

REFRESH DESIGN OF THE SCOOTY PEP PLUS

PROJECT BRIEF

AIM

Refresh design of the Scooty Pep plus (90 cc) for M/s TVS Motors Company - for two specific user categories

OBJECTIVES

Understanding the concept of refresh design in the automotive industry

Understanding form appreciation for the specific user categories

Appreciation of styling trends in the existing scooter industry in global market

Re-Styling design of the exterior body panels

Clay styling of the full scale model and painting

PROJECT BRIEF

SCOPE & LIMITATIONS

Emphasis has been given to two major areas of the design process namely:

1. EXTERIOR STYLING DESIGN:

Body panel design with extensive form exploration over atleast 50 concepts.

The bulk of the body had to be retained on the same chassis.

Ergonomic changes are not suggested owing to the research put into this field behind every change, as the case is in the industry.

2. CLAY STYLING MODEL:

Emphasis has been given on recreating the model on a 1:1 scale in industrial styling clay.

This process would span over a period of two months, owing to the fact that the critical form refinement would occur during this stage.

The model would be built over an existing vehicle as a reference guide.

METHODOLOGY

JAN 15 - 31

Understanding refresh design

Form Appreciation of Users

Styling brief for target user group

User study and activity analysis

Market study and analysis

Assembly line understanding

FEB 01 - 25

Initial form conceptualization

Existing styling trends study

Analysis of the existing model of Scooty Pep plus

Integrating expression into form

Deriving concepts in two directions

MAR 01- 10

Incorporating changes from feedback of MID SEM review

Concept evaluation

Final Concept renderings (marker renderings)

MAR 11 – APR 30

Mock model in 1:1 scale for form refinement

Final concept renderings (Photoshop)

Physical model in industrial styling clay (1:1)

Documentation of the design process

BASIC DIVISION OF TWO-WHEELERS

Motorcycles

Cruisers



Scooters

Motorcross bike



Motor-scooters



Mini - Scooters

Mopeds

Sports bike



Dirt bikes

Super bikes



Sports Touring bike



Scooterettes

The most commonly accepted definition of scooterette is

Two-wheeled, non-g geared vehicles that have wheels between 8 and 14 inches in diameter (smaller than scooters), step-through frames and typically engines that are low and close to the rear wheel

[The New Encyclopedia Britannica (1997), vol. 8, pg. 367].

Scooterettes also often incorporate full bodywork, including leg shields and generally are designed to be easier to operate than standard motorcycles or scooters. It should be noted that scooterettes may be of any engine size.



INDIAN MARKET OF SCOOTERS

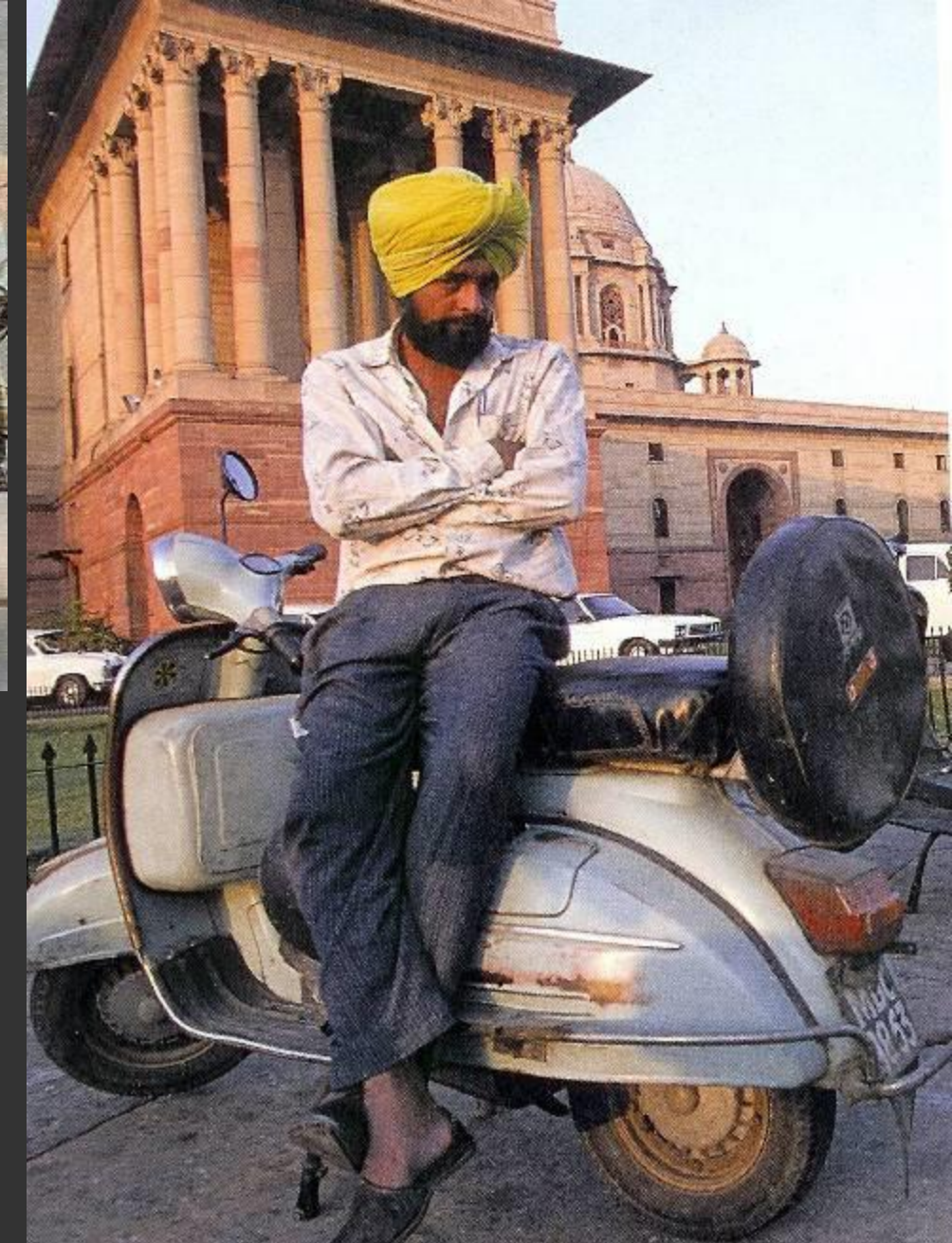
1961- Bajaj Auto Ltd.

“Chetak”

“Vespa 150”

Family vehicle

Multi-tasking (Home errands, Two-wheeler taxi, Doodhwalla, Carrying LPG cylinders)



1971- SIL(Scooters India Ltd).

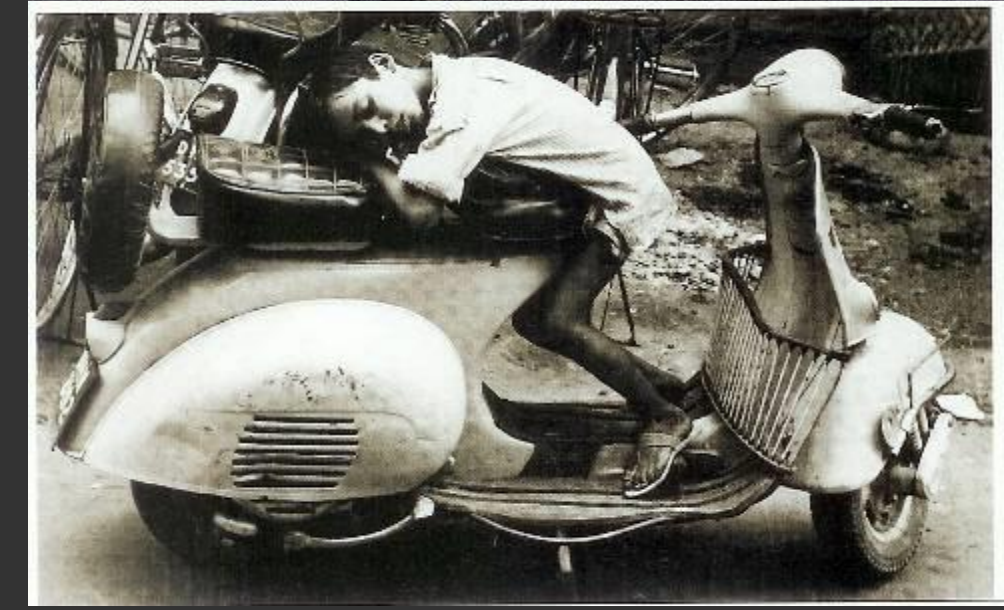
“Lambretta”

(Lamby 150, Lamby Polo)

Family vehicle with typical Italian styling marketed for its high quality and technological updating

Piaggio’s license to manufacture in India expired –

Since then Vespas have been made by Bajaj Auto Ltd.



1990- Kinetic Engineering + Honda

“Kinetic Honda”

Styling inspired from a “swan”

Scooter for the urban areas, absorbed by youth

INDIAN MARKET OF SCOOTERS

1994- TVS Motor Company

“Scooty ”

(Scooty ES)

College girls were target users

Light weight, non-gearred scooterette, cutting edge styling

2000- TVS Motor Company

“Scooty Pep ”

Four-stroke engine, youthful and energetic, streamlined and soft

A Trend-setter for styling of scooterettes

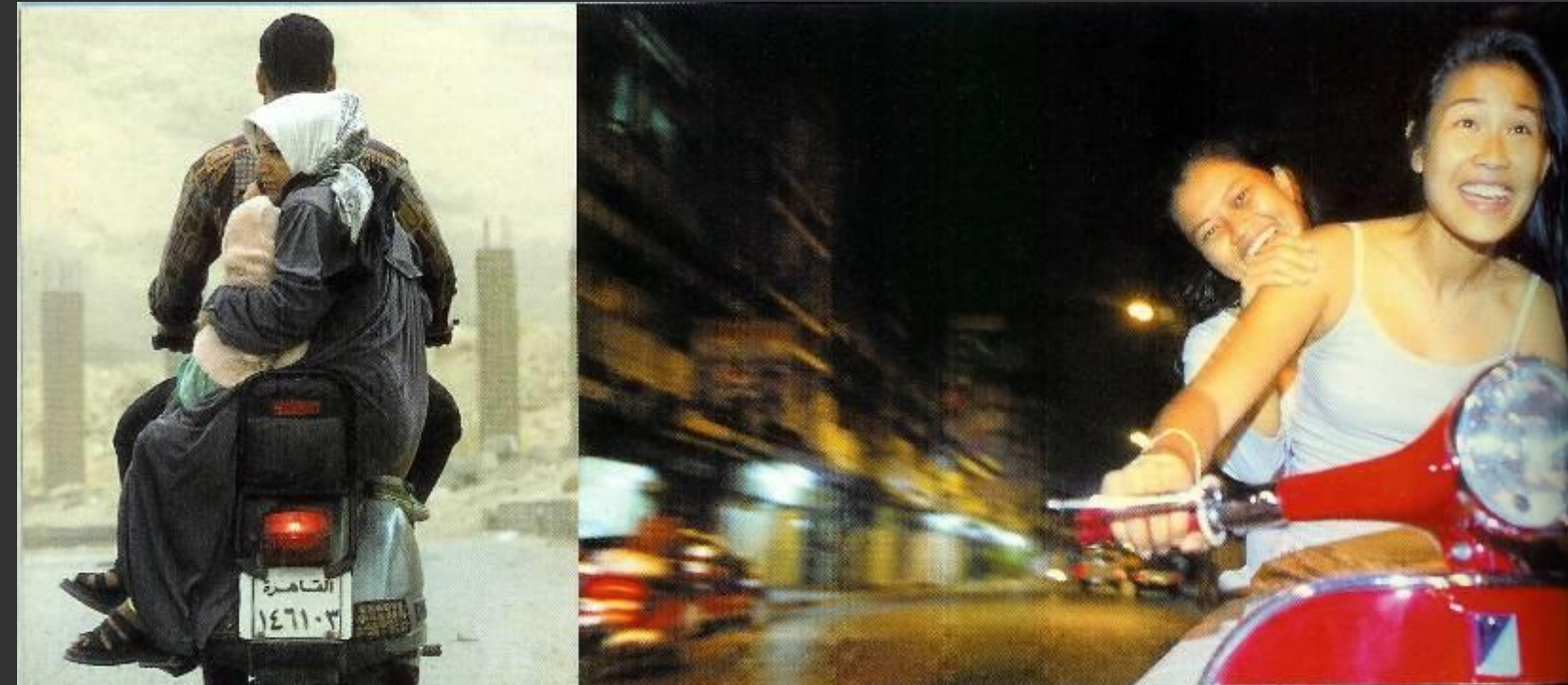
2003- Honda

“Activa ”

100 cc non-gearred moto-scooter

Step through design – family vehicle

Easy maintenance following nuances of Vespa – full metal body



TECHNOLOGY THAT SHAPED STYLING

COPY MILLING

Traditional clay styling was done by master craftsmen and the automotive designers for over 6 months – the surfaces were then translated using rail curves manually.

The pentagraph was then used for transferring the model surfaces to develop the metal body model.

CNC MILLING

The surface model developed in high-end Class A modelling softwares are milled using CNC technology in Industrial clay. After a few refinements, the cloud data from the laser 3d scanner is assimilated and corrected. The final model is then transferred to the dies used in the manufacturing process.



INTRODUCTION TO SCOOTY

- HISTORY
- MARKET SCENARIO
- BRAND IDENTITY OF SCOOTY PEP PLUS
- VEHICLE SPECS
- MATERIAL UNDERSTANDING
- HARD POINTS IN FRAME
- PRODUCTION LINE
- CHASSIS FRAME

INTRODUCTION TO SCOOTY HISTORY



Launched ES with the idea of capturing the college crowd
Was well accepted and survives till date



Launched Pep with a 4-stroke engine and was a trend
setter with the stylized design
Still catered to college crowd
Brand ambassador – Preity Zinta



On popular demand and high market potential, the need
for refresh design on the third degree (decals and
amenities)
Introduced the 99-colour scheme for the users

1994

2000

2003

TIMELINE

INTRODUCTION TO SCOOTY

MARKET SCENARIO

To capture the niche market of college going girls –
ES was launched with the following design strategies

- Light weight
- Non-geared two-wheeler
- Convenient Step – through and storage
- Ergonomical for youth
- Styling emphasized lightness of vehicle breaking away from notion of a “scooter”
- Creating a scooterette identity in the market



The vehicle is targeted for users in the top 10 metros in India

The user study is now carried out on a psychographic segmentation rather than the typical demographic study

Facing stiff competition from parallel giants in the industry

Scooty has developed with time and created a notion of “trust” with the user group

The Scooty identity is strong in the existing market

30% of the users are males and the rest are all females from varying age groups

INTRODUCTION TO SCOOTY

BRAND IDENTITY

On discussion with Mr. G. Srinivas, Marketing manager for the Scooty Pep Brand –

Scooty Pep plus is

Youthful

Energetic

Fun-Loving

Targeted from the age- group 18 – 25 years

Young brand ambassadors like Aishwarya Rai and Preity Zinta have been advertised to promote the trendy identity of Scooty Pep

Design Features -

Cutting edge modern styling with the 99- colours scheme to suit the user's preferences

Paint your Scooty marketing campaign was launched to introduce this scheme



INTRODUCTION TO SCOOTY

MATERIAL UNDERSTANDING

Headlamp – POLYCARBNATE

Reflectors – ABS SILVER PLATED

Front neck panel - ABS PAINTED

Grey and Silver panels - STRUCTURAL
POLYPROPYLENE

Chassis frame - MS

Rear panel - PP – not painted

Wheel cap – Aluminum Alloy



Seat - Frame – PP

Foam – PU

Upholstery - REXIN

Grab handle- GAS INJECTED NYLON

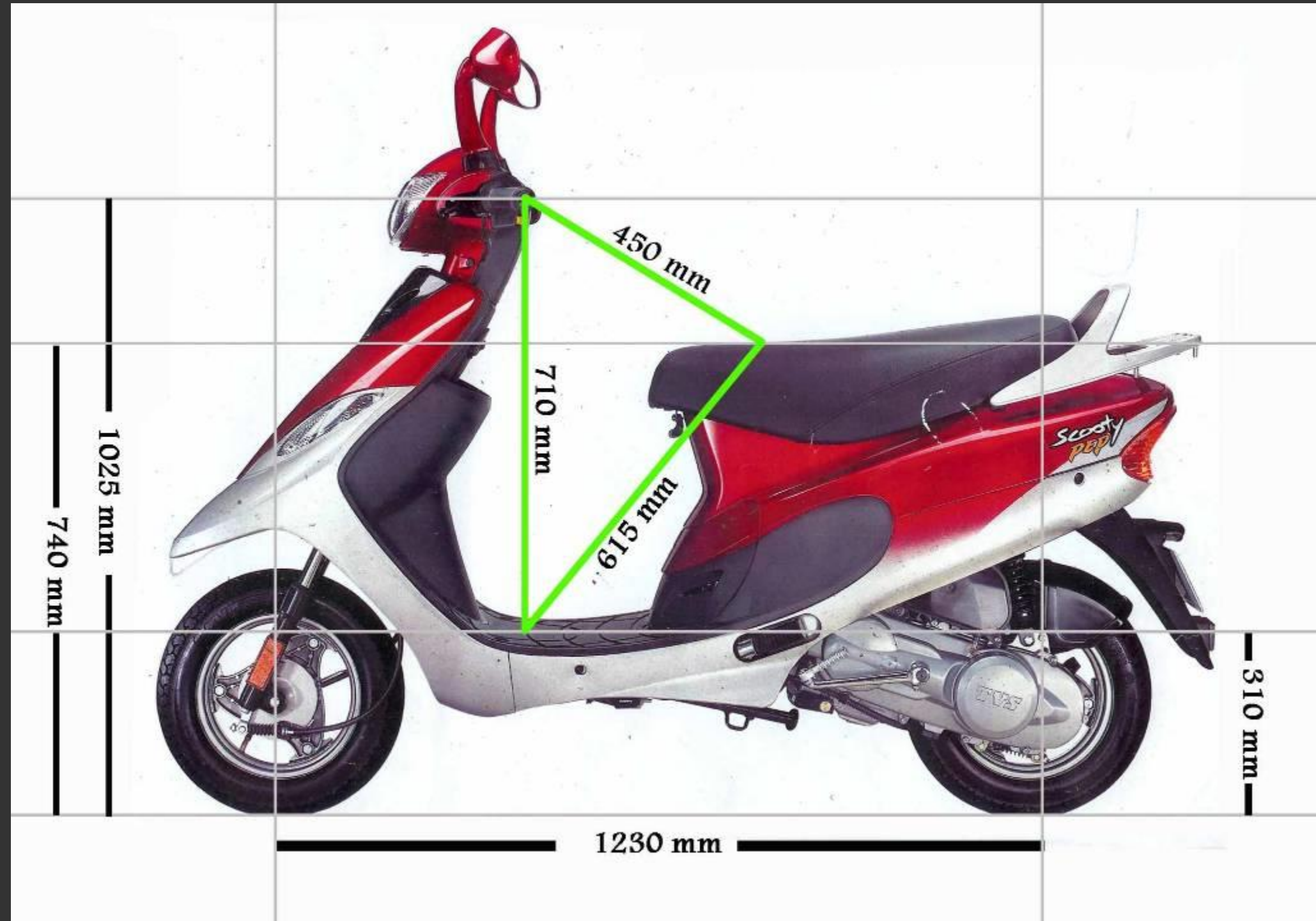
Painted Body panel - ABS

Mud-guard – STRUCTURAL PP

Engine housing –
ALUMINIUM DIE-CAST

INTRODUCTION TO SCOOTY

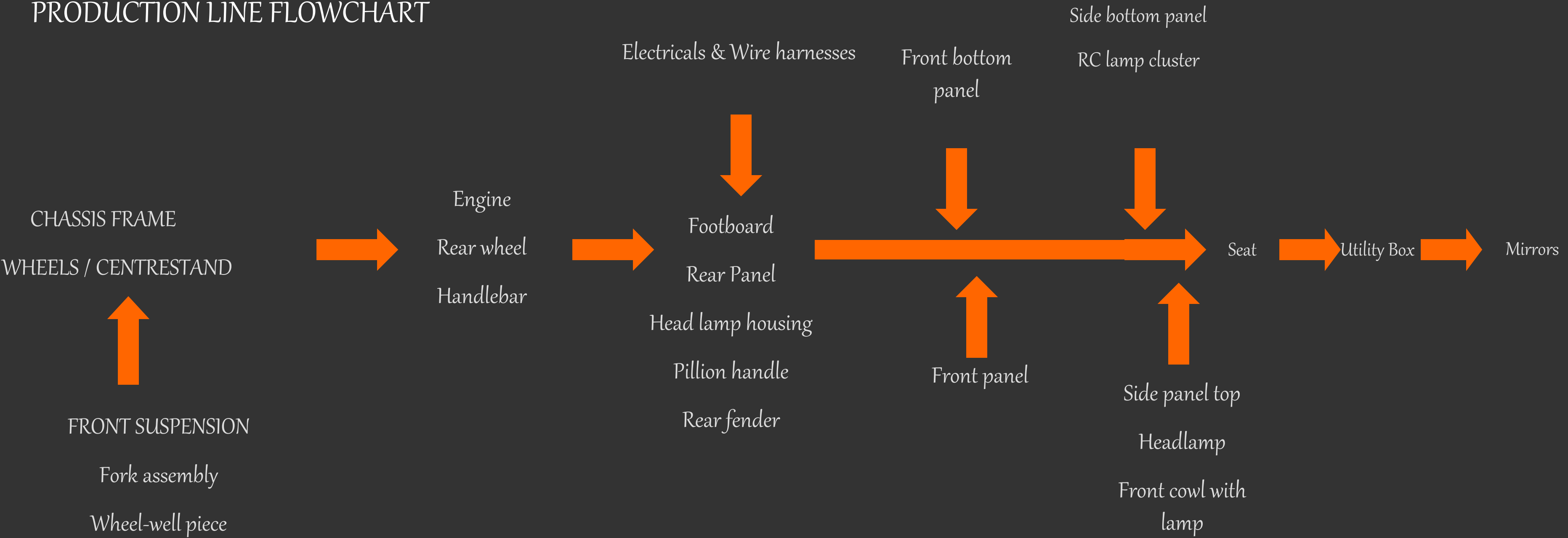
HARD POINTS IN FRAME



The ergonomic considerations for the Scooty pep + can not be changed for limitations of project scope.

