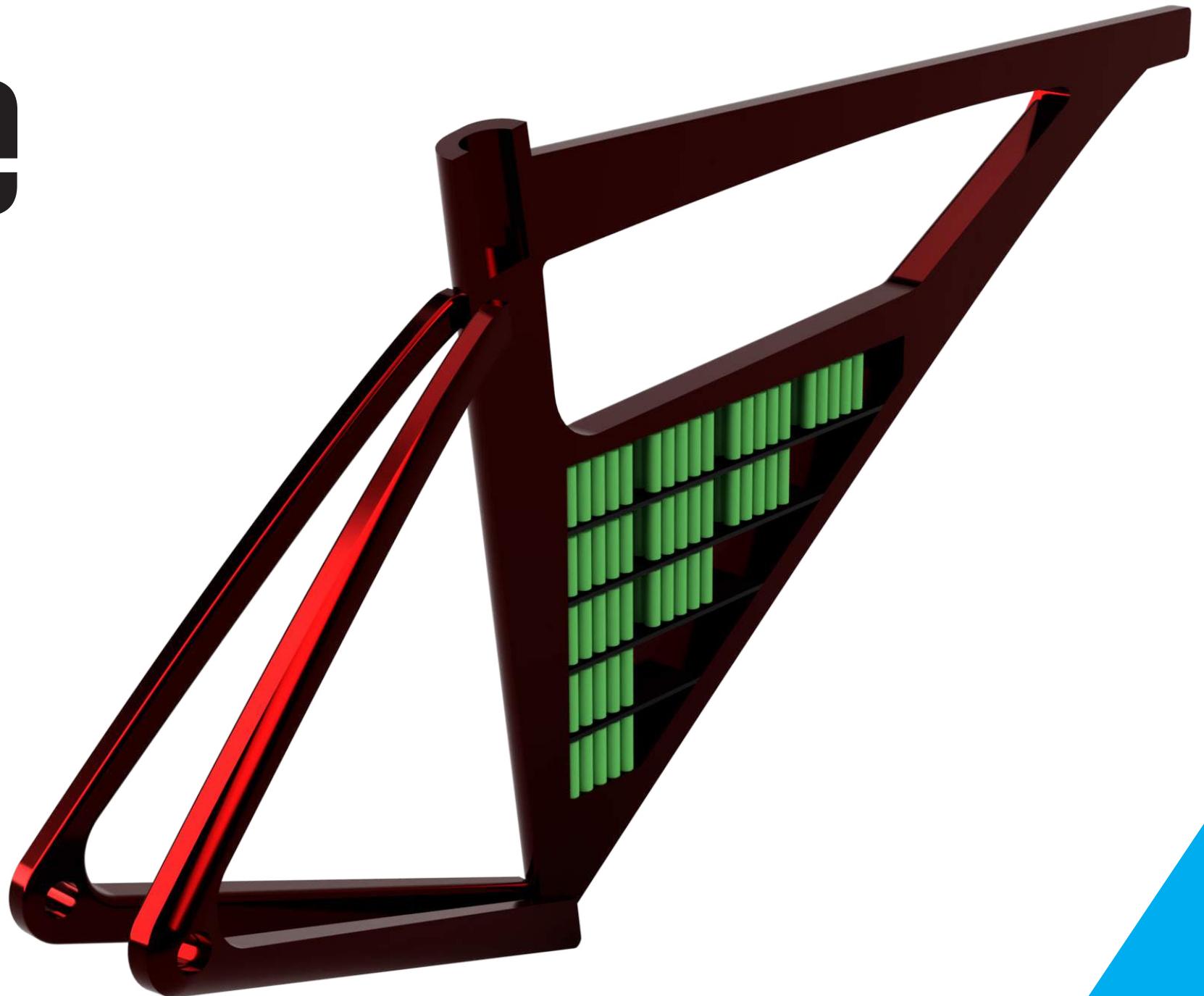


# VeBike

Urban Commuting Bike



# Who is it for?



 **Mark Martinsen**

 **New York, USA**

**Environmentalist**

**Energetic**

**World Traveller**

**Entrepreneur**

**Video Blogger**



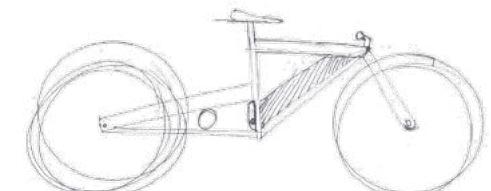
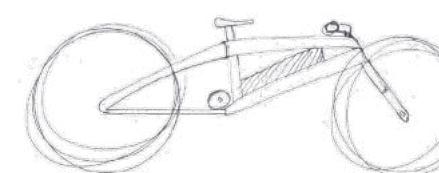
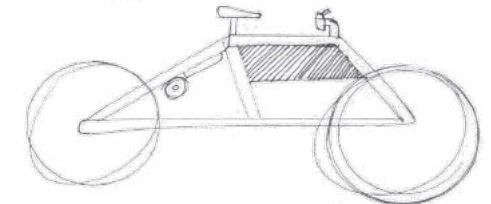
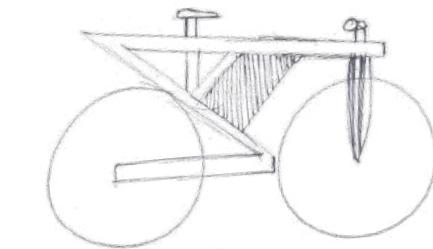
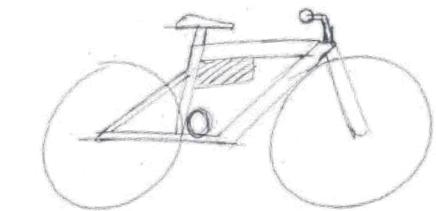
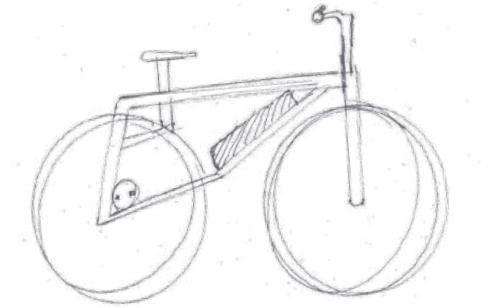
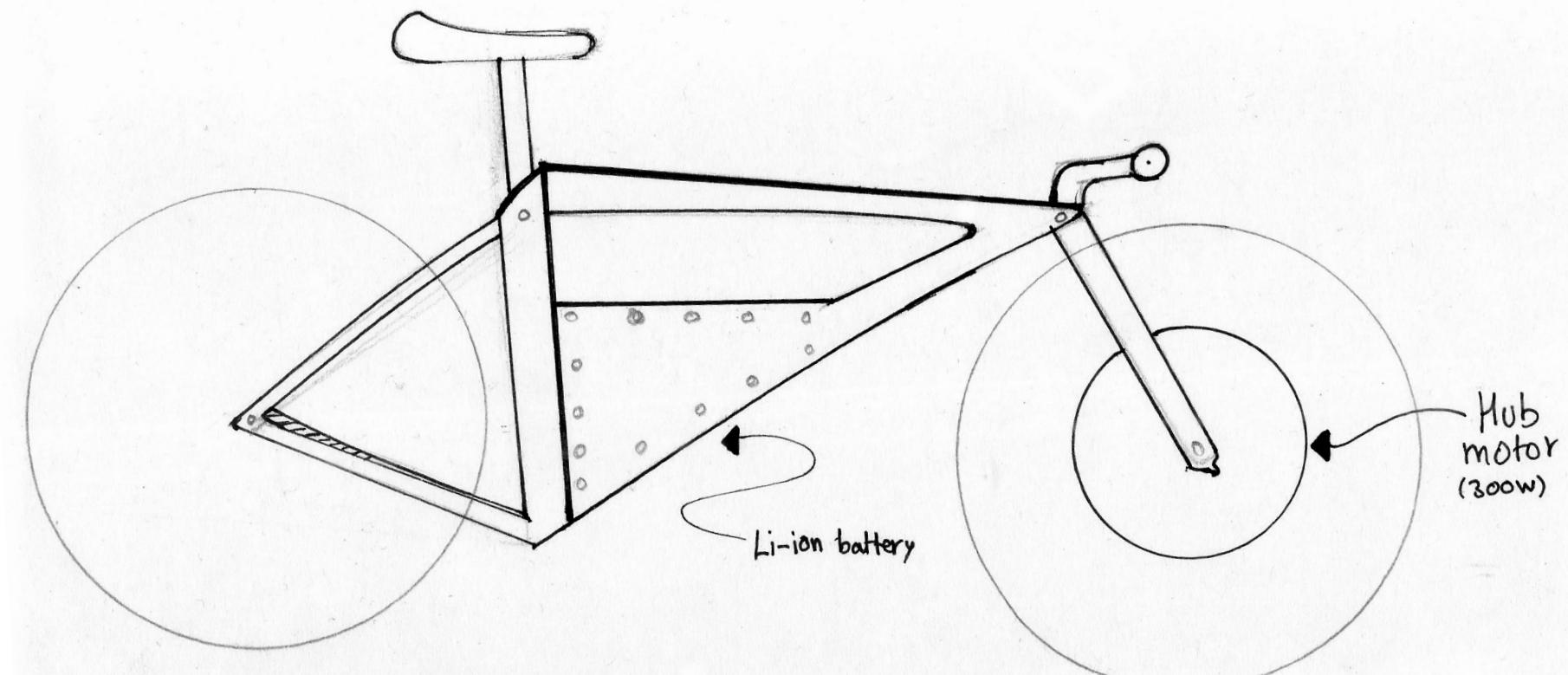
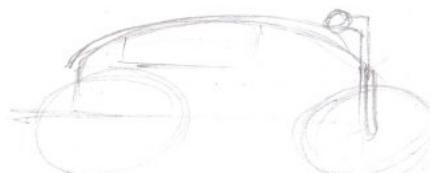
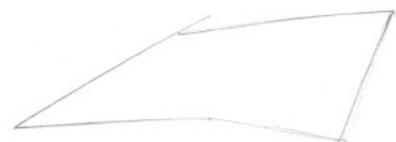
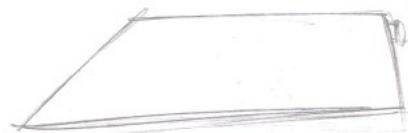
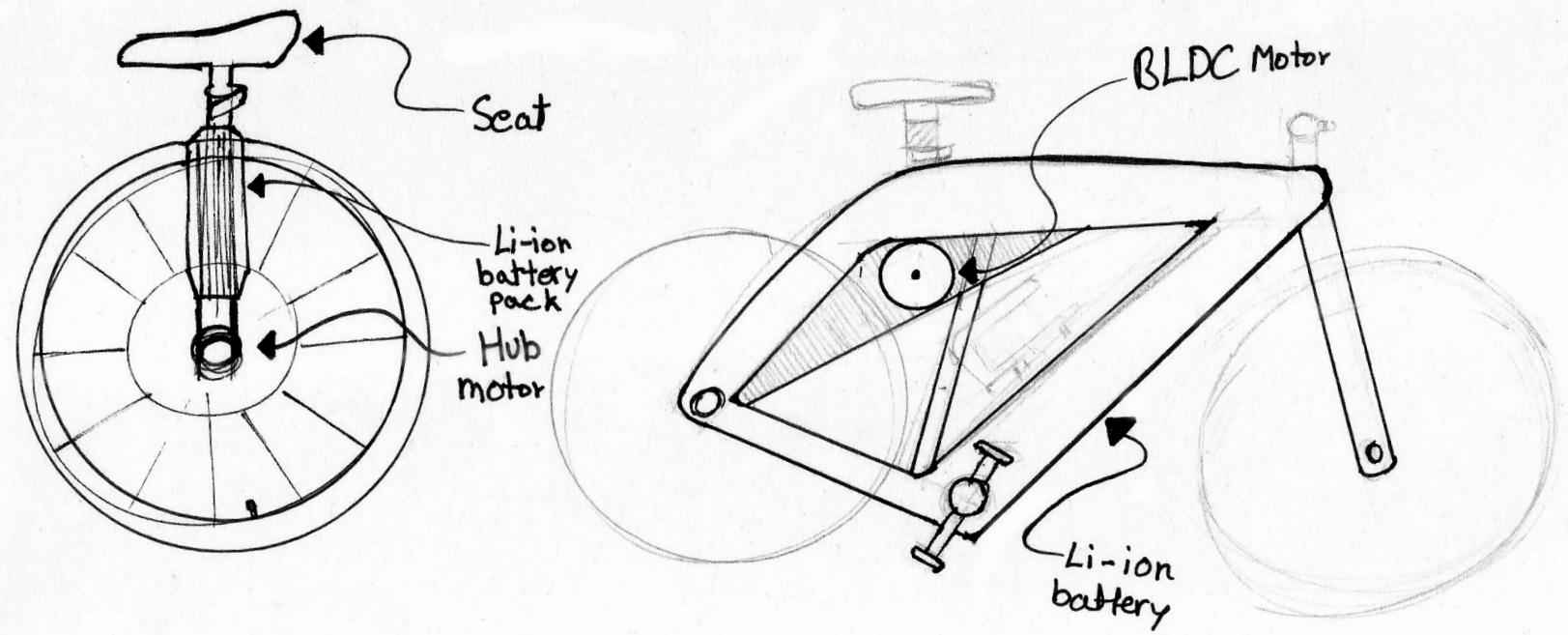
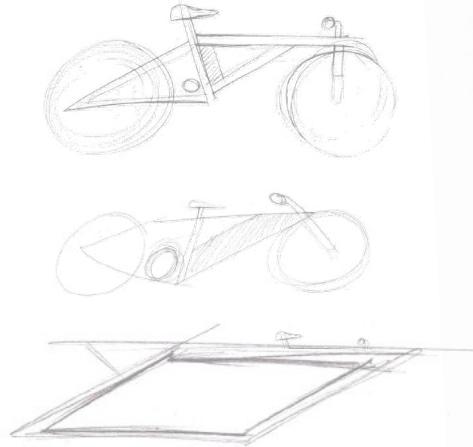
**Mark wants to upgrade his bike by making his own e-Bike**



