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NANYANG TECHNOLOGICAL UNIVERSITY
SCHOOL OF ART, DESIGN & MEDIA

Title
EnCube - The Art of Concealment

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Contents

Abstract

Figure 1, Curio Cabinet (Digital Image. Retrieved on 30 Apr 2017, from https://s-media-cache-ak0.pinimg.com/236x/75/02/45/750245e38b633da9e717f0384ff68998.jpg)

Humans are nostalgic creatures. At times, we yearned for the past - activities or sentimental objects. These objects may not be valuable to others but to the user they are Knick-Knacks, Bric-à-Bracs, Mementos — pieces of memory. Keeping and collecting meaningful objects may in fact reduce wastage, as there is an old saying, “one man's trash is another man's treasure", but where do we keep these curios or artefacts?

Through the Art of Concealment, containments are curated for each object as well as inviting viewers through a journey of cryptic conundrums and rediscover the secret compartments within.

Keywords: Collection, Concealment, Containment

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Introduction

The Box Project

Boxes has fascinated the humankind ever since the beginning of civilisation. A box, being able to conceal and contain is a useful object by itself. The function of a box is to safeguard and protect its contents. Yet at the same time, by virtue of its very presence, the box makes an announcement: I contain something valuable; In concealing, the box reveals.

Figure 2, Vintage Pop Out Pencil Cases (Digital Image. Retrieved on 30 Apr 2017, from http://kueneman.tumblr.com/post/3778089429/vintage-japanese-pencil-cases)

We have been hiding our items since young especially with these nostalgic pop out pencil cases. (Figure 2) It was a child's very first toolbox whereby only the user knows what is inside and how to access its contents. These pencil cases had existed since the mid 1900s and was a classic fancy thing to own for a child. More than just a pencil case, it acted like a toy with various useful secret compartments. Apart from being hard, solid and in one piece, these pencil cases are full of mysteries. With the transformation and organization of spaces, they had caught the heart of a child and was regarded as one of the coolest gadget to own in class. It was these humble forms of concealment and containment that sparked the commencement of this project.

History of Boxes

For centuries, secret compartments have been built into boxes and furniture (Figure 3) to conceal the user's most treasured private belongings. These compartments could be concealed anywhere, behind or underneath false panels and walls, being out of sight and camouflaging to its surrounding elements. Upon discovering a possible location of the secret compartment only completes half of the task; One then has to figure out its accessibility. Concealed push buttons, flush sliding drawers and false panels are just some of the ingenious ways that were used to unveil these secret compartments.

Figure 3, Automaton Mechanical Table by Craig Thibodeau (Digital Image. Retrieved on 30 Apr 2017, from http://ctfinefurniture.com/automaton-table)

Project Aims

However, during the 19th century with the introduction of metallurgy that improvised safes and locks, these secret compartments had faded away and became an Art of Concealment to illustrate the ability and ingenuity of a box maker instead. In order to engage with the term, Art of Concealment, we must first investigate the Art of Collection and Containment in which identify the spaces and objects within to be concealed. This project hereby seeks to rekindle the crafts of hidden spaces in a modern piece of private furniture to improve storage problems and reminisce the memories of our valuable everyday items.

Research

Art of Collection

The Art of Collection is the act of keeping things from different places and bringing them together. An Art Collector or in many cases, the curator, makes decisions in regards what artefacts should be collected or selected which may create a narrative or simply for self-indulgence. Art collecting was only common among the affluent nobles in the Ancient World in both Europe and East Asia, but had now developed to its modern form — the museum, where private art pieces could be indulged by the public too.

Figure 4, Square Sandalwood Curio (Digital Image. Retrieved on 30 Apr 2017, from http://culture.teldap.tw/culture/index.php?option=com_content&view=article&id=1160:square-sandalwood-curio-box-with-30-curios-inside&catid=148&Itemid=209)

Eastern curio boxes (Figure 4) differs from each other as they contain very personal possessions of the user. The production of these boxes dated back to in the Qing dynasty where not only they represented the objects through its forms and materials, but also to a standard of grading. This graded collection signified that only the most prized possessions were stored the curio boxes, while the less prized were placed among treasure chests of thousands. The design of a curio box is often valued for its clever construction of hidden compartments concept that somewhat akin to the hide-and-seek game, in which one is always discovering something new or surprising. While the East curios comes in small collections and boxes, the Western curios were in large and unusual sizes called Wunderkammern.

Figure 5, Wunderkammern (Digital Image. Retrieved on 30 Apr 2017, from http://www.oobject.com/the-wunderkammer-through-history/1993-the-evolution-store-ny/7297)

Wunderkammern (Figure 5), or cabinets of curiosities, was where art collectors showcase their collectibles in the mid-sixteenth-century Europe for all exquisite and exotic objects. It was a mixed form of collection that includes art and what we would now call natural history or scientific specimens. These cabinets were formed by royalty but smaller ones also by merchants and scholars. The cabinets of curiosities not only simply show the particular interests of their curators but also reflect their social status to establish and uphold rank in community.

The preferences and tastes of the collectors have played a very important part to determine the demand of what art was being produced by the artists. Objects made from materials like cobalt, glass, precious stones or bones were highly sought after such as badges, carvings, plaques, gems and small statues were essentially made for the collector's market. By the 18th century, all well-to-do homes were expected to possess a selection of artefacts, from paintings to silverware, that could form part of an art collection. It was through basic aspects of human nature – our curiosity and our desire to collect that these forms of established art collection practices have been evolved to the museums of our current day.

Art of Containment

Apart from collecting unusual and exotic artefacts, the Art of Containment seeks to contain our mundane everyday items. The principle of containment is to have a home for items to go to so that the user knows where it is, where it will be and where it should be. The little things that we use often in a certain activity should be group together. These boxes such as pencil cases, jewellery boxes, sewing boxes or tea caddies would nevertheless increase our efficiency and productivity through the experiences of finding the right tools at the right locations while also improve the portability. Although some of these containments such as the writing boxes (Figure 6) have obsolete due to the decline of letter writing, they are still highly sorted by antique collectors.