INTRODUCTION TO SCOOTY

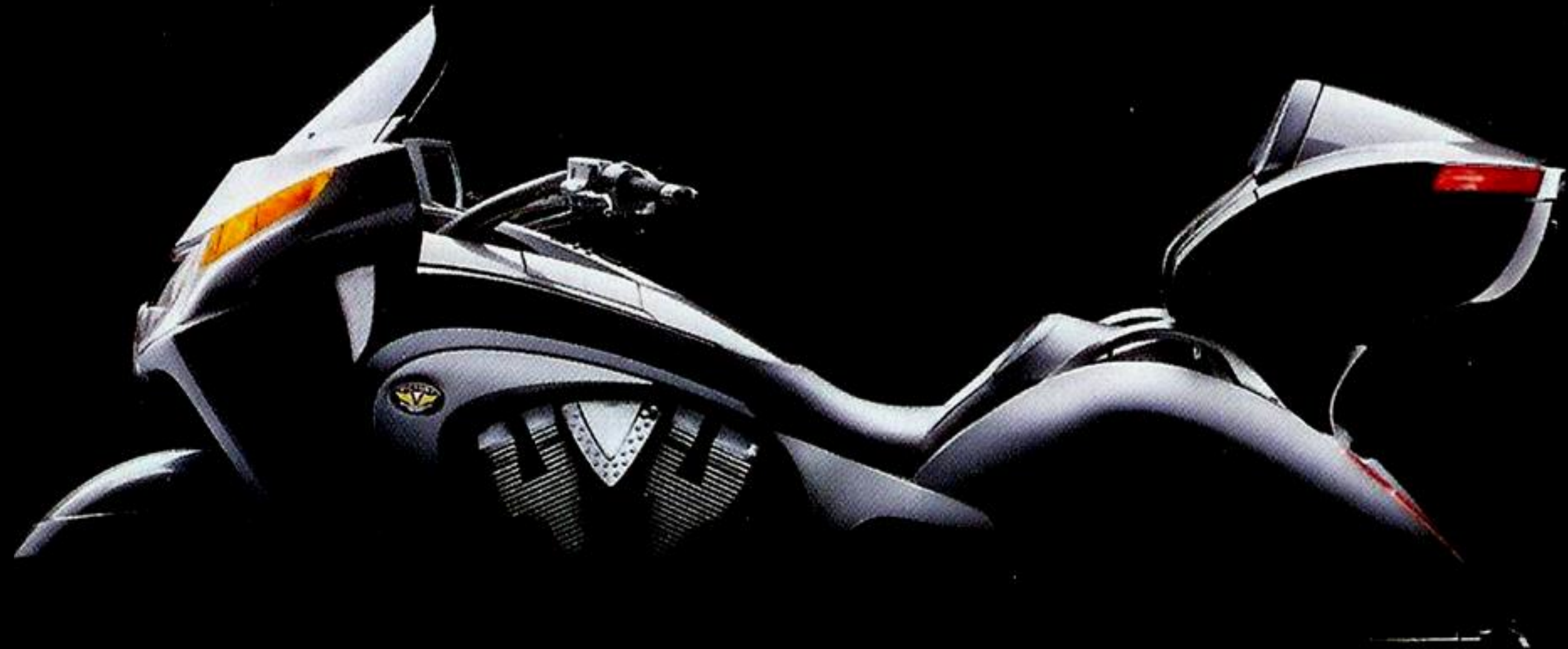
PRODUCTION LINE FLOWCHART



UNDERSTANDING STYLING DESIGN

STYLING TRENDS IN AUTOMOTIVE INDUSTRY

- FRONTAL EXPRESSION
- METAPHOR
- SURFACE BEHAVIOUR
- EDGE STYLING
- RETRO STYLING
- SCULPTURAL



Styling trends

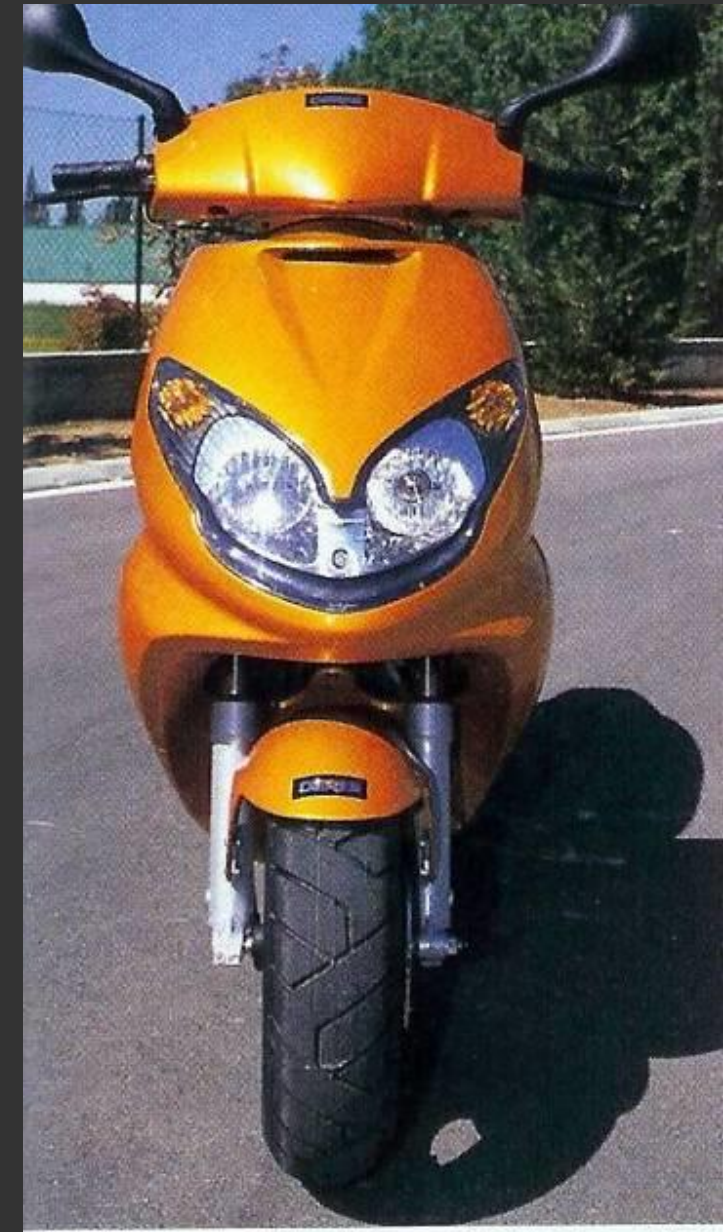
FRONTAL EXPRESSION :

Front face has life and emotion – relates to riders

Headlamps act as EYE

Grill as MOUTH

Other supportive accessories – FACIAL FEATURES



Styling trends

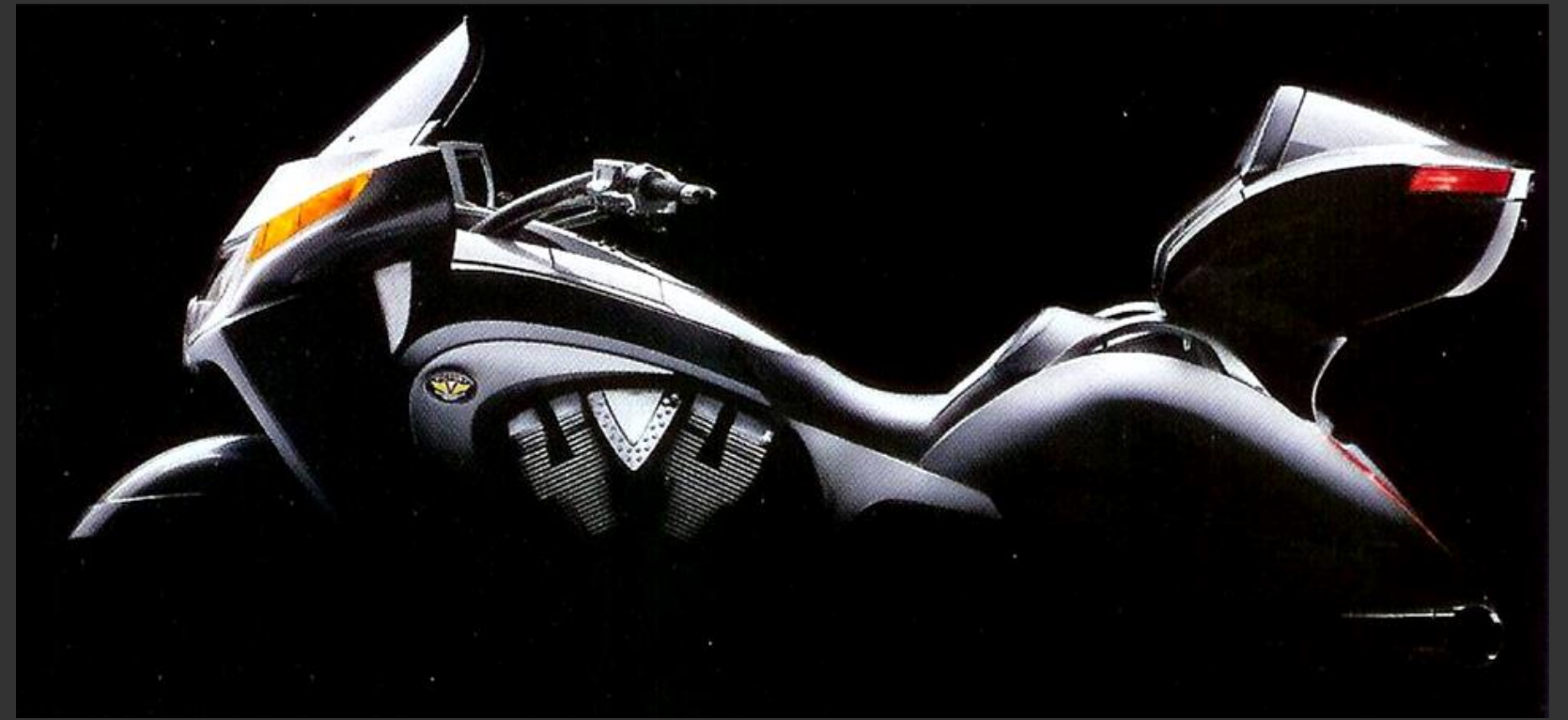
METAPHOR :

DIRECT BIONIC (NATURAL) & INDIRECT BIONIC (ARTIFICIAL)

EG: AEROPLANE DERIVED FROM BIRD

RAYMOND LOEWY'S DESIGN INSPIRED FROM AEROPLANES

MAIN CONSIDERATIONS – COMMON CHARACTERISTICS ELEMENTS



Styling trends

SURFACE BEHAVIOUR :

CURVACEOUS FORM - AERODYNAMIC

AIDED BY TECHNOLOGICAL DEVELOPMENT



Styling trends

EDGE STYLING :

REPLACED SMOOTH FLOWING CURVES WITH SHARP CURVES AND WELL DEFINED EDGES

GEOMETRY HAS PREMIUM IMPORTANCE



Styling trends

RETRO STYLING :

STYLING TREND OF 40'S AND 50'S

INCORPORATES VISUAL FEATURES OF OLDER STYLISED VEHICLES



Styling trends

SCULPTURAL :

MORE IMPORTANCE TO STYLE AND LESS TO PRACTICAL
CONSTRAINTS

NON-CONVENTIONAL LOOKS, MOSTLY ALL CONCEPT VEHICLES



UNDERSTANDING REFRESH DESIGN

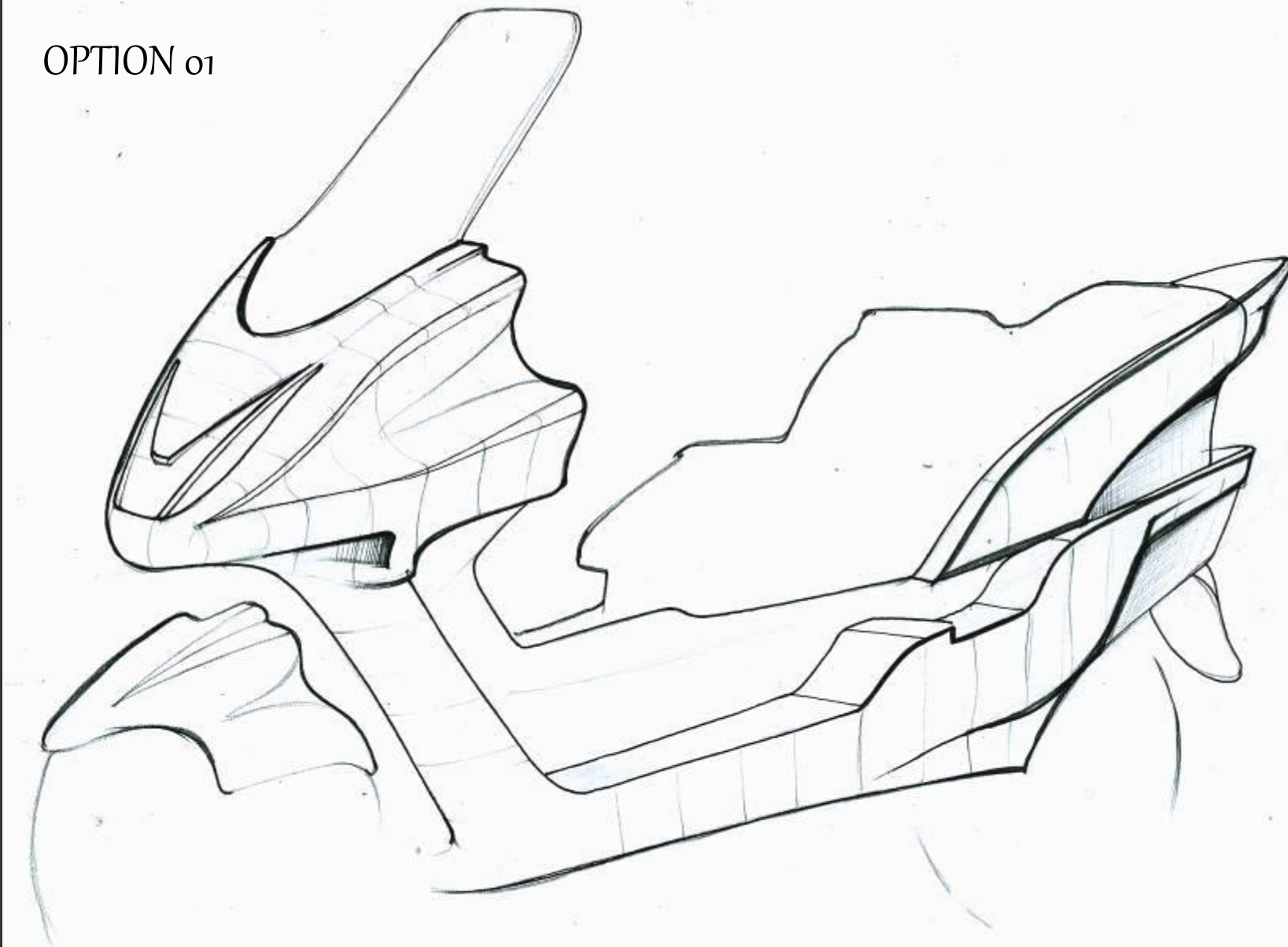
REFRESH DESIGN INVOLVES MINIMAL CHANGES TO THE BULK OF THE MASS, RETAINING THE SPLIT LINES AS FAR AS POSSIBLE AND KEEPING INTACT THE SCHOOL OF THOUGHT BEHIND ITS FORMAL EXPRESSION



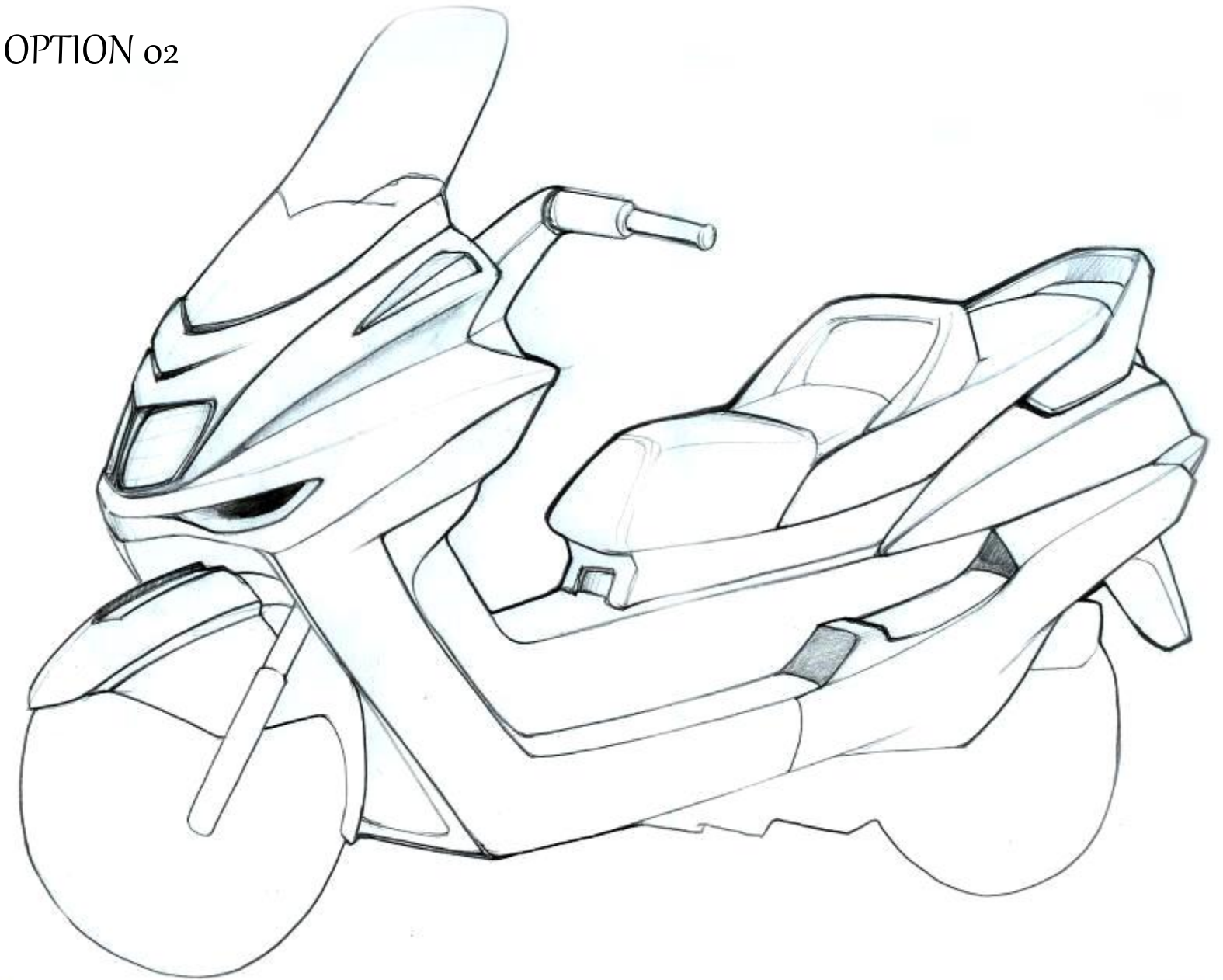
UNDERSTANDING OF REFRESH DESIGN

SUGGESTED REFRESH DESIGN CHANGES FOR THE YAMAHA MAJESTY

OPTION 01



OPTION 02



COMPARATIVE ANALYSIS OF OTHER SCOOTERS IN INDIAN MARKET

HONDA ACTIVA

HONDA DIO

TVS SCOOTY ES

KINETIC NOVA

HERO HONDA PLEASURE

BAJAJ SAFFIRE

KINETIC ZOOM



Head Lamp



Honda ACTIVA

Box character, head light highlighted and separated

Less Hard, Passive



TVS SCOOTY ES

Indicator lights fused with head light in crescent shape

Hard, Modern



Bajaj SAFFIRE

Head light in a crescent smile

Soft, Feminine



Kinetic NOVA

Box character using concave edge lines, makes it look larger

Central area recedes to balance visual mass

Bulky, static



HONDA DIO

In front panel, pointed to sharp corners, but the panel on handle takes a soft character

Sharp, Modern, less aggressive



Hero-Honda PLEASURE

Smooth panel but the head light breaks away from it.

Soft, feminine



Kinetic ZOOM

Very long and bulky

Hard, Masculine

Front Panel



Honda ACTIVA	Kinetic NOVA	TVS SCOOTY ES	Bajaj SAFFIRE	HONDA DIO	Hero-Honda PLEASURE	Kinetic ZOOM
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Metal panel -minimum surface transition metallic Colour makes hard edge chest, less prominent	Visual mass reduced-silver panel long narrow indicators-trendy Curvaceous surface - bulky	Characteristic sharp edge & nose, Cutouts gives aggressive feature, plane surfaces and less width makes it look light	Smooth and curvaceous with very little treatment Indicators - out of proportion	Graphics used to reduce bulky nature, accentuated sharp light emphasizes aggressive stance, name plate not integrated	Bulky with highly soft edges, indicators like head light tries to assume a less soft character	Minimum surface transition dealt well with graphics, less hard, plane angular surface makes it less bulkier
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Elegant, Retro	Soft, less bulky, trendy	Modern, less aggressive, hard	Bulky, soft, less streamline	Bulky, static	Bulky, soft	Bulky, static
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Nose Feature



The nose is short and blends with the curve of the leg shield rendering a subtle, passive character

The nose is bulkier with the integration of the headlamp. Ends in a point and appears robust.

Tapering the nose renders an aggressive look and imparts a lighter, streamlined character

Nose is extremely shortened, almost blends with the leg shield curve. The front grills cut into the visual bulk

Nose is extremely shortened again, but the treatment to the bottom edge changes the character

Nose is extended more towards the front and ends in a rounded point, with the horizontal division with split colours.

An almost non-existent nose which is overpowered by the front fender, blends into the front panel.

HONDA ACTIVA

HONDA DIO

TVS SCOOTY ES

KINETIC NOVA

HERO HONDA PLEASURE

BAJAJ SAFFIRE

KINETIC ZOOM

Step - through



Honda **ACTIVA**

Kinetic **NOVA**

TVS **SCOOTY ES**

Bajaj **SAFFIRE**

HONDA
DIO

Hero-Honda
PLEASURE

Kinetic
ZOOM

No storage, surface intersection doesn't merge, straight waist line

outer and inner panels offset hence smooth transition. Well integrated storage

Hard edges, well integrated transition, no storage, foot board at angle make it dynamic

Contradiction between outer and inner panel, absence of storage, footboard at angle make it dynamic

Storage is not well integrated, less smooth transition

Storage is open, edges have smooth transition

Both surfaces offset by a larger radius giving it a finite sweep

Less Hard, Masculine

Smooth, Feminine

Hard, Dynamic

Less sharp, less dynamic

Bulky

Soft, Feminine

Hard, Serious, Retro

SIDE COWL



HONDA ACTIVA

Bulky, Mass made to look modern using sharp cuts

HONDA DIO

Sharp pinch on front end gives a crisp appeal

Higher stance gives a sense of lightness and dynamism

TVS SCOOTY ES

Wraps tight around the body

Less area in proportion to the grey areas reduces mass of the rear

KINETIC NOVA

Soft, curvaceous and rounded rear half

HERO HONDA PLEASURE

Smooth, modern

Minimal surface transitions making it elegant



Cut-outs with ridges cut the visual bulk

Steep angle of the side cowl imparts a high stance

Blunt treatment of edges makes it less sharp

BAJAJ SAFFIRE

Bulky, box-like character , static look

Linear cut-outs – non dynamic

Hard form



KINETIC ZOOM

Tail lamp



HONDA ACTIVA

Modern, spreads over the entire width



HONDA DIO

Sharp points render a dynamic expression



KINETIC NOVA

Bulky, extending out of the body mass



HERO HONDA PLEASURE

Dynamic styling expression

Flow lines continued from the grab handle



Soft, feminine

BAJAJ SAFFIRE



Hidden under the stepany wheel

KINETIC ZOOM

Stance



HONDA ACTIVA

Stable stance

Serious look

Mature expression



HONDA DIO

Crisp look

Dynamic expression

High stance



HERO HONDA PLEASURE

Happy expression

Modern looks

Soft, smooth elegant styling

Low stance

Stance



KINETIC NOVA

Bulky, attempt has been made to reduce the visual width with a colour break



KINETIC ZOOM

Rigid, hard looks
Static stance



TVS SCOOTY ES

Light, sleek expression
Hard, Edgy character
Dynamic stance

Front Fender



Fender attached to body - coherent with soft language of the whole form

HONDA ACTIVA



Attached to the front panel- sharper look

HONDA DIO



Nose tapers down to reduce need of fender

TVS SCOOTY ES



Fender attached to the wheel and differentiated from the body with colour.

KINETIC NOVA



Nose is extremely shortened again, but the treatment to the bottom edge changes the character

HERO HONDA PLEASURE



Absence of fender

BAJAJ SAFFIRE



Fender attached to front panel

KINETIC ZOOM

Seat



Honda **ACTIVA**



Kinetic **NOVA**



TVS **SCOOTY ES**

Warm, Less dynamic

Bulky, Feminine

Serious, static

HONDA **DIO**



Dynamic, Aggressive

Bajaj **SAFFIRE**



More dynamic, Feminine



Hero-Honda **PLEASURE**

Smooth, Feminine

Kinetic **ZOOM**



Static

Rear View



Honda A**CTIVA**

Bulky, Stable



TVS SCOOTY **ES**

Hard, Static



Bajaj SA**FFIRE**

Light, Soft



Honda **DIO**

Sporty, Dynamic



Kinetic
ZOOM

Stable

Grab Handle						
						
Honda ACTIVA	Kinetic NOVA	TVS SCOOTY ES	Bajaj SAFFIRE	Honda DIO	Hero-Honda PLEASURE	Kinetic ZOOM
Heavy, Strong, not interesting	Bulky, Trendy	Light, Strong, Cold	Accentuates stance, Soft, Modern	Strong, Passive	Dynamic, Modern	Inconspicuous

Pillion rider’s footrest



HONDA ACTIVA

Flip – down footrest proves comfortable for the user wearing a sari and a second pillion rider as well.