# Inspiration



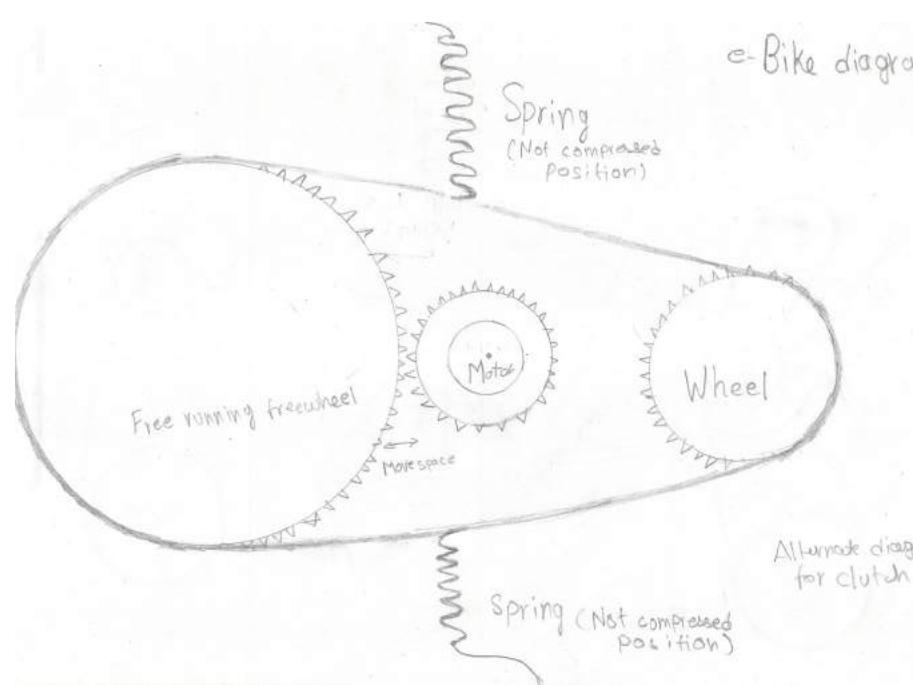
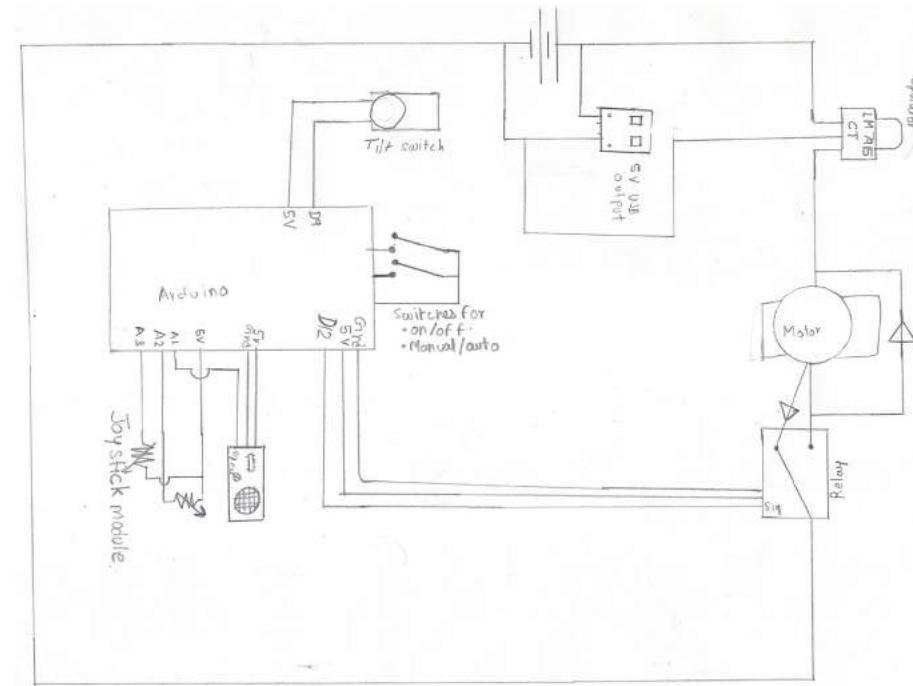
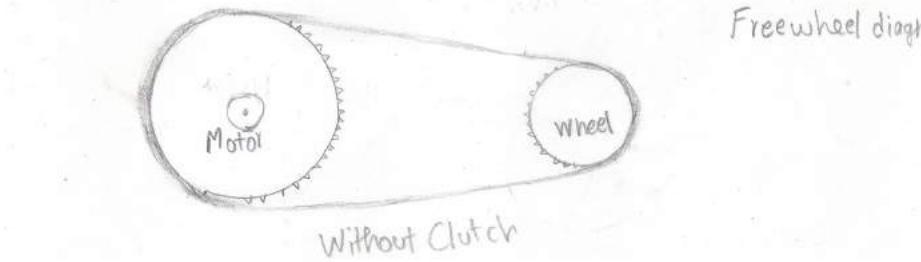
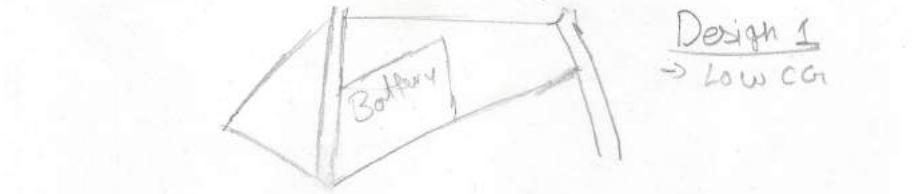
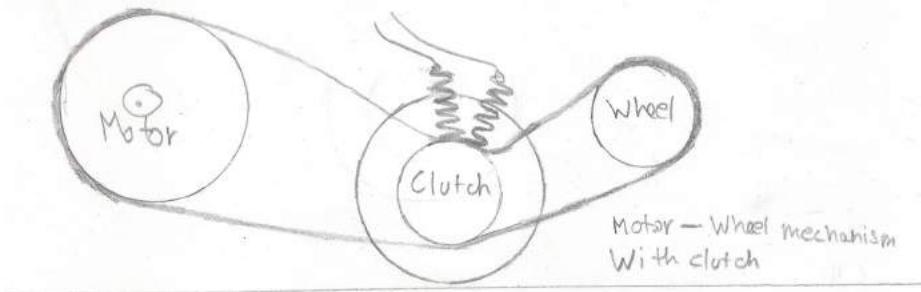
# Ideation



