhibitions, Maywa Denki products are displayed as artwork. In concerts, Maywa Denki performs as a band with self-made instruments. Some of their performances have been turned into TV programs. Lectures introduce individual creative paths, especially in recent years with hacker and maker being heated topics. Maywa Denki also transferred many of their prototypes of final products into do-it-yourself (DIY) kits for educational purposes in workshops for teenagers. Overall, selling toy instruments is the biggest source of income for Maywa Denki.

Maywa Denki is not the only crossover creative individual/group. Ai Weiwei, a Chinese artist, presents himself as a crossover creator to the public and is concerned about one constant theme/idea. Before 2006, Ai Weiwei's individual expression was presented as installation art and architecture design. After 2006, he began to write a tremendous amount of news comments on Twitter and the Chinese version of Twitter, Weibo. His impact as a social activist quickly boosted, after he released two documentaries: Balianhuaer and Laomatihua. Balianhuaer was about an earthquake and student casualty investigation. Laomatihua was about being a witness for Tan Zuoren in an earthquake-related prosecution. Finally, he was arrested by the Chinese government in 2011 and prohibited from going abroad for more than three years. After such a political episode, he went to Germany in 2016 and all his works were related to political issues. They focused on refugee problems and political crimes because he treated such topics with self-recognition.

The reason why Tosa Nobumich of Maywa Denki and Ai Weiwei could become successful crossover creators may have two opposing perspectives. First, it is relying on the rise of internet. An idea owner could make use of social media to promote, while he could also easily search for outsourced manufacturers and sellers. The second perspective, and perhaps more important perspective, is that the problems studied by Maywa Denki and Ai Weiwei are important questions that are hard to be classified into any particular existent subject, which means these questions are related to a systematic failure. The political problem Ai Weiwei is concerned with, such as the refugee problem, is a crossover problem between the EU, US and Middle East, and every single government is not sufficiently

functional here. The top-down observation could miss the real situations in such problems. Similarly, Maywa Denki's individual study is located in a vacant space left by contemporary philosophy. Ontological discussion about the essence of human and the world is absent in contemporary philosophy. Maywa Denki also supplements studies that should belong to anthropology. While anthropology mainly studies on primitive people's relationship with tools, machines and everyday objects, Maywa Denki acts like anthropologist on contemporary human beings, and it observes contemporary people from their everyday implements.

That is to say, there is a kind of opportunity illustrated by Maywa Denki and similar creative individuals: to study and express on a single topic as an individual, one could find promotion channels to have an impact on the public, open discussions, and make a sustainable business.

Chapter 3

My work: The Floating World

3.1 Learning from Maywa Denki

After studying Maywa Denki's works I have acquired the following insights:

1. What is valuable to consumers are basic questions that draw public concern.
2. One way to efficiently express such questions is through interaction with touchable objects. People can build a deep understanding when they are touching and operating on things.
3. Through a designed interaction with objects, positive reactions towards serious questions could be generated.
4. Such objects could become a commodity and thus could be accessed by the mass public.

Therefore, I initiated a project which contains four elements:

1. It expresses concern on a serious public question.
2. Its approach of expression is through sensible images and touchable objects.
3. It generates a positive reaction towards a serious problem.
4. It results in products that can be widely distributed and adopted by a mass audience.

3.2 My concern as starting point of design

As a former architect, I am always concerned about living conditions of underprivileged groups. However, I think a new trend is emerging today where extreme living conditions, especially of displaced individuals in temporary shelters, are gradually becoming more and more prevalent around the world with increasing uncertainty. I have this concern partly because of my own experience and this study, but more importantly, because of a gradually acquired awareness that it must be an emerging global humanity issue that we did not meet before. Here, I will provide a matrix of issues to provide context for my design work.

2008 earthquake in Sichuan, China:

The 2008 Sichuan earthquake in China caused 69,227 death, and 374,643 injuries¹⁵ (many were amputated). The earthquake rescue was soon taken over by the government military and controlled by propaganda. Surviving residents were uniformly placed in temporary prefabricated houses, and then moved to new cities that were fast-constructed by the government. The whole process took a very short amount of time and was under strict surveillance by the government without information transparency. The following issues indicated that the Sichuan earthquake was more than a natural disaster. First, the buildings of schools built by local governments were the ones that collapsed more frequently. The parents of casualty students demanded investigations of building quality, however there has been no response from the government. An activist, Tan Zuoren, on the issue was even arrested and imprisoned for five years for "subverting the national power". Second, the cause for the

¹⁵ Wikipedia. *2008 Sichuan earthquake*. https://en.wikipedia.org/wiki/2008_Sichuan_earthquake

largest number of casualties in the town of Beichuan could be traced back to its unreasonable site selection when the whole town was moved in 1952. Fifty years after the alarms of the earthquake possibility was frequently proposed by scientific reports, the local government chose to neglect that for the concern of maintaining a high speed of economic development. Third, due to the one-child policy in China, parents who lost their only child in the earthquake and were unable to have another child were not given enough compensation from the government.

The Sichuan earthquake was a real trauma. When the years passed, it gradually vanished from the sight of the public. Millions of people lost everything they owned and were deposited in temporary shelters by the strong nation power for years. The appearance of such temporary shelters impressed me. They were prefabricated with blue and white steel plates. Many victims placed all their remaining belongings on the floor of the house, which were a few necessities such as their bed and cooking utensils. It was such a shame that there was not a documentary on an individual victim's life after the earthquake. Only after two months the attention of the press transferred to the luxury of the Olympic games held in Beijing. In China's official ideology, the voice of "dream" always prioritized the voice of retrospection.

Thus, through earthquake a sharp question emerged, "Without the fantasy of development where could the lives of individuals go?". Many earthquake survivors could not endure the trauma of the huge loss and selected suicide, which reminds people to reflect on the beginning point of their after-earthquake life: their life in temporary shelters.

Beijing urban villages:

An urban village is a unique phenomenon in China. It basically refers to poor constructed dwellings that are leased to low cost labors in the grey area of major cities (some are agriculture houses built before the urban expansions and some are buildings that were built in the Cold War period that did not reach modern standards). The difference between urban villages and slum villages is that urban villages accommodate a larger variety of populations. Urban villages not only accommodate poor urban population, but more often laborers (e.g. builders, waiters, package couriers, etc.) and young graduates from universities from outer provinces that swarm into more developed areas to look for jobs. The key point is that the housing rate in major Chinese cities (Beijing, Shanghai, Shenzhen) are increasing to an extremely unaffordable level. They are also accompanied by increasing rent rates, which has caused almost every out-comer to choose to live in the urban village for a while. In the November of 2017, the Beijing government executed an "administrative order" to expel out-comers living in Beijing. This included poor urban labors, many young immigrants from other provinces, and local low income inhabitants, which means the government was actually expelling every underprivileged population category.

I have many friends who live in poor conditions in Beijing and Shanghai. I took pictures of their units. The absurdness is that they were from top universities in China or overseas, yet no one seems to be surprised of the surrounding reality. The cause is complex yet also simple, China is a society with both high repression and gorgeous illusion. Most people are enduring the unendurable for an illusionary future. People are kidnapped by both repression and illusion, and always feel helpless and incapable of change. Looking at photos of a poor flat in my cell phone I'm urged by a cold painful thought that these pictures should be inspected completely so as to ask what on earth a human life is now.

Congo residence:

About half a year ago I initiated a study on Congo in a humanities class. In 1998-2003 there was Second Congo War, also known as Great Congo War, which caused 5.4 million deaths and 2 million displaced¹⁶. We should know this is the biggest fatality number since Second World War, yet not known by the public out of Africa. What continues to happen even today is that Democratic Republic of Congo (DRC) is still a place where hundreds of military powers supported or banished by its neighbor countries came and went freely, perpetrating all sorts of unimaginable violence. A family in the North Kivu area in East DRC, could experience periodic robbery, rape and killing convicted by wandering military troops. But, and this is a serious “but”, sympathy is the wrong direction, when I conveyed a deeper research, especially when I inspected video journals sent from Democratic Republic of Congo and Republic of Congo, a strong feeling of connection and similarity, rather than condescension, emerged.

The living condition of Congolese drew my attention. A typical Congo family lived in a shabby house with a courtyard, where bricks, steel buckets, plastic basins, plastic chairs and wood stools were scattered around. People were doing everything in this courtyard. They cooked food, washed clothes, took baths and threw garbage in indistinguishable buckets and basins, while sitting on the ground or on stools. Surprisingly those plastic utensils collected by Congo families were all mass-produced objects that could be found anywhere in the world, such as containers for bottle water, buckets for petrol and cheaply molded plastic chairs.

Calais refugee tents:

The refugee situation beginning after 2010 is also related to the problem of individual living conditions. From such perspective refugees should not be understood as a list of abstract numbers nor some fixed exotic groups with unchangeable culture. To be a refugee means a temporary living status that might not be experienced by everybody but is completely possible for anybody. Any individual could face a passive choice of leaving their current life and settling down in a strange place.

Imagine the status of a refugee: if one is forced to leave his home, what should he put in his pack? If he is planning to cross the borders of a couple of different countries, what clothes should he prepare? Calculating on the total distance of walking, how many pairs of shoes is he going to pack? As I browsed the photos and films recording the refugee flow, I found that they also led a life with piles of objects carried with them. The clothes, the tents, the cans, the medicine they carried personally were all their living context. Even when they finally reached their destination, it's hard for them to integrate themselves into the local society and many ended up living in refugee camps where they were provided supplies, without any cultural and social reconstruction.

The after-earthquake shelters in the slums of Beijing, simple courtyards in Congo, and tents of refugee camps have a certain kind of similarity. They are all poor yet modern living environments. The traditional well-architected home is disappearing. Instead, there is a rise of people living with a pile of necessities in whatever limited space is available. Such living statuses could last for a long time and that is the starting point for my design.

3.3 The ways of expression

In my work I want to express two points of view. First, living in unstable temporary living conditions is something that can happen to anyone and can be understood by anybody; It is not a business of “theirs”, but a possibility that is hidden in the life of every modern person. Second, as an individual,

¹⁶ Wikipedia. *Second Congo War*. https://en.wikipedia.org/wiki/Second_Congo_War

positive reactions could be given to such conditions.

I learned from Maywa Denki that an idea could be expressed in multiple ways to enable communication and commercialization. Thus, I conceived a group of different forms of expressions. Specifically, my work plan includes diagrams, a 360 panorama picture, a storybook, object designs, and short videos. These provide a matrix of perspectives on my integrated feeling and ideas. Diagrams provide graphical concepts which I think offer philosophical inspirations; I use diagrams to express the new point of my understanding of an issue. The 360 panorama picture simulates a scenario of an alternative reality. Storytelling relates abnormal scenarios with touchable everyday life with the help of a description that explains causes and results. Objects designed in context, similar to ritual objects that have been analyzed, provide a response to a non-existing but possible situation. The same as what people get in participating rite, by interacting with objects they could practice a positive reaction towards a crisis and build psychological confidence in unconsciousness. Videos are the evidence taken to immerse imagination into real life. Through experiment with a real person's body the whole concept becomes a real activity beyond mere thinking.

3.4 Description of the works

3.4.1 Diagram: Kaleidoscope (Figure 28)

A kaleidoscope is a glass tube that has six ends and at each end there is a translucent image of a particular shelter in which people live. These shelters include temporary shelters in the Sichuan earthquake, urban village flats in Beijing, residential courtyards in Congo, and the tents in the Calais refugee camp in France.