Figure 6, Betjemann Coromandel Writing Slope (Digital Image. Retrieved on 30 Apr 2017, from https://www.1stdibs.com/furniture/decorative-objects/desk-accessories/desk-sets/betjemann-coromandel-writing-slope/id-f_3565182)

Writing boxes had existed for many centuries and in various cultures. They are antique pencil cases or form of portable desk that can be seen as an ancestor of the modern laptop. During the Medieval and Renaissance period, the writing box is one of the precious goods or furniture that the monarch will travel with. They are usually strongly constructed by fine exotic hardwoods like curly maple or dark cherry with a hinged writing slope surface. Secret compartments were also designed to hold inkwells, sealing wax, and undisclosed documents like love letters. By the 17th century, these writing boxes were mostly used by men as they symbolised intelligence, commerce and social status. The writing box was a very personal possession, unlike the writing desk. People were their boxes to write cherished letters for business and to their loved ones. During the 19th century, the writing box has gradually disappeared with the invention of cheaper writing implements and telecommunication technology, hence people are writing few letters.

Art of Concealment

After knowing what to collect and how it is contained, the Art of Concealment elevates both Collection and Containment to another level — the accessibility. Accessibility creates a barrier between user and the object in collection and containment. This barrier is known as concealment whereby only with the user's knowledge, should one knows the accessibility. This artistic form of concealment can be seen in the traditional Japanese puzzle boxes.

Figure 7, Hitmitsu Bako 21+1steps Akaasa (Digital Image. Retrieved on 30 Apr 2017, from http://www.hakonemaruyama.co.jp/product-e/h2118-e.htm)

In the town of Hakone of Japan, the first Japanese secret puzzle boxes called the Himitsu Bako (Figure 7) were being crafted in the late Edo period over centuries. The Himitsu Bako is an enclosed containment with no obvious opening to access what is inside. To gain access, each box must be slided and rotated in a specific number of moves, ranging from four to hundreds and thousands. As there is a great variety of high quality natural coloured wood in the region, each Himitsu Bako was adorned with beautiful Yosegi-Zaiku marquetry techniques. A skilled craftsman would then cut and glue them together to form an elaborated patterned woodblock for the faces of the puzzle boxes. With the Japanese master craftsman nurtured to flourish an art form that is cherish and appreciated for its details and ingenuity, the Himitsu Bako s being considered a work of art and highly prized among the elite and wealthy of the time.

Design Concept

EnCube

The idea of the EnCube, which represents the notion of within the cube, is to have a home for our precious items. It conforms to the trinity of the Art of Collection, Containment and Concealment by being curated puzzle box that can only be opened effortlessly with the user's knowledge.

The idea came to light with the reference of Villa Müller by Adolf Loos. (Figure 9)

Figure 9, Villa Müller by Adolf Loos (Digital Image. Retrieved on 30 Apr 2017, from https://burakagbulut.wordpress.com/2017/02/20/sketch-problem/villa-muller)

The Villa Müller is the renowned avant-garde landmark of early modernist architecture. It consists of a blunt cubic façade character as the house is not built for those who see it from the outside, but to those living within.

> "My architecture is not conceived in plans, but in spaces (cubes). I do not design floor plans, facades, sections. I design spaces. For me, there is no ground floor, first floor etc.... For me, there are only contiguous, continual spaces, rooms, anterooms, terraces etc. Stories merge and spaces relate to each other."
>
> *- Adolf Loos, Shorthand record of a conversation in Plzeň (Pilsen), 1930*

The Raumplan concept (Figure 10) was what Loos talked about. It was to rethink the convention arrangement of spaces within a predetermined volume. Loos believed that every space should be designed independently. With the Raumplan, rooms are not designed by plane or floors, but accordingly to their significance and function. Each space need a different height. Private spaces are smaller; Public spaces are larger.

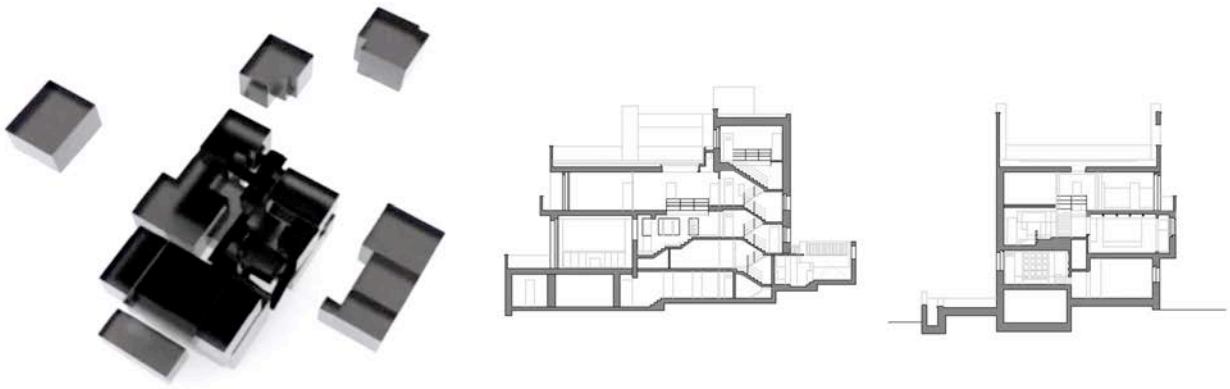

Figure 10, Raumplan (Digital Image. Retrieved on 30 Apr 2017, from http://2.bp.blogspot.com/-4u9YVNJeLo0/T12fOI64uqI/AAAAAAAAAVw/ATD6tKEohJo/s1600/sections.jpg)

Bridging back to the project, similarly to the Raumplan concept for spaces, objects have different sizes too. The compartments of EnCube could be exemplified by the Raumplan concept for the containment spaces of the objects within. (Figure 11)