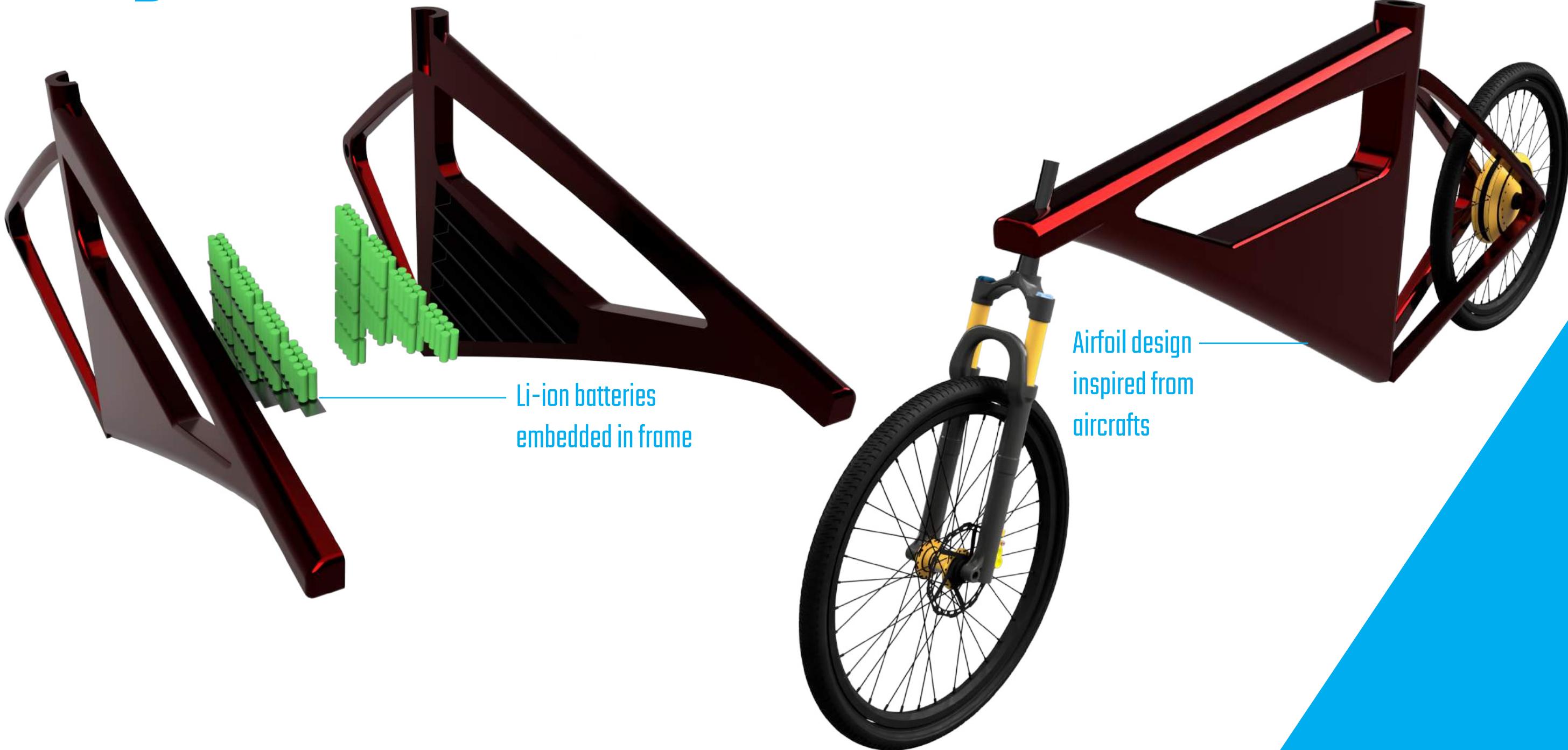
# Seat Design



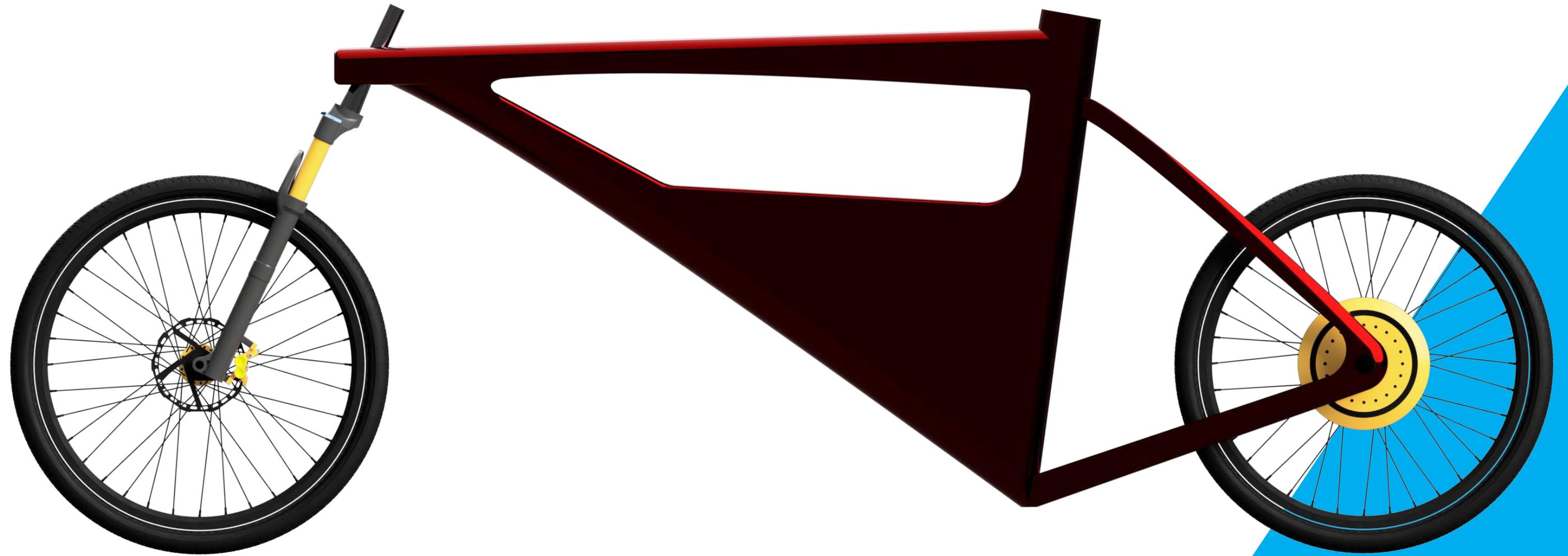
# Development

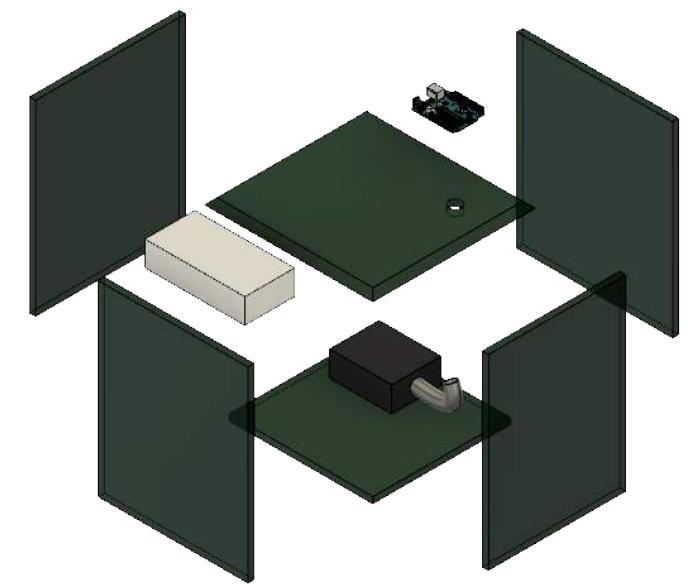
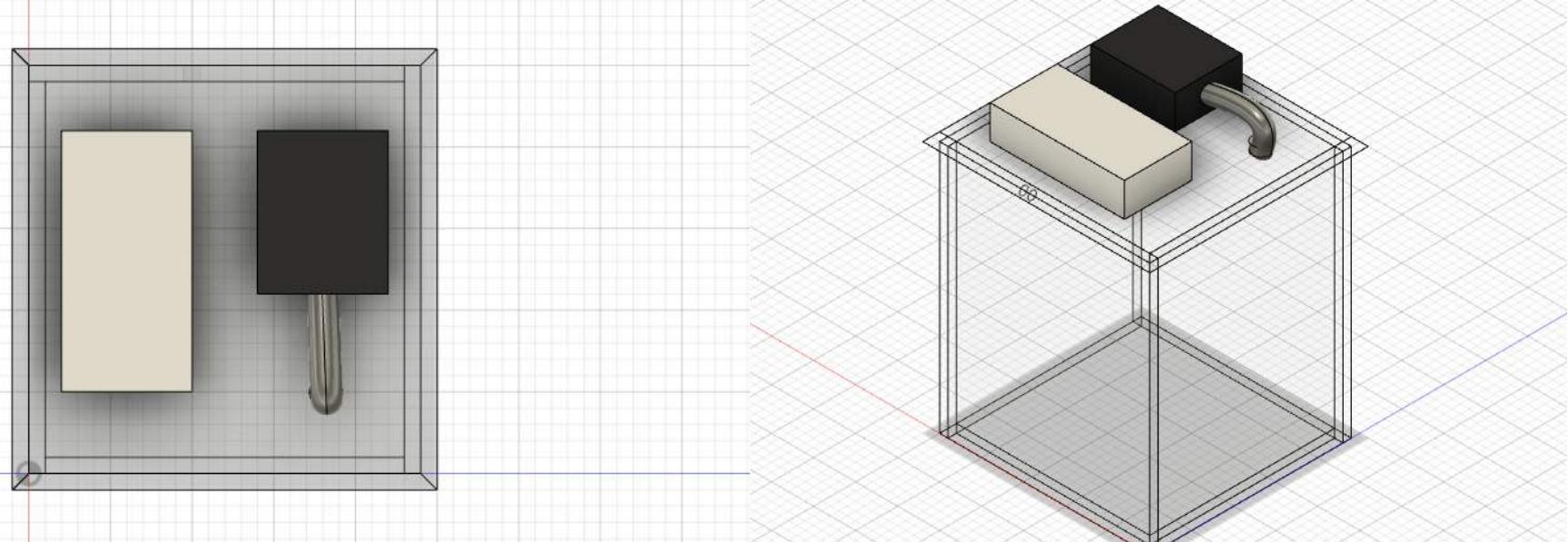


# Design Features



# VeBike





# Eureka

---

Automated Watering Assistant



# Why Automate Watering?



Conserves Water

Convience of automating  
mundane tasks



# Existing Products



## IKEA PS FEJÖ Self-watering Planter

This product relieves the user of watering their plants every day by using a mechanism which involves using threads to suck water from the bottom of the pot to the soil because of the lower content of water in the soil.

### Advantages:

Caster wheels make it easy to move

Reasonable cost (\$20)

Made of recyclable material

Water gauge indicates the water level

### Disadvantages:

Not ideal for the outdoor environment

No effective way to drain excess water



## GrowOya

This product is a terracotta pot that can be buried into the soil and filled with water about once a week. The water inside slowly seeps out through the walls to water the plants at the roots.

### Advantages:

Saves water and time

Reduces weed growth

Plants get how much water they need

Material and development process is not hazardous to the environment

### Disadvantages:

Expensive (\$25 for 1 small product which is sufficient for 2 feet diameter)

Difficult to install

Breaks at temperatures below zero if left in the soil



## Rainbird Drip-Irrigation System

This product controls water flow to a set of plants through a pipe laid across the area that has to be watered. This method allows water to seep into the soil, providing sub-surface watering.