HONDA DIO

Tight leg room for pillion rider



TVS SCOOTY ES

Two rests provide ample space



KINETIC ZOOM

Tight space



KINETIC NOVA

Ample foot-rest space on the inner edge as well as an extra pedal

Rear View Mirror



Honda **ACTIVA**

Elegant



Kinetic **NOVA**

Trendy



TVS **SCOOTY ES**

Bulky



Bajaj **SAFFIRE**

Elegant



Honda **DIO**

Soft



Hero-Honda
PLEASURE

Modern



Kinetic
ZOOM

Retro

Monogram, Decals





user study & styling brief

TARGET USER GROUP

YOUNG INDIAN WOMAN
TODAY'S CONTEXT
(25 YRS AND ABOVE)



LIFESTYLES MOVED FROM
HOUSEHOLDS
↓
WORKPLACE



IMAGE OF "FREEDOM" WITH
"MOBILITY"



PRIORITIES:

- BALANCING PROFESSIONAL CAREER WITH FAMILY RESPONSIBILITIES
- POSSESSING DIGITAL CONNECTIVITY
- SENSE OF "COMFORT" - PHYSICAL + PSYCHOLOGICAL ASSURANCE
- SAFETY & SECURITY WHILE RIDING

SECONDARY USERS

CHILDREN RANGING FROM 3 YRS TO 15 YRS

MAXIMUM 2 KIDS PER VEHICLE

TWO TRIPS PER DAY

ISSUES:

- SAFETY FOR PILLION RIDERS
- KIDS STAND IN FRONT – SAFETY FACTOR
- STORAGE SPACE FOR SCHOOL KID'S ACCESSORIES



PRODUCTS CARRIED:

SCHOOL BAGS

WATER BOTTLES

UMBRELLAS (MONSOON SEASON)

QUESTIONNAIRE SURVEY

- 28 users were studied in Bangalore
- Equal mix of working professionals from firms and college students were chosen depending on their experience of riding two-wheelers
- Riding experience of atleast two years was a criteria to chose the user
- Study was conducted in Koramangala, Christ college, Brigade Road ,Richmond town
- The users hailed from various parts of India



IMAGE OF PERSONAL VEHICLE

Honda Activa



Honda Dio



Well grounded

Safe

No off-balance

Heavy

Good Styling

Powerful un-gearred vehicle

A little heavy

Stability

Easy, low maintenance



Scooty Pep +

Ridiculous

Kiddish

Lack crispness

Doesn't suit professional image

Not strong



Bajaj Kristal

Dynamic

Edgy look

Sporty

Jazzy rear end

Sturdy

Aggressive stare

Kinetic Honda

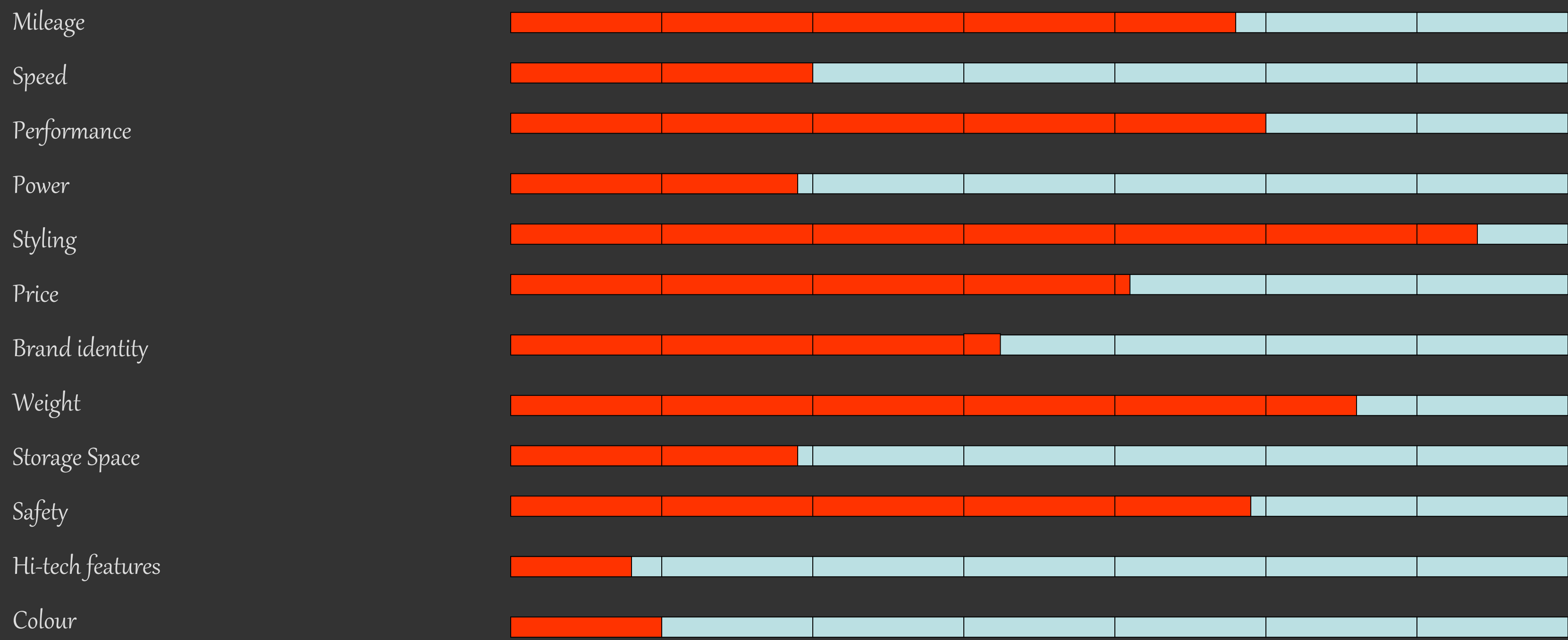


Obsolete

Rudimentary

Bulky

PREFERENCES WHEN BUYING



PERSONAL ACCESSORIES

Electronic accessories

Mobile phones

Walkman

MP3 player

(Most do not use these while driving)

Other accessories are

Jacket

Handbag

Scarf

Helmet

Sunglass

Laptop bag

Luggage

Books

Grocery bags

Purse

School bag

Bottle

Cleaning cloth

Food

Rain coat

Tool kit



ATTIRE

Most preferred

Jeans

Casuals

Flats

Floater

Sneakers

Jacket

Trouser

Pant

Shirt

Salwar

Least preferred

Sari

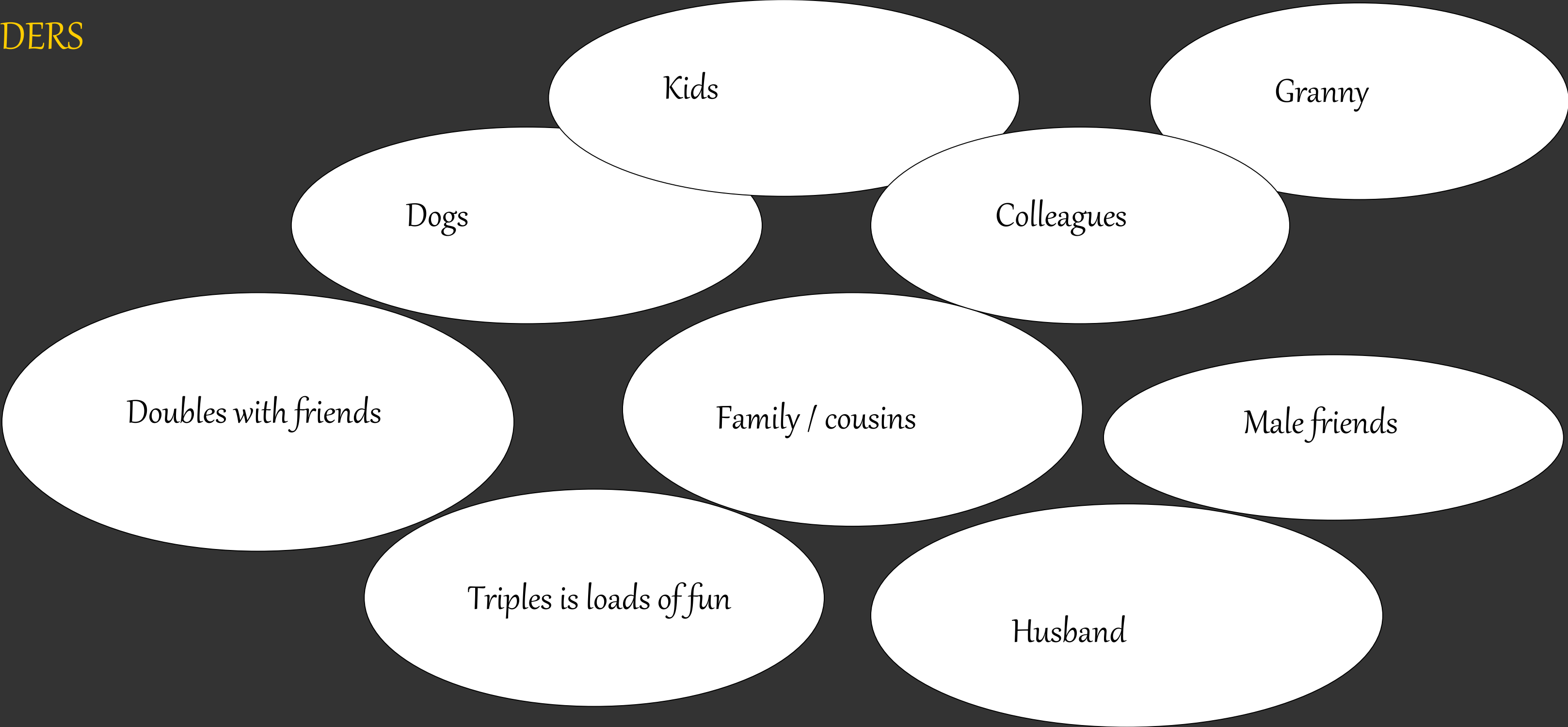
Skirt

Dupatta

High heels



CO-RIDERS



ACTIVITY ANALYSIS (Male user)



TASKS:

1. Wears the helmet
2. Kick starts the pedal, after putting in key
3. Grabs the vehicle by the grab handle and the handle bar
4. Lifts the vehicle off the central stand
5. Reverses vehicle from parking lot
6. Ingresses across the step through
7. Takes position of the handle bar, checks the instrument panel and accelerates
8. Rides away into traffic



ACTIVITY ANALYSIS (Female user)



TASKS:

1. Removes helmet from the storage compartment, wears the helmet, puts her bag into the storage compartment
2. Removes side stand by holding onto the handle bar and seat
3. Driver climbs in through the step-through
4. Takes position on the handle bar
5. Turns the key and checks the instrument panel
6. Presses the self-start button, while pressing the brake handle
7. Pillion rider climbs onto back seat
8. Accelerates and drives into traffic



ACTIVITY ANALYSIS (User comments)

“It is difficult to put the vehicle on centre stand, Hence I leave the vehicle on side stand”

- Lavanya

“With a co-rider it is easier to carry my other bags”

- Prasad

“ Even if I wear a jacket or a rain coat, water still splashes on my dress during the monsoon season”

- Shanta

“ I prefer wearing my jacket while riding”

- Sweta

“ I prefer the Dio, because it helps me carry my pet dog to the vet, He rests on the floor of the step-through in front”

- Varsha

“ I am not able to reach the ground easily , during long hours of traffic halt; it becomes hard to balance the vehicle”

- Apeksha

“ I feel uncomfortable while riding my Spirit, because when the wheel turns to the right, the front is still pointing straight ahead”

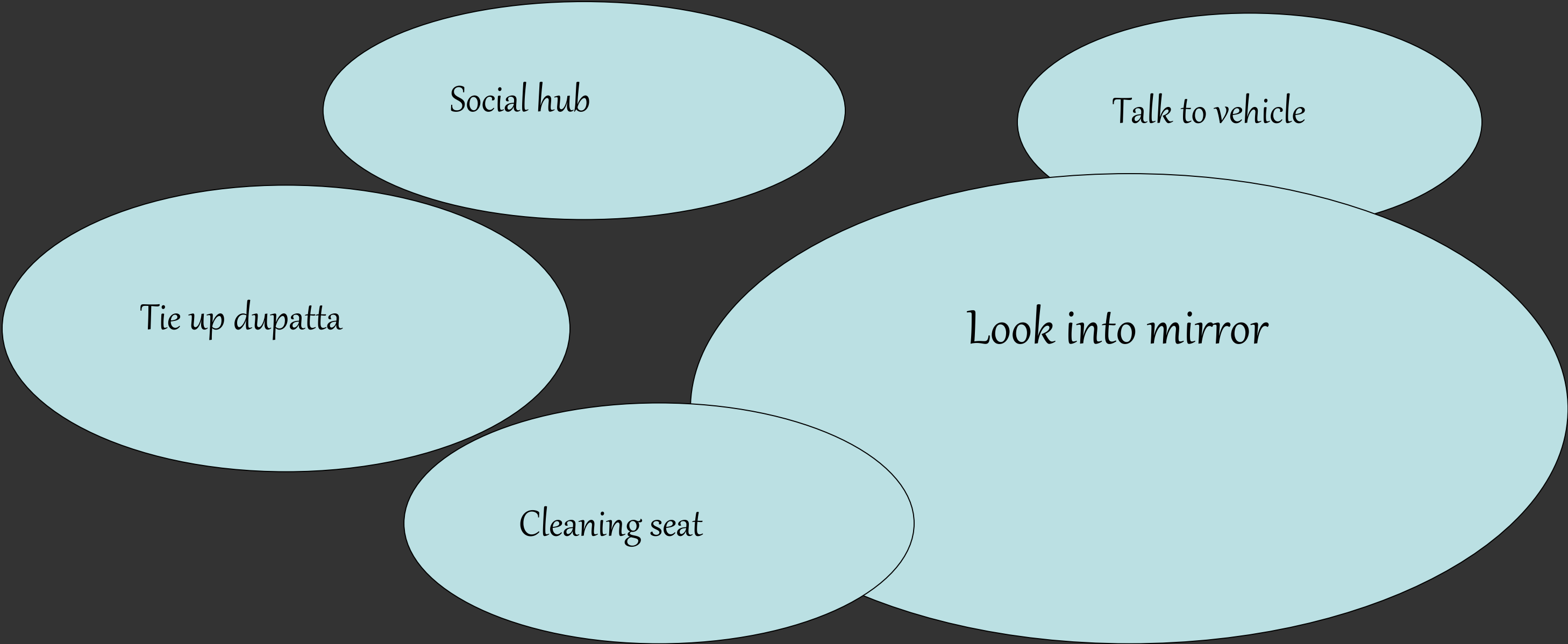
- Anu

“ I park my Scooty near the laariwallah and have pani puris”

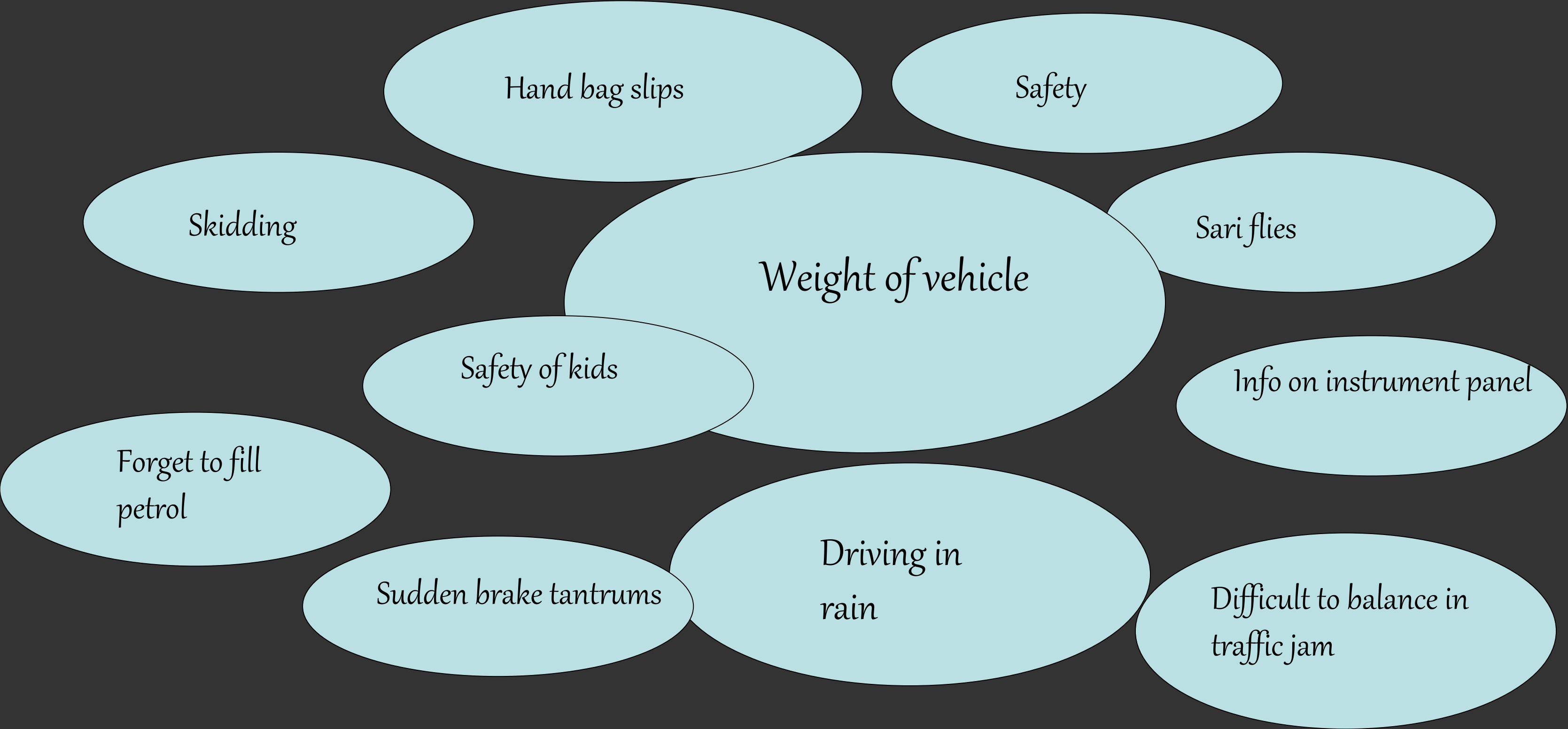
- Mary



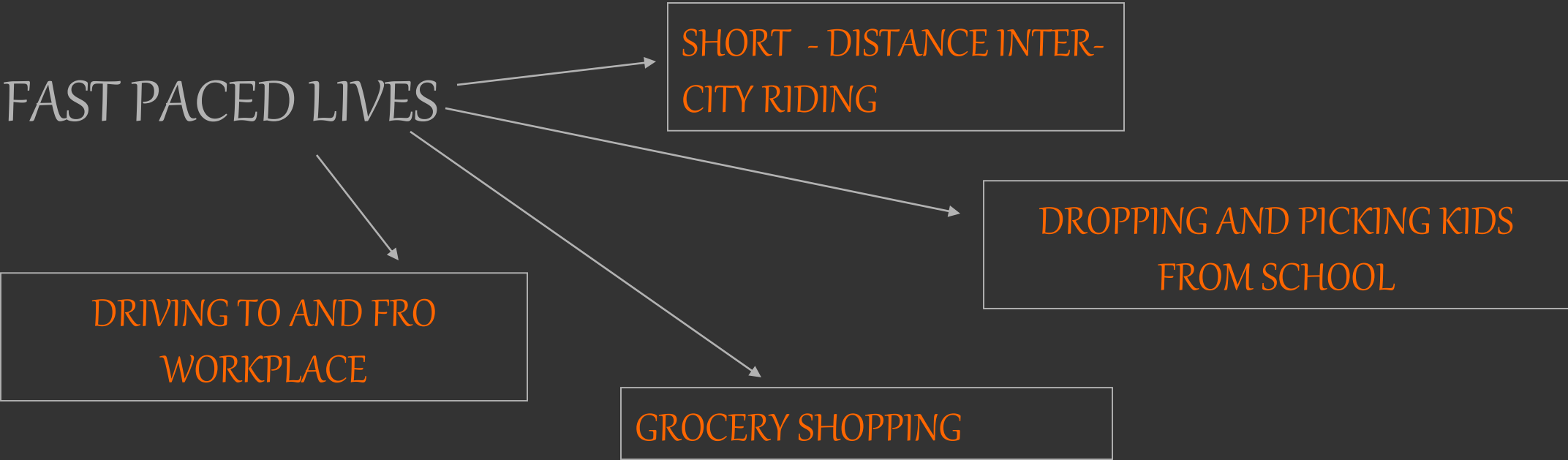
HABITS WITH VEHICLE



PROBLEMS WHEN RIDING



ACTIVITIES OF TYPICAL USER:



LONG HOURS OF WAITING IN TRAFFIC JAM

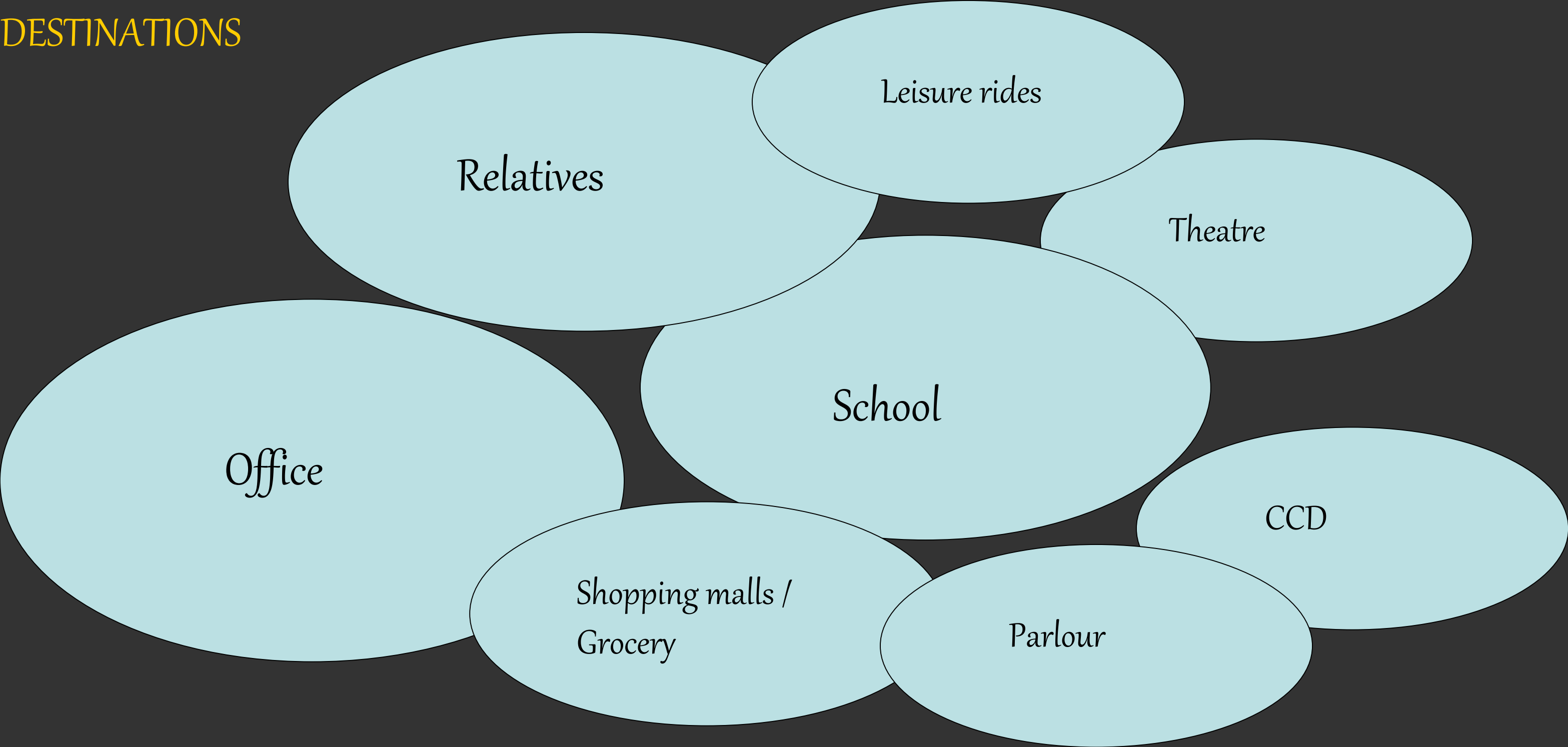
RIDING THROUGH HEAVY TRAFFIC WITH TWO KIDS

EVE-TEASING ON ROADS

VEHICLE STALLING IN JAMS

WEARING ETHNIC CLOTHING

DESTINATIONS



UNUSUAL OBSERVATIONS

Pet dog is taken to vet on Honda Dio

Covering is of little help since water splashes on them anyways

Most users prefer wearing jacket

There is a mental image of women and their proportion to the vehicle

Working professionals carry laptop bags on shoulder while riding

Looking into the mirror is a frequent habit

Hand bags slip from handle

Little kid sits on floor of step-through

Women are concerned about getting tanned

EXISTING NUANCES TO THE USER:

SCOOTY PEP enthuses “Softness”

Floating lightness – which appears fragile to the user group

Feminine traits of “grace” and “flow”

Absence of any harsh corners / hard edges

Why are users unhappy with Scooty Pep plus?

- soft curvaceous form in the rear end
- tapered nose
- sleek look makes it feel fragile
- not crisp in its styling
- Does not enthuse safety or stability
- “barbie doll vehicle”
- Does not suit the image of an older user – too kiddish



WHAT ARE THE NUANCES DESIRED BY THE TARGET USERS?

- *Crisper, sharper* styling with an *edgy* look
- A vehicle that *looks strong* and *stable*
- Should *enthuse safety* and *robust* looks
- Prefer to be *visually light*
- Should try to look *powerful* and not fragile
- Aggressive / Serious or *mature* looks
- Should suit *my body build*
- Should impersonate me — *my professional image*

INFERENCES:

There are two main directions that the vehicle could revolve around:

- 1) Sturdy, stability, powerful and not fragile – **ROBUST** looks with sinewy character – **MUSCULAR** expressions
- 2) Crisp, aggressive, edgy character – **SHARPNESS** enthused with **AERODYNAMIC** expression

STYLING BRIEF

An URBAN INSECT weaving through traffic – demands a look of swiftness, dynamism, no-frills , enthuse stability and yet should be easy to handle.