Figure 11, EnCube Interior

Renderings

Figure 12, EnCube Rendering (Concealed)

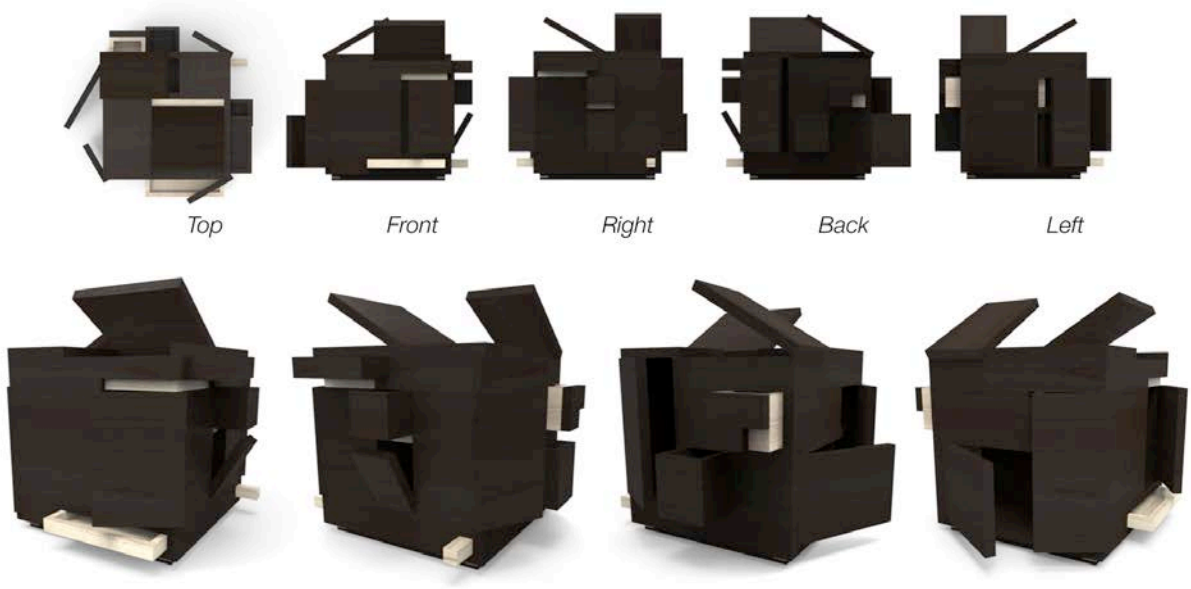

Figure 13, EnCube Rendering (Unveiled)

Mechanisms

The following mechanisms enhance and perform principle of the Art of Concealment.

Figure 14, Locking Mechanism

The locking mechanism (Figure 14) consists of a brass rod being inserted into a ring magnets at its end. Followed by inserting both of them into two acrylic tubes, one acts as a tunnel while the other acts as a stopper. When this mechanism is added into the panels of the EnCube, upon contacting the right surface location of the panel with the strong magnetic key, the brass rod will protrude, locking the panel within the cube itself.

Figure 15, Support Mechanism

Other than the locking mechanisms, the concealed barrel hinges and magnetic push latch (Figure 15) with aid in complementing the Art of Concealment of the EnCube, giving it a blunt cubic façade and increase the difficulty of locating the hidden spaces.

Curios and Artefacts

Figure 16, EnCube Curios and Artefacts

The EnCube would be an inheritance box constructed by an artisan before his passing with an intention of searching for a successor. It contains the following curios and artefacts (Figure 16) of his indulgence, each providing clues to the passage to open the last compartment. These objects are carefully selected to aid in solving the box. They are mostly made of vintage brass and glass with mechanical function that measures time, distance and location. These objects are considered as precious mementos that could evoke nostalgic senses. In addition, the first two compartments contain the key and passage to solve entire EnCube.

- Bicycle Bell
- Brass Pipe
- Compass
- Glass Globe
- Hourglasses (Goldenrod Yellow, Cobalt Blue, Clear)
- Magnetic Key
- Magnifying Glass
- Mechanical Clock
- Mechanical Stopwatch
- Message in a Glass
- Passage
- Perpetual Calendar
- Vintage Rule
- Winding Musical Box