### Advantages:

Saves water compared to usual watering

Better growth of plants

Does not require digging

One time set-up

### Disadvantages:

Requires a constant pressurized water supply

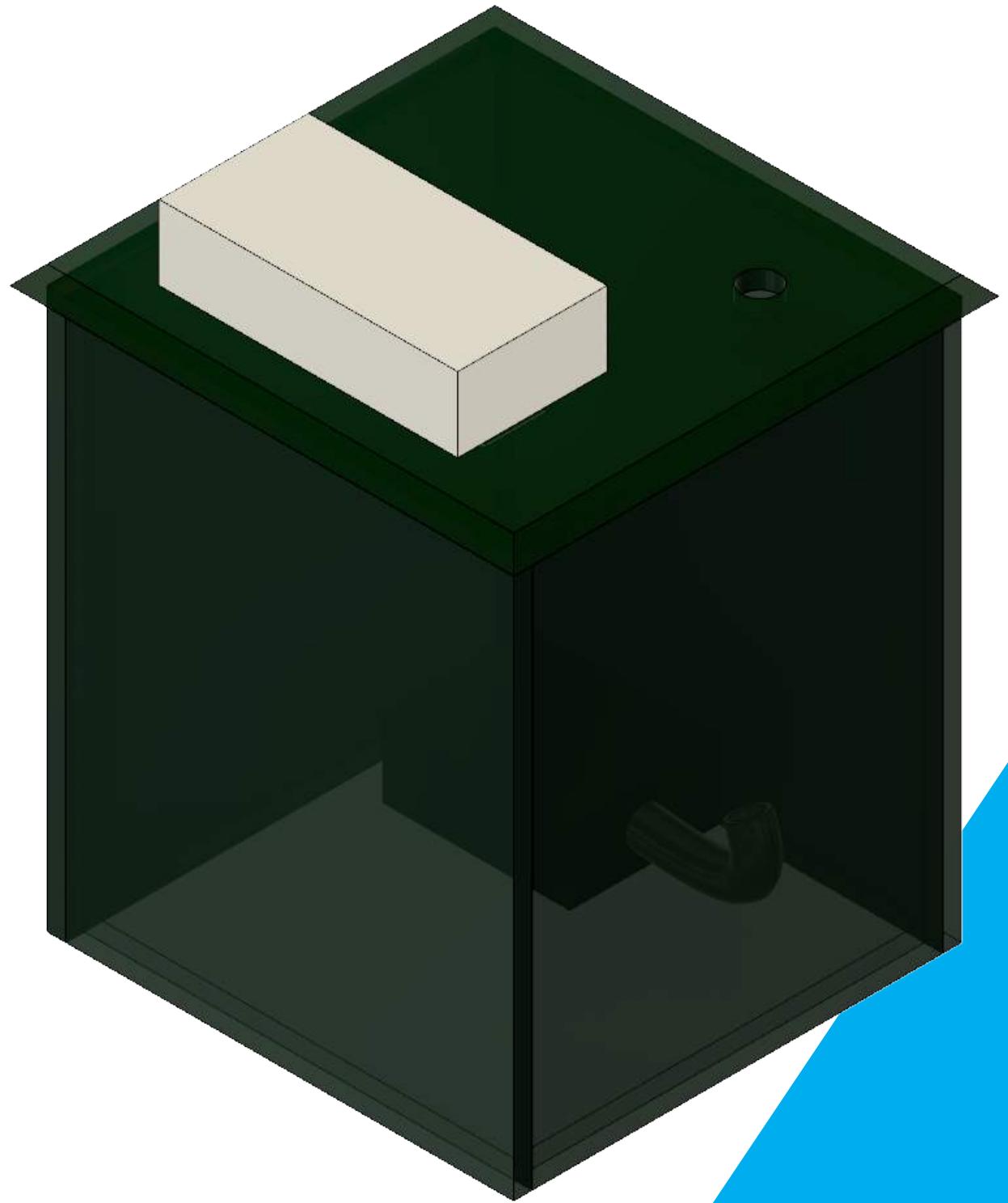
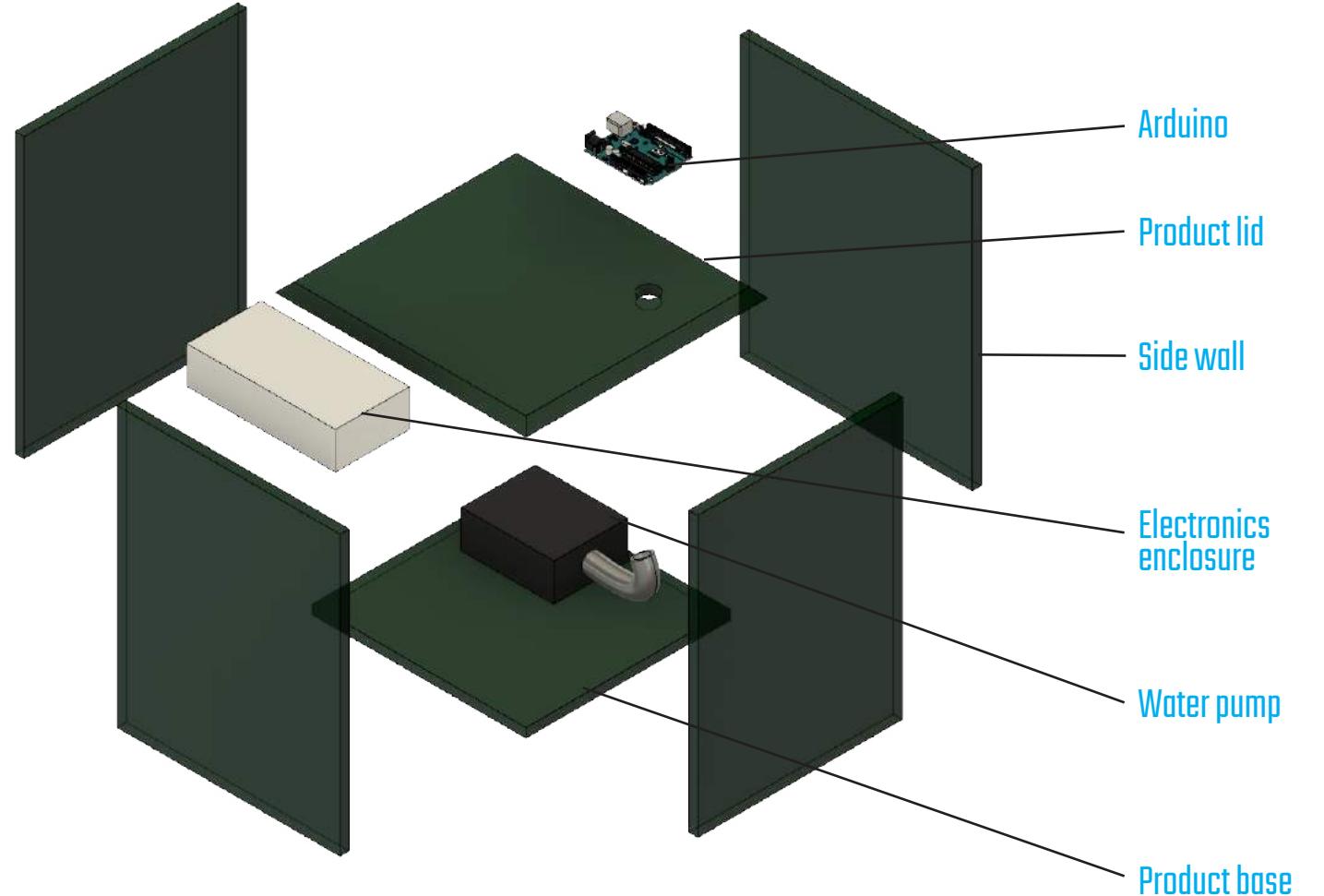
Expensive (\$130 for an area of up to 75 square feet)

User set watering frequency, not based on soil humidity

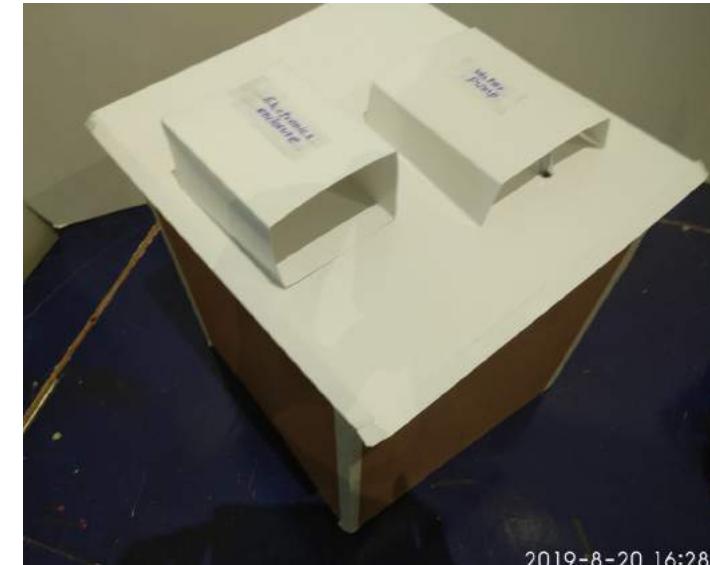
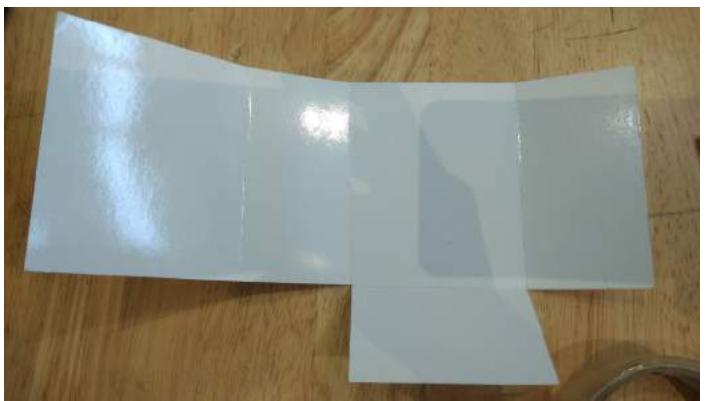
# Sketch Modeling