EXPRESSIONS IN FORM:

MUSCULAR / ROBUST

Hard and rugged

Rough

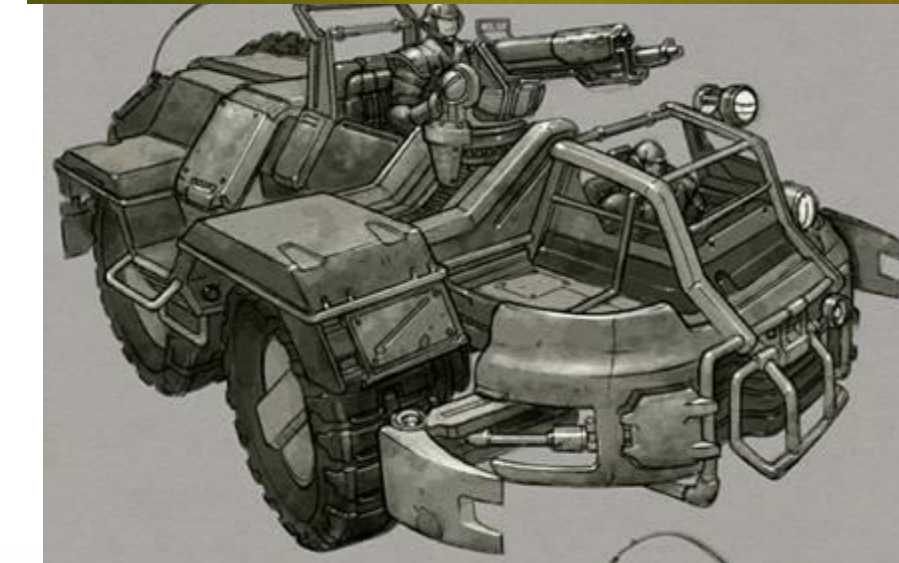
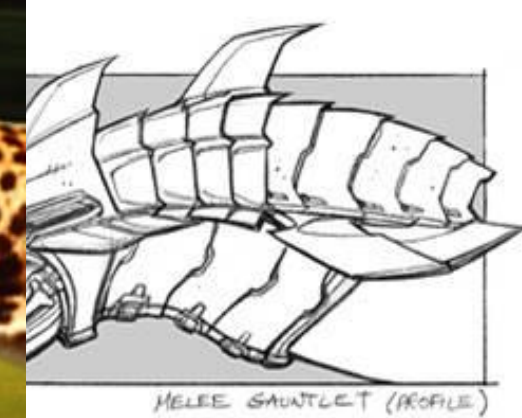
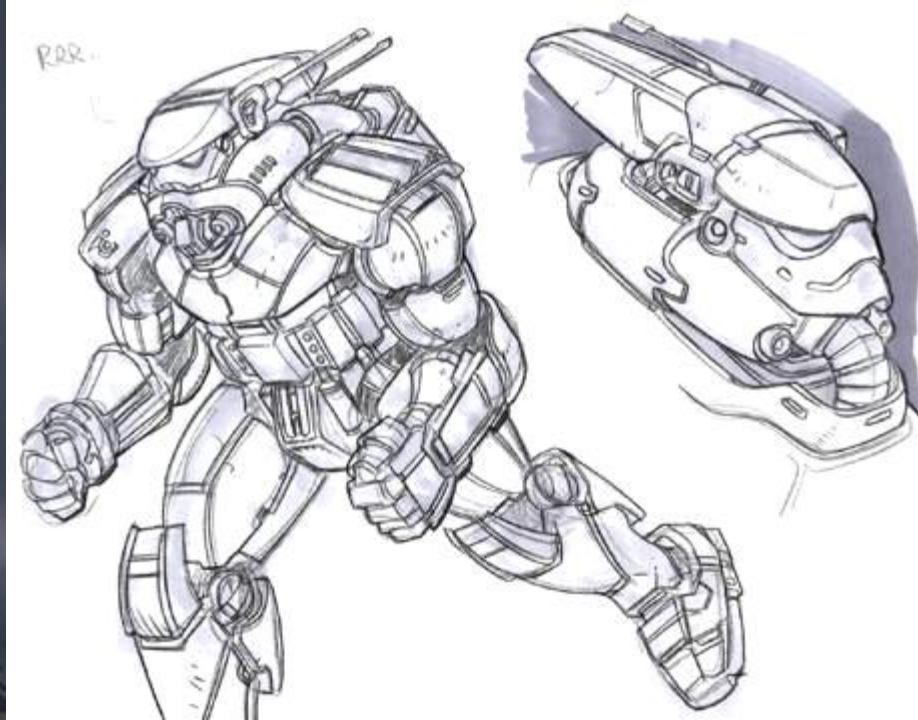
Faceted bulk – but not too angular

Overlapping forms - many surface transitions

High contrast between highlights and shadows

Proportions are large

Visual Weight is more



HIGH



LOW

EXPRESSIONS IN FORM:

AERODYNAMIC / STREAMLINED

Highly angular - Absence of blunt edges

Precise details

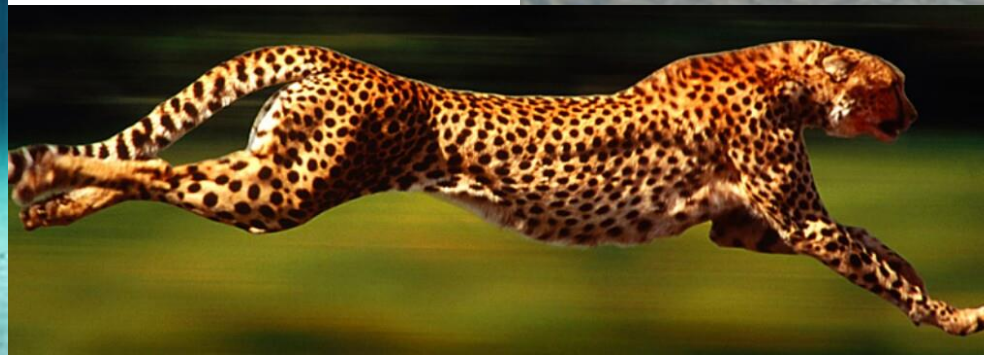
Smooth surface transitions

Highly glossy and smooth finishes – least friction

Ending in tapered volumes

Proportions are thinner – but not fragile

Visual Weight is less



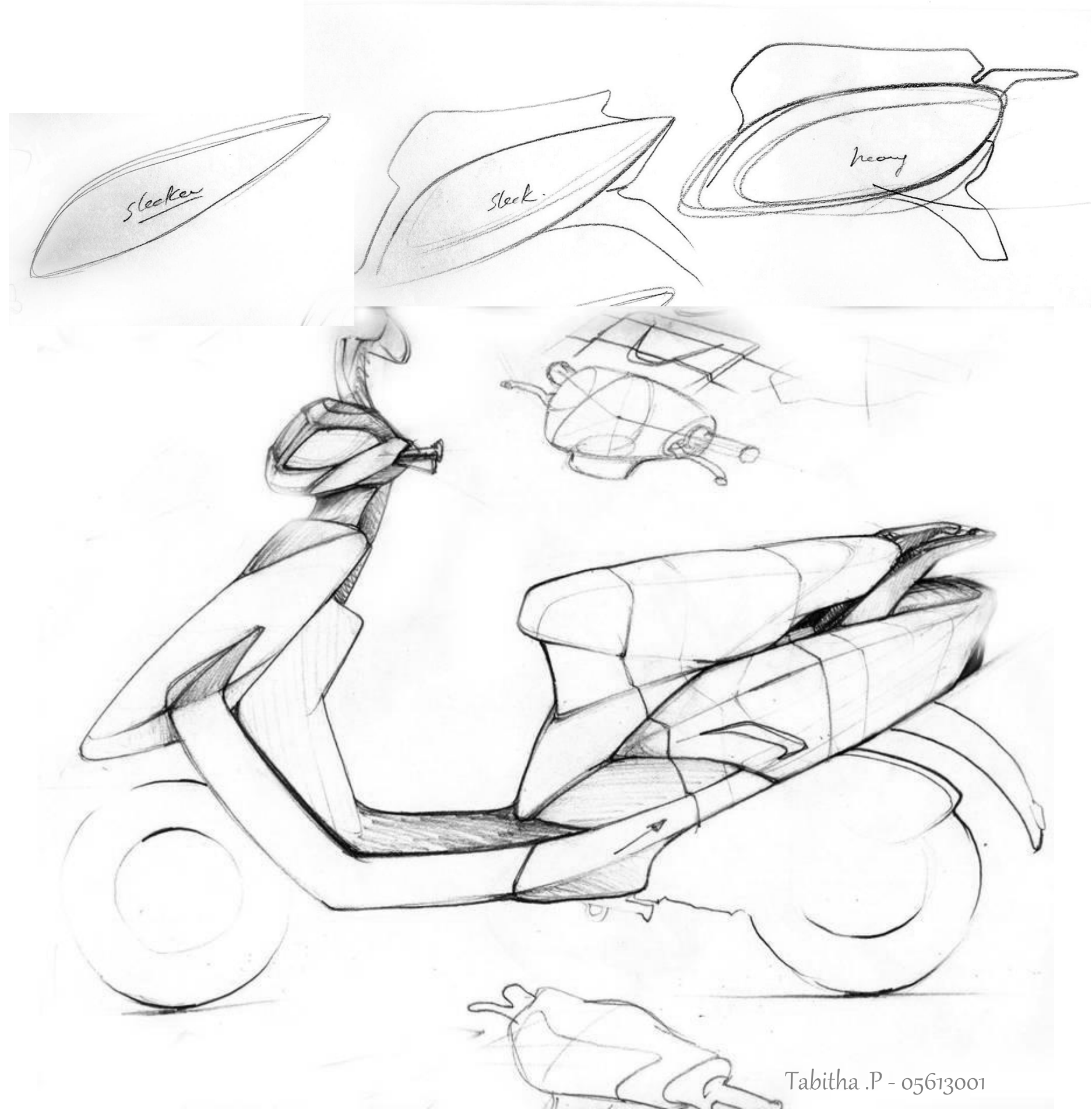
HIGH



LOW

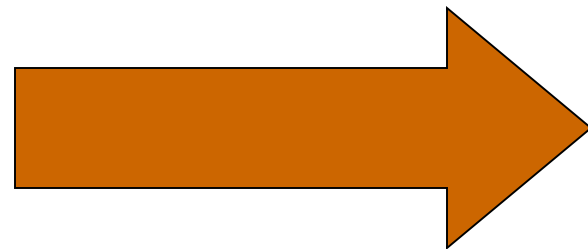
CONCEPTUALISATION

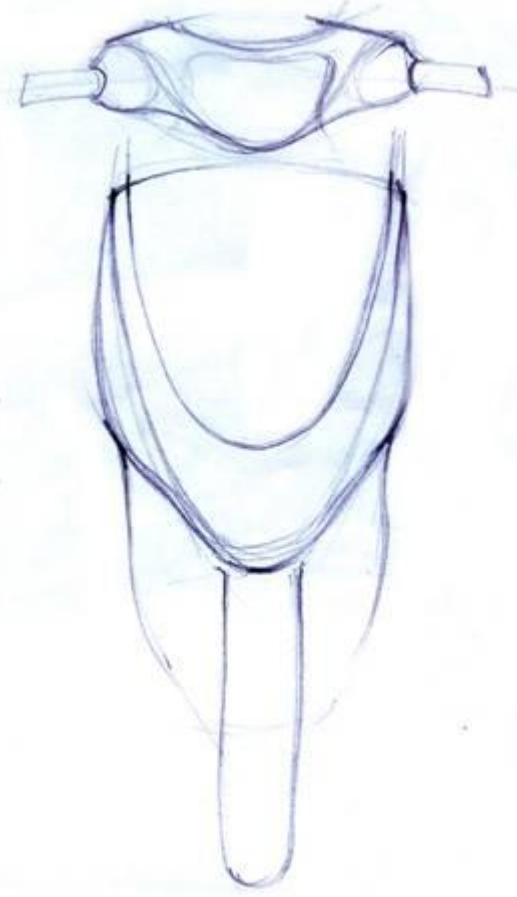
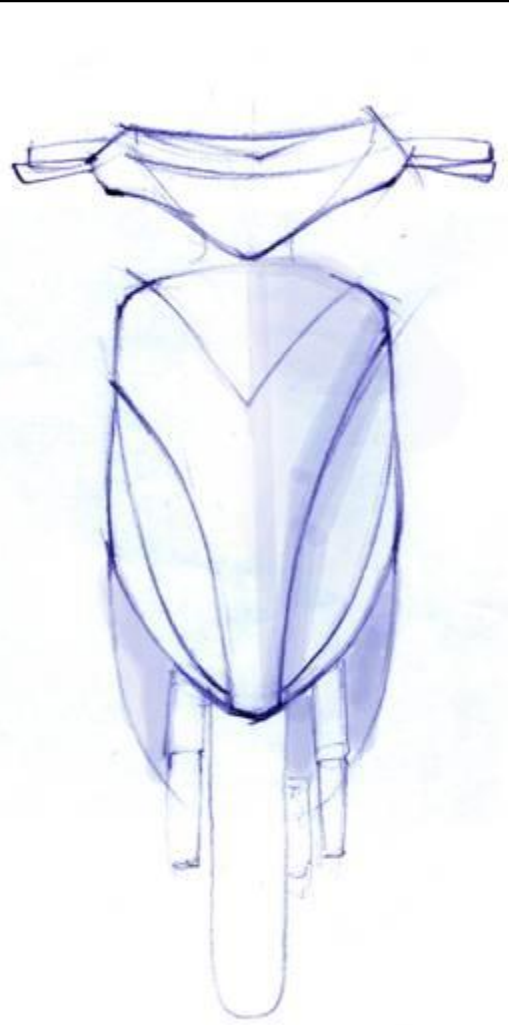
- Initial form sketches
- Integrating expressions into forms
- Deriving concepts for 2 expressions



INITIAL FORM SKETCHES

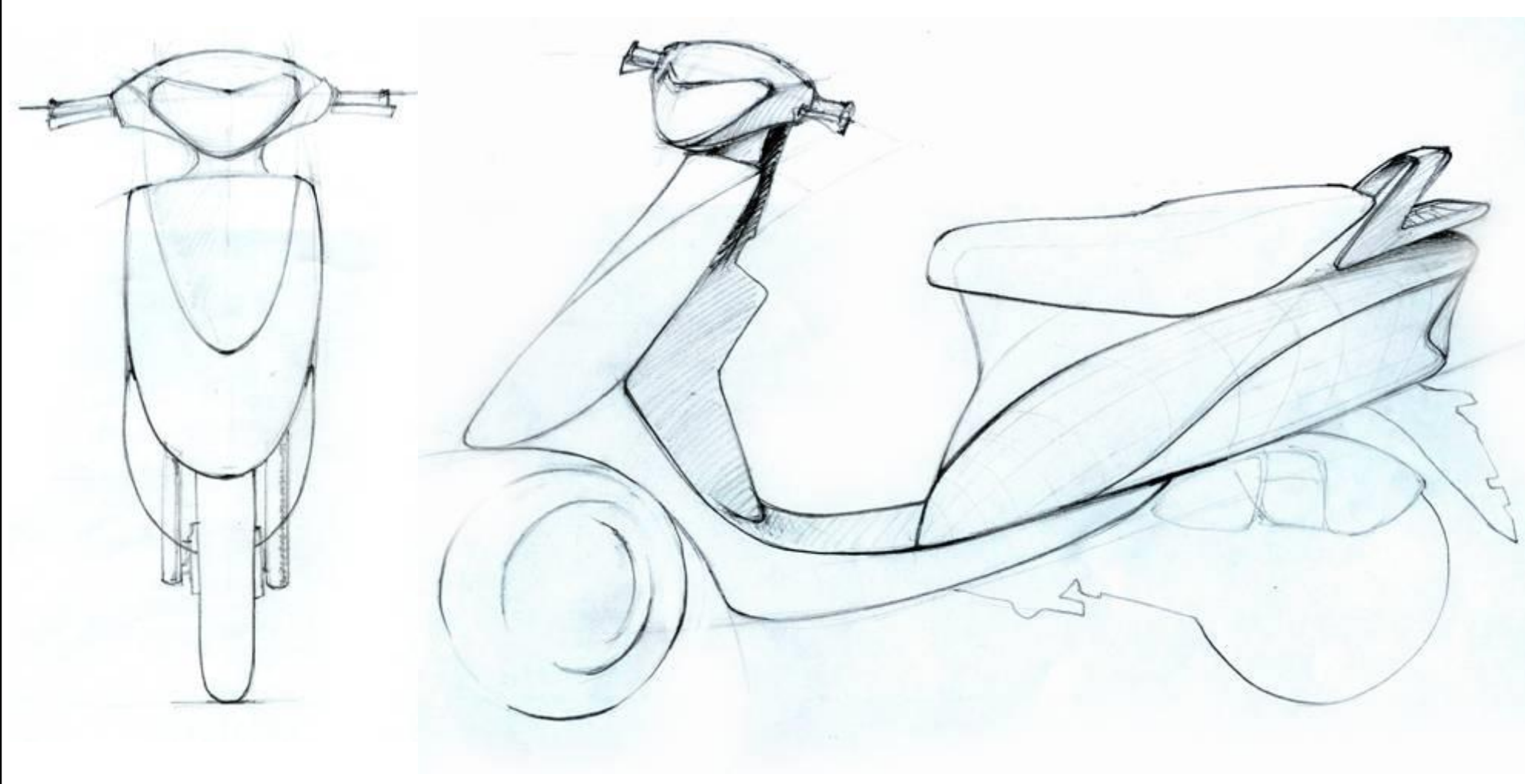
- Understanding the *body* of the vehicle and developing ideal forms on the given chassis.
- The mass of the form has shifted from *rear-heavy* as observed in the Piaggio to *central heavy* and *lighter at the ends*



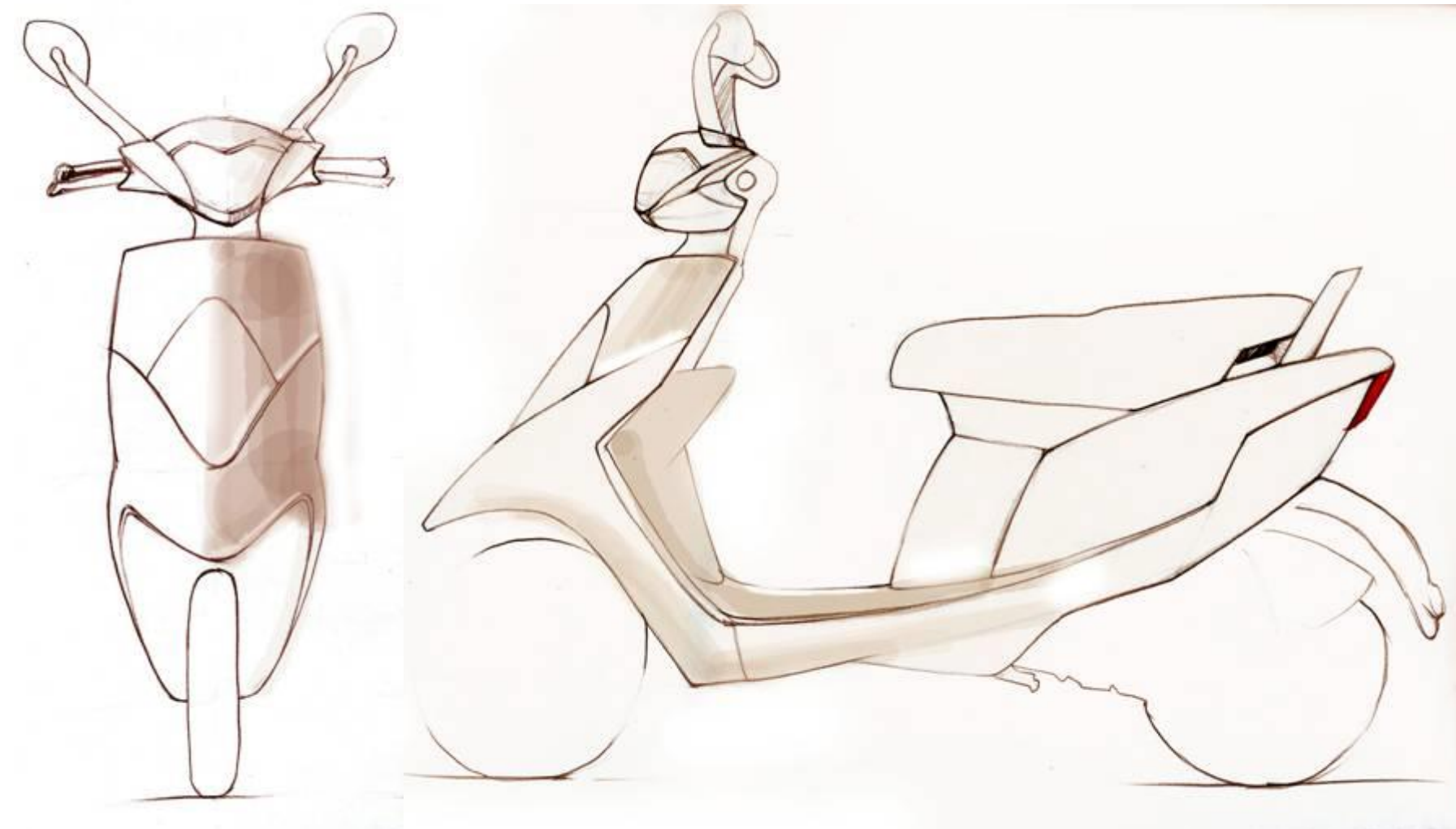


- Lifting the seat to give a high stance.
- Front panel – origin of all curves emanating from nose – creates focus
- Shifting the mass to the centre – ends are tapering (higher)

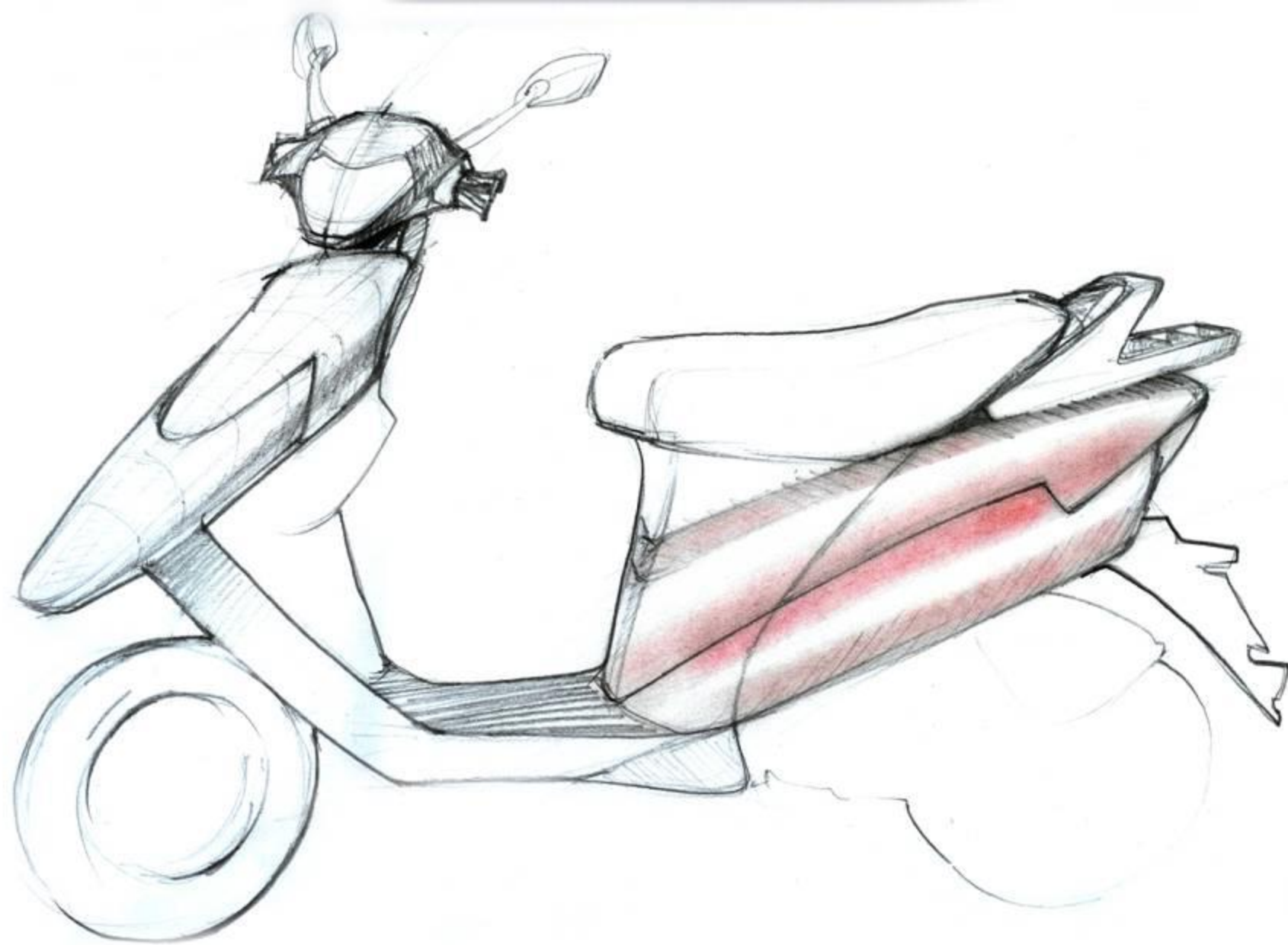
- Increasing bulk in front and tapering to the end
- Increases impression of a heavy head
- Seat impractical



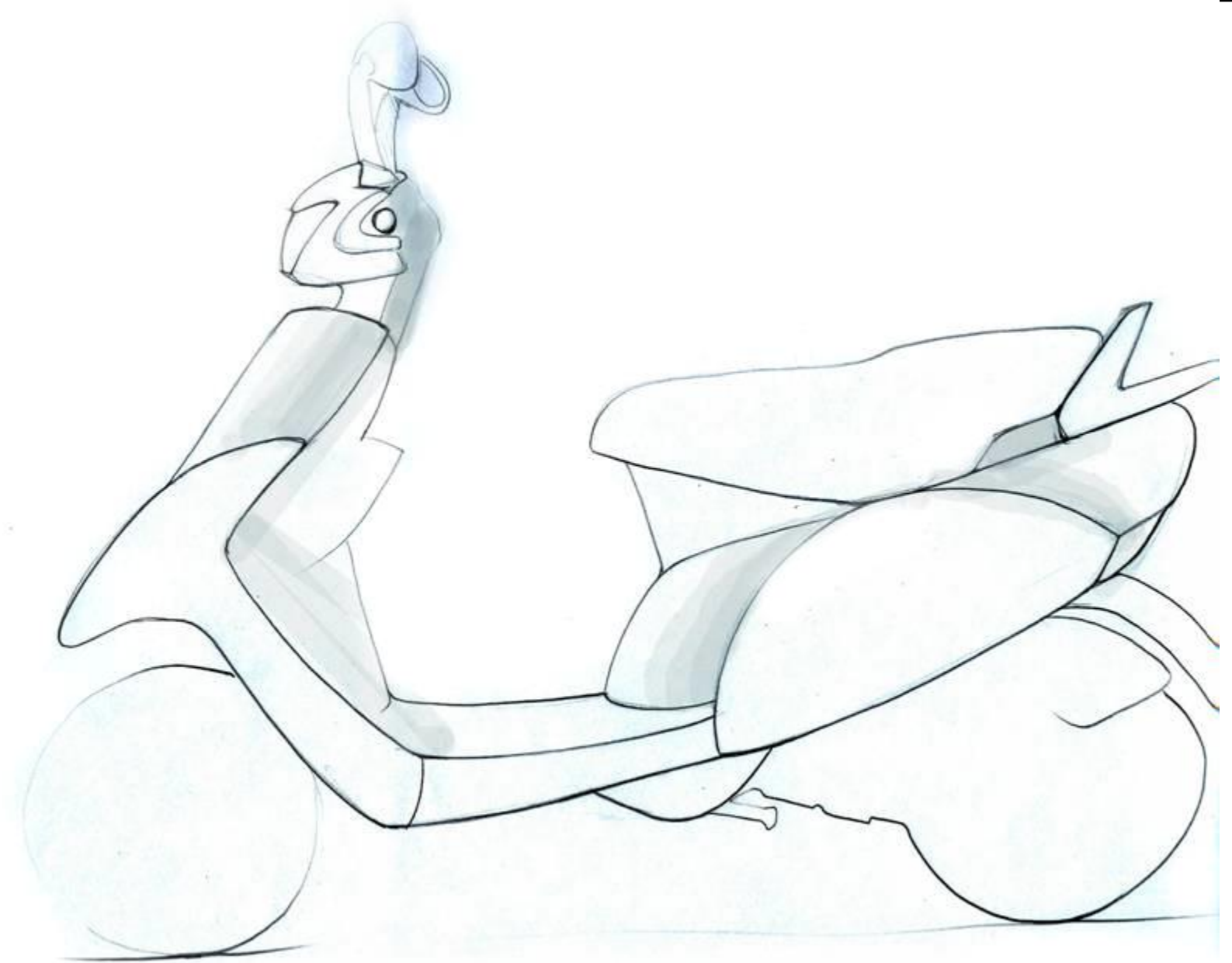
- Attempt to taper at rear end is not implied – very stocky and still retains bulk/volume
- Not coherent with the language of the rest of the vehicle