Passage

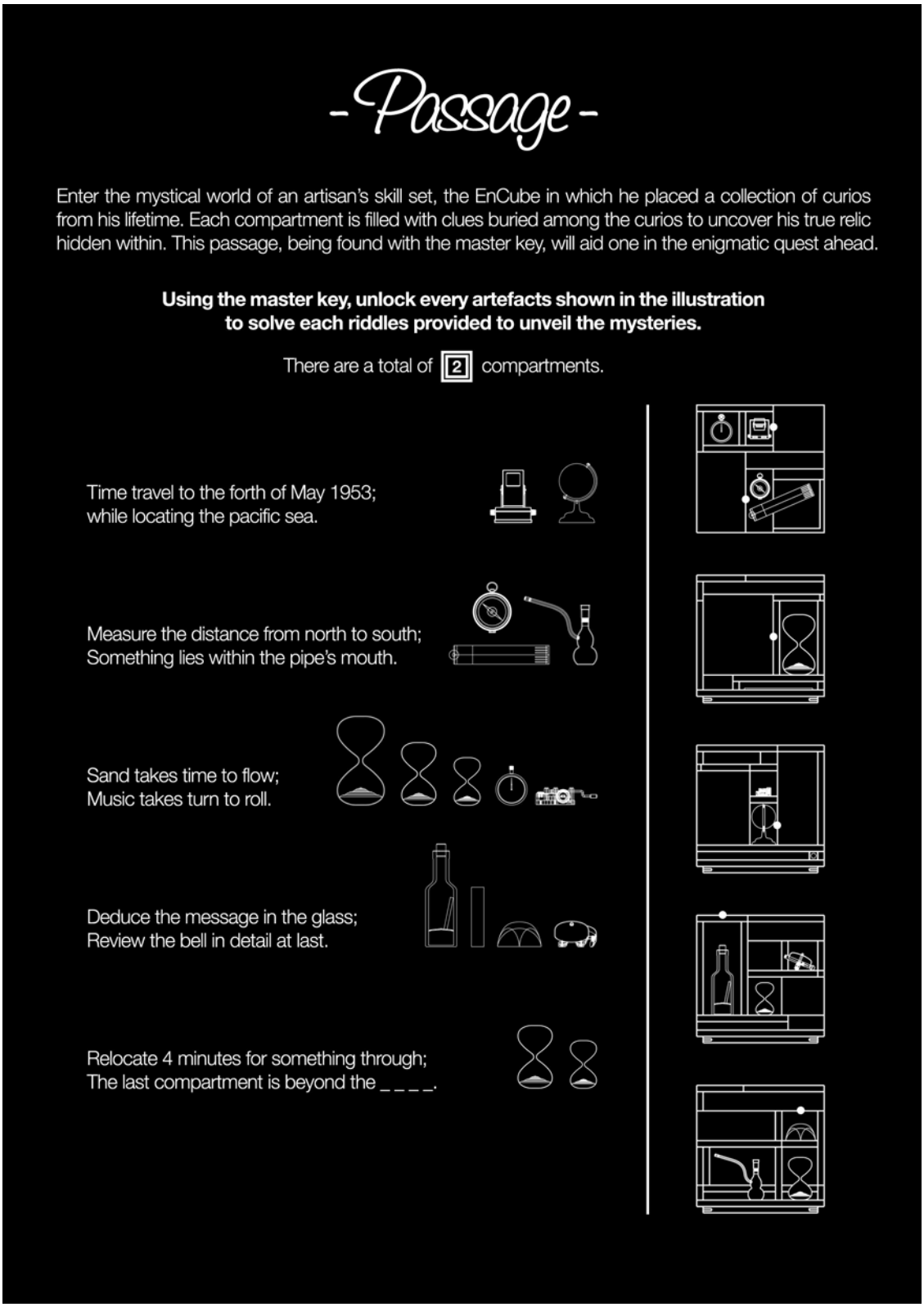

Figure 17, EnCube Passage

Solutions

Upon acquire the EnCube, one could find the first two compartments in which are the keys and passage as these are the only two compartments could be open consecutively in the beginning. (Figure 18)

Figure 18, EnCube First Two Compartments

After gaining the key and passage, one could then use the right side of the passage (Figure 17) to locate and access each curios and artefacts via the magnetic key that unlock the locking mechanisms.

- There are a total of (2 square square = 16) compartments

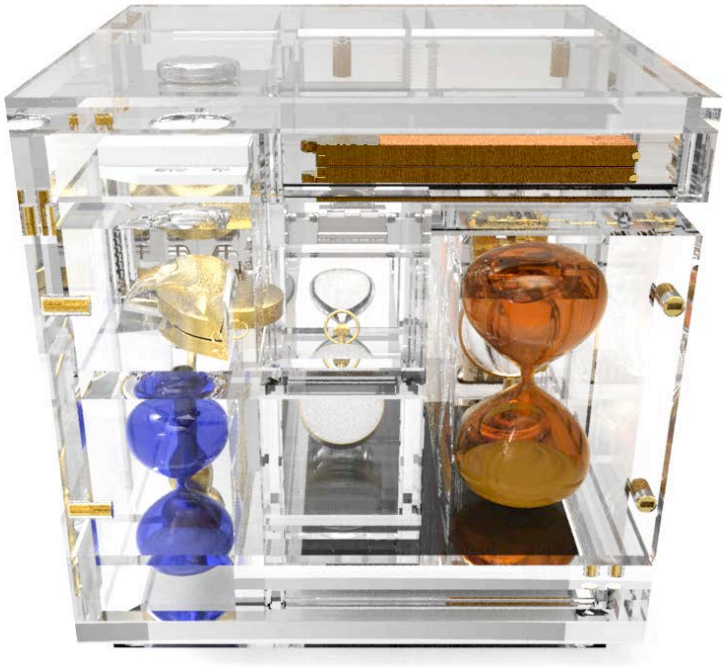

Figure 19, EnCube Curios and Artefacts Locations

The Last Compartment

When all the curios and artefacts are acquired, one could finally begin to use them to solve the left side of the passage. (Figure 17) The graphics represents the objects to be used to solve each paragraph of the riddles to uncover the last compartment. The following are the solutions:

- Flip the perpetual calendar to the forth of May 1953 which is a Monday (1)
- Locate the pacific sea on the glass globe, there is a number 1 (1)
  - 1 + 1 = 2
- Use the vintage to measure the length of the compass from north to south, 3cm (3)
- Turn the brass pipe by its mouth and there is a number 9 within (9)
  - 3 + 9 = 12
- Use the mechanical stopwatch to time all three hourglasses, 10mins, 3mins, 1min (10) (3) (11)
- There is a number 7 underneath the winding musical box (7)
  - 10 + 3 + 1 + 7 = 21
- Use the magnetic key to take out the message and the magnifying glass to read the number 5 (5)
- There is a 0 located at the hitting mechanism of bicycle bell (0)
  - 5 + 0 = 5
- Make sure both the 1min and 3min hourglasses are take out
- The last compartment is behind the blue hourglass compartment
  - 2 12 21 5 = B L U E