Sketch evolution page goes here

# Product Visualization



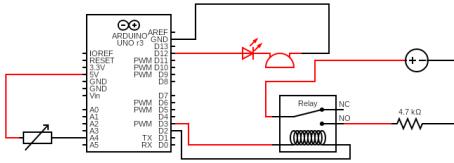
# Prototyping



# Material Exploration

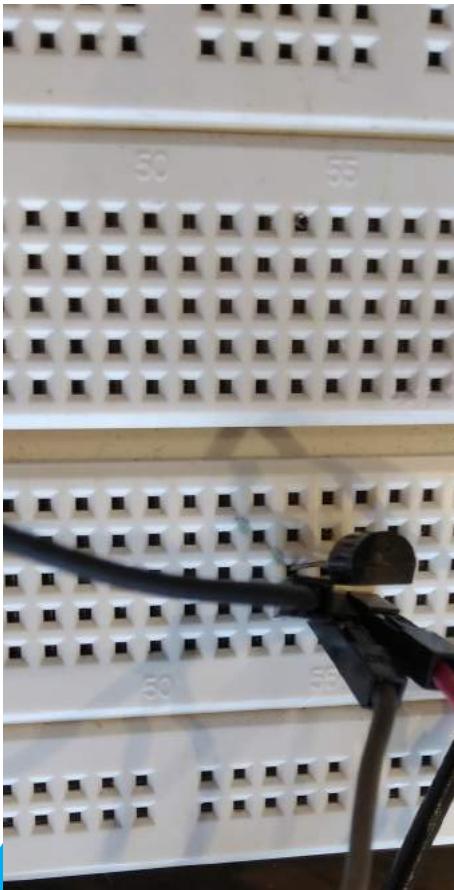
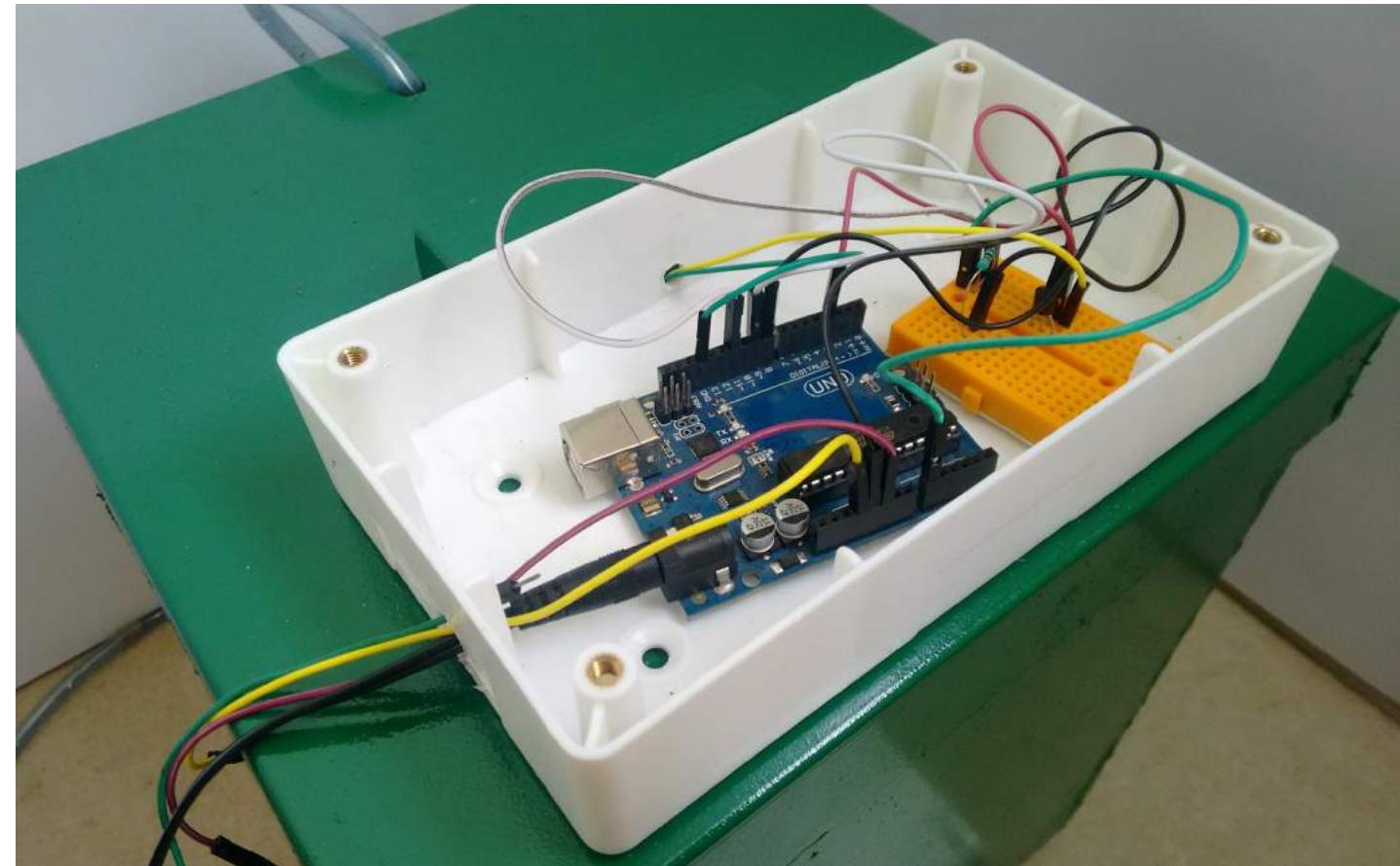
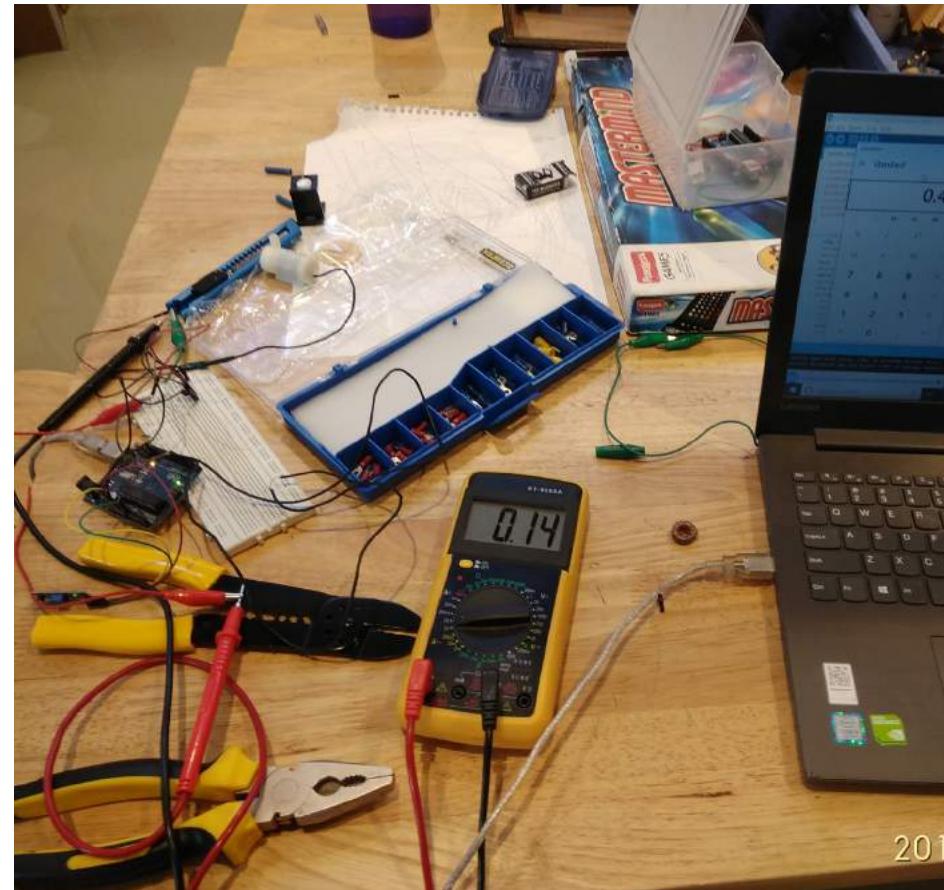
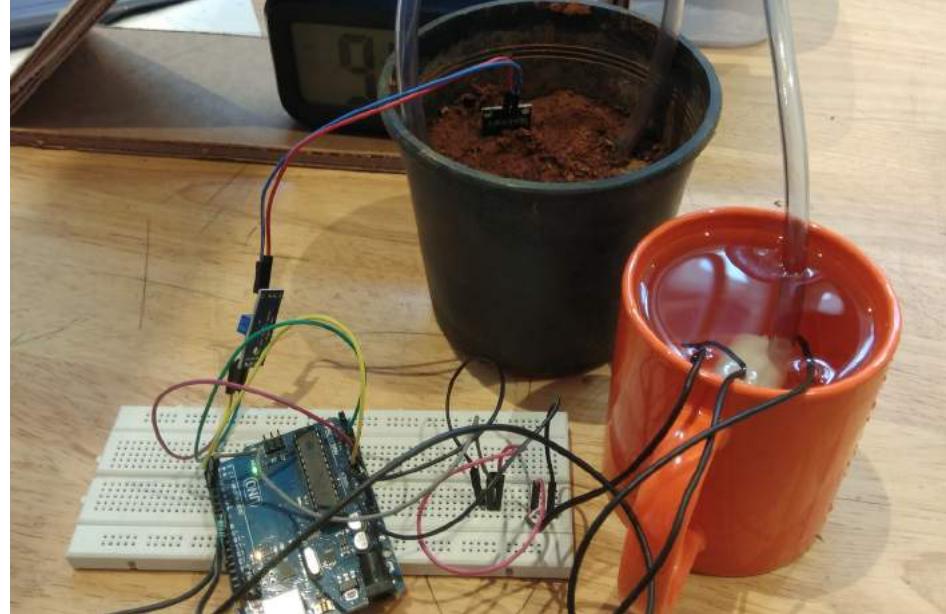


# Electronics



sensor\_sketch | Arduino 1.8.9 (Windows Store 1.8.21.0)  
File Edit Sketch Tools Help  
COM0  
sensor\_sketch  
void loop() {  
 temp = dht.readTemperature();  
 Serial.print("temp: ");  
 Serial.print(temp);  
 soil = analogRead(A0);  
 Serial.println(soil);  
 water = digitalRead(9);  
 Serial.println(water);  
 delay(1000);  
 if (water == 0) { //Warn user if tank is empty  
 digitalWrite(11,HIGH); //Switch on LED  
 digitalWrite(12,HIGH); //Switch on buzzer  
 delay(1000); //Buzzer for 1 second  
 digitalWrite(12,LOW); //Switch off buzzer  
 enabled = 0; //Disable water pump  
 }  
 if (soil < 500) { //If soil humidity is low  
 if (enabled == 1){ //if water is in the tank  
 digitalWrite(3,HIGH); //Switch on water pump  
 delay(2000); //Keep pump on for 2 seconds  
 digitalWrite(3,LOW); //Switch off water pump  
 }  
 }  
}

Done uploading.  
Sketch uses 5138 bytes (15%) of program storage space. Maximum is 32768 bytes.  
Global variables use 226 bytes (11%) of dynamic memory, leaving 182 bytes free.