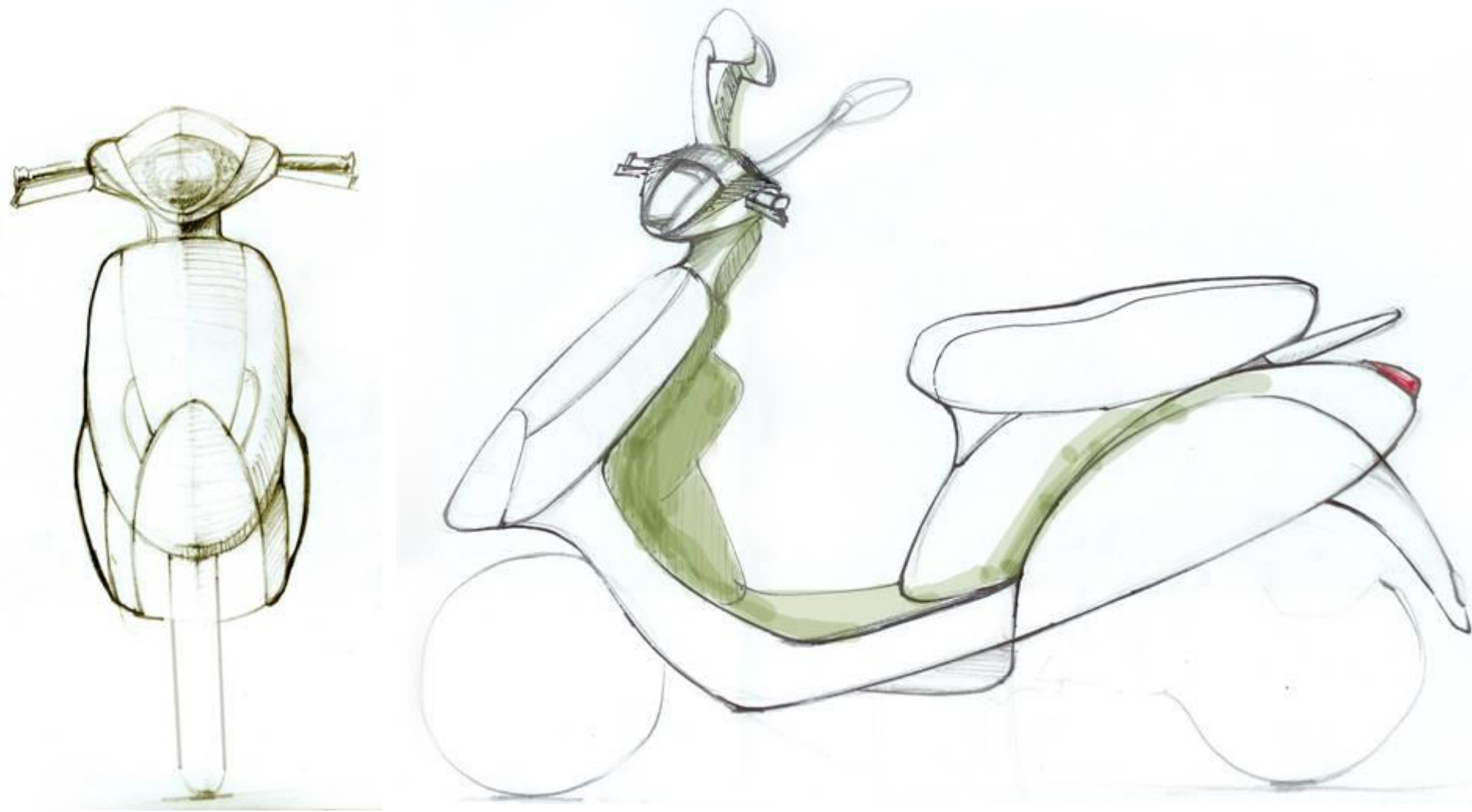
- Integrating sharper junctions
- Varying angles – disturbing
- Proportion of the body panel to the bottom half aids in cutting visual bulk
- Front panel is a combination of convex and concave curves – incoherent



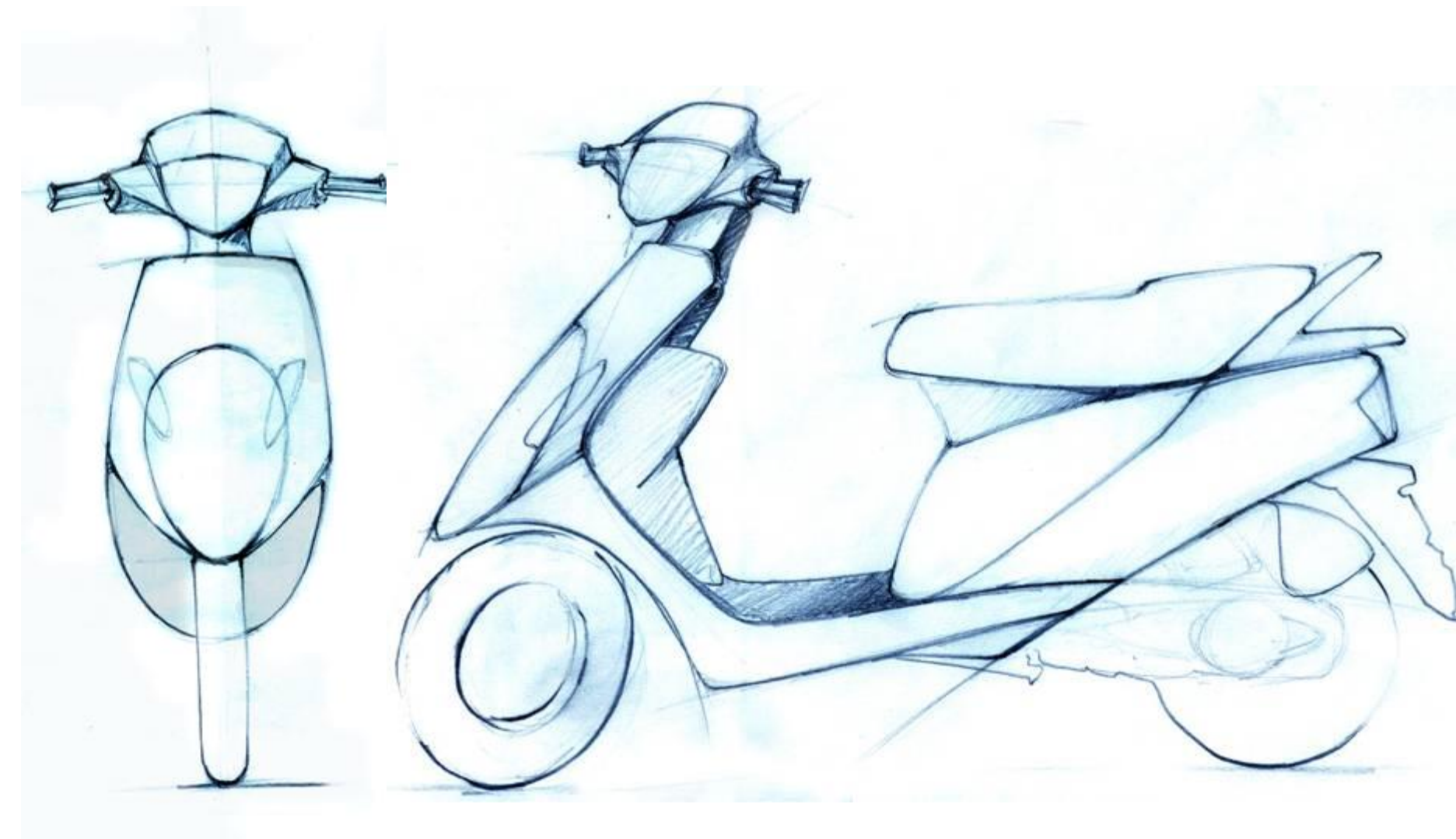
- Retaining the bulk of the scooty – but changing the split lines to vary the proportions of the body panel to bottom half- 50-50 ratio – static
- Two equal bands still read as bulky
- Jagged ends- create problem in intersection of surfaces



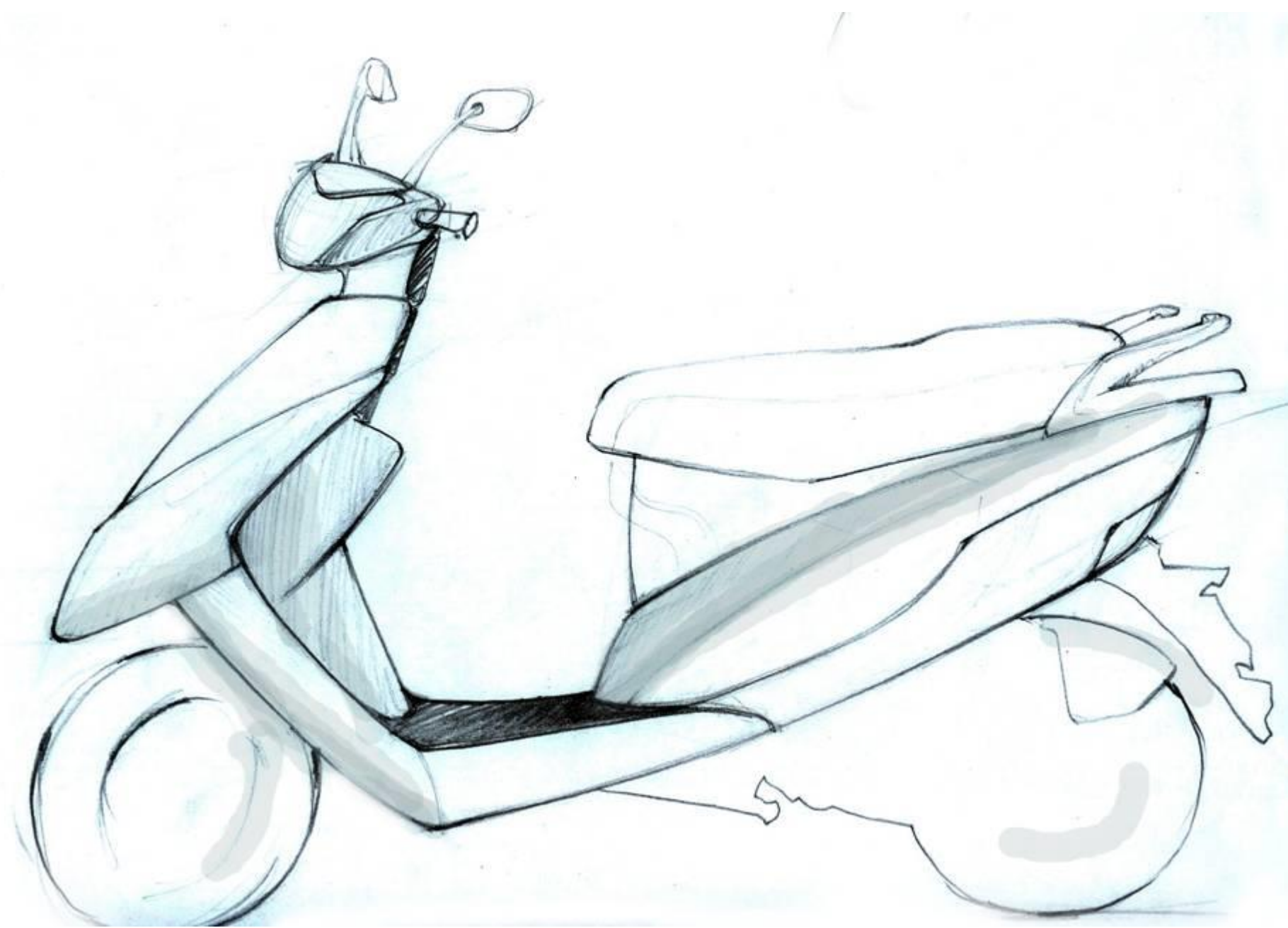
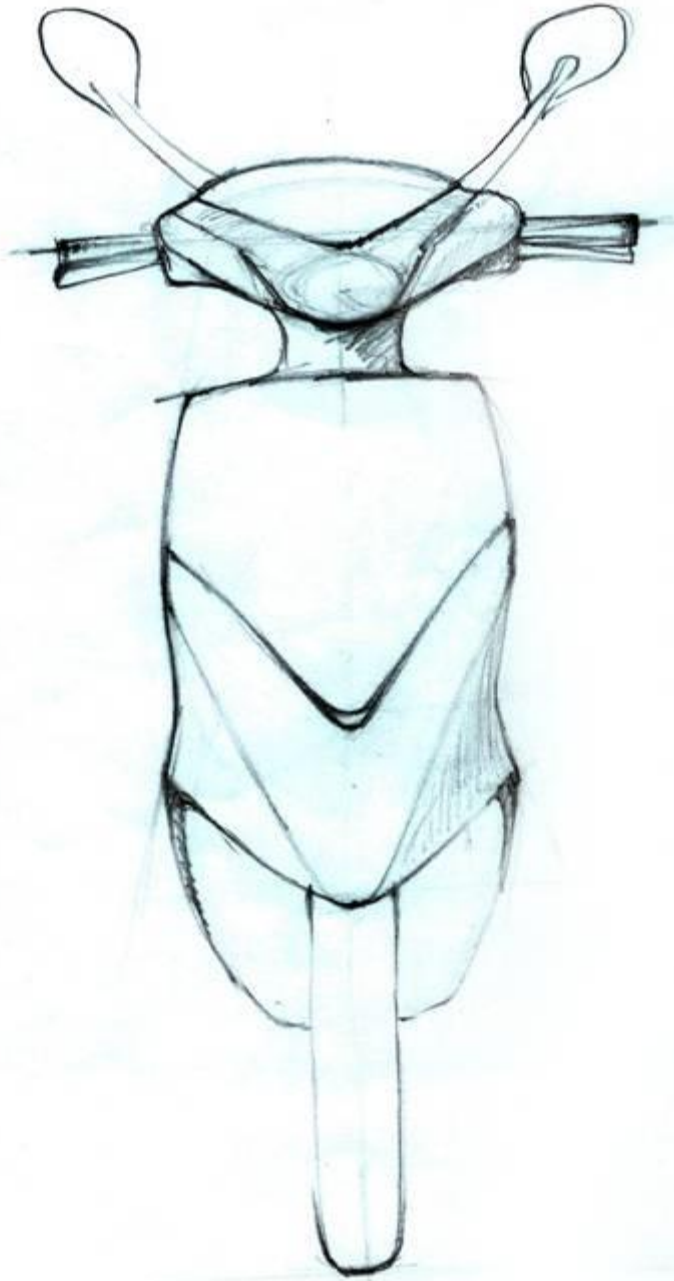
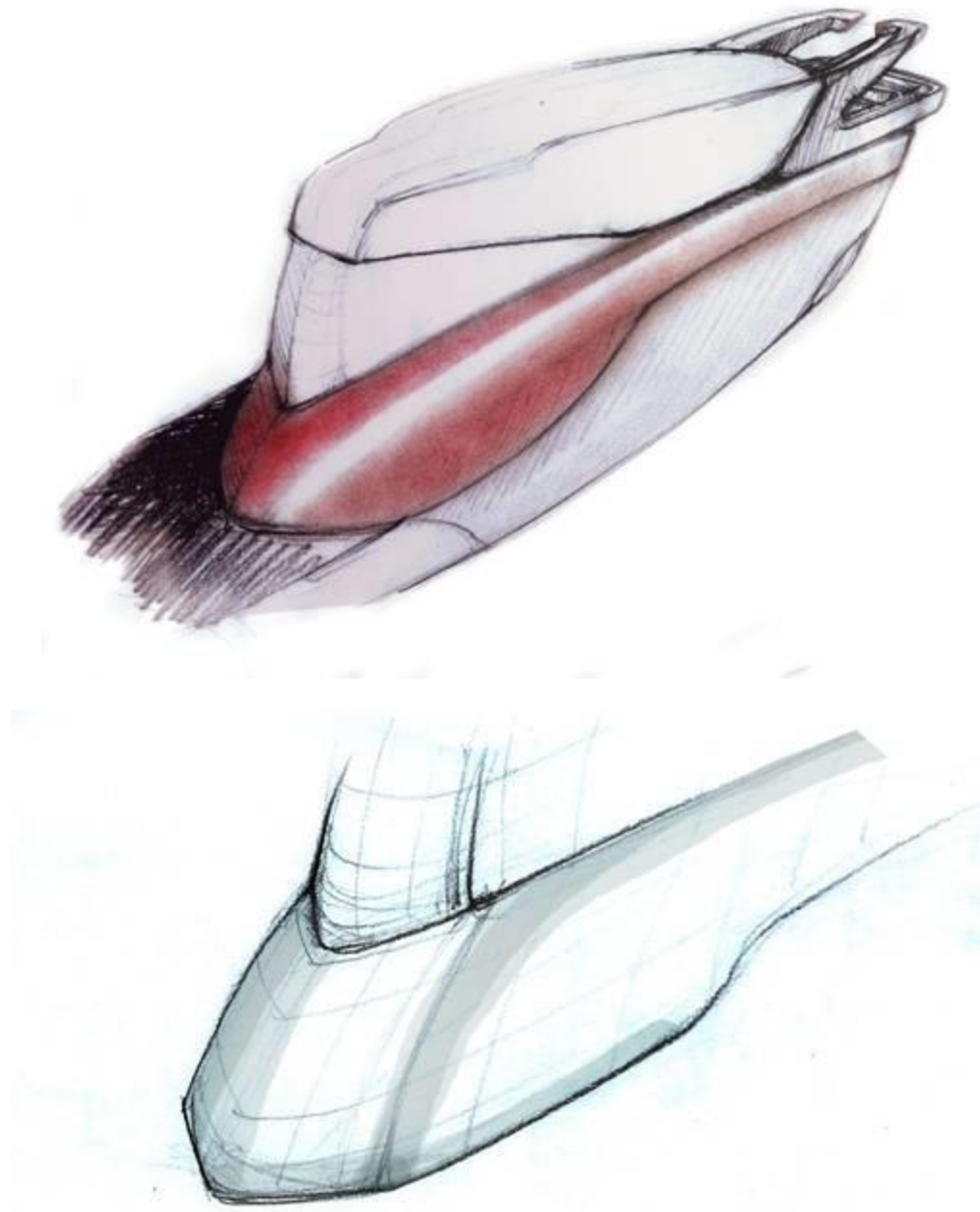
- Extreme bulk expressed with rear end- very retro in styling
- Language continued onto the front – breaks the identity completely of what the scooty is like



- Bulbous rear end and nose
- Rear end- inspired from Piaggios XT, rear fender also made to suit flow lines of the soft drop shaped cowl
- This effect does not reduce the bulk though
- Proportion of headlamp is too huge



- Form expresses bulk with convex curves
- Junctions between panels are crisper and hard
- Juxtaposition of crisp with bulk is not a successful attempt

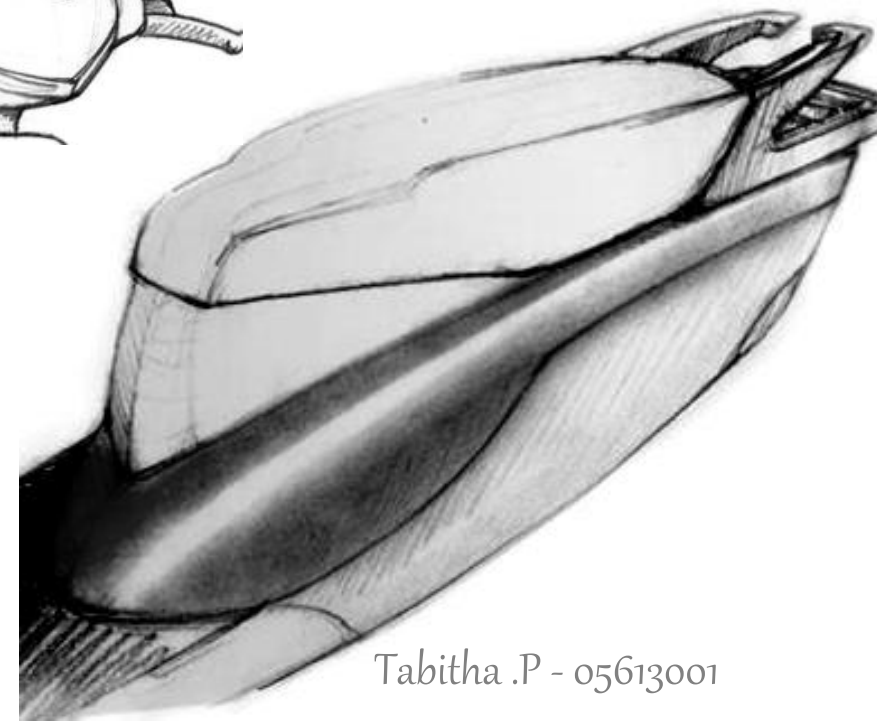
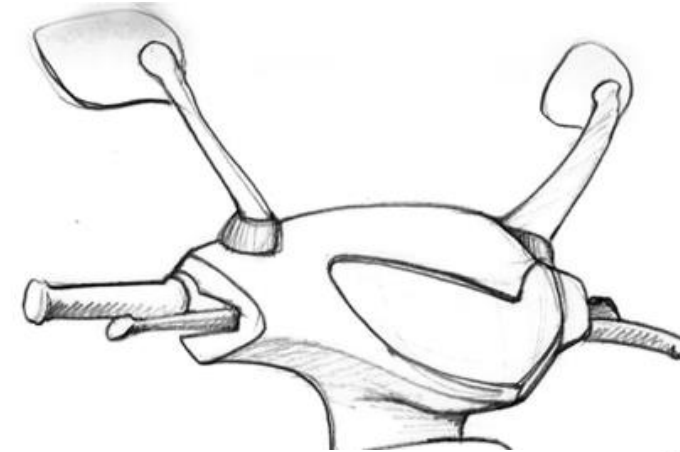
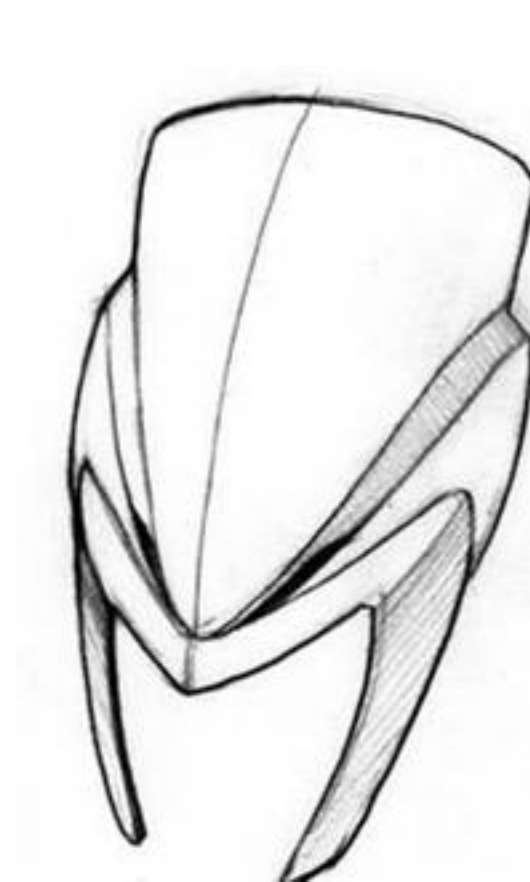
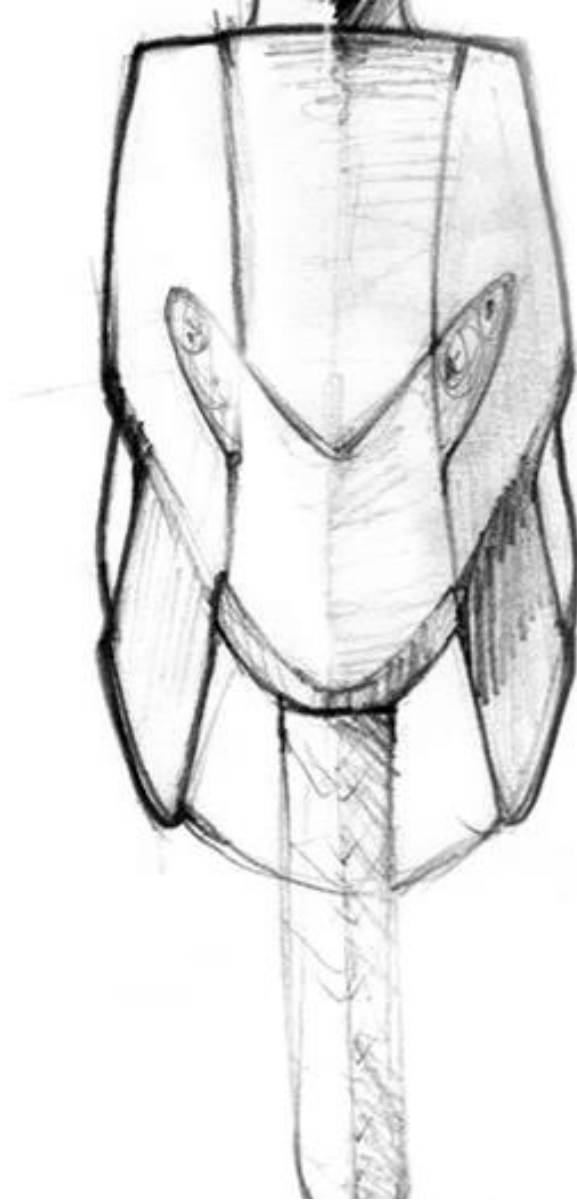
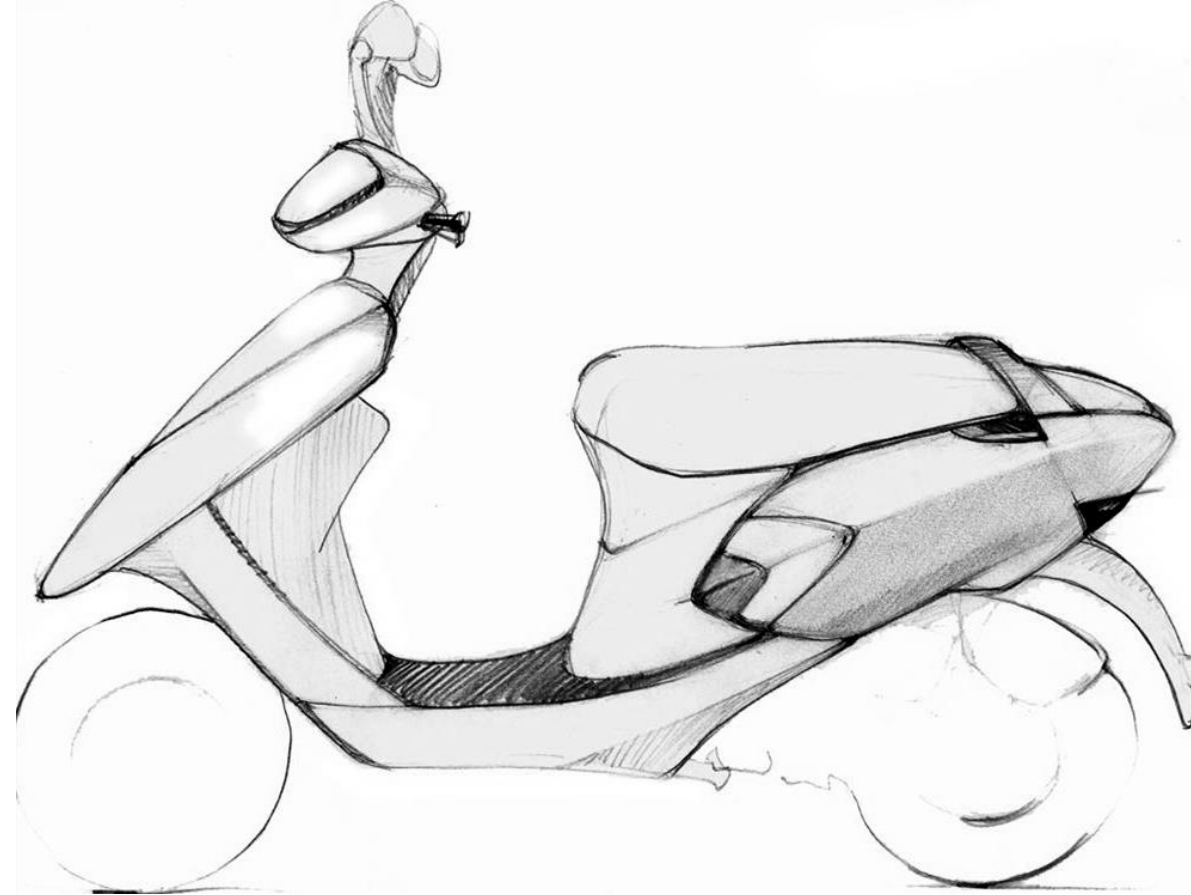