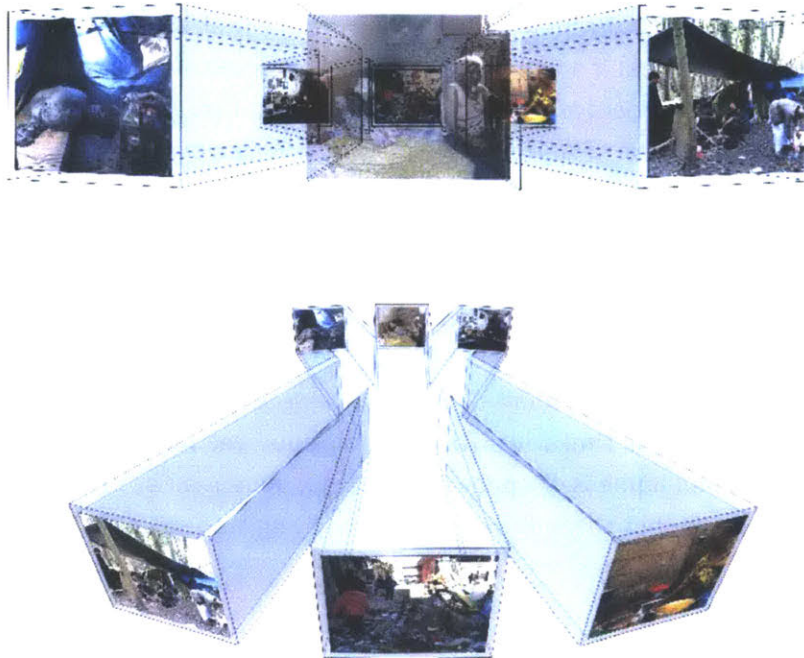


Figure 28 Kaleidoscope

3.4.2 360 panorama picture (future plan)

A 360 panorama picture is a description of a fictional image of an alternative world which would be explained in the storybook. This world is an abstract representation of the uncertainty happening today that causes the displacement of people. In this fictional world, the structural material that the skeleton of the city is constructed from has suddenly lost its mechanical reliability, causing the total collapse of artificial structure. In order to survive from such a catastrophe, people are displaced and building temporary floating spaces on the sea. The 360 panorama picture places the watcher at the center of a piece of floating wood as he/she observes the collapsing world along with tons of scattered material and objects around him/her. I think such a moment of emotionless observation is the starting point of the individual struggle against catastrophic chaos.

3.4.3 Story book: the Floating World (Figures 29-33)

The necessity of a storybook is that it provides a descriptive cause of the result. Even if that story is a fictional one, it makes people feel closer to that strange result and capable of sympathizing by imagining it possibly happening in the future. I regard storytelling as a way of connecting different special scenarios with the help of alternative timelines; for example, people living in the Western World are currently far away from warfare and human crisis, but science fiction movies depict a future crisis happening in major cities like London or New York. This refers to real disaster scenarios happening in other parts of the world.

This storybook named, "Floating World" describes the collapse of the man-made structures, the displacement of people, and the individual struggle to survive as the main character. To answer the question of "How to survive in the floating world?", the main character invents a couple of functional objects that become the prototypes of the toy design.