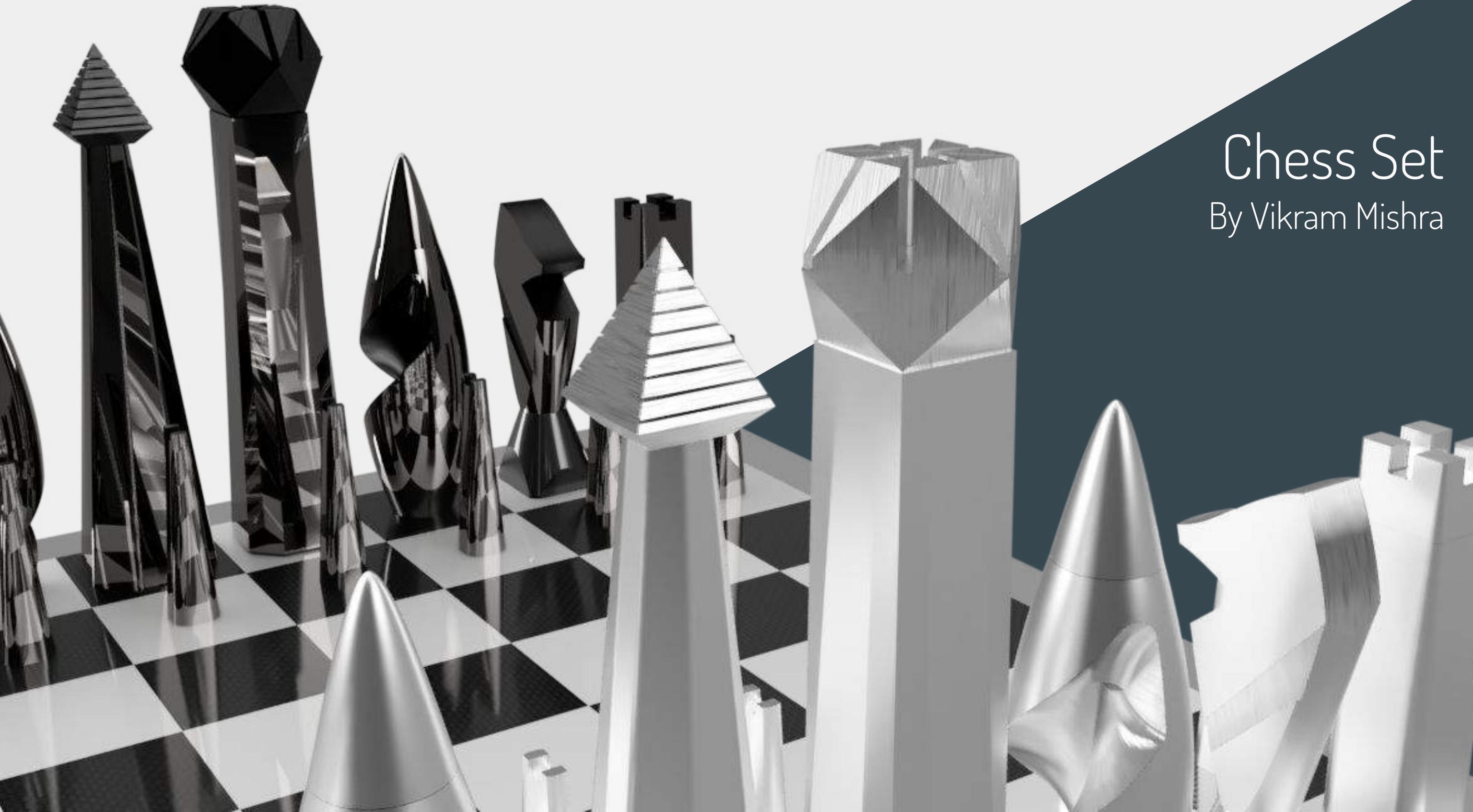


# Finishing



# Chess Set

By Vikram Mishra



# POSSIBILITIES MATRIX

## WHO

- Automobile Companies Offices & Showrooms
- Car Enthusiasts who use Custom Made Parts
- Automobile Collectors

## WHAT

- Showpiece
- Gift to Guests
- Collectible

## WHERE

- In a Cabinet
- On a Glossy Table
- With a Car Collection

## WHEN

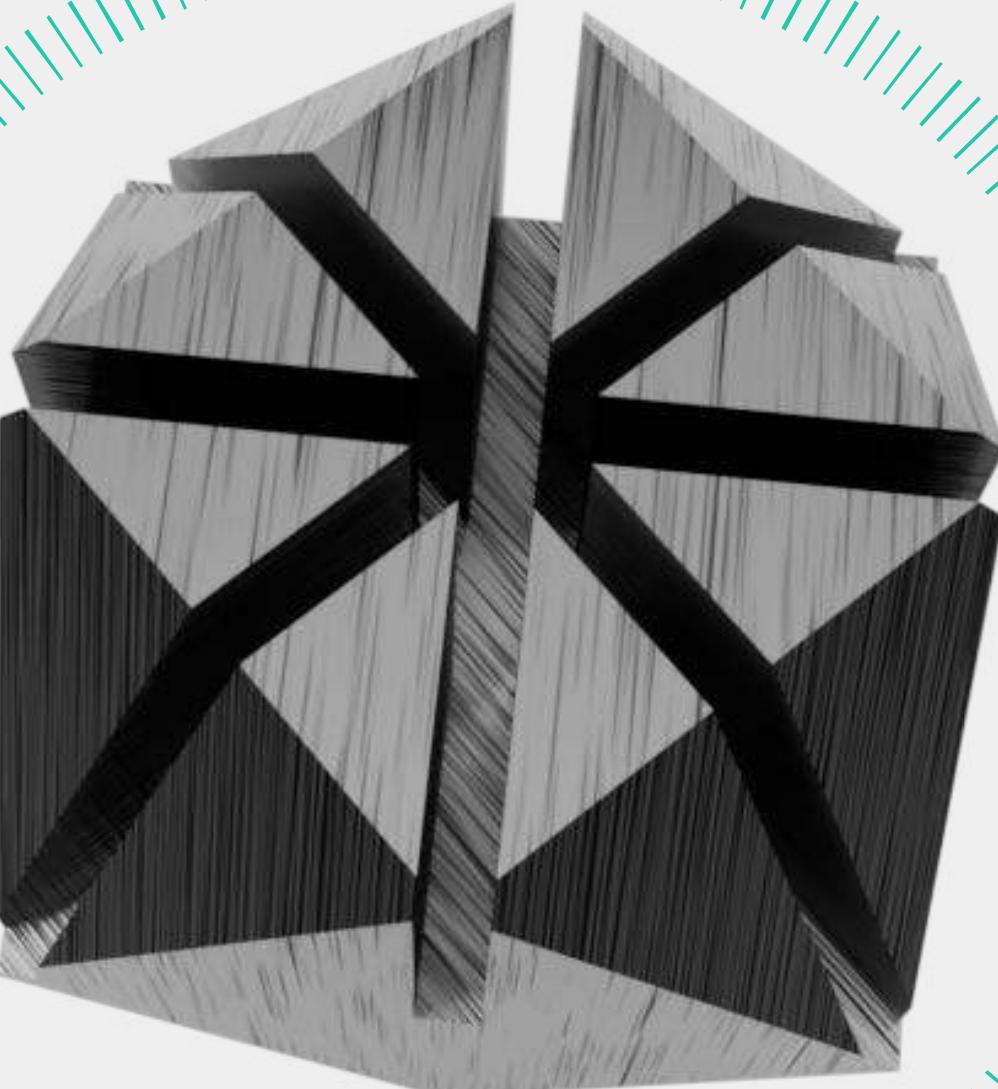
- Used Occasionally when Meeting a Chess Player

## WHY

- A Style Statement and Expression of Enthusiasm for Automobiles
- Creates Ambiance

## HOW

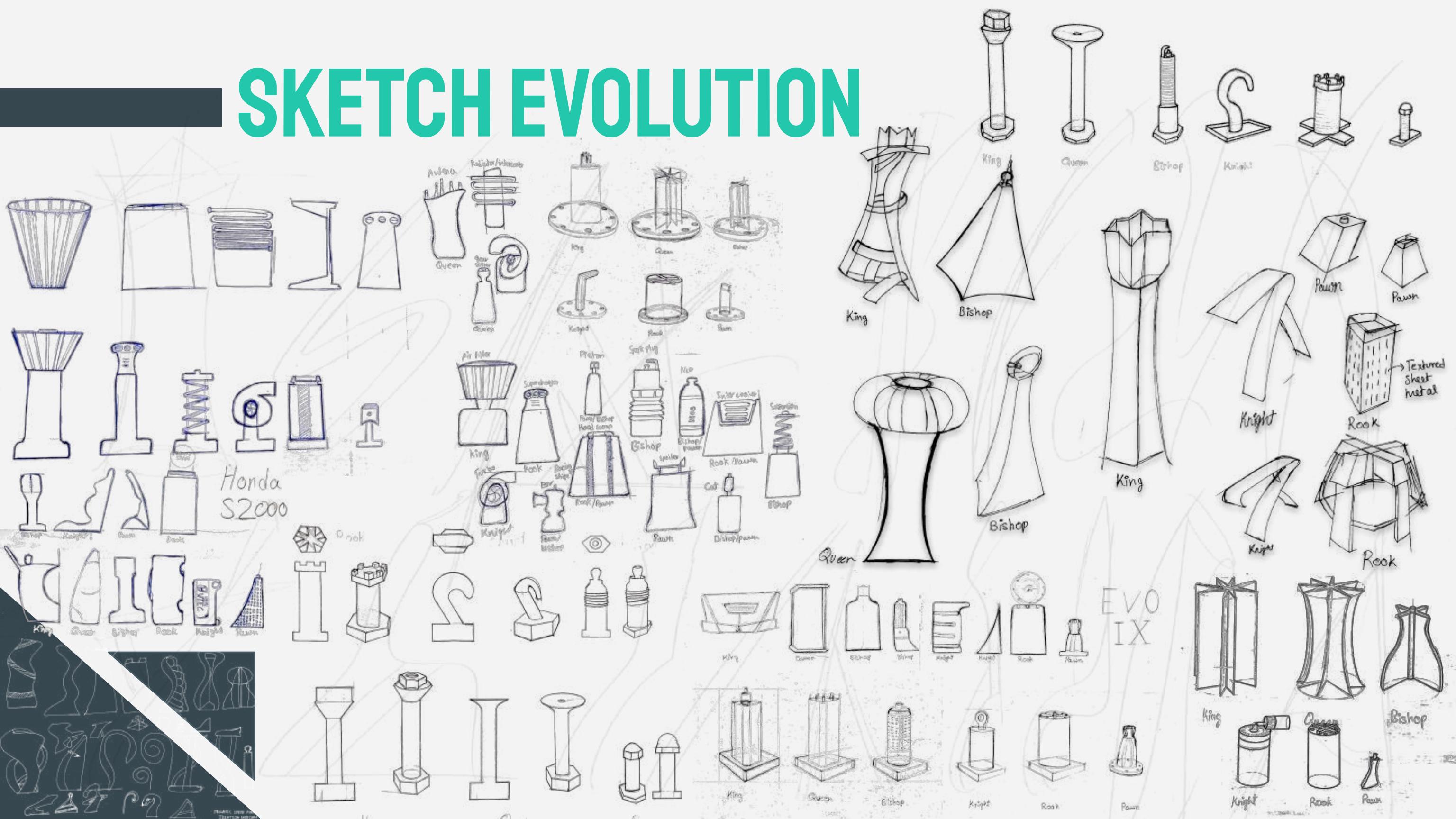
- Made of Finely Cast and Machined Stainless Steel