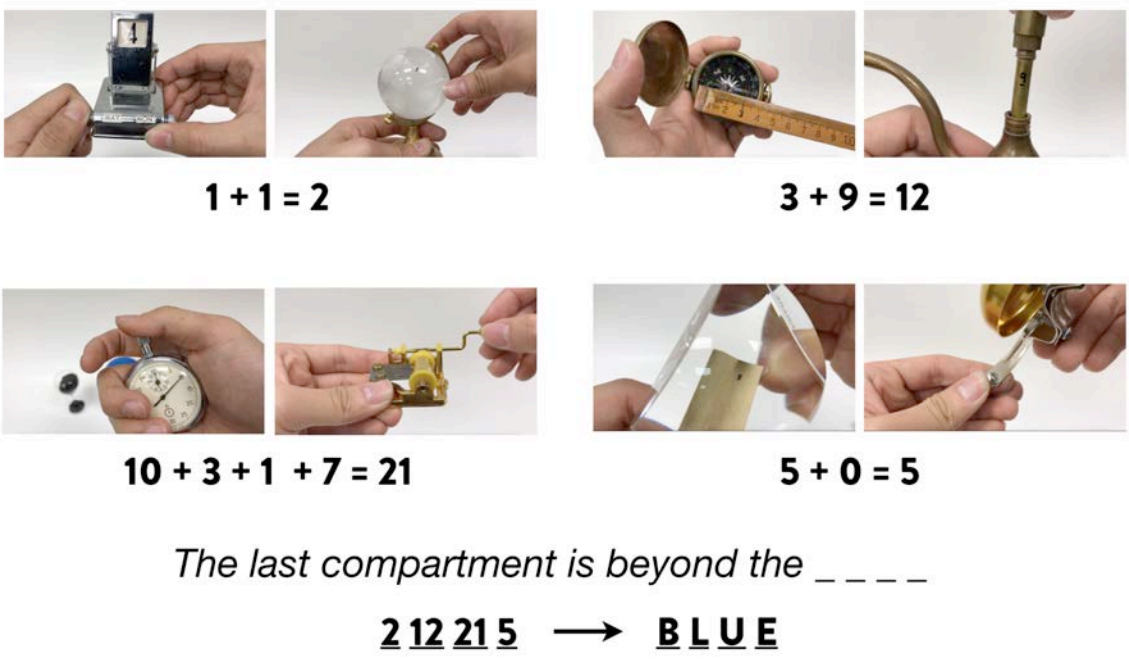

Figure 20, EnCube Last Compartment Solution

Figure 21, EnCube Last Compartment

Figure 22, EnCube Last Compartment Object

Construction Process

Construction Drawing

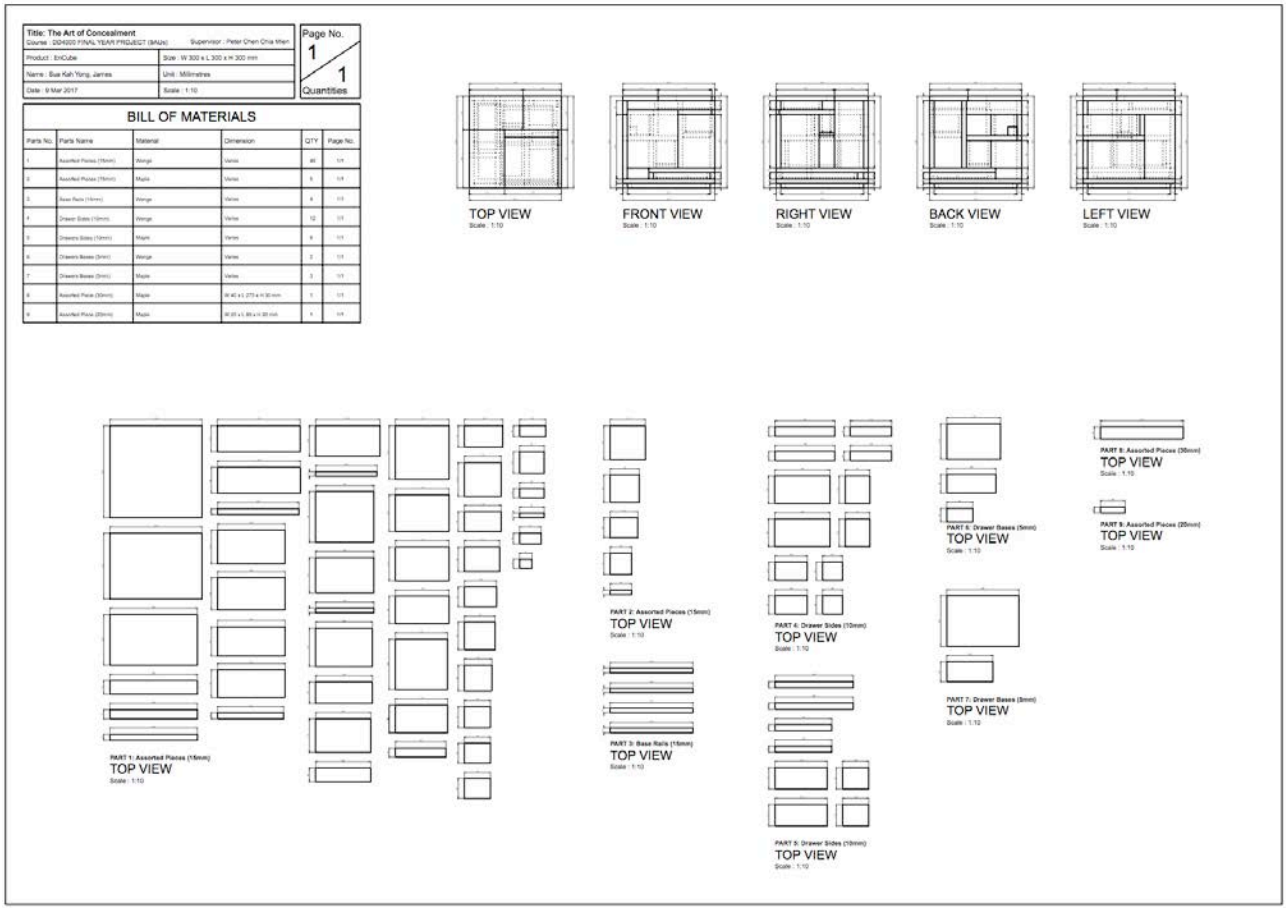

Figure 23, EnCube Construction Drawing

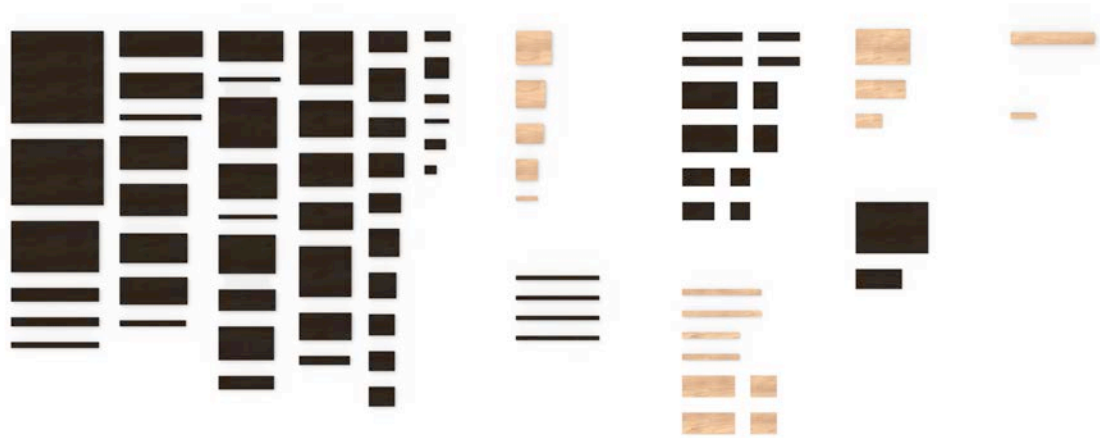

Figure 24, EnCube Components (82 Pieces of Maple and Wenge)

Material Selection

After finalising the construction drawings together with the cut list, it was time to source for the main material, wood. As seen in the picture, exotic wood is much darker and richer than domestic wood, in this case Wenge vs Walnut. (Figure 25) Hence, I had decided to go with Wenge as it would give a high contrast when placed with Maple.

Figure 25, Wenge vs Walnut

Fortunately, I was able to find Wenge at Kenwood Industries and gotten a dozen pieces. The timber was only available in long strips (Figure 26) hence they have to be edge jointed to achieve a bigger width.

Figure 26, Wenge Strips

Edge Jointing

Before edge jointing, the wood had to be planed as all of them were wrapped. Hence, cutting them into halves will reduce the wrapping and material wastage as less material will be planed away. Using a white chalk, all of the pieces would have to go through the drum sander (Figure 27) several times to make sure every piece has the correct thickness.

Figure 27, Planning down to ideal thickness