- Tucking in the mass at the jaw line gives tighter surfaces
- The degree of curvature in the body panel imparts the specific character
- Intersecting angles should be similar- too many varying angles is disturbing
- Proportion of body panel to the bottom half is critical- the cowl tapers to the rear top end
- Angle of the rear end surface imparts a 'light' look

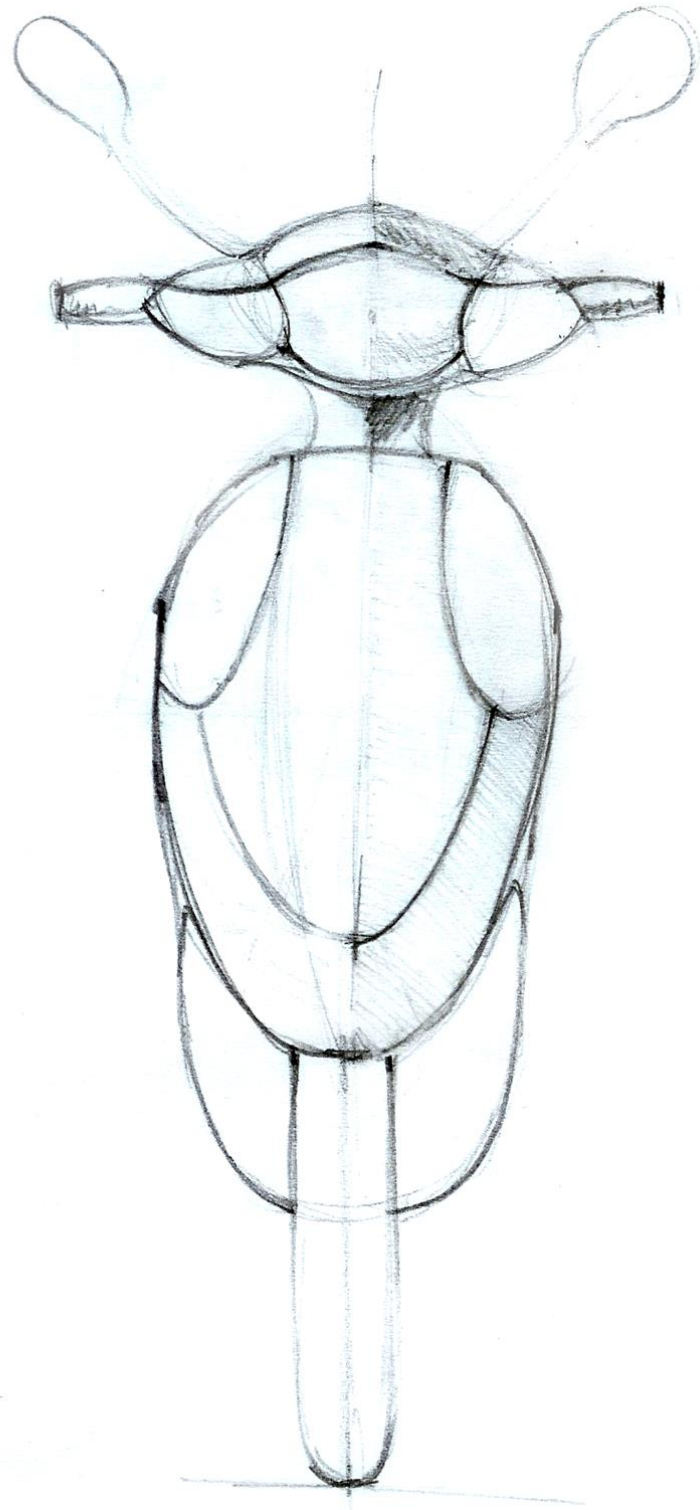
EXPRESSION IN FORM

A variety of expressions were worked on, mainly divided into 4 main categories:

- Soft expression
- Aerodynamism / Swiftness
- Muscular / Robust
- Aggressive / Fierce expression

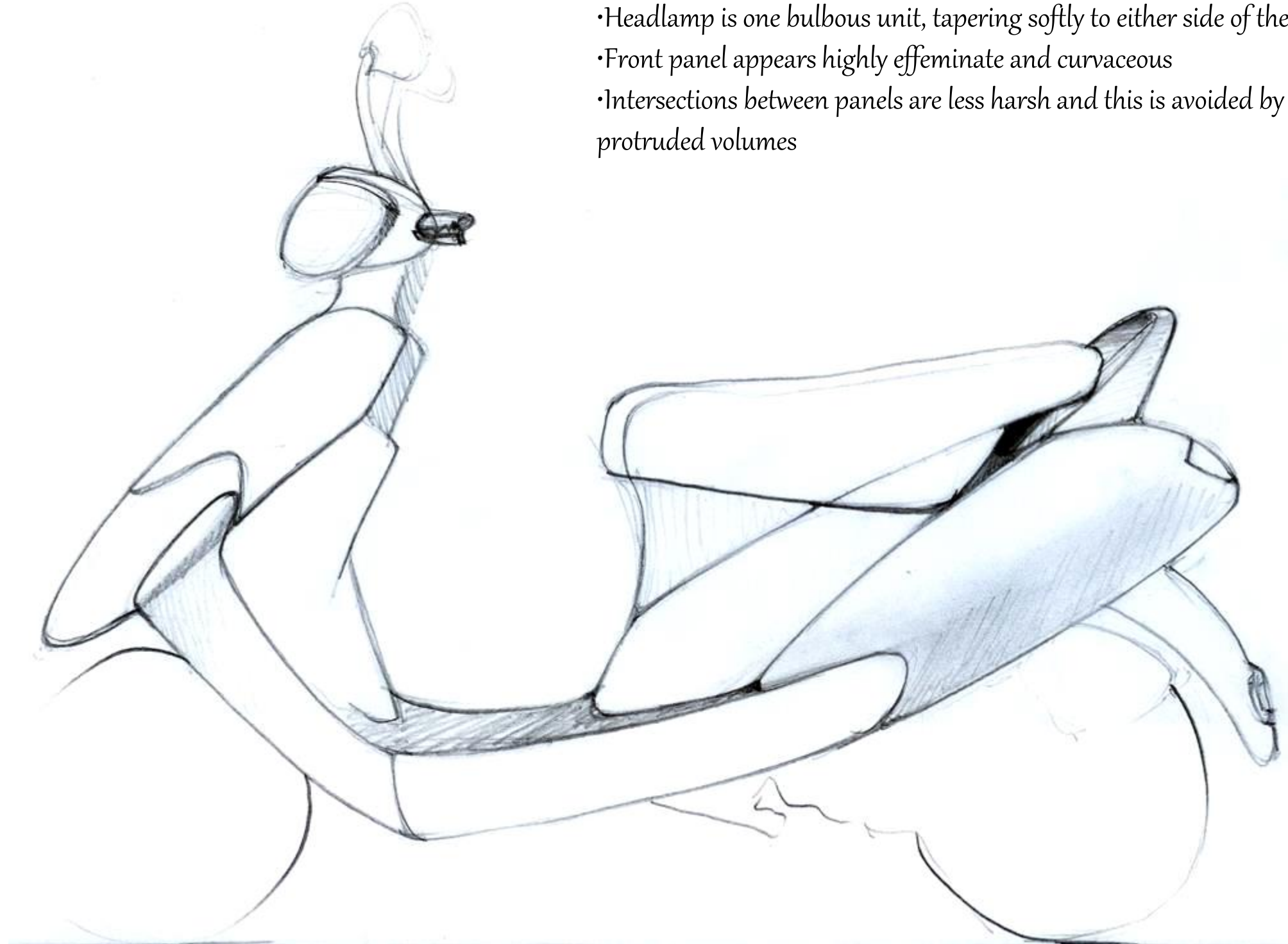
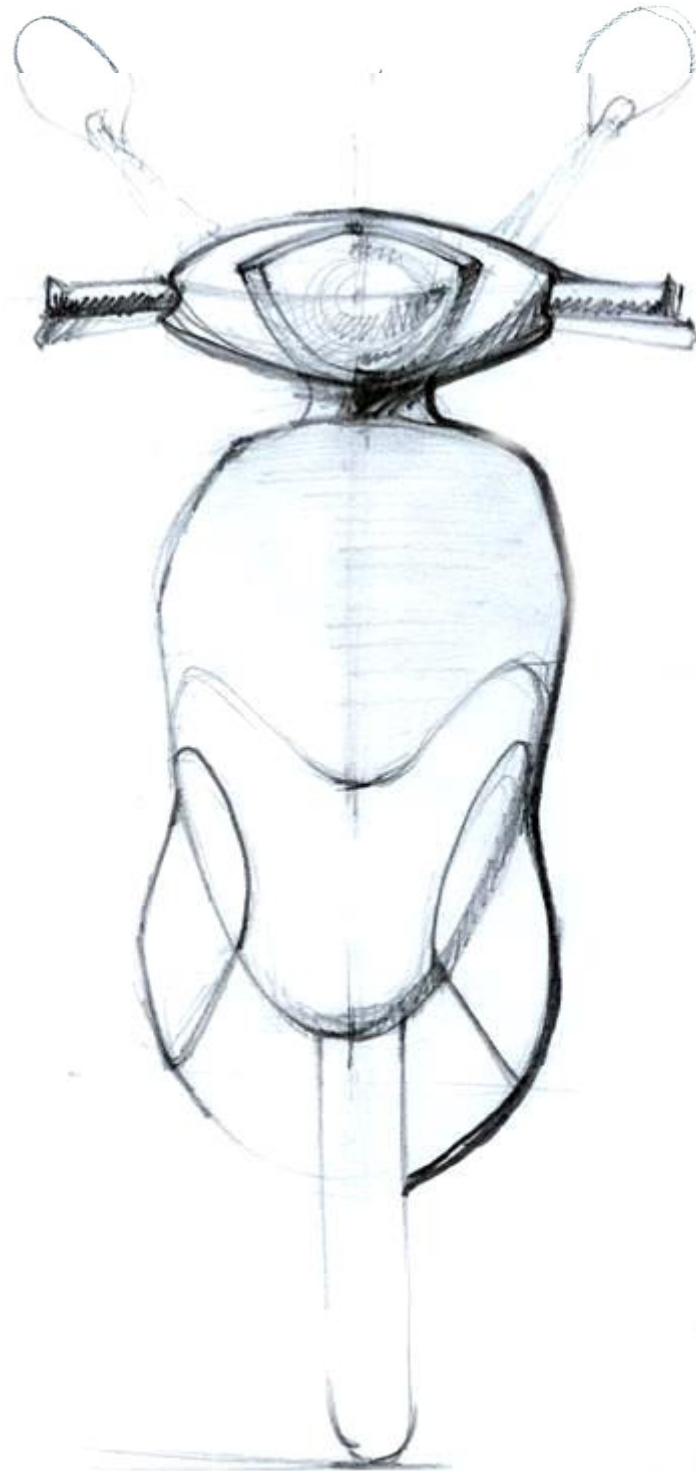


SOFTNESS



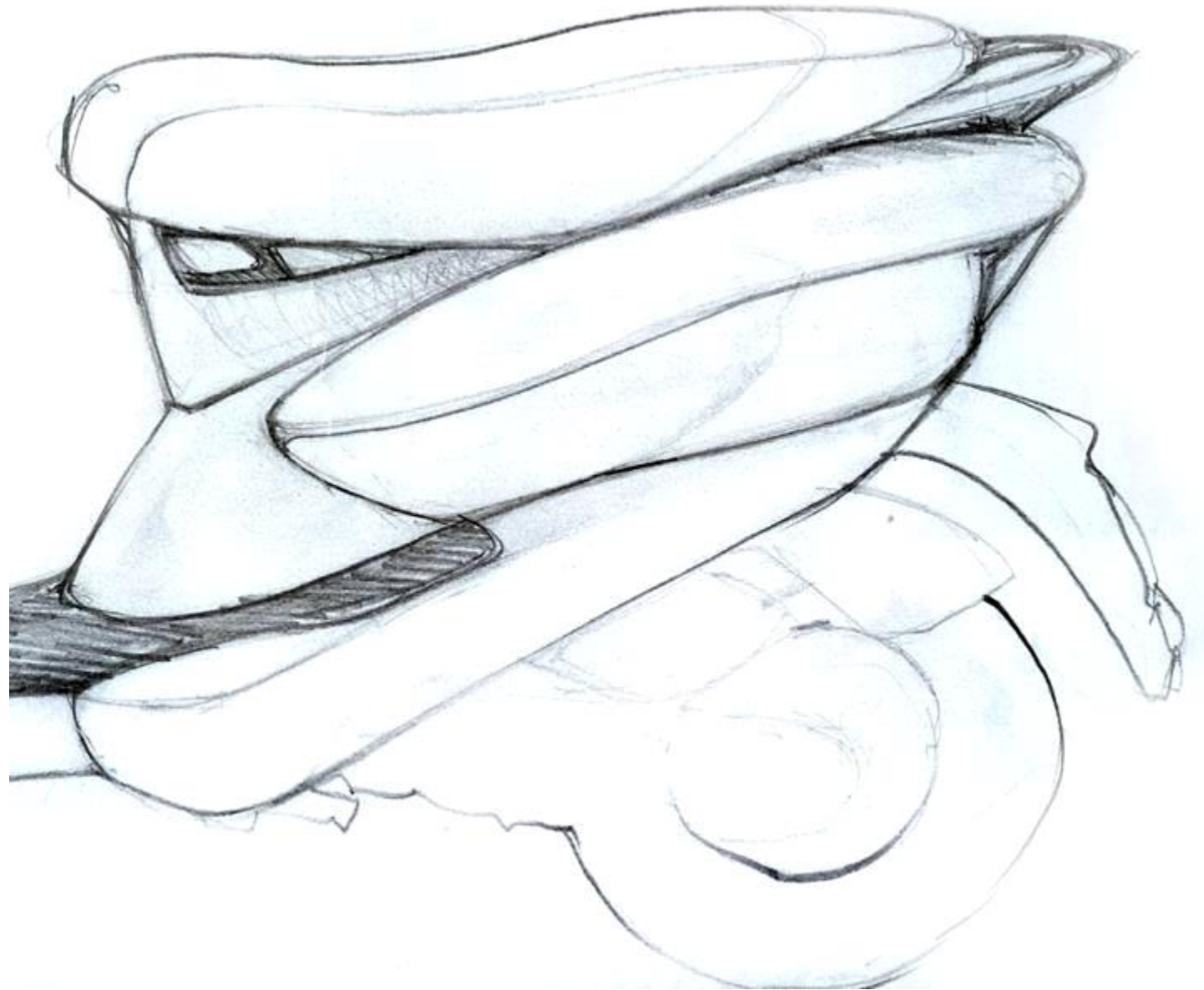
- Convex flow lines
- Tracing continuity in flow lines
- Absence of harsh breaks – more monolithic surfaces in body cowl.

SOFTNESS



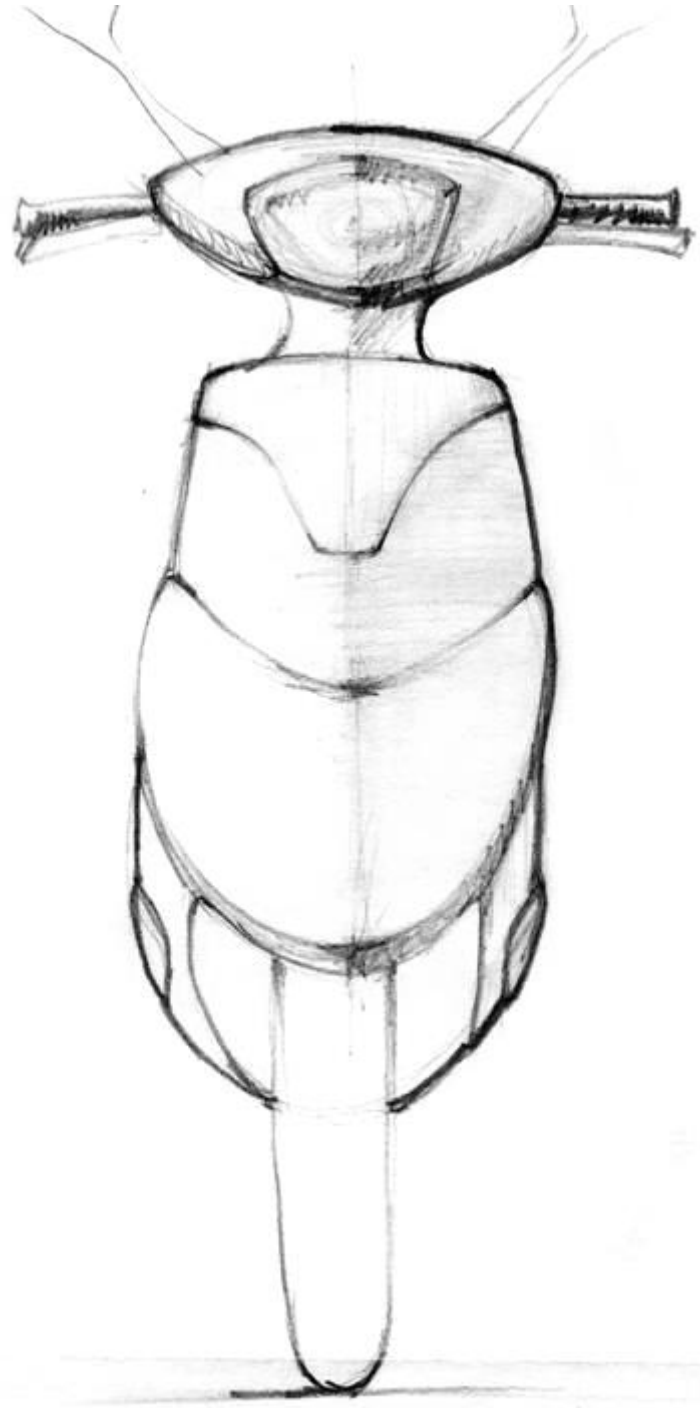
- Rear section is characterized by soft lines, with dropped shaped cowls in the body shell, though too bulky
- Headlamp is one bulbous unit, tapering softly to either side of the handle bar
- Front panel appears highly effeminate and curvaceous
- Intersections between panels are less harsh and this is avoided by creating protruded volumes

SOFTNESS



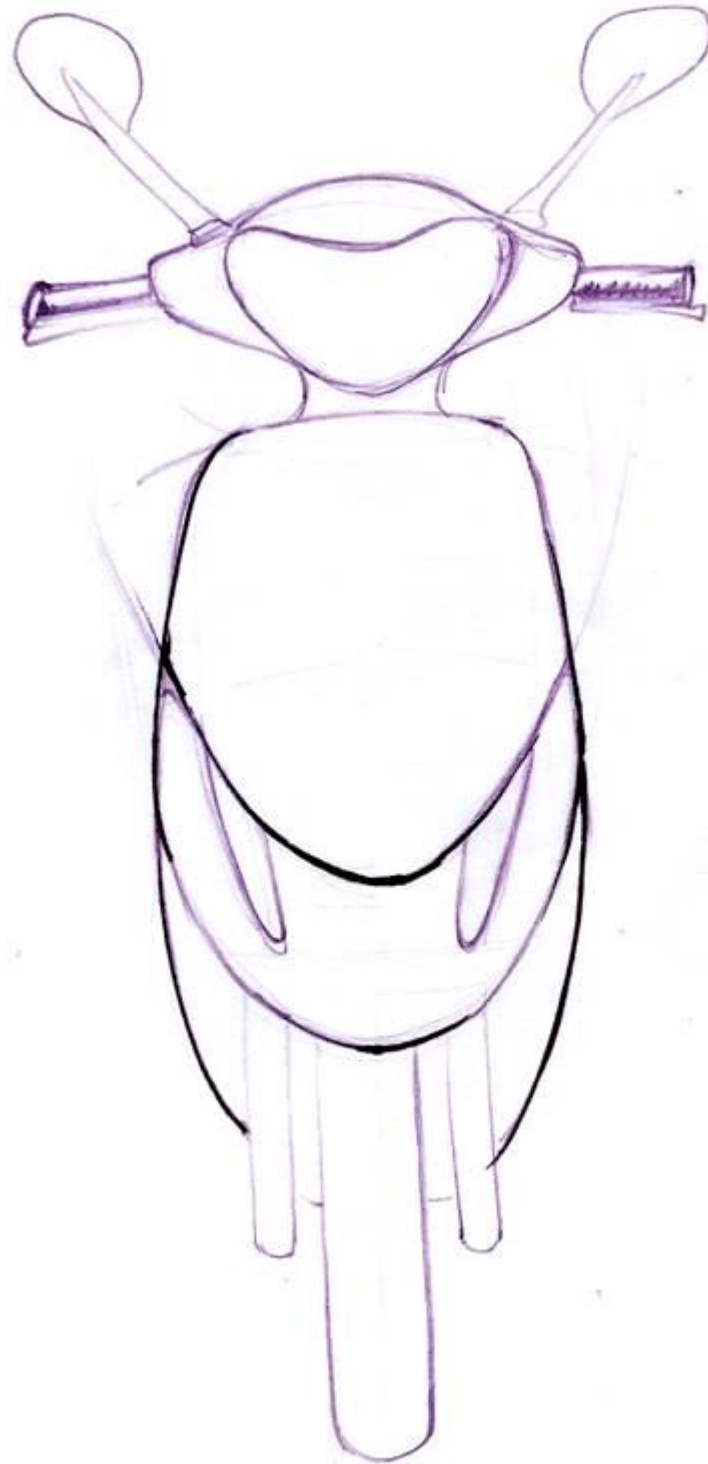
•Protruded volumes in the elements at the rear end enhance the feeling of softness.