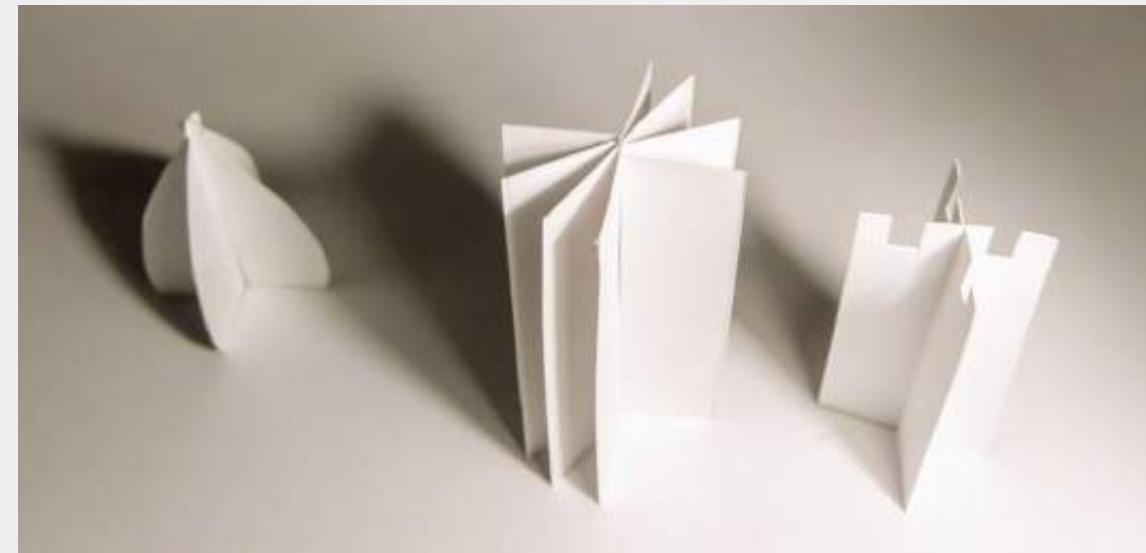
# AESTHETIC

Made from finely machined metal pieces, this chess set will fit in corporate offices of automotive companies and in car showrooms and dealerships, as well as in garages with collectable cars and as a showpiece in cabinets in houses of automobile enthusiasts who enjoy customizing vehicles, especially with custom made parts

# SKETCH EVOLUTION



# 3D SKETCHES



# FINAL PHYSICAL PROTOTYPES



# HUMAN FACTORS EVALUATION



## IDENTIFICATION

- The pieces were identifiable primarily through the hierarchy
- The bishop doesn't have any features of the conventional bishop, it is difficult to identify

## GRASPING

- The pieces were grasped without any hesitation and without much thought
- The rook and Queen were grasped from the top while the rest were grasped from the middle or the bottom

## CONCLUSIONS

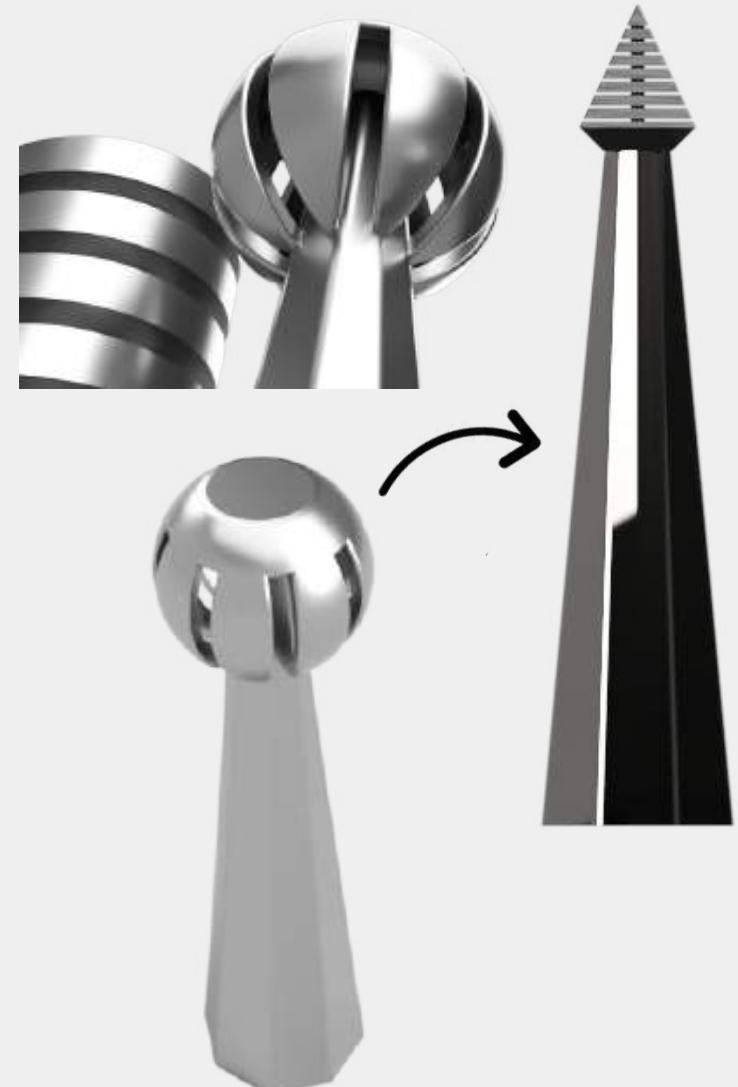
- The pieces could be more successful at being identifiable using features other than the hierarchy of size
- The design of the pieces does not interfere with grasping and picking them up

# DESIGN CHANGES



King incorporates idea of a finely machined custom top attached to a casted base

Changes from a more functional design to an aesthetic one



Top of the queen becomes easier to manufacture in a CNC machine



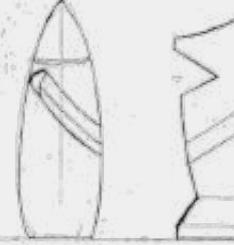
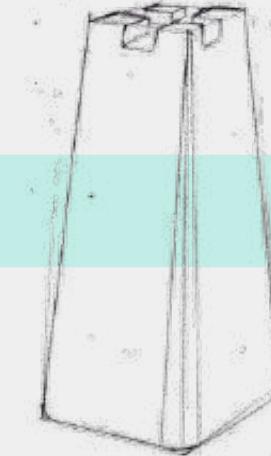
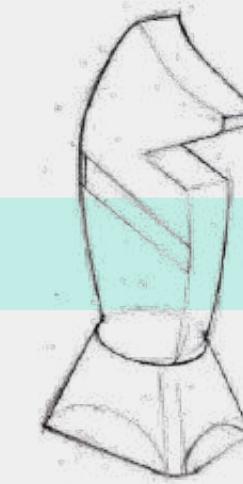
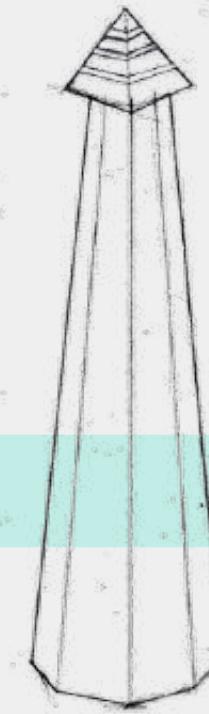
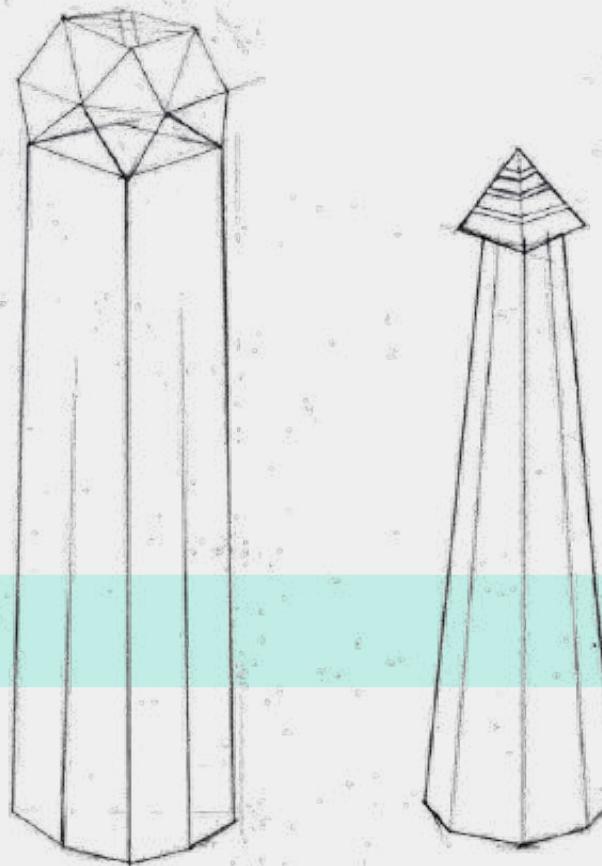
Bishop becomes more aesthetic and uniquely identifiable