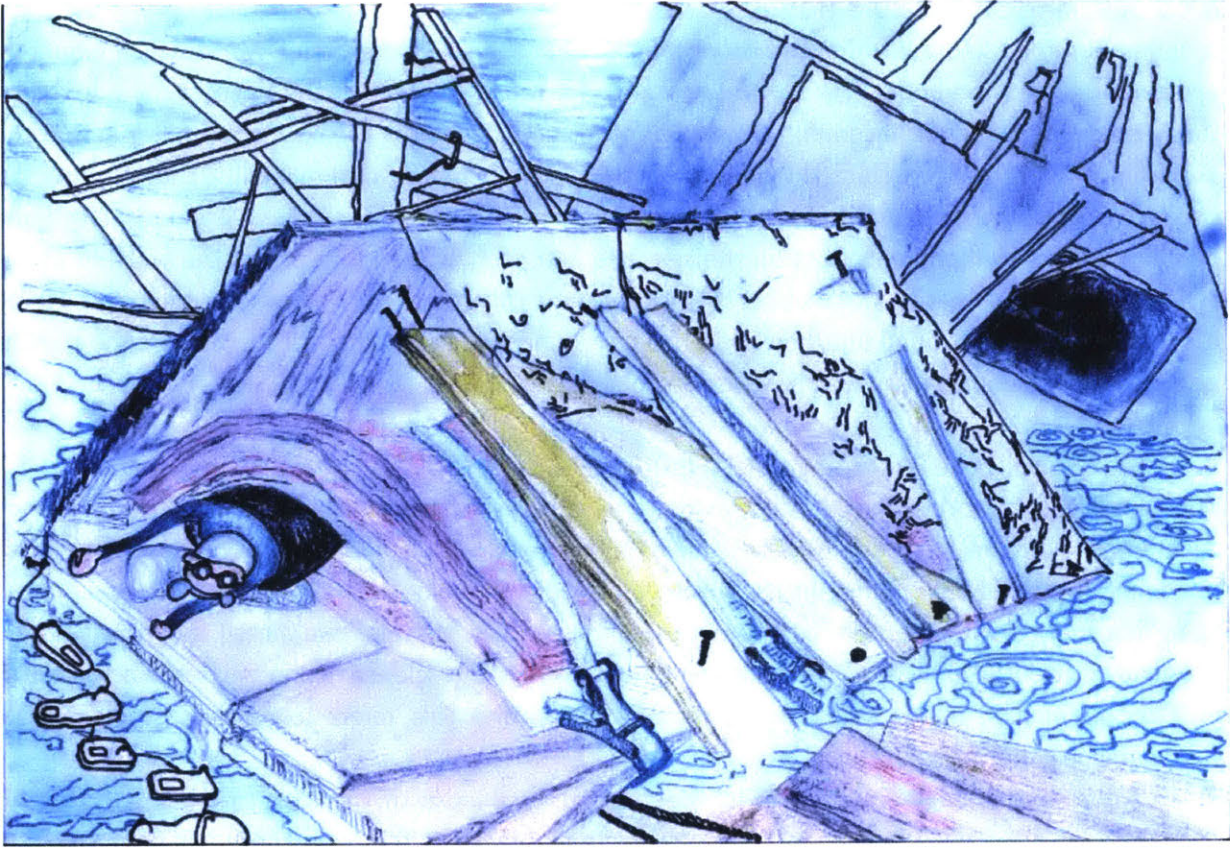


Figure 29 Storytelling 1: Shelter on the water

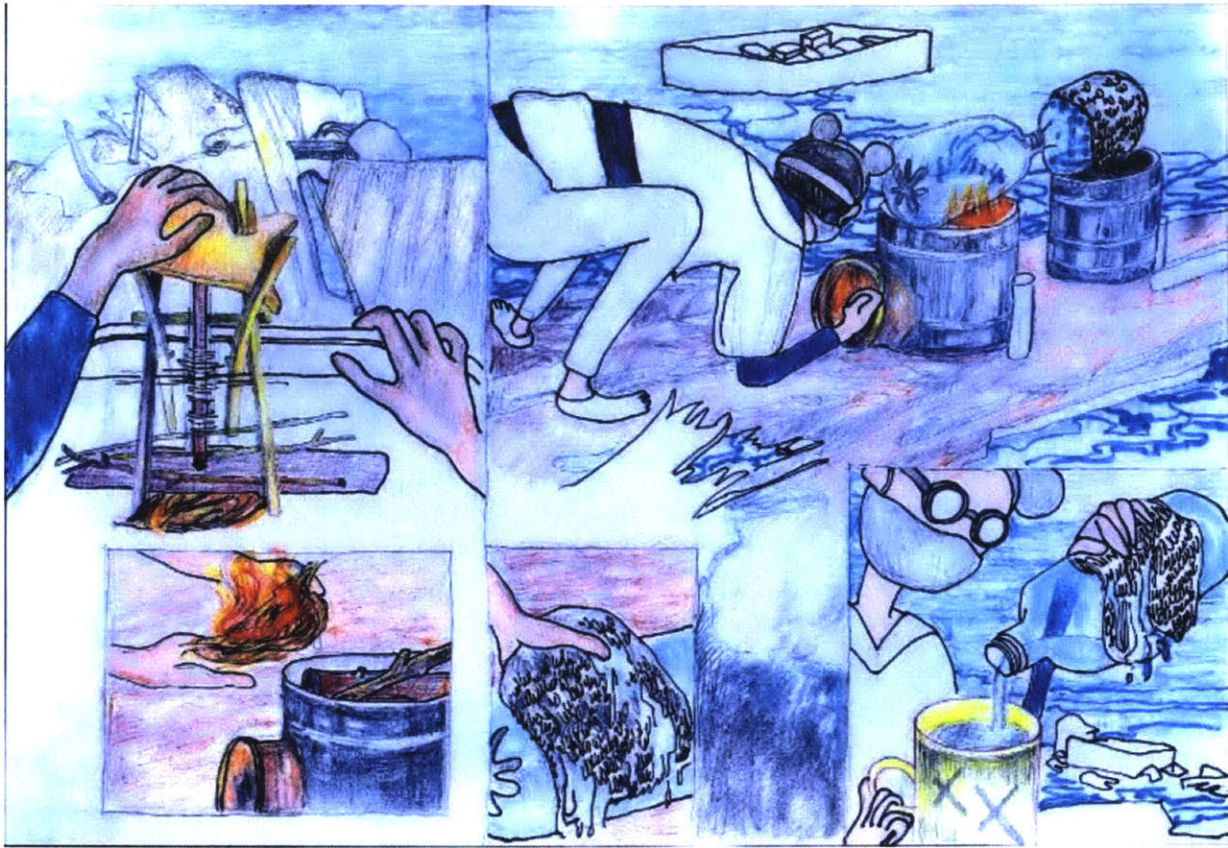


Figure 30 Storytelling 2: Drilling fire and distilling fresh water

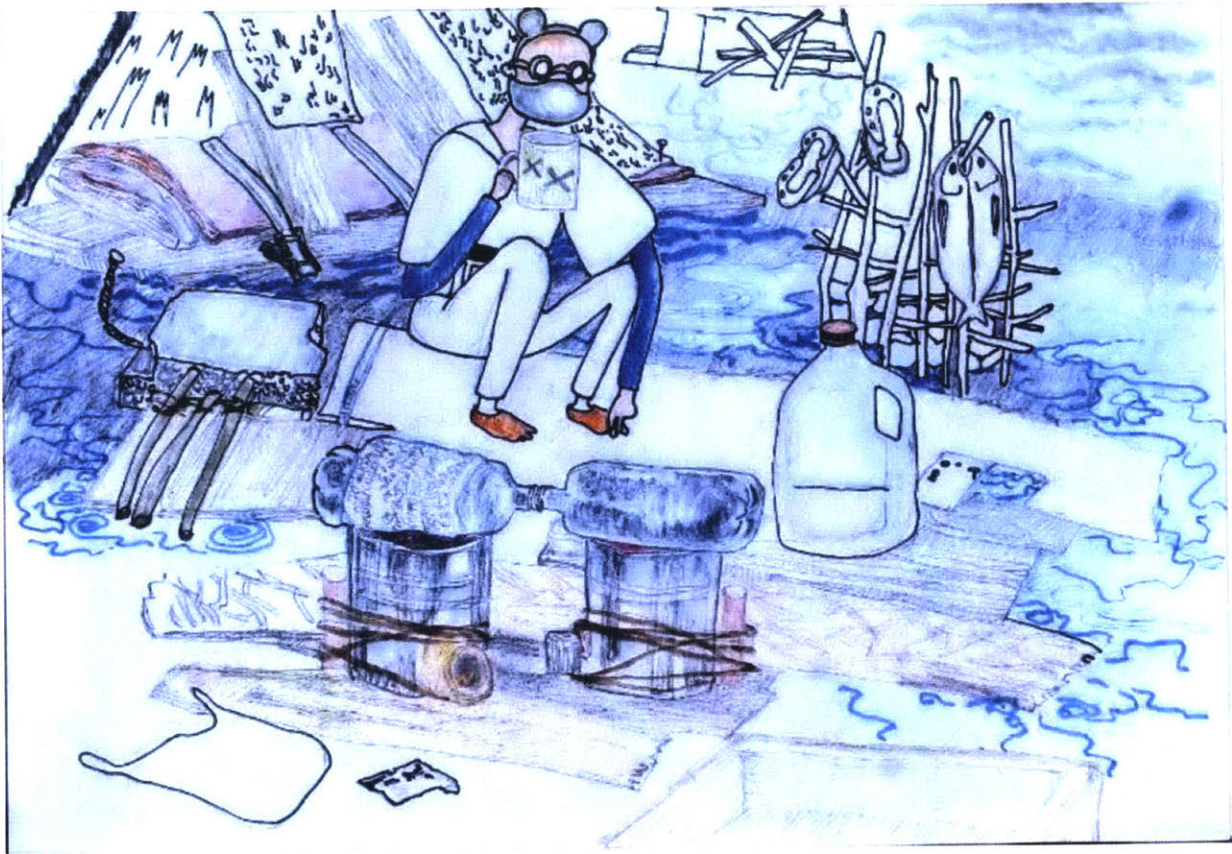


Figure 31 Storytelling 3: Rest on floating wood boards

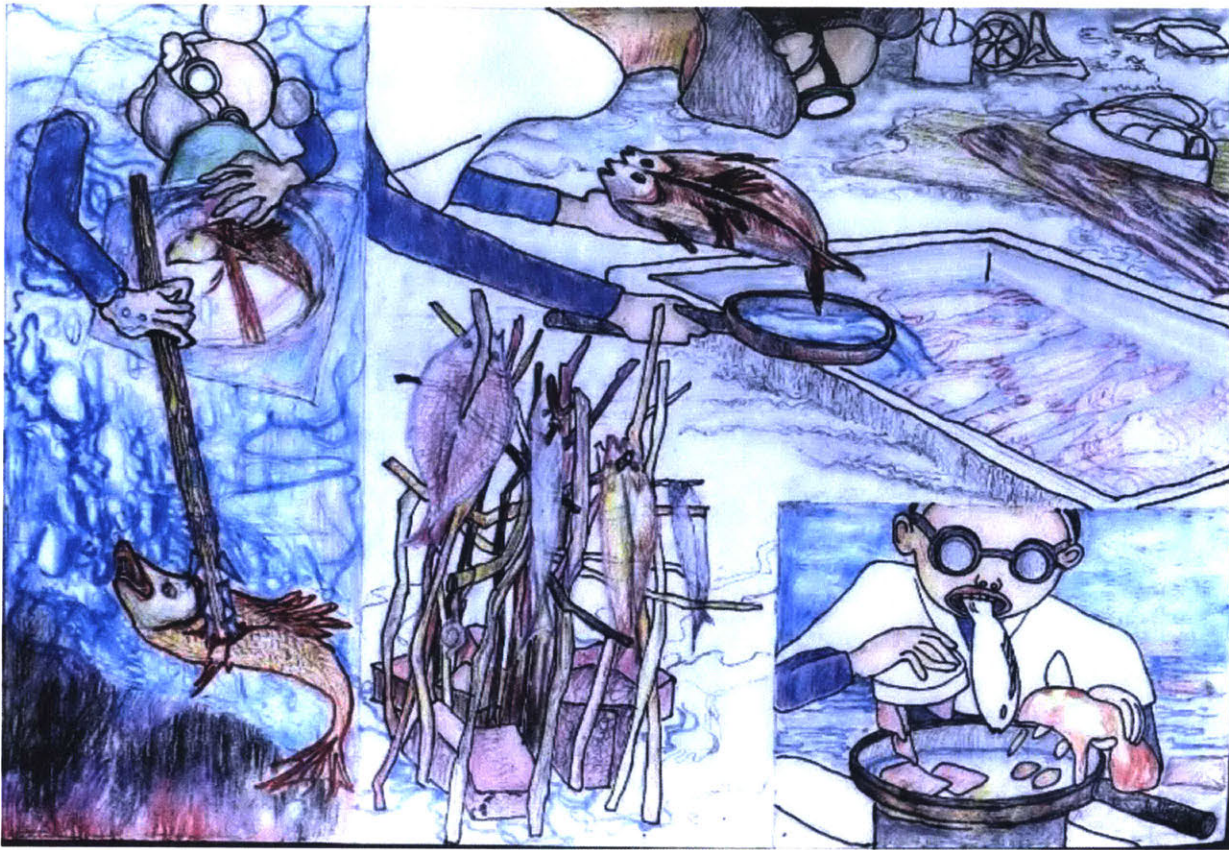


Figure 32 Storytelling 4: Marinating cached fish



Figure 33 Storytelling 5: Food storage while floating

3.4.4 Object design

Four objects are designed to help the surviving of the main character in the storybook. In the non-fictional world they could be seen as big toys. They are:

- 1) Floating Nest (Figure 34): nest-shape floating object made by connected branches, at its bottom could place foams. This frame could float on the water, and as a solid frame it could hold smaller utensils in it.
- 2) Ax 1 (Figure 35) and Ax 2 (Figure 36): The two axes are made to cope with raw materials, using simple mechanism to magnify human power in order to cut large blocks of wood, plastic or paperboard into small pieces. They are designed in sharp shapes to provide psychological strength for fragile individuals.
- 3) Fire-drilling Machine (Figure 37): A shelf floating on the water that could help holding the drilling stick and bow drill, with users being able to make fire through drilling wood. It is also designed in bright color and sharp shape.

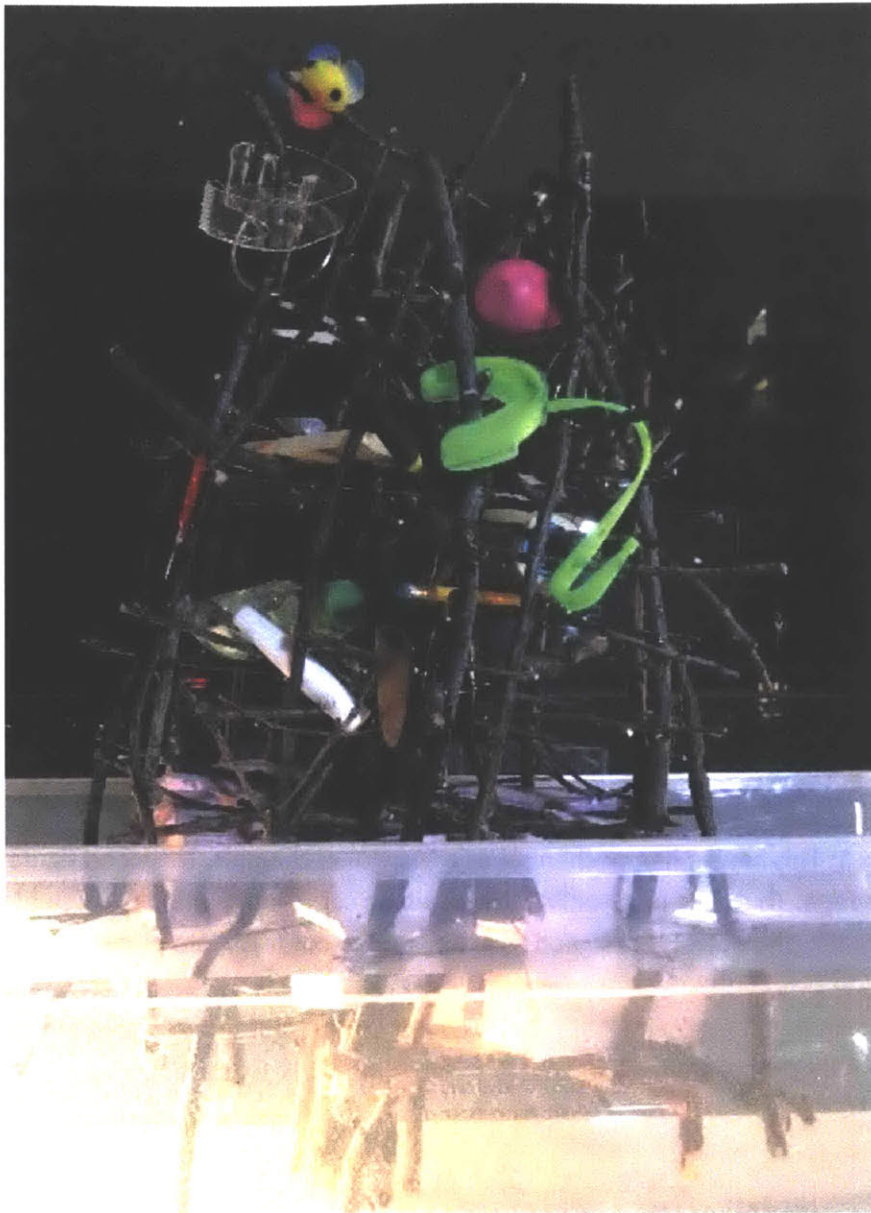


Figure 34: Floating Nest: a floating structure made from abandoned tree branches and some foam is inserted inside its bottom space. Its upper part has a vacant space that could hold objects as well as extruded ends acting like hooks. When the world collapses, there will be tons of trash floating on the water. Survivors could pick up useful trash and place them on simple floating structures like this.