SOFTNESS



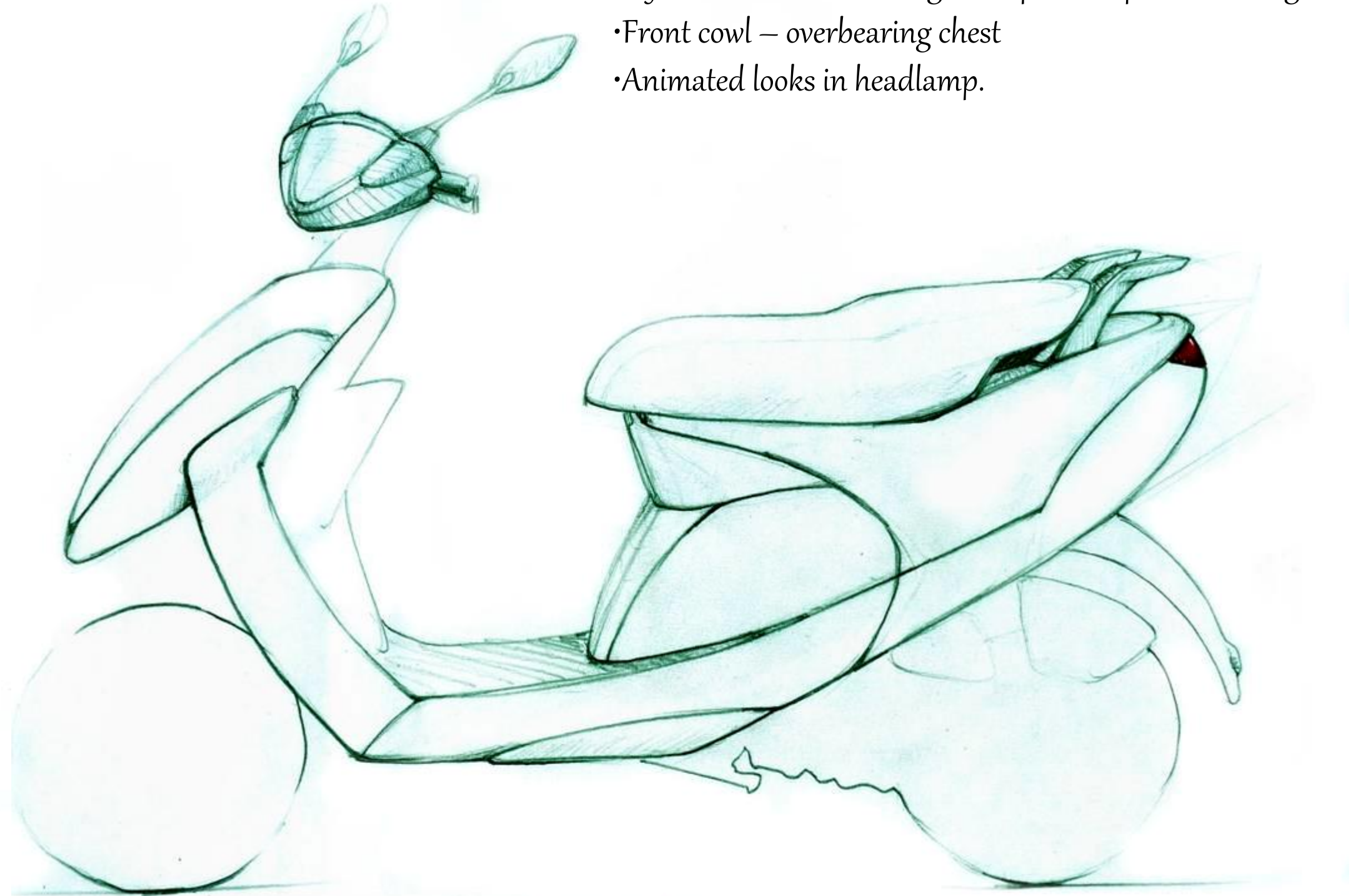
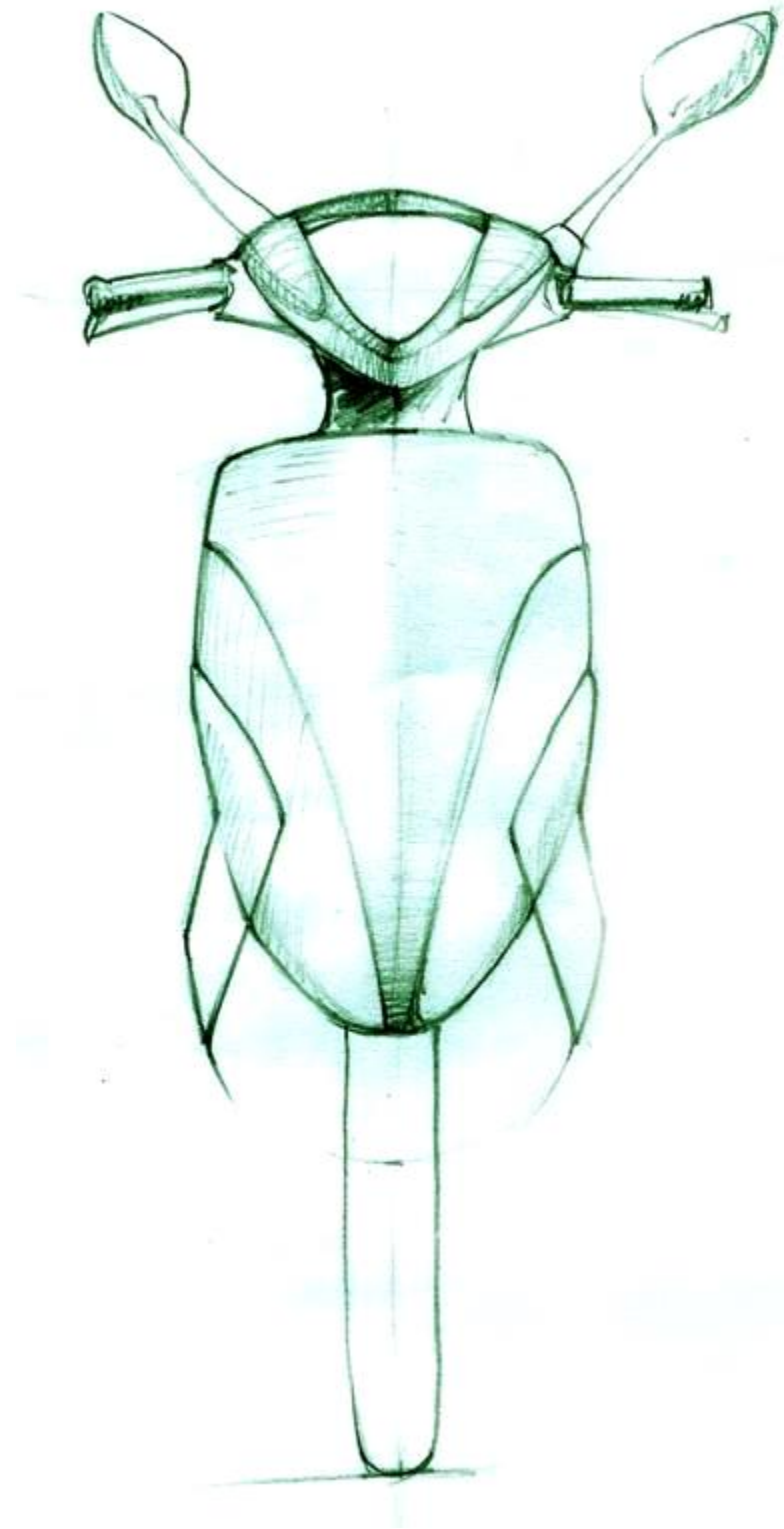
- Softness in front panel, increases in volume towards lower end – visual weight
- Imparts notion of being well-grounded / stability in stance.

SOFTNESS



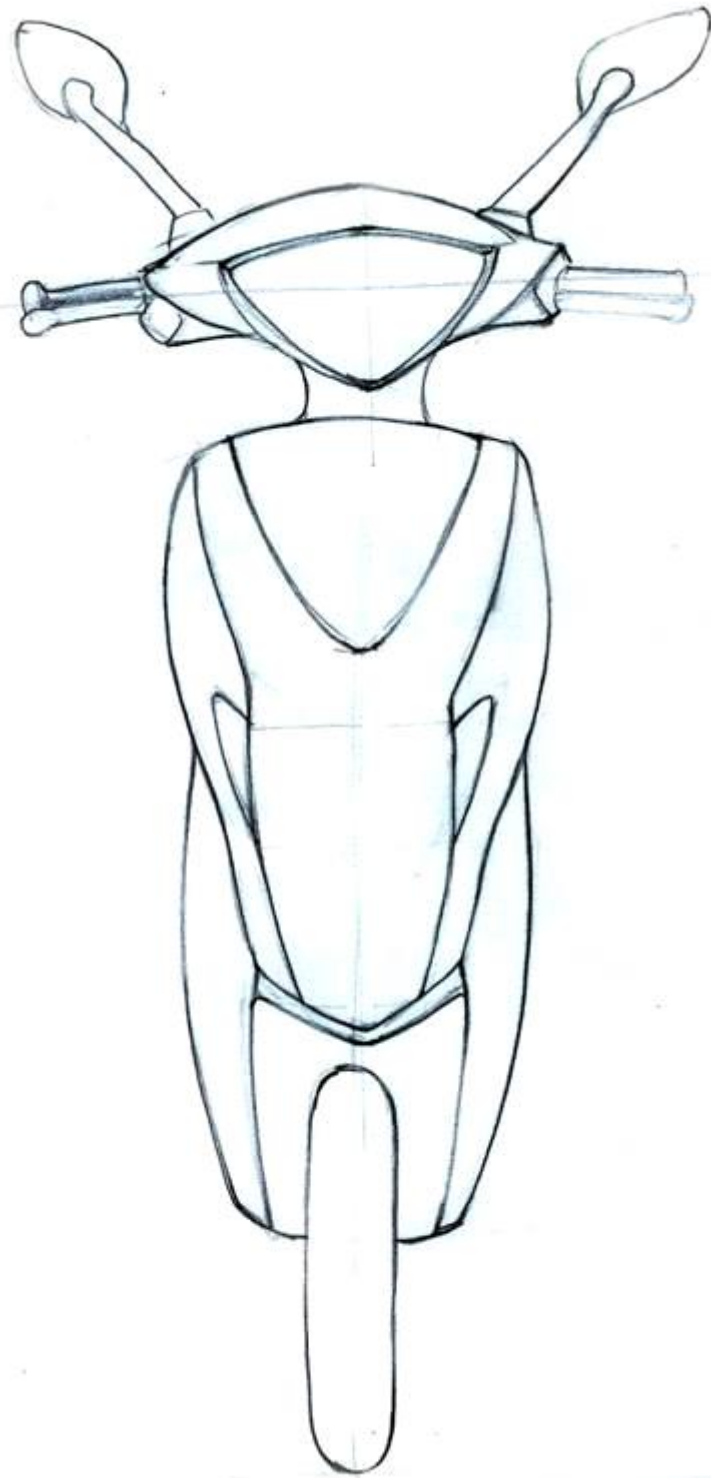
- Overlapping volumes protruding out in progression
- Rear end – single color – expressed bulk
- Transition from step through to body panel - incoherent.

SOFTNESS



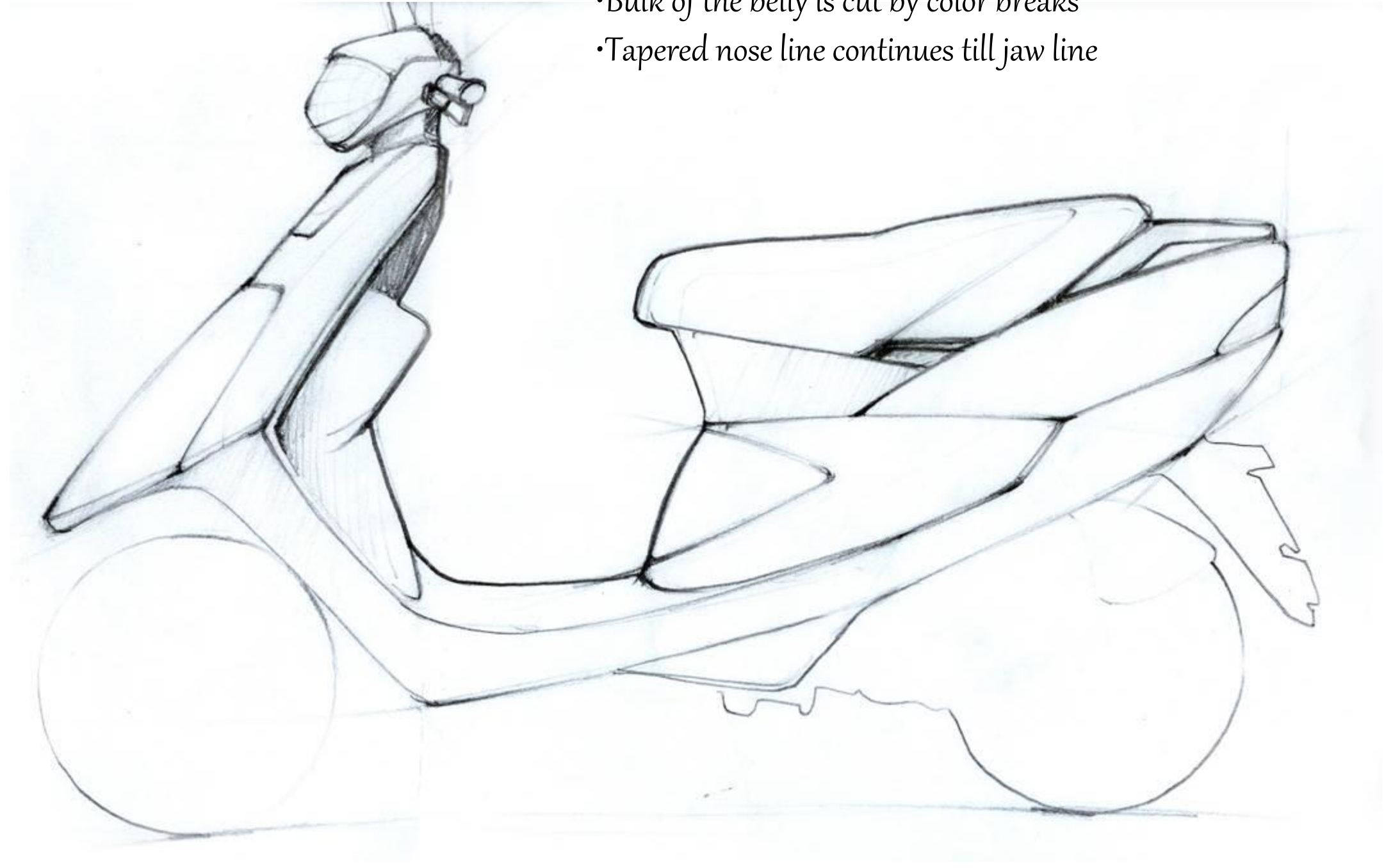
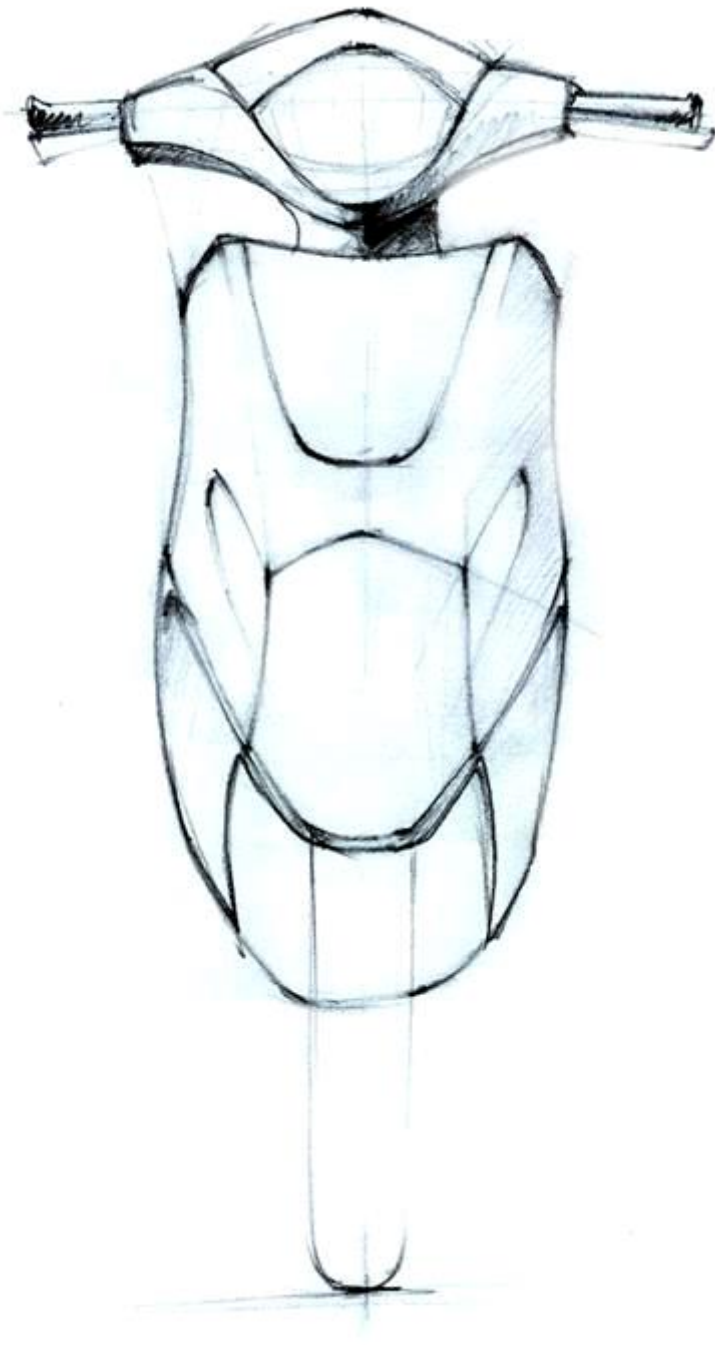
- Soft bulbous rear with slight crispness expressed in edges
- Front cowl – overbearing chest
- Animated looks in headlamp.

AERODYNAMISM / STREAMLINED



- Chin tucked in tight, with tapered nose
- Rear end raised & tapered
- Convex and concave curves in the same flow line to be avoided
- Headlamp can do more justice.

AERODYNAMISM / STREAMLINED



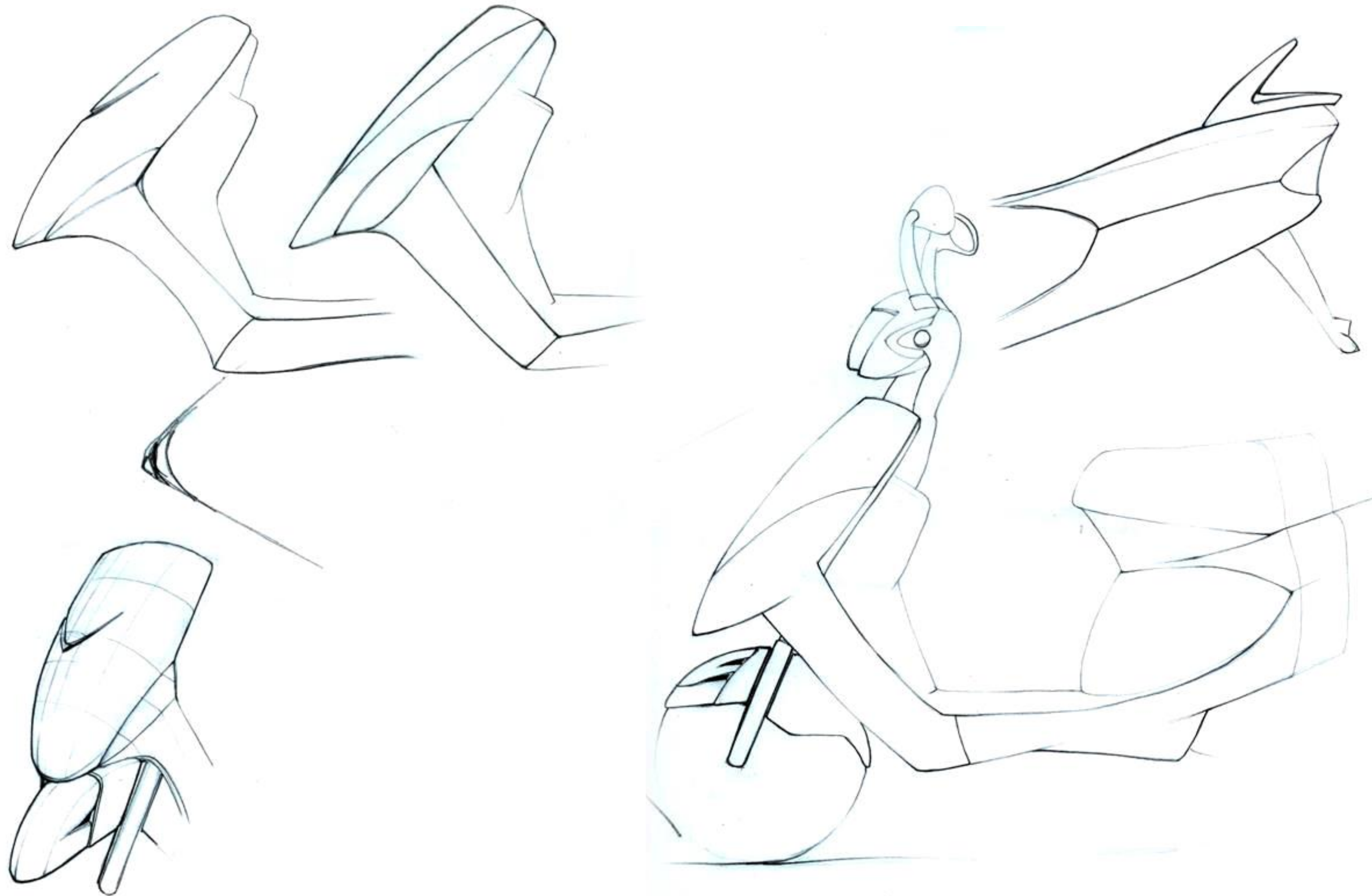
- Tighter surfaces in rear end intersecting at sharp acute angles – racy / dynamic look.
- Shoulder pulled back
- Bulk of the belly is cut by color breaks
- Tapered nose line continues till jaw line

AERODYNAMISM / STREAMLINED



- Shoulder pulled back
- Front cowl made of faceted edges by convex curves
- Overhang of tail end could be more dynamic – too soft for expression