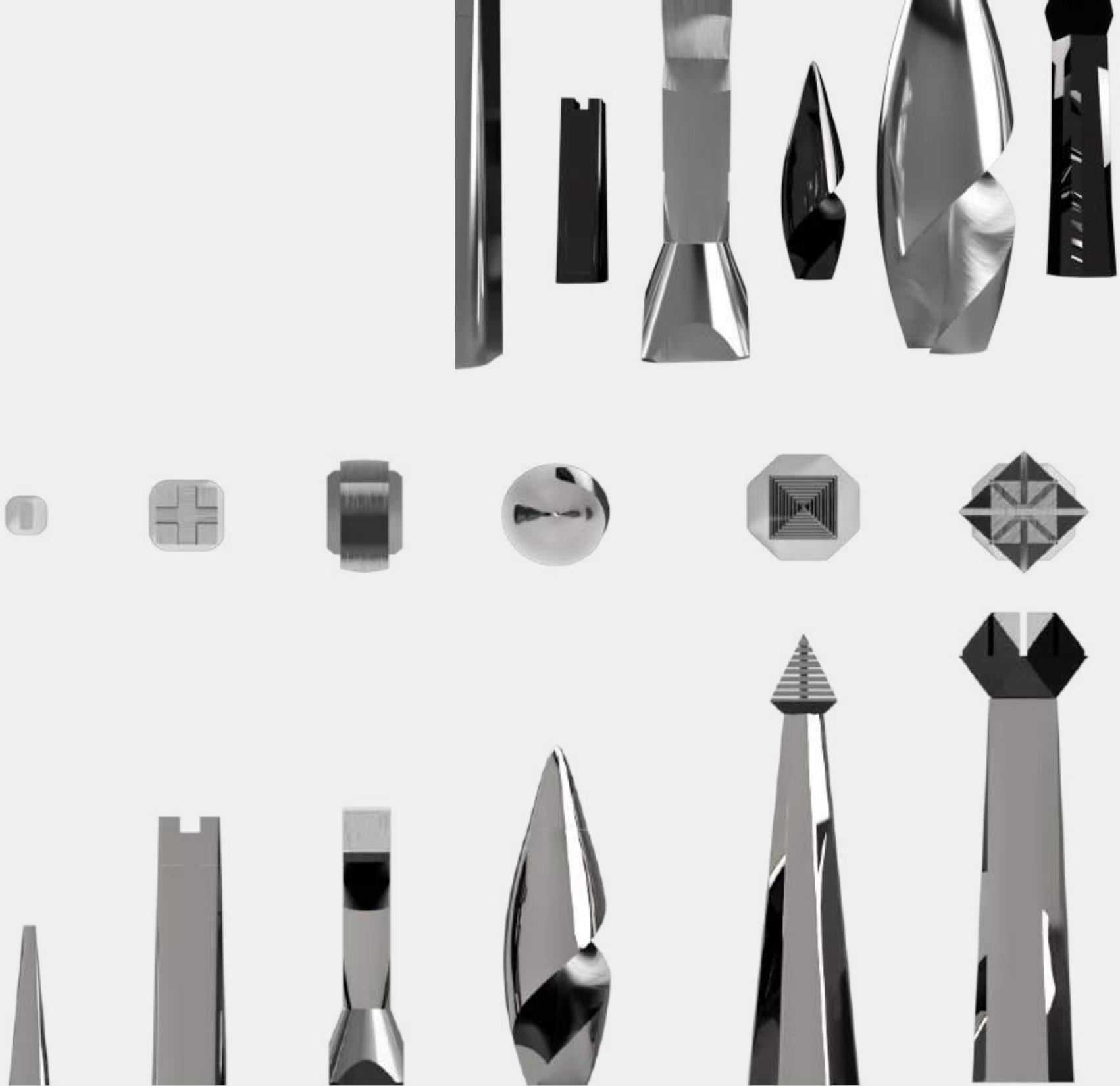
Knight design changes from a more functional design to an aesthetic one

Manufacturing process changes from bending sheet metal in a metal shop to a CNC machine

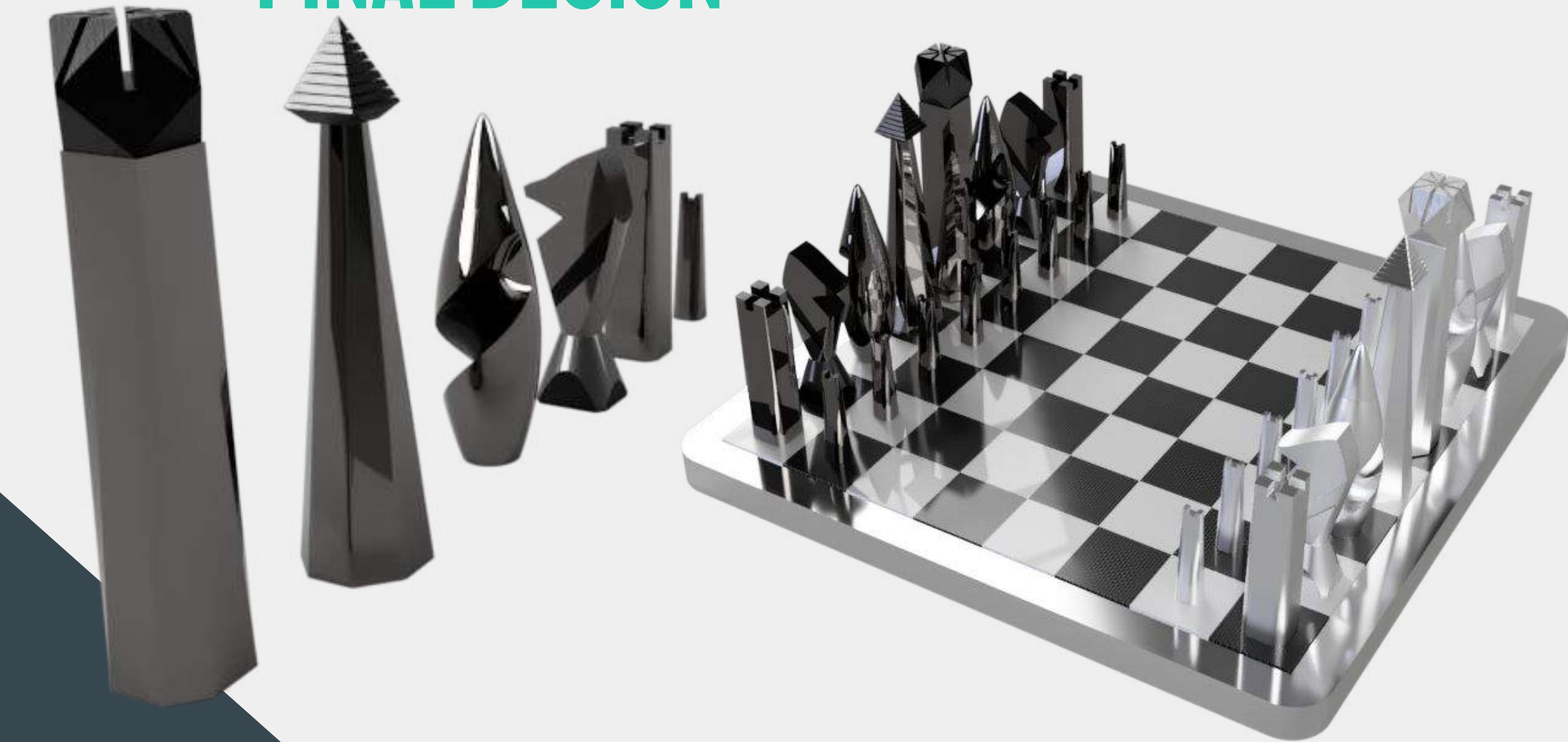
# FINAL 2D SKETCHES

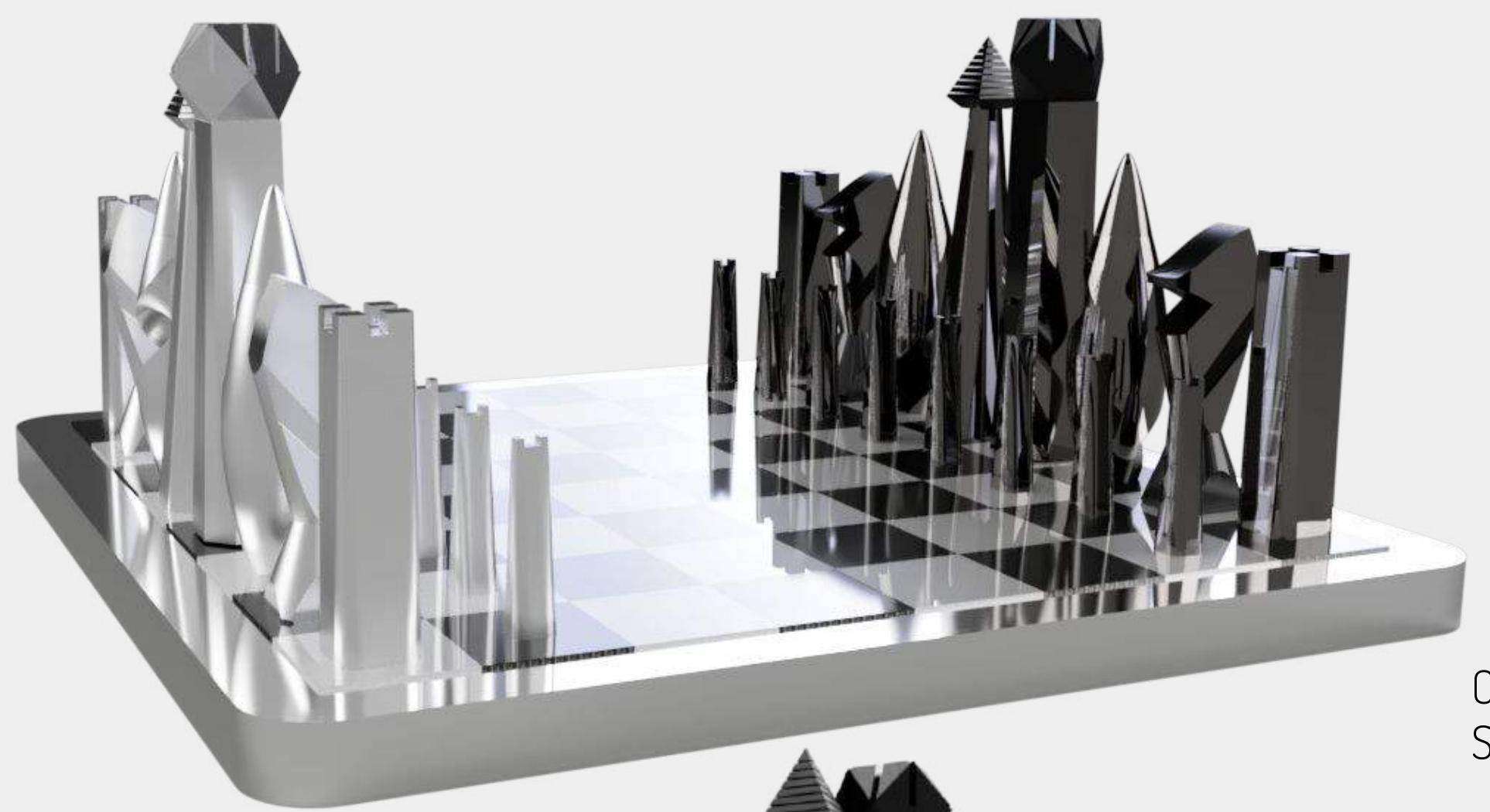


# SET OF SIX



# FINAL DESIGN





CNC Brushed  
Stainless Steel



Smooth Casted  
Stainless Steel