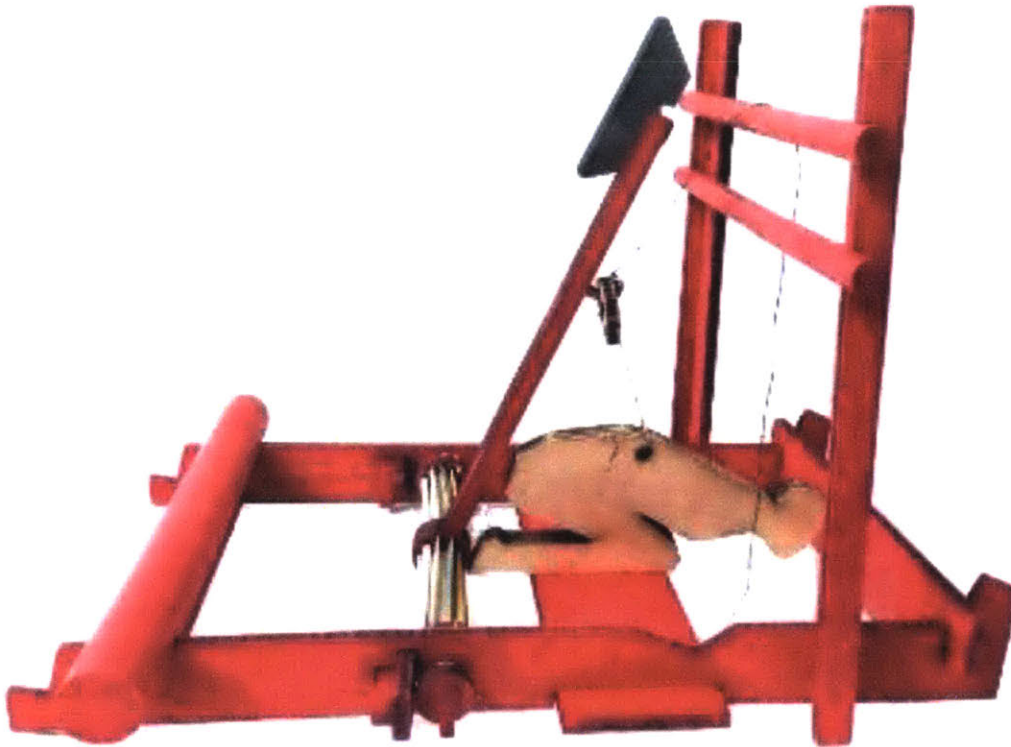


Figure 35 Ax 1: This has similar mechanism as a Mangonel catapult. The wood figure bends down and pulls the rope. Then, the ring holding the Ax would come loose with the Ax suddenly striking. The object is designed as a mini tool to cut trash into pieces.



Figure 36 Ax 2: Along with the wood bar sliding in the groove, the Ax part could lift and fall, cutting materials under it. The object is designed as a mini tool to cut trash into pieces.



Figure 37 Fire-drilling Machine: Hold the structure with one hand on the top to stable it while floating on the water. The other hand pushes the bow drill forward and backwards. The wood stick would spin on the wood base and could possibly start a fire if operated skillfully.

3.4.5 Video: floating in Charles River

I took a video of the four objects I created, me playing with them and floating in a boat in the Charles River. The video showed another perspective: nobody understands the reason behind the activity, yet the scenario is naturally embedded in everyday life in Boston. This clearly shows the details described in the storybook could be a scenario happening in reality.



Figure 38 Floating on Charles river



Figure 39 Floating on Charles river and playing with Ax 2



Figure 40 Floating on Charles river and playing with Fire-drilling Machine

Chapter 5

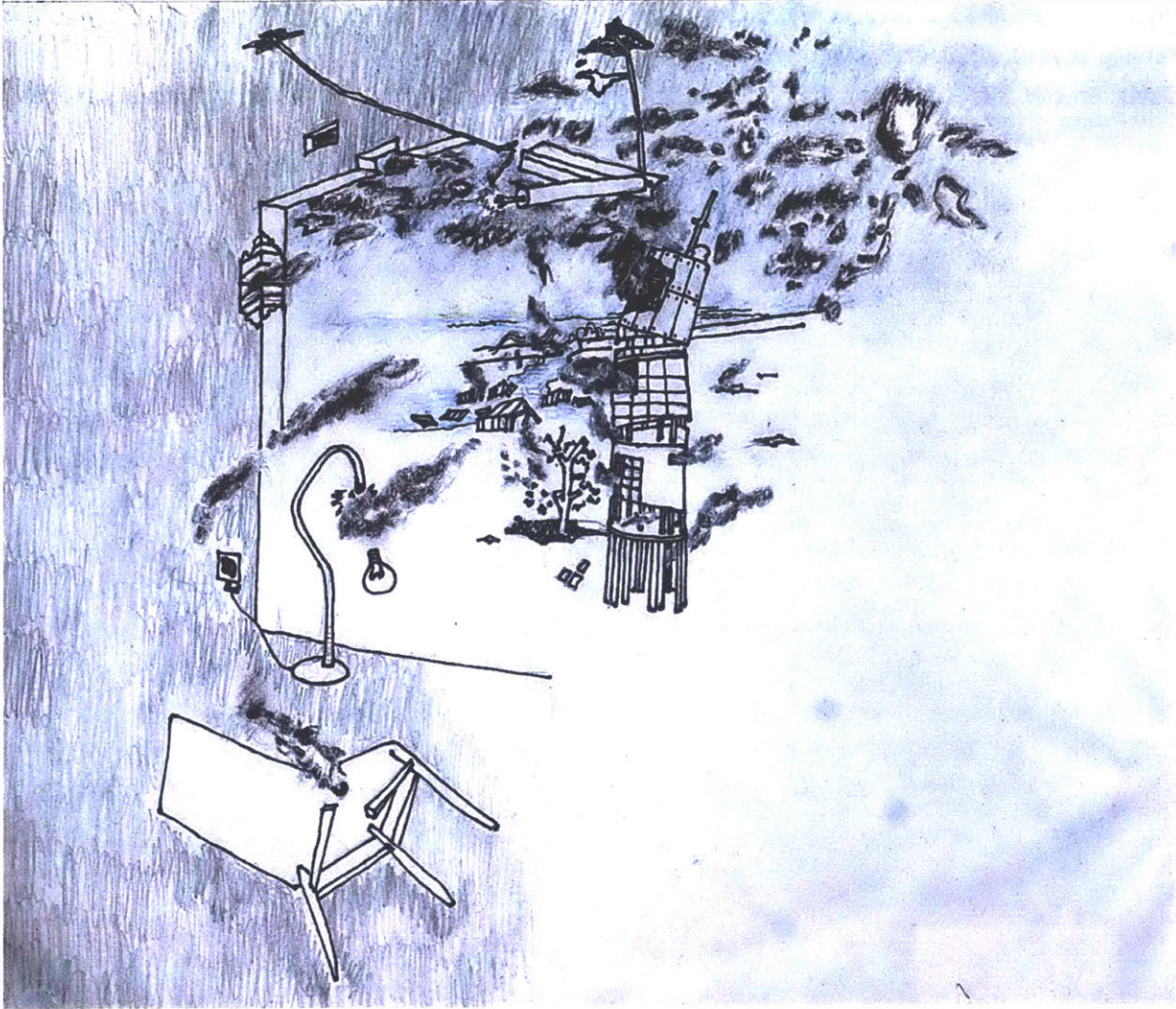
Conclusion

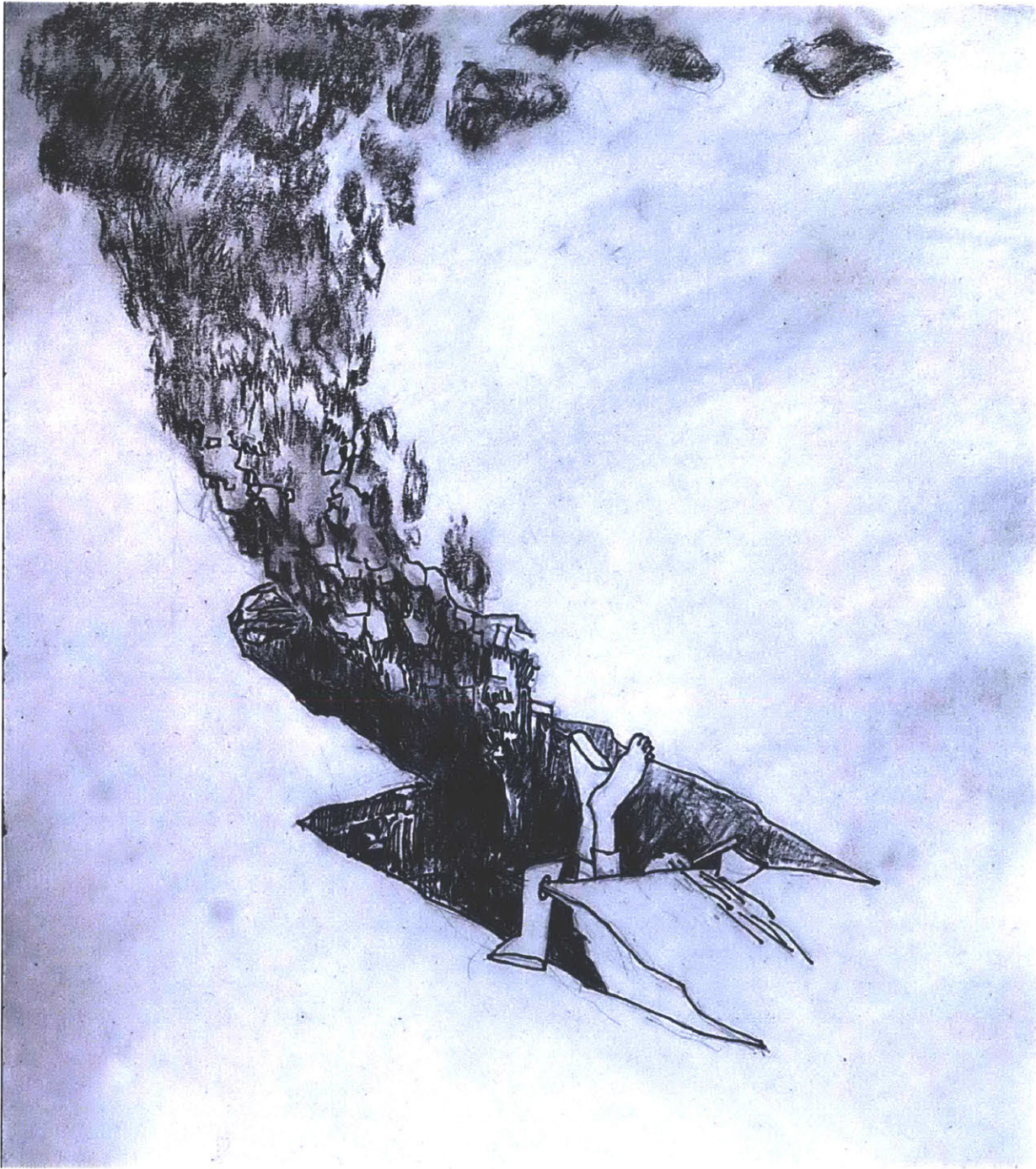
The biggest inspiration Maywa Denki gives me is that the design process acts as a way of expression. It not only solves functional problems, it offers people a possibility of meaning. The desire and need of people are not inherently fixed. In contrast, meaning is created. Thus, expression becomes a necessary method to trigger that meaning. Expression has its own technique and is free from any current conclusion. A crossover creative group could sustain itself by offering expression and discussion on commonly concerned questions to the front of the public.