After being planed, the pieces were arranged for edge jointing. (Figure 28) Pairs with similar grains were chosen for edge jointing so that it glue line wouldn't be too obvious. Only a few pieces have to be edge jointed as some of the pieces is wide enough for the parts.

Figure 28, Edge Jointing

Drawers Construction

The drawers were constructed first as they are the harder pieces and also the box can be built to counter the minor precision errors (if there is, from the drawers).

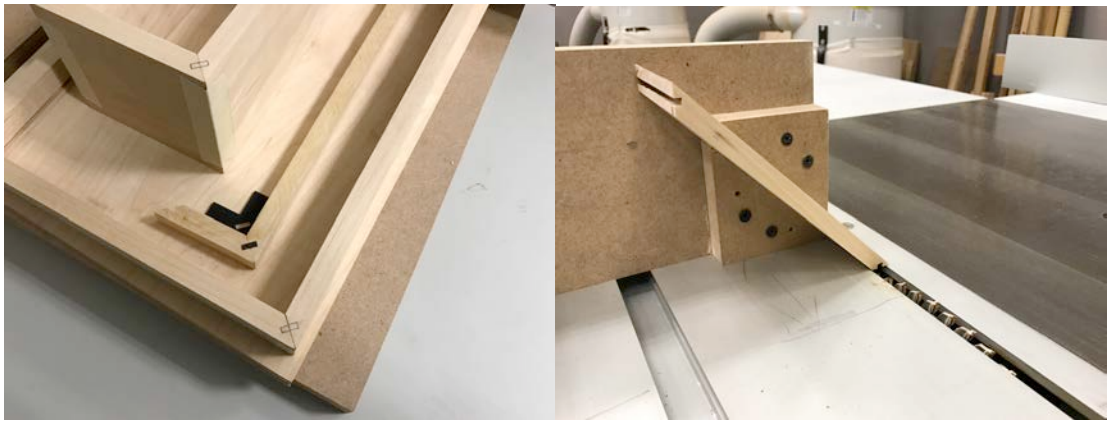

Figure 29, Spline Joint

First, the spline joinery. (Figure 29) As traditional miter spline joinery will reveal the splines at the side which is quite undesirable as I would not want the drawers to be identified when being concealed. Hence, the splines placed at the top to bottom so that the joinery is hidden when closed but revealed when being opened. After some experimenting of the joinery, jigs were built in order to cut it precisely with the tables saw was used. Lastly, gluing the drawers with epoxy as it is gap filling. (Figure 30)

Figure 30, Drawer Assembly

Box Construction

The overall construction of the box is intricate but enjoyable as every piece is unique and is cut only when it was ready to be assembled as part of the box for the precise fit. Epoxy was used for the joining for the whole box for its strength and gap filling properties. Some of the parts required chiselling and also drilling for the installation of the hinges, latches and locking mechanisms.