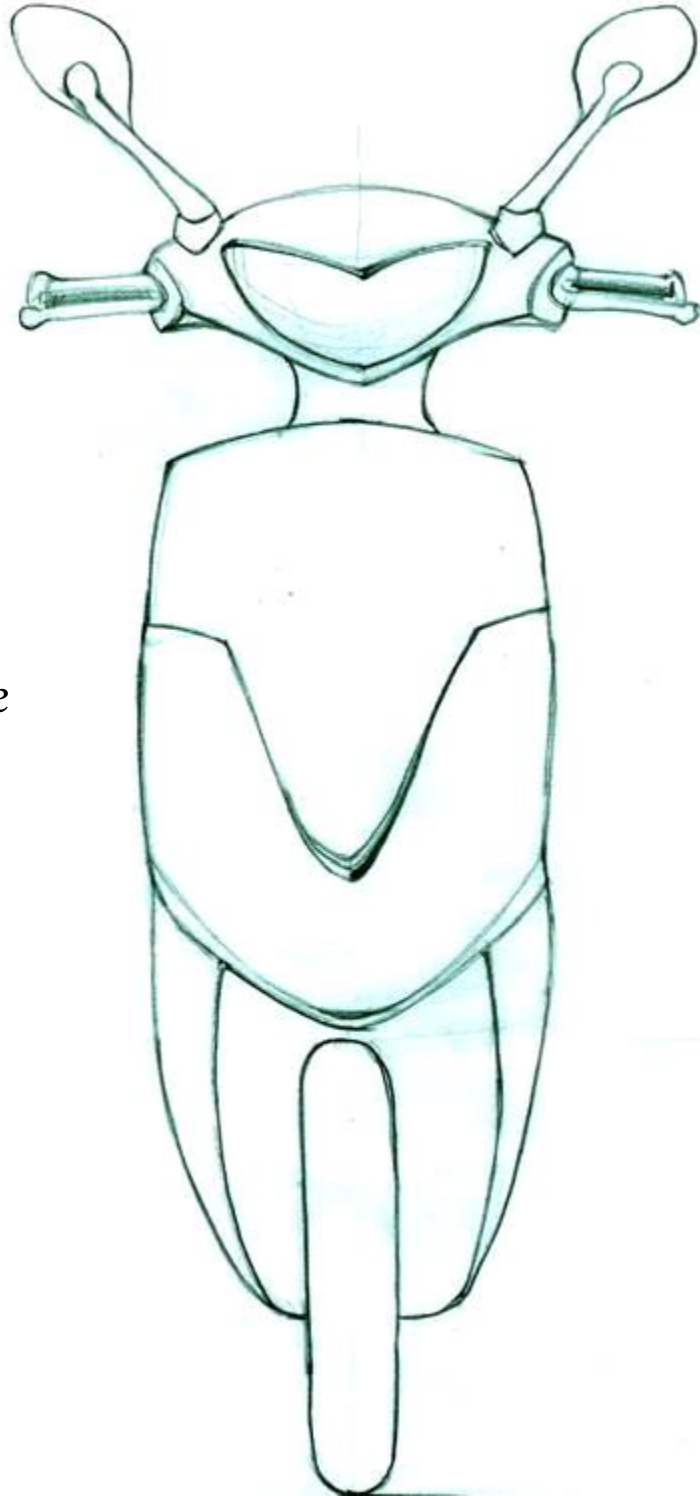
AERODYNAMISM / STREAMLINED



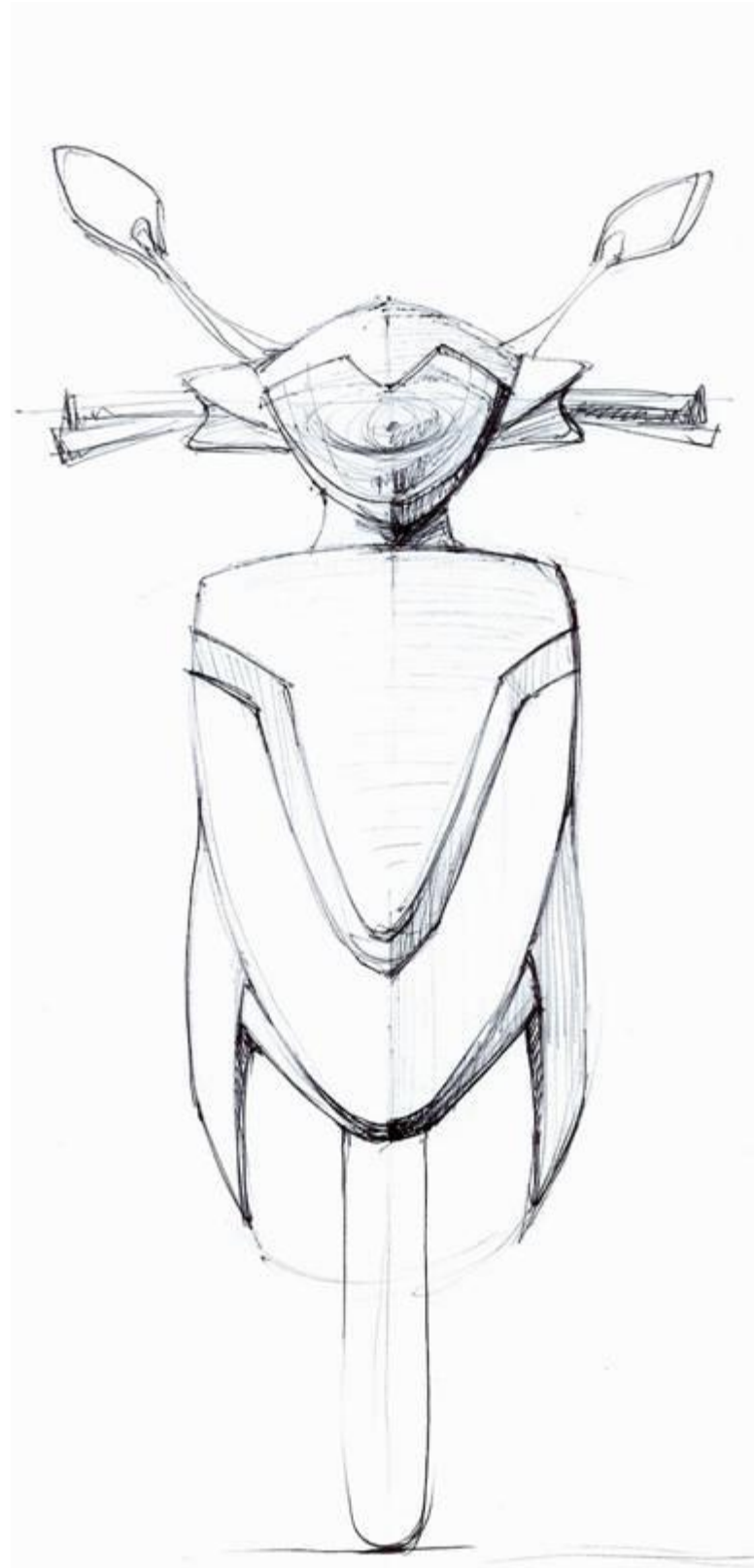
- Acute angles determine the degree of expression
- Cut –outs enhance the racy look
- Proportion o the jaw line is critical

AERODYNAMISM / STREAMLINED

- Flow lines are coincident at one point
- Non-parallel lines are visually busy
- Ends of form coincide in sharp acute angles – rendering a dangerous look

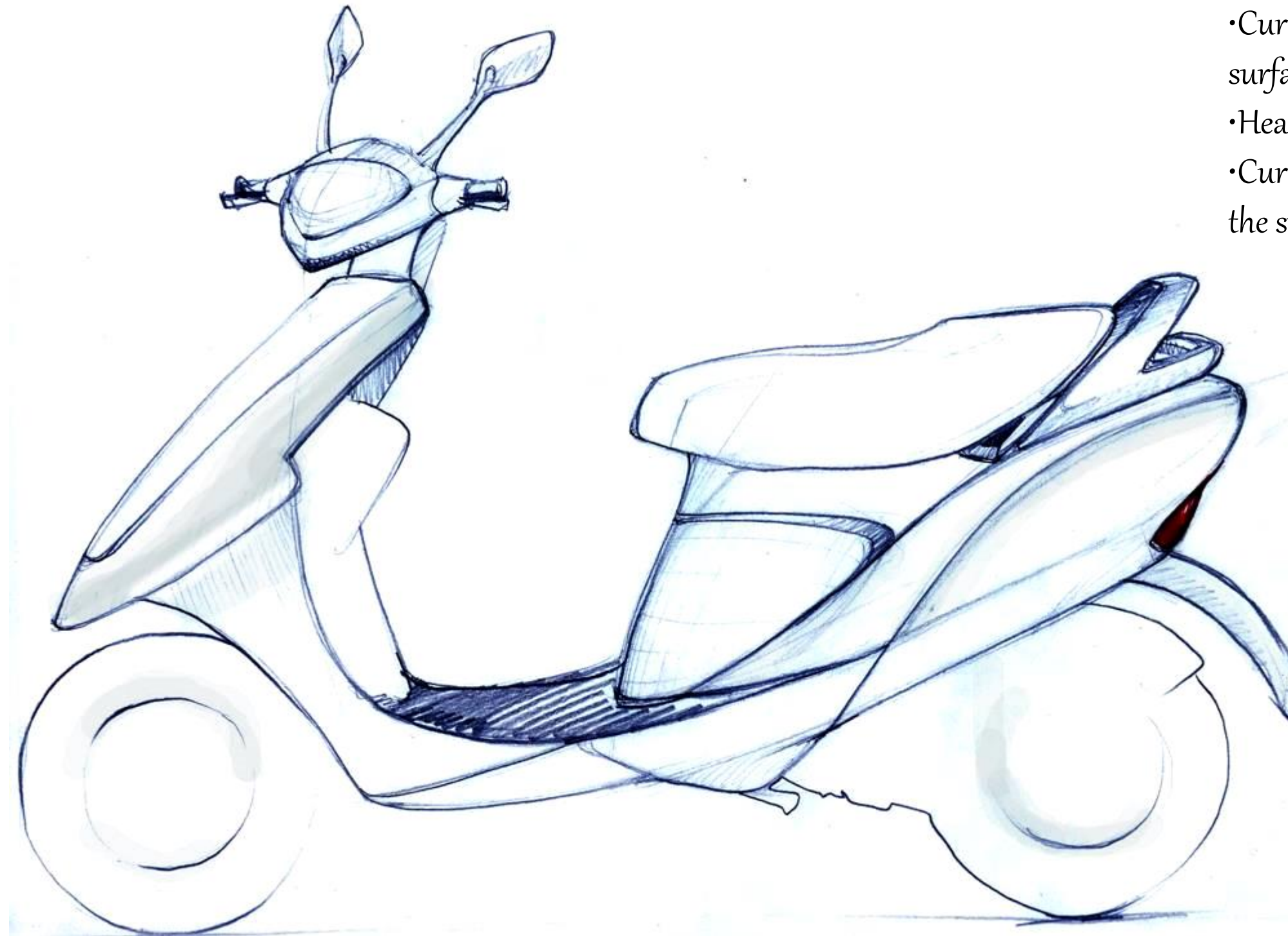


AERODYNAMISM / STREAMLINED



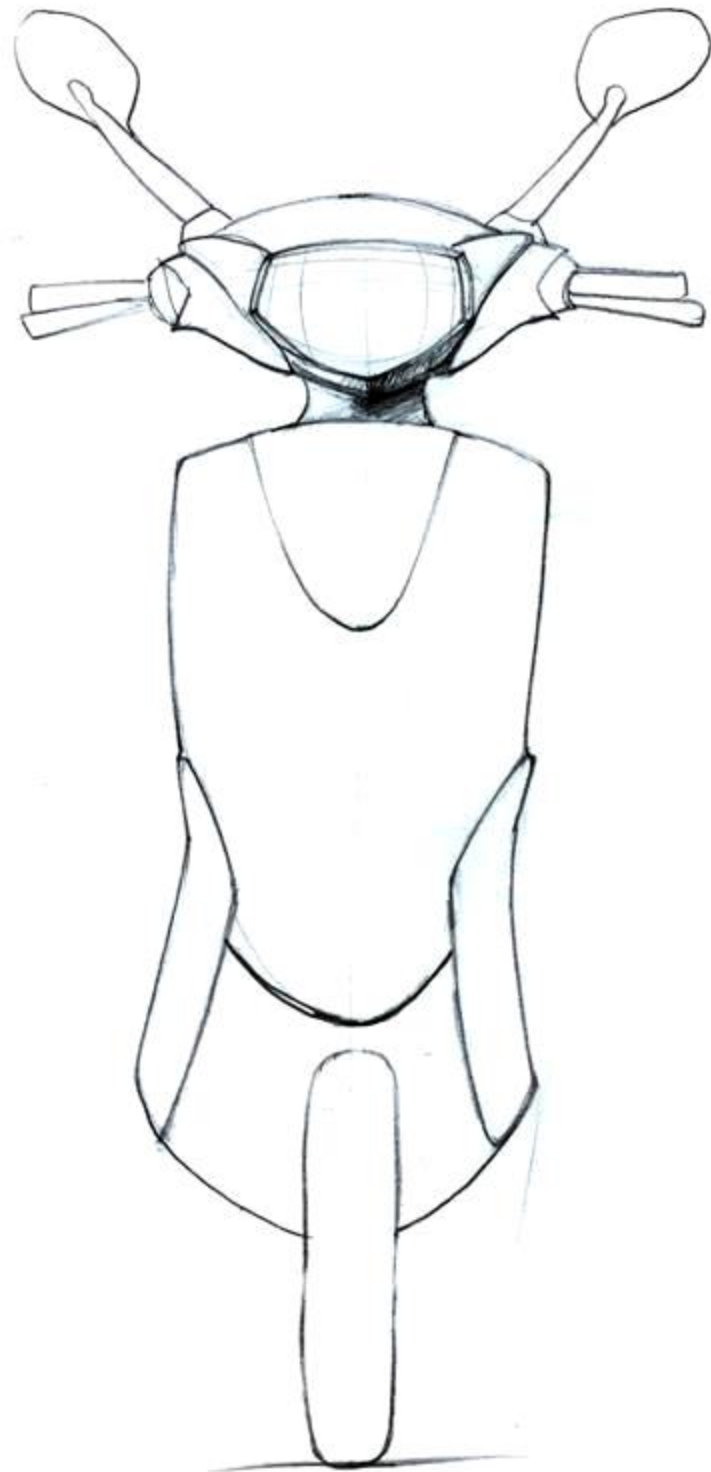
- Swift lines with edgy character
- Rear end is raised and tightly wrapped around the body
- Arms are recessed under the Jaw line to enhance sleekness

AERODYNAMISM / STREAMLINED



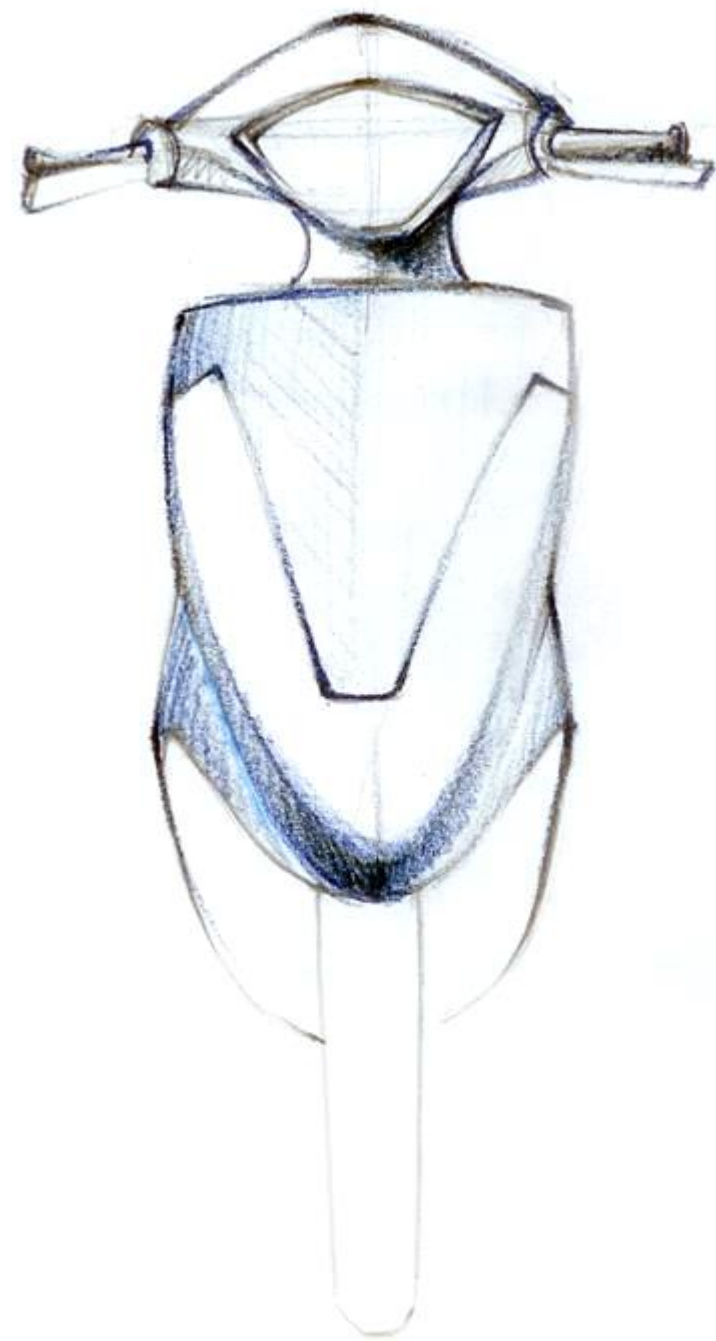
- Curves indicate flow of wind along the body surface
- Headlamp and front cowl promote the racy stance
- Curves are convex and taper to the top to enhance the swift look

AERODYNAMISM / STREAMLINED



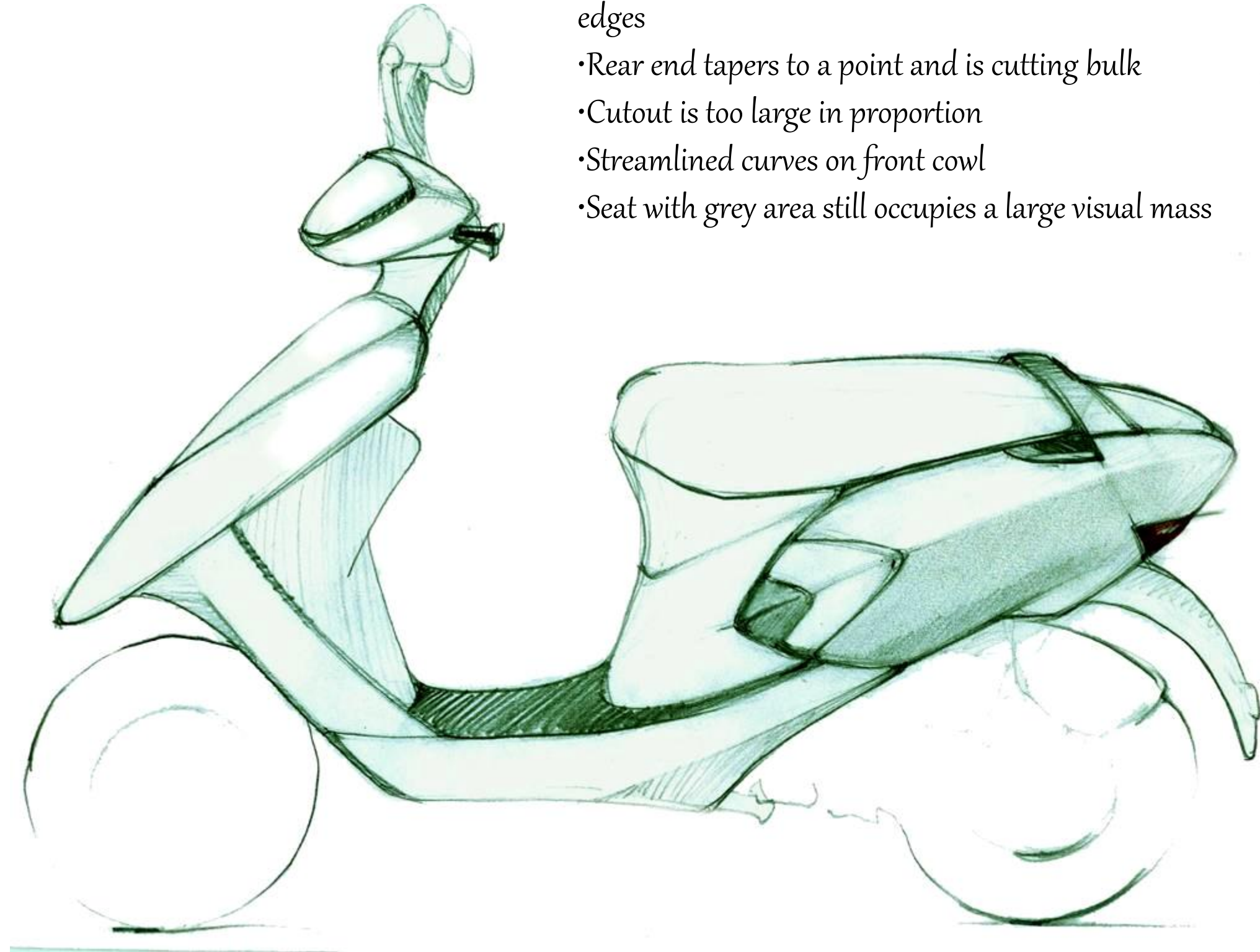
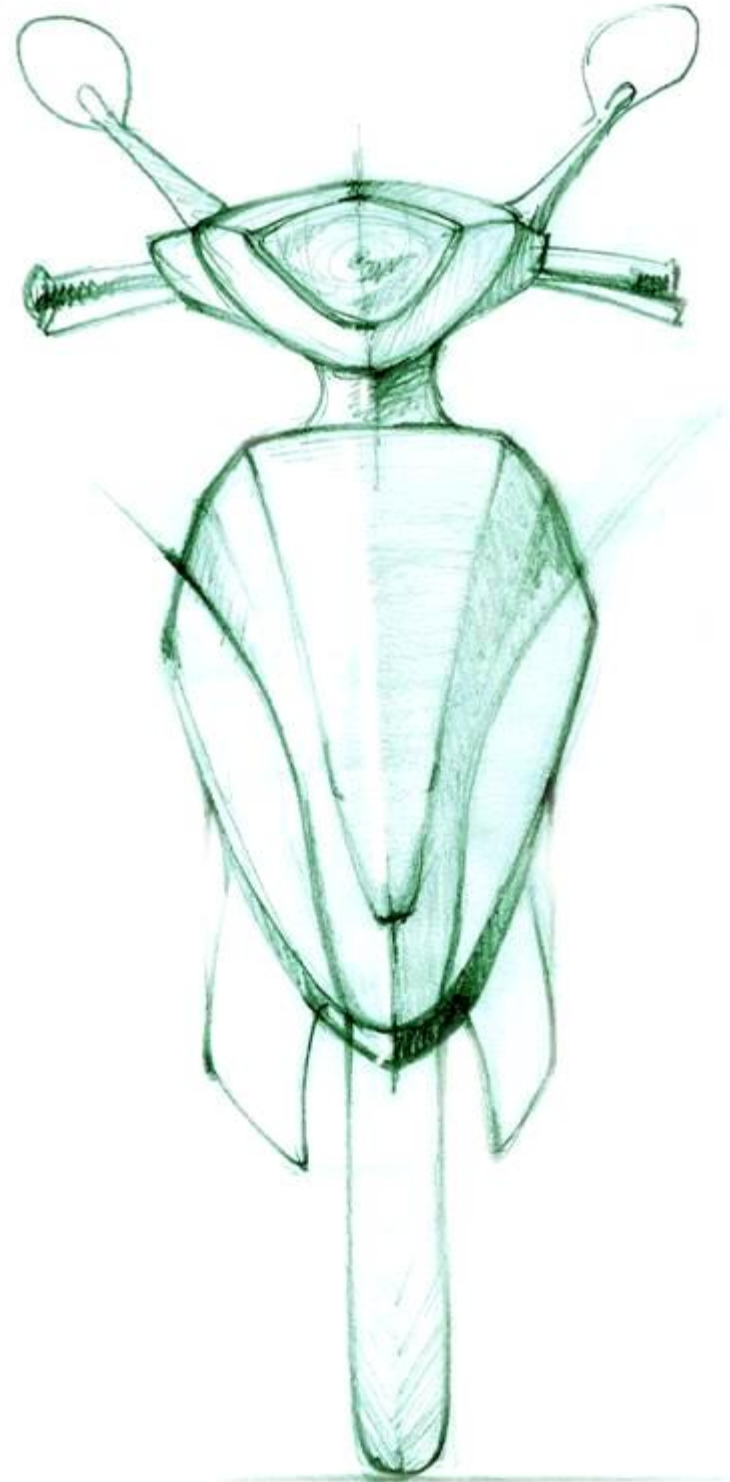
- Acute angles - piercing racy expression
- Aerodynamic expressions in individual elements ,
but a whole, too broken

AERODYNAMISM / STREAMLINED



- Cutouts enhance quality of swiftness
- Waistline determines change in surface behaviour tapering all the way to the top rear end – this is enhanced by highlights along this edge
- Headlamp – too bulky

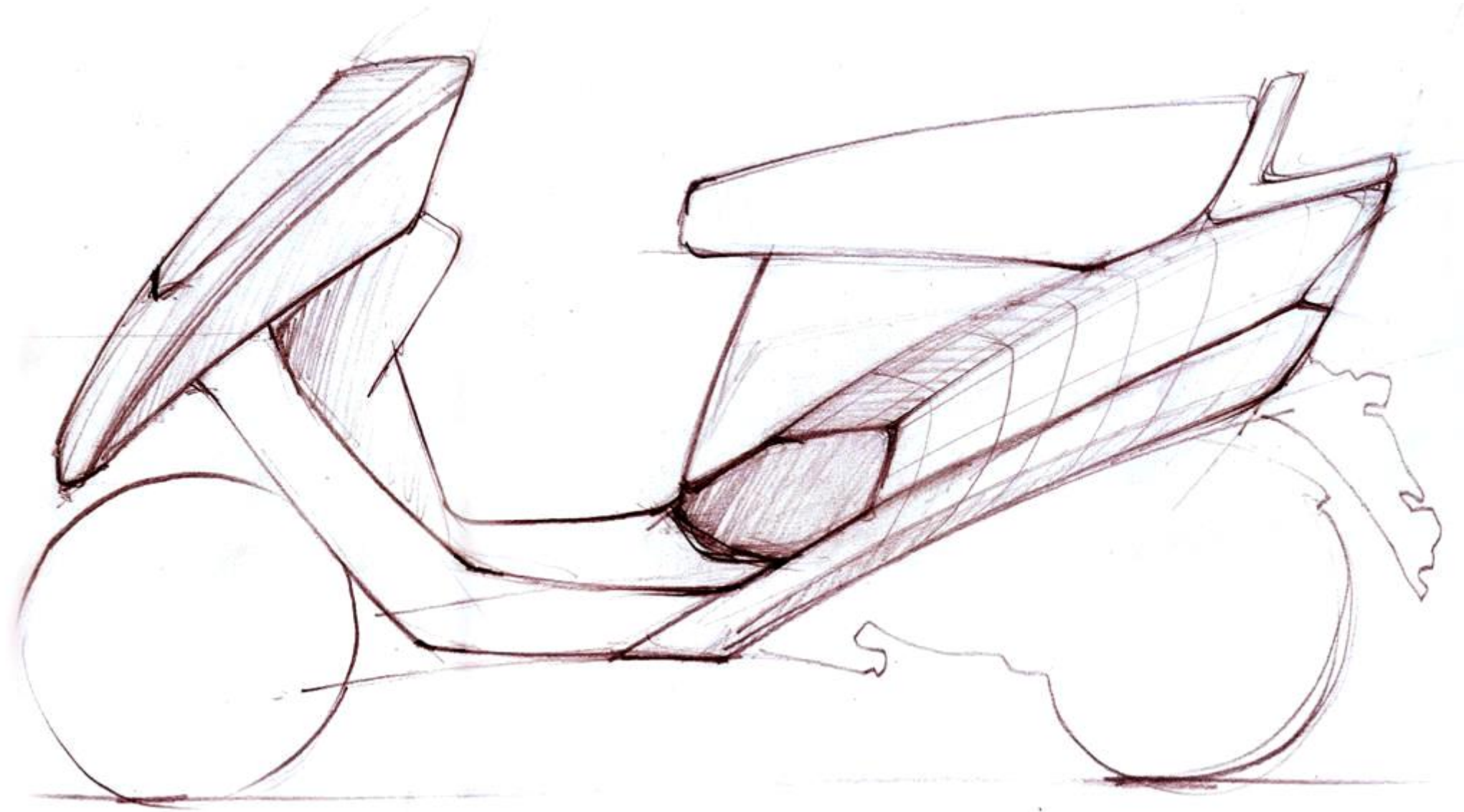