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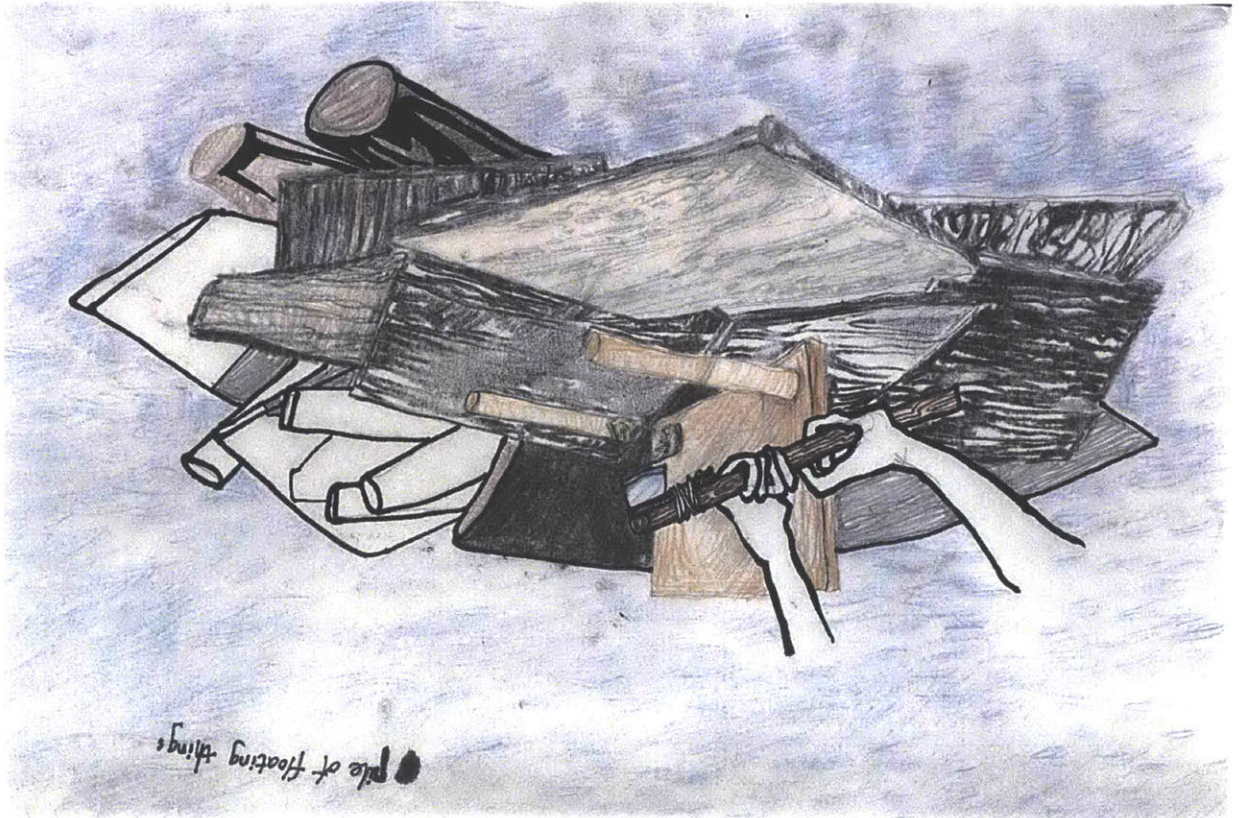
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Appendix A: Images for the Floating World