Figure 31, Milling

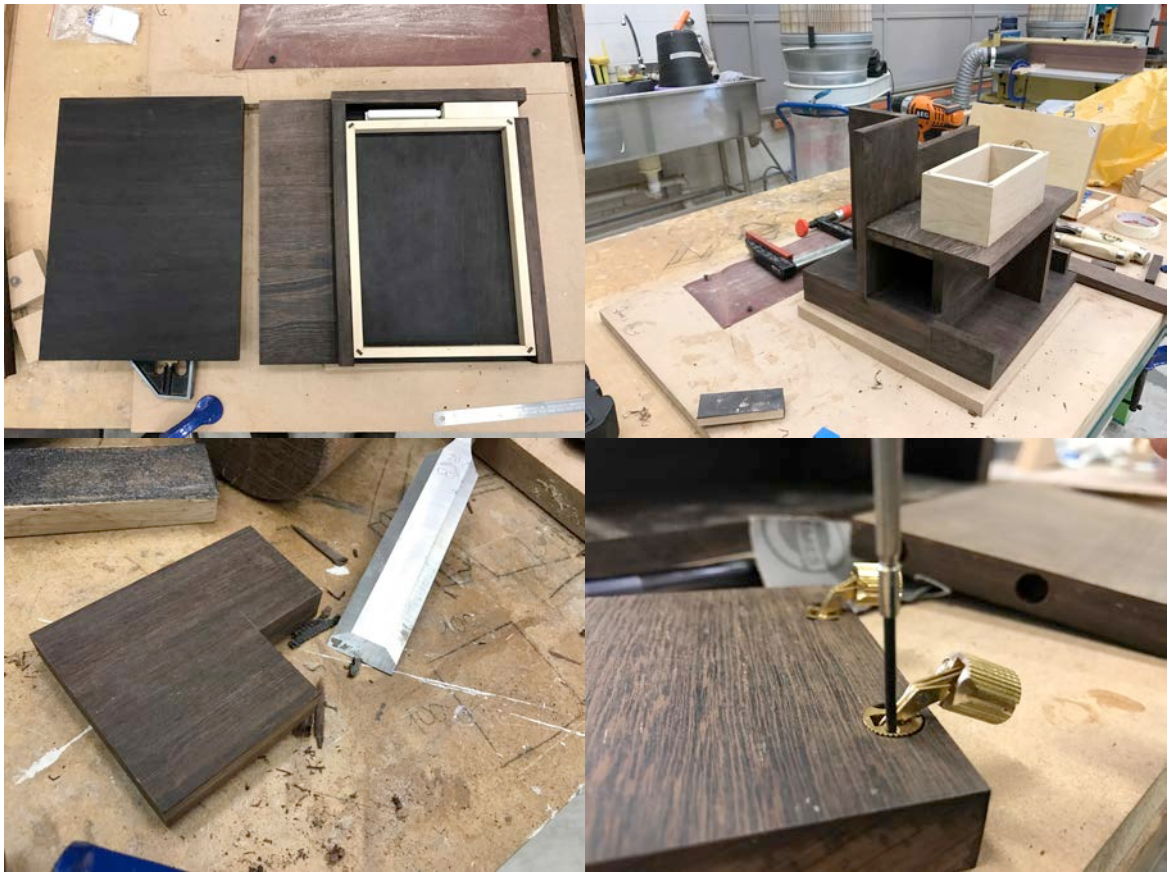

Figure 32, Box Assembly

Finishing

After the box is fully assembled, a thorough sanding was proceeded, followed by a dark stain to enhance the vibrant colour of the exotic wood. Lastly, a few coats of Lavender wax preserve the colour of the wood, giving it an ageing effect and protective layers instead of oiling which will turn the wood slightly yellowish. (Figure 33) Finally, the construction of the pedestals and display cases. (Figure 34)

Figure 33, Sanding and Waxing

Figure 34, Pedestals and Display Cases

Final Outcome

Figure 35 EnCube (Concealed and Unveiled)