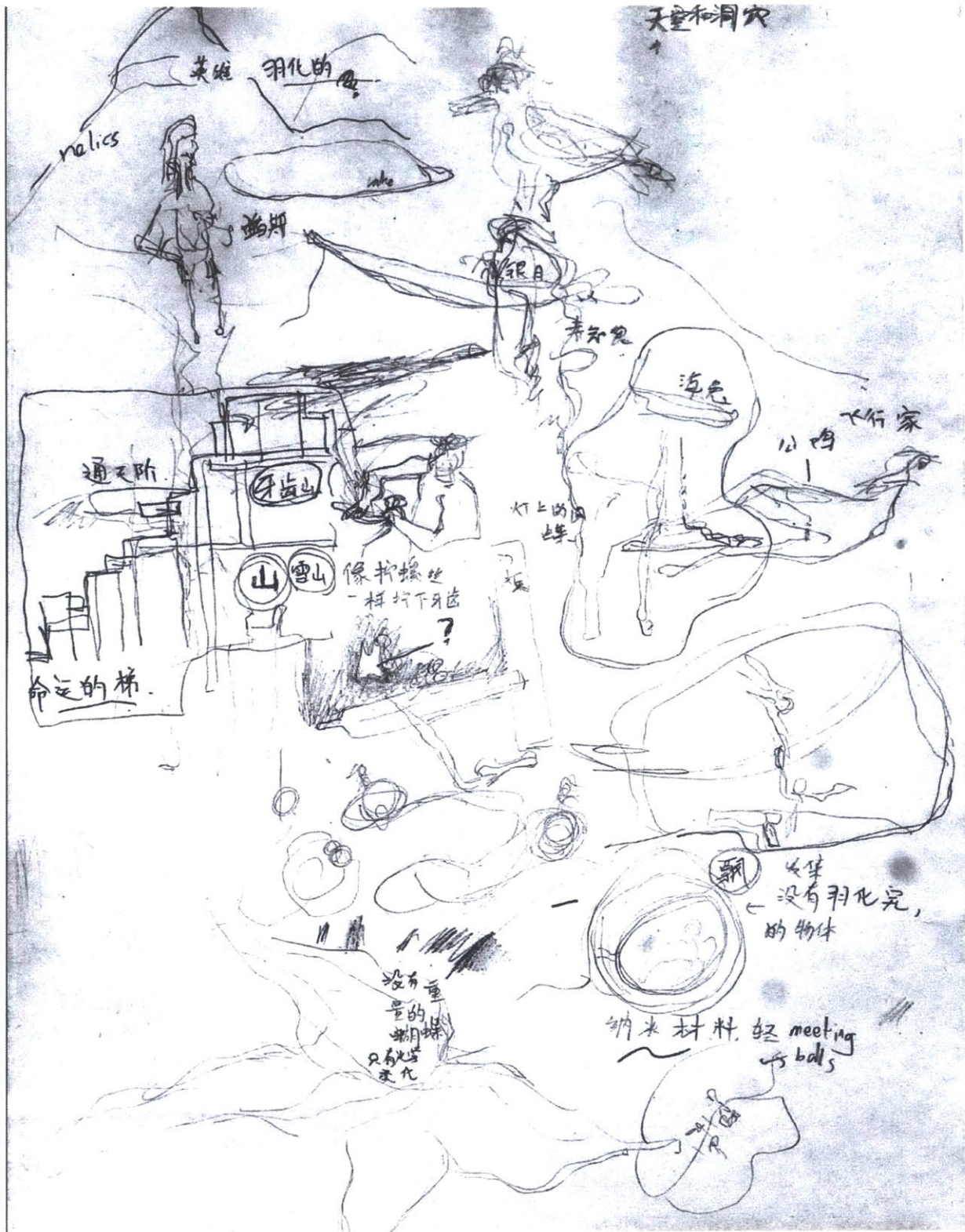


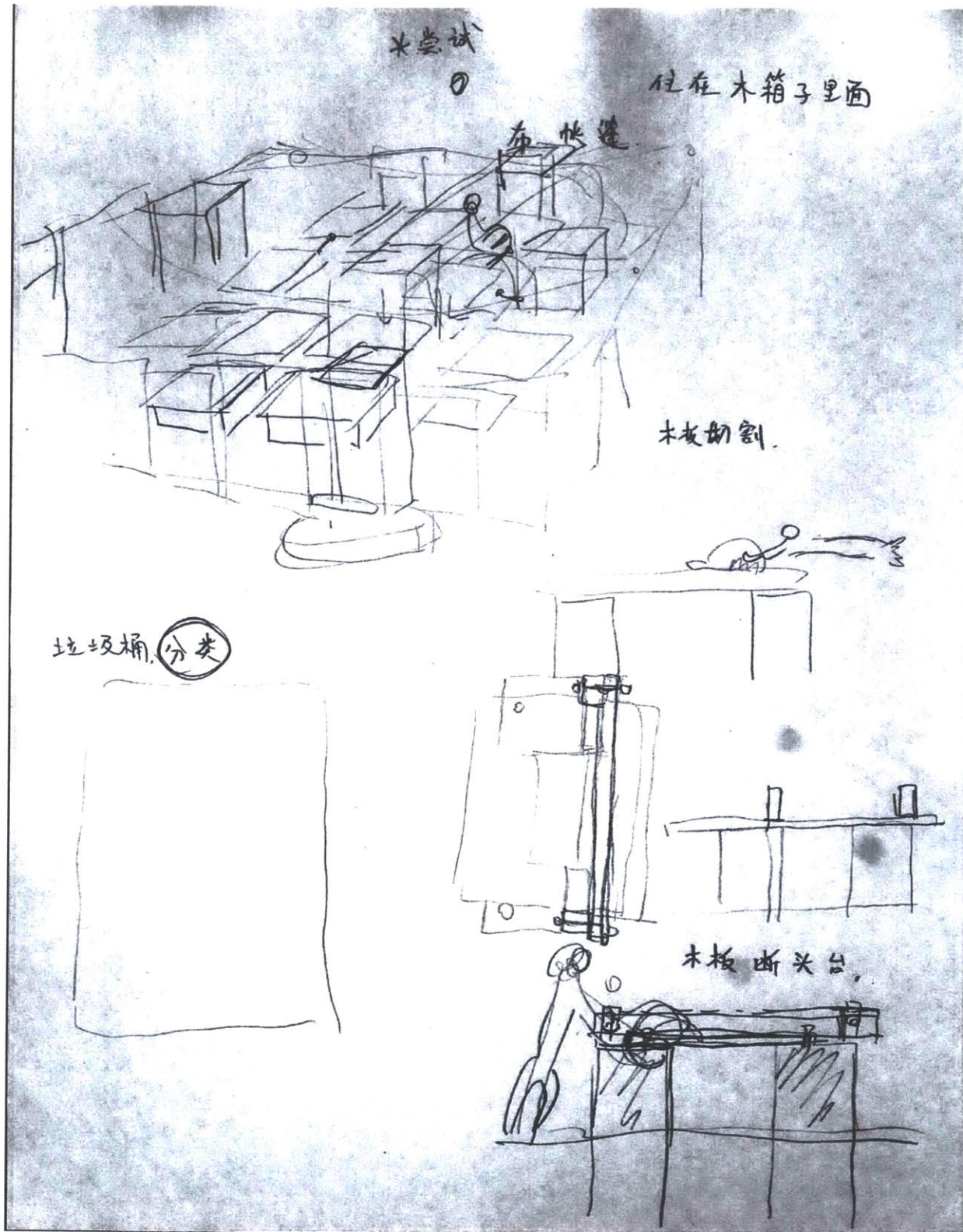




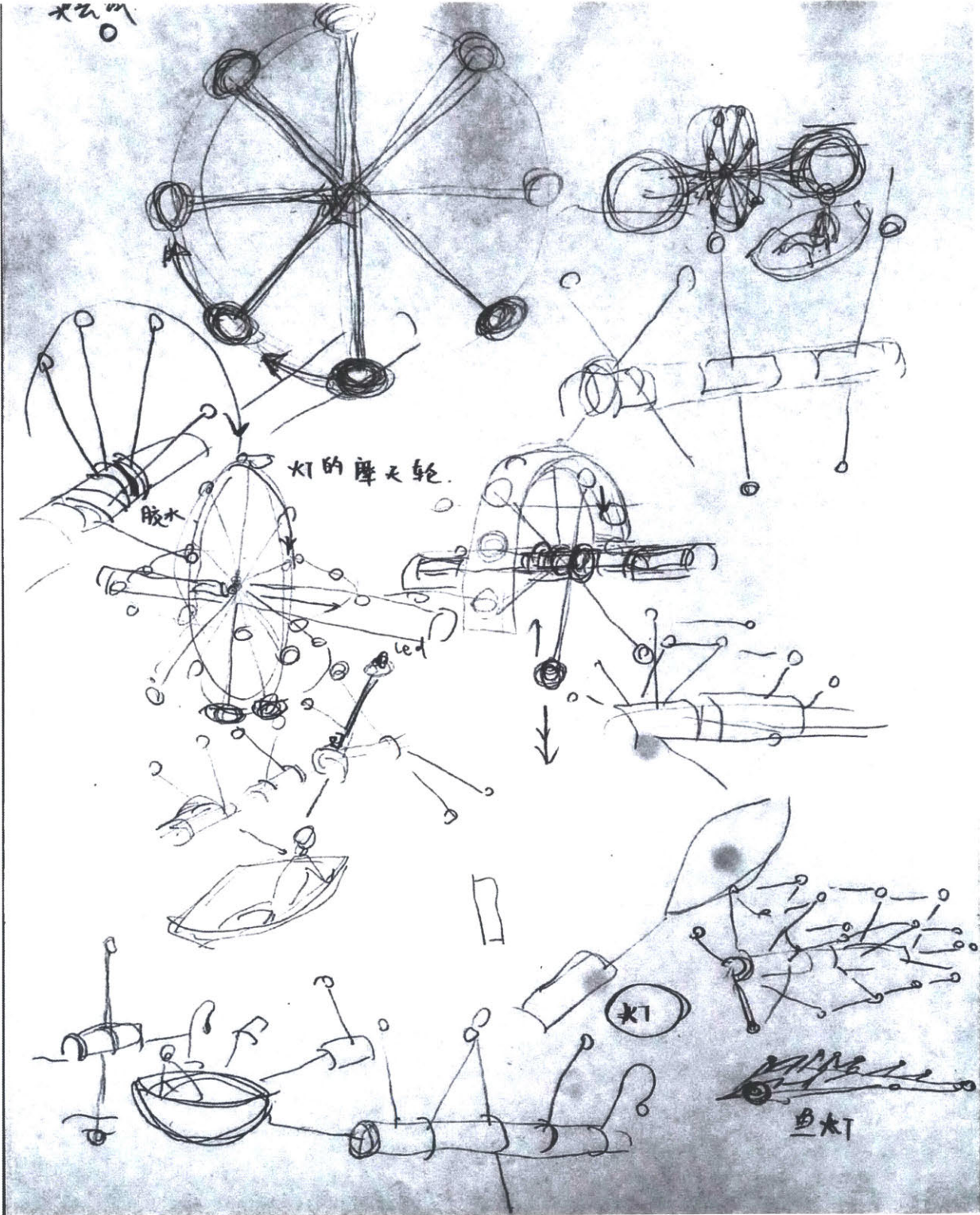


Appendix B: Sketches for toy design

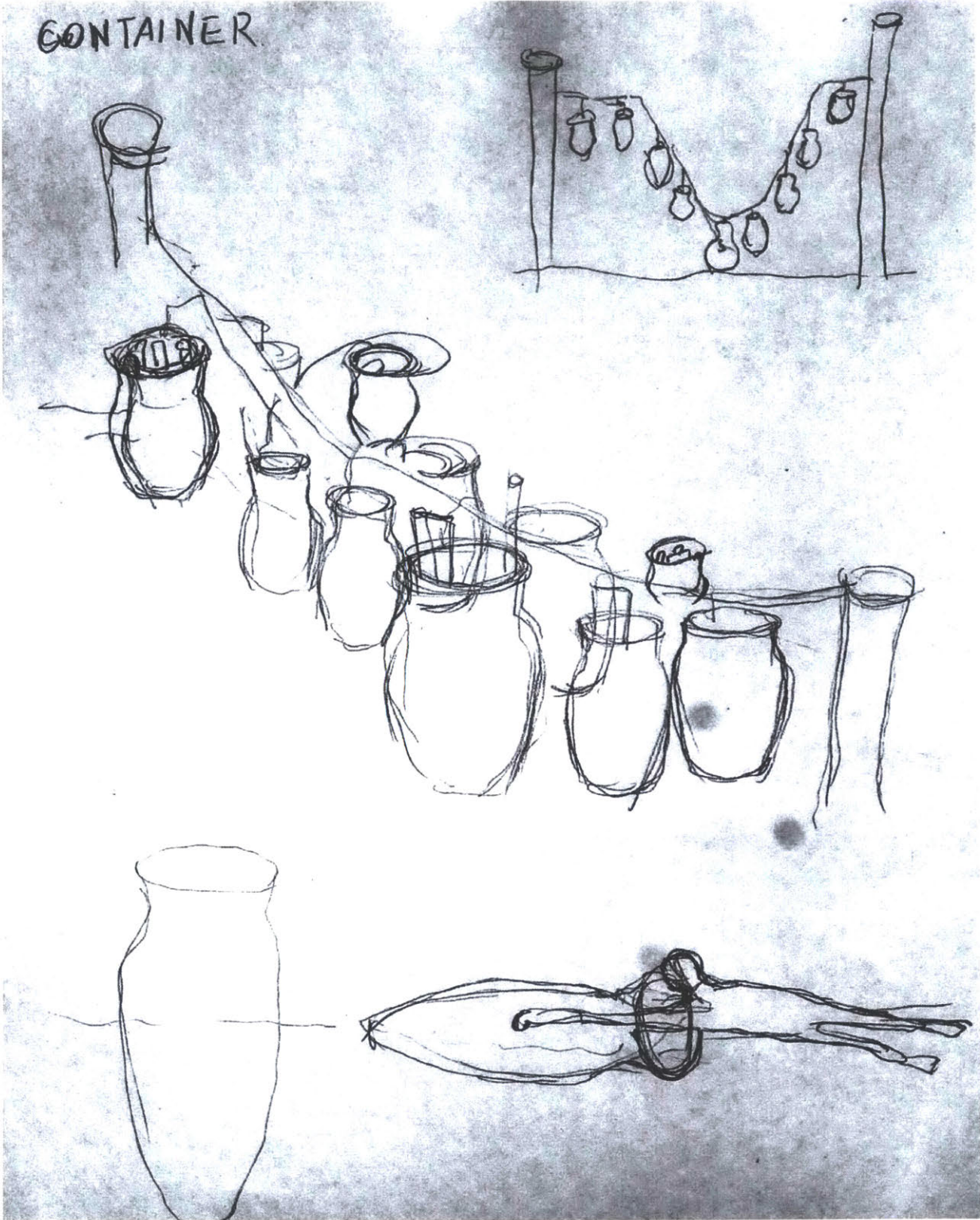


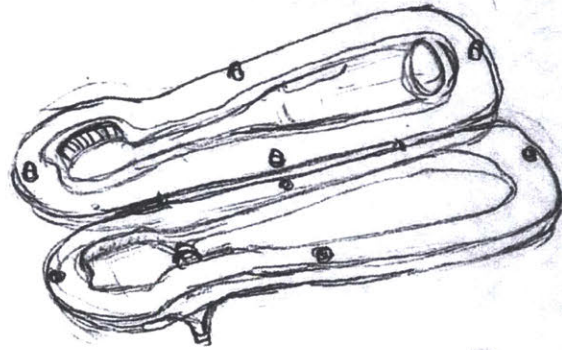
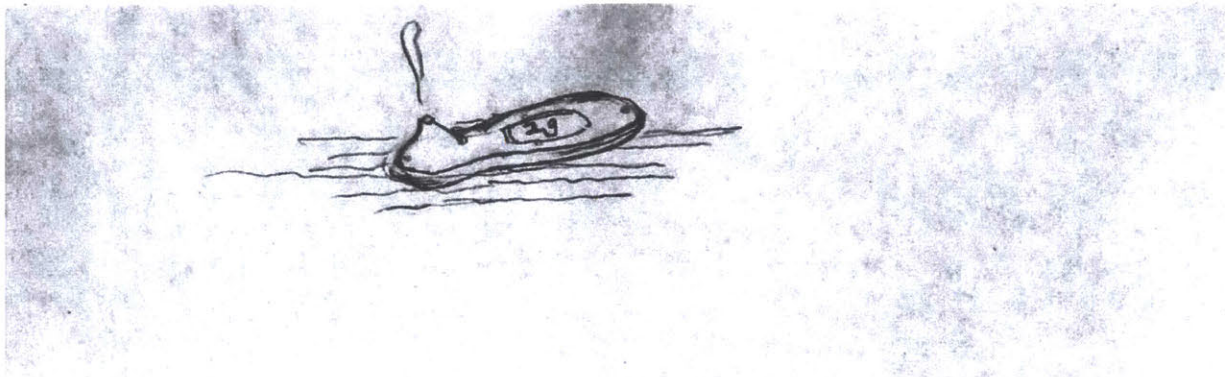


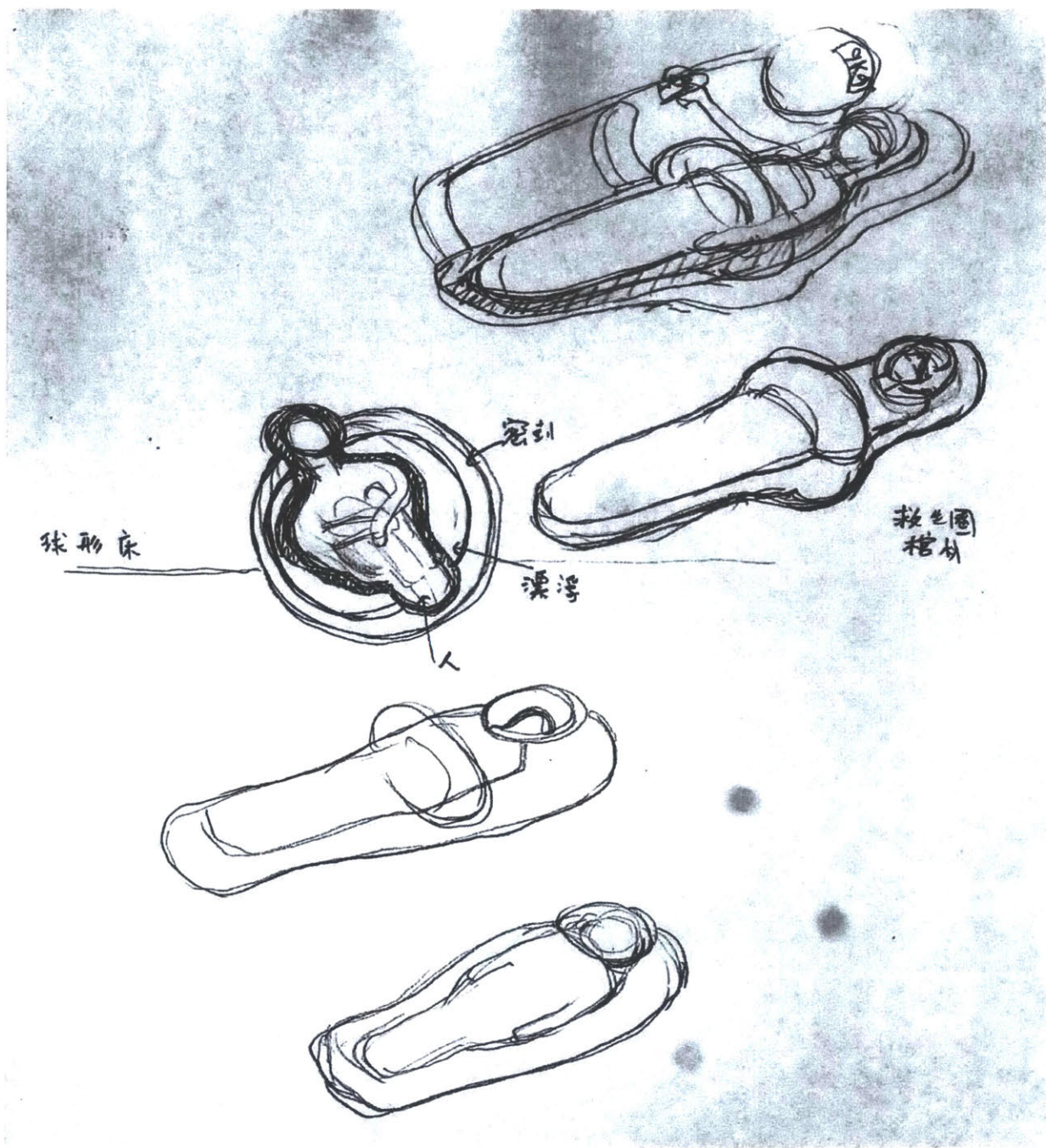
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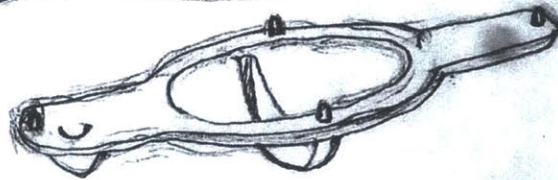
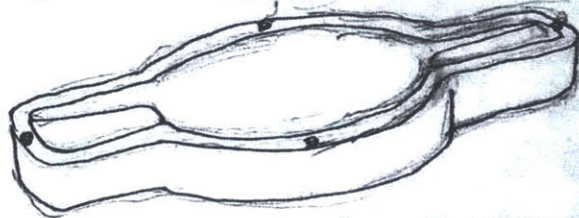
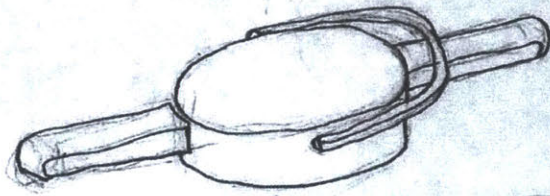
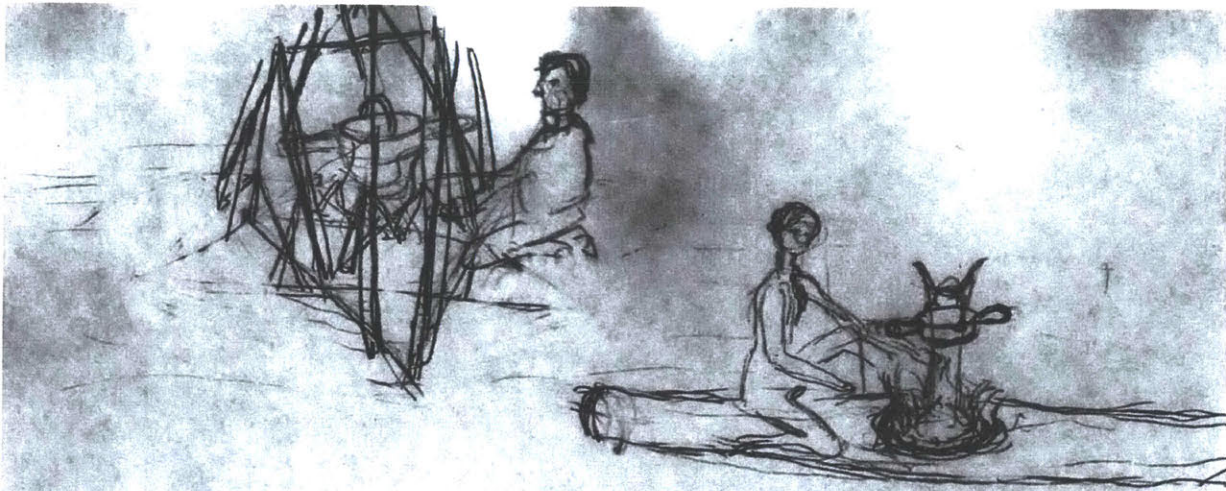


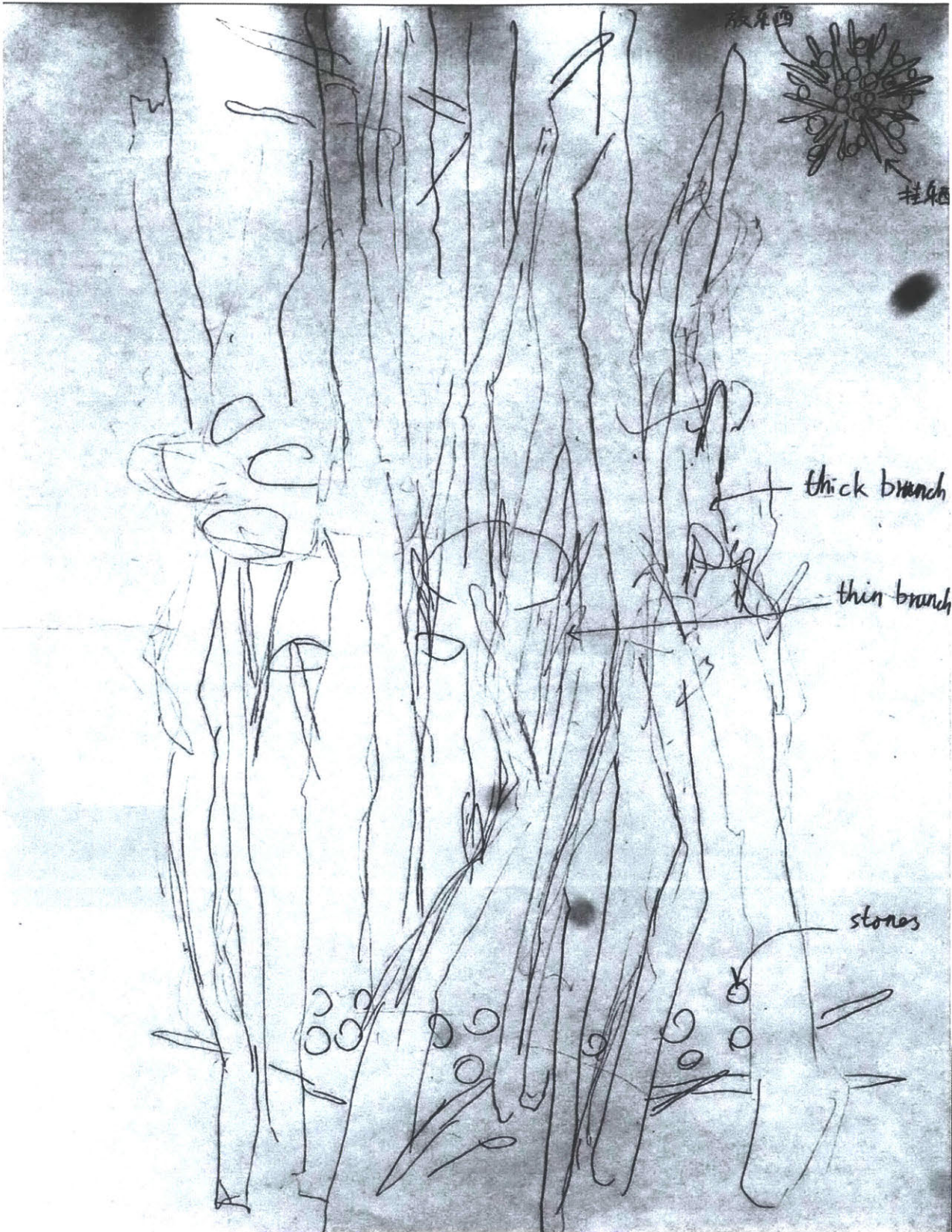
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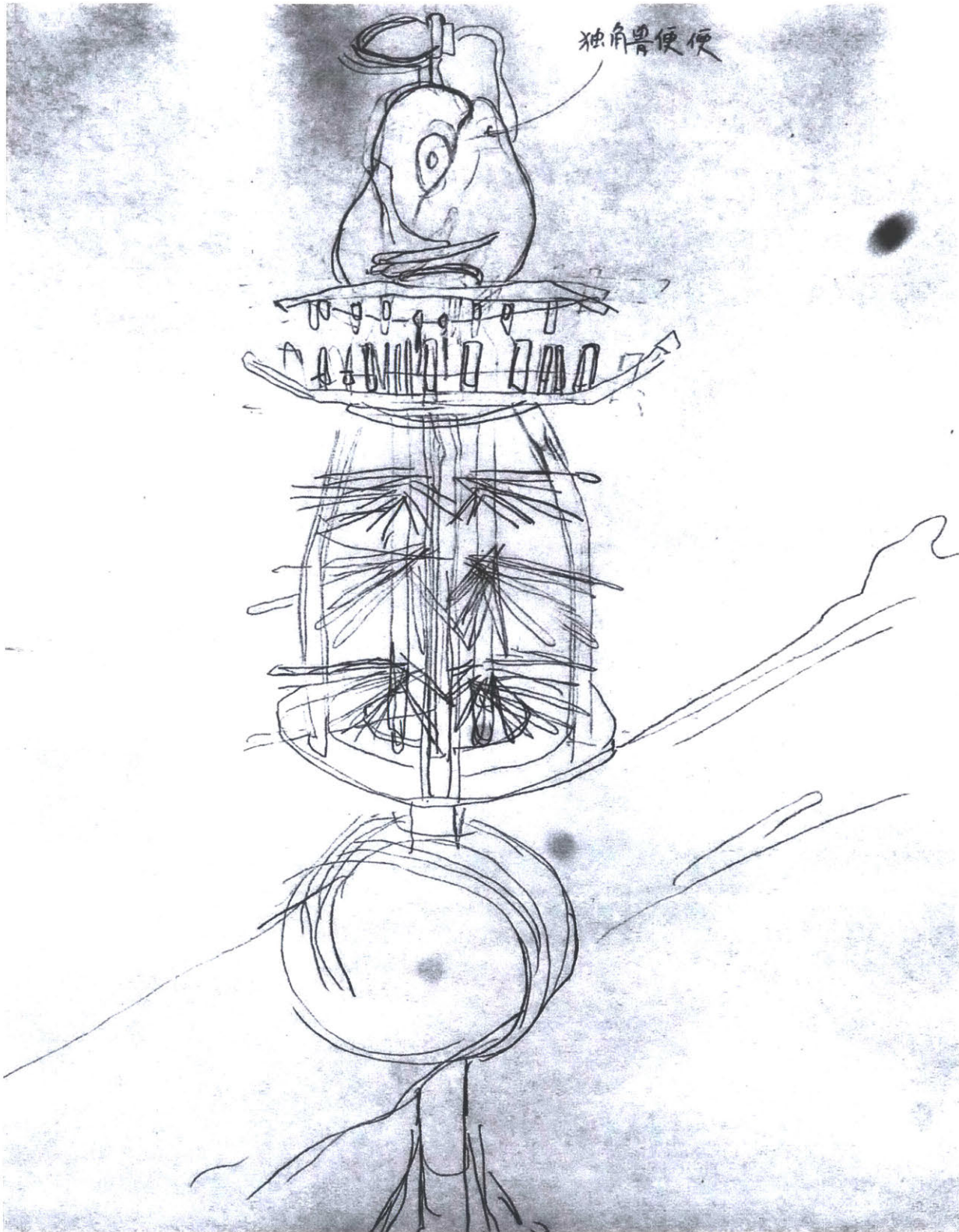