Details

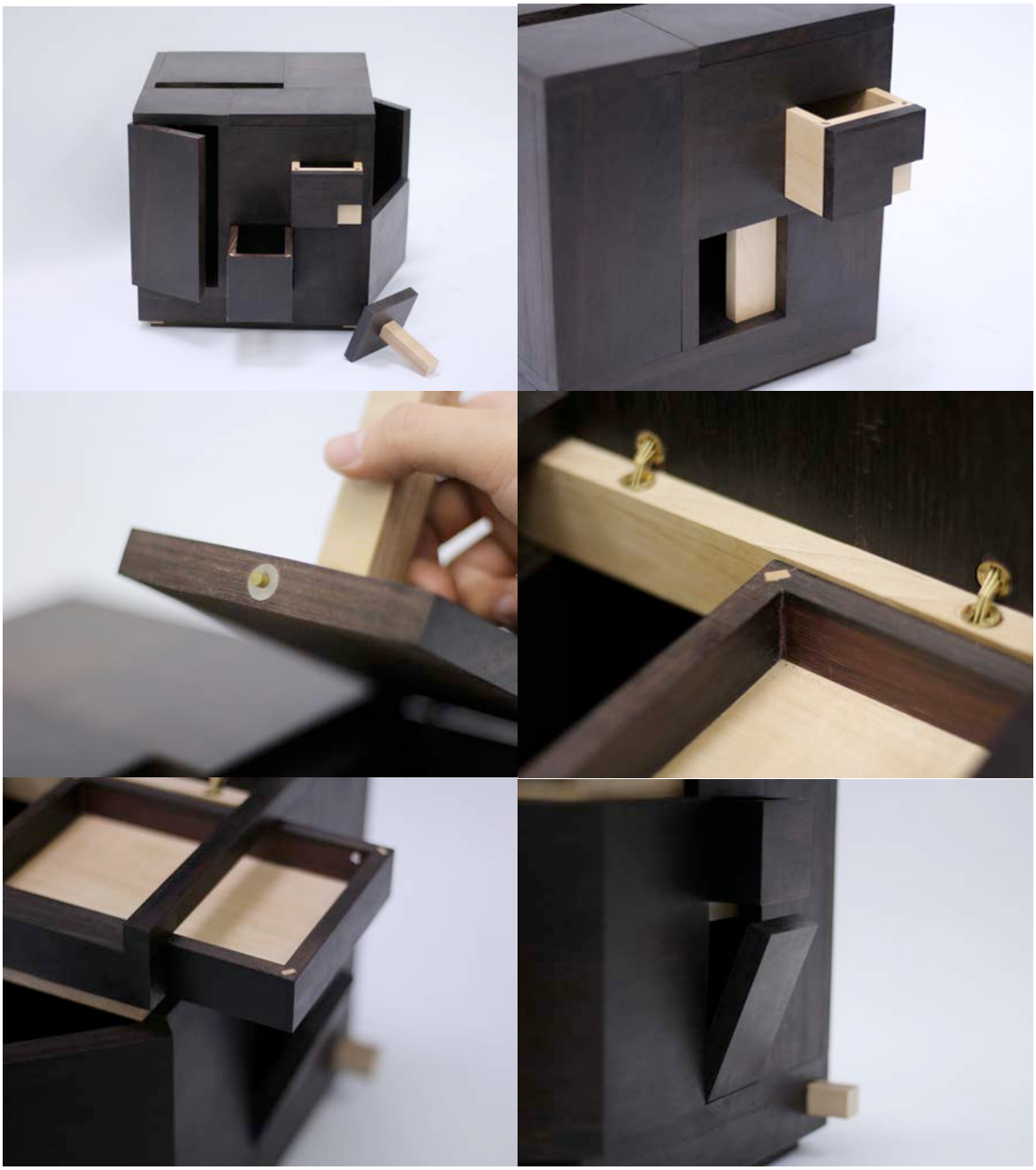

Figure 36 EnCube Details

Exhibition Booth Layout

For the exhibition booth, the EnCube is the centre of attention being placed in the middle, creating an enclosed space within the booth. Viewers are able to visualise all sides of the EnCube and also the details, description, artefacts and passage along the walls and table when journeying through the booth.

Figure 37 EnCube Exhibition Booth (Rendering)

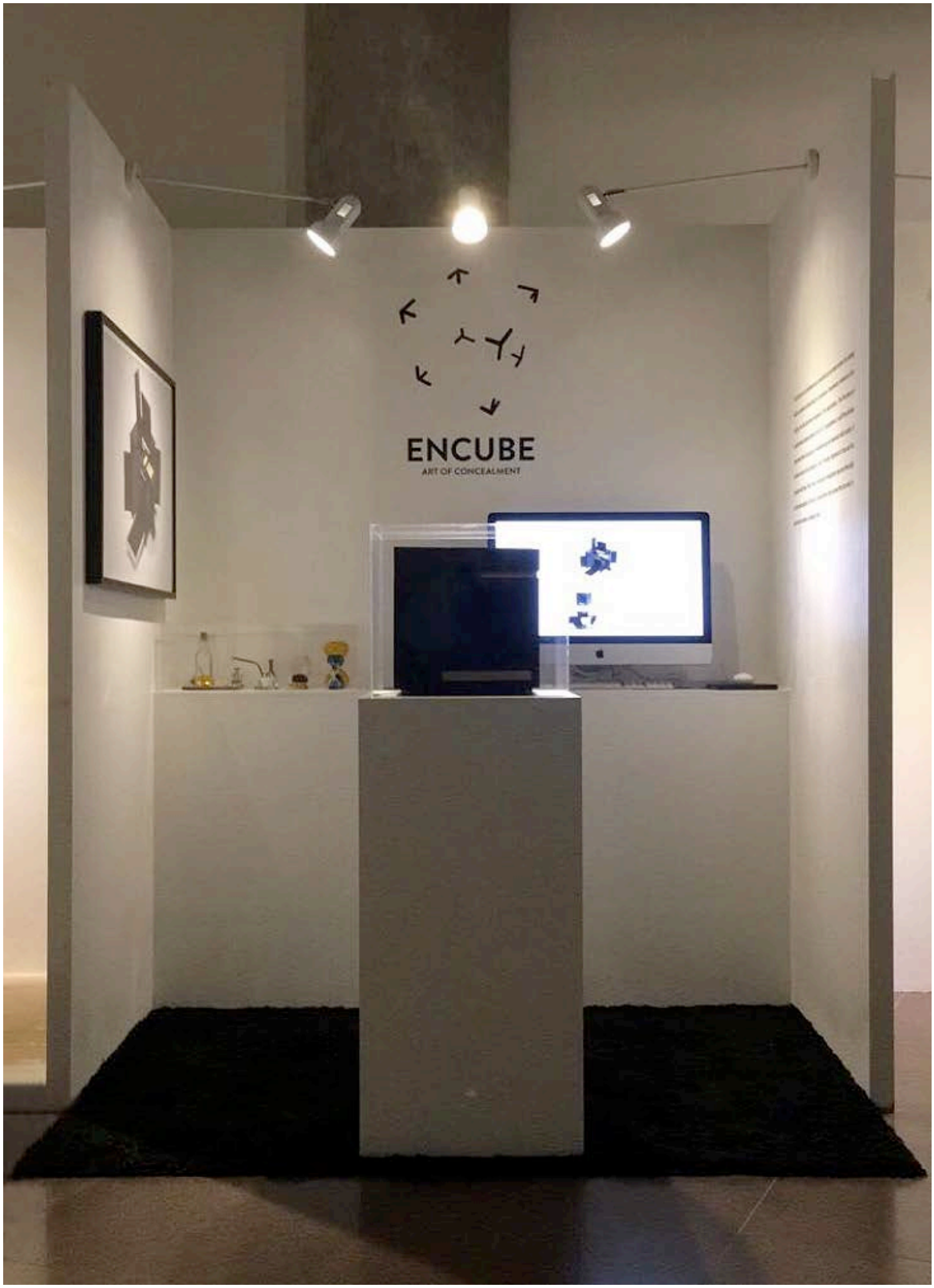

Figure 38 EnCube Exhibition Booth (Actual)

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