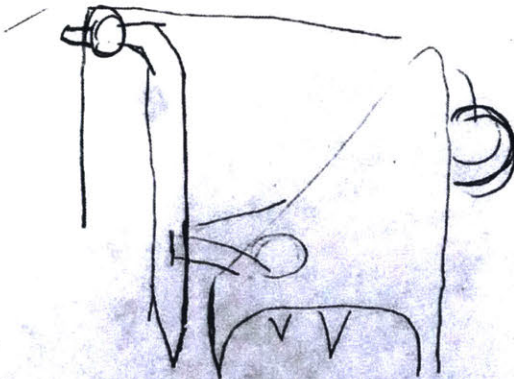
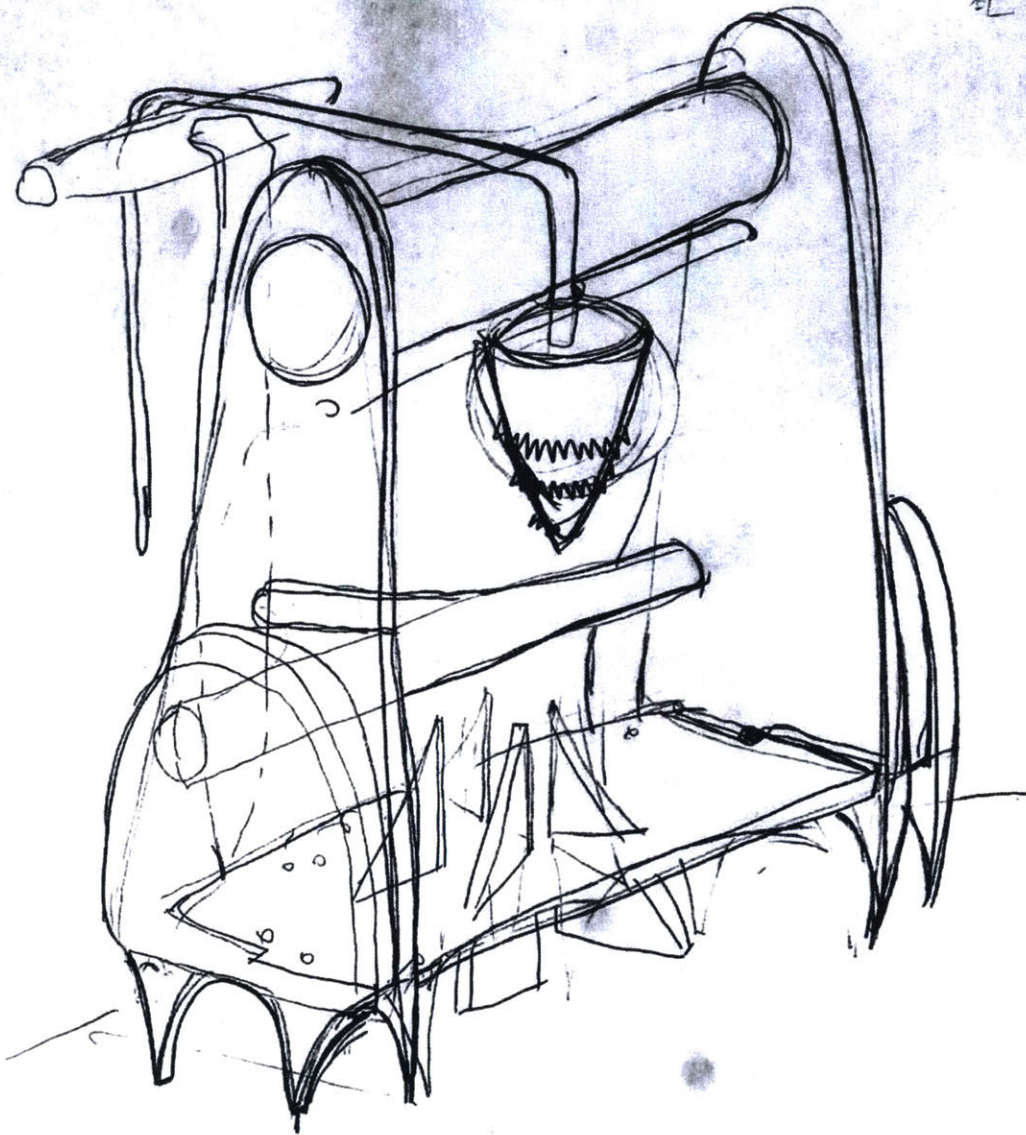


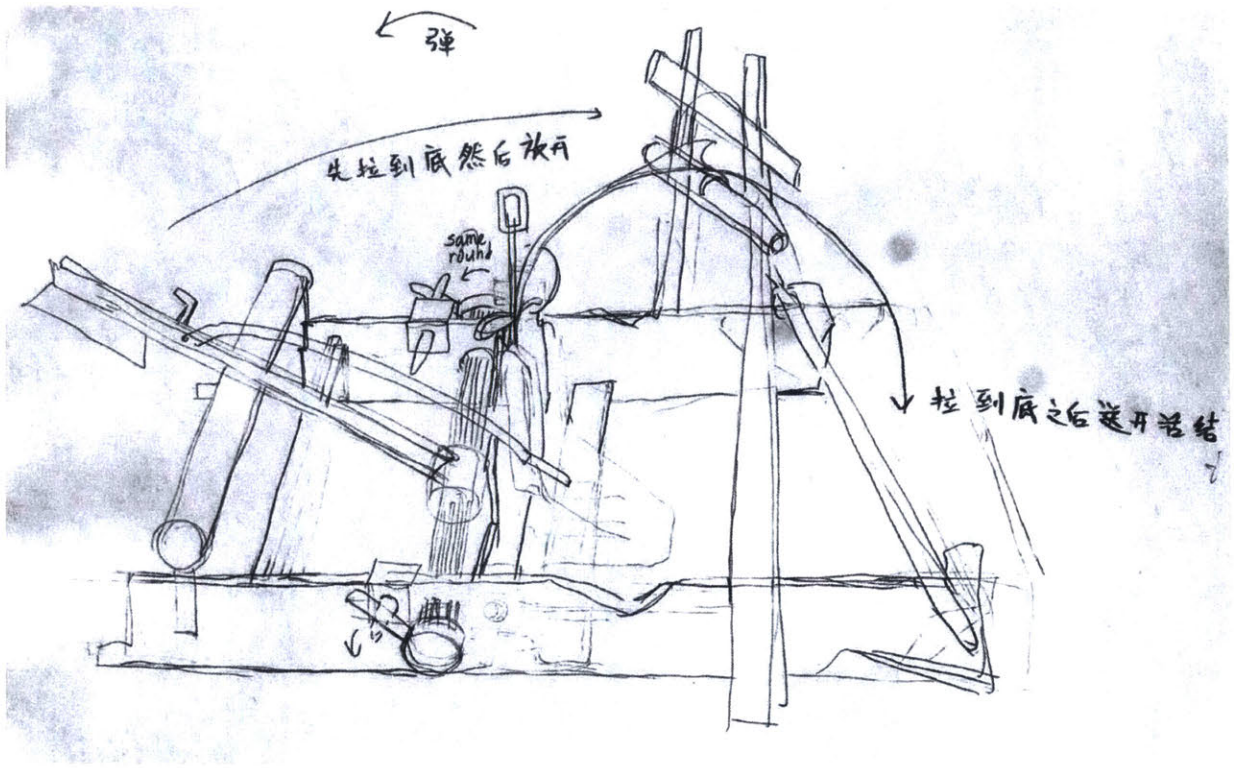


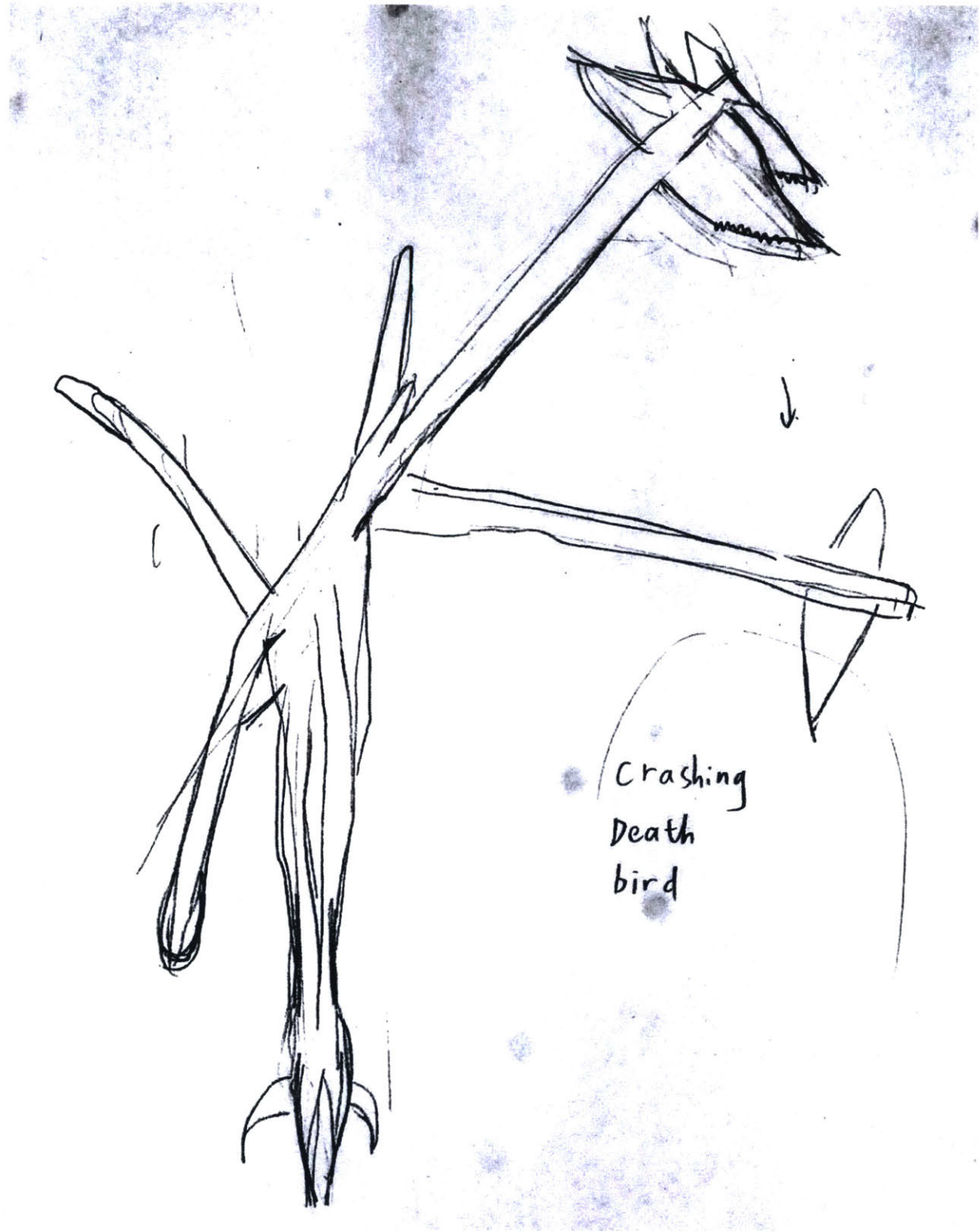




crashing machii
EL







Crashing
Death
bird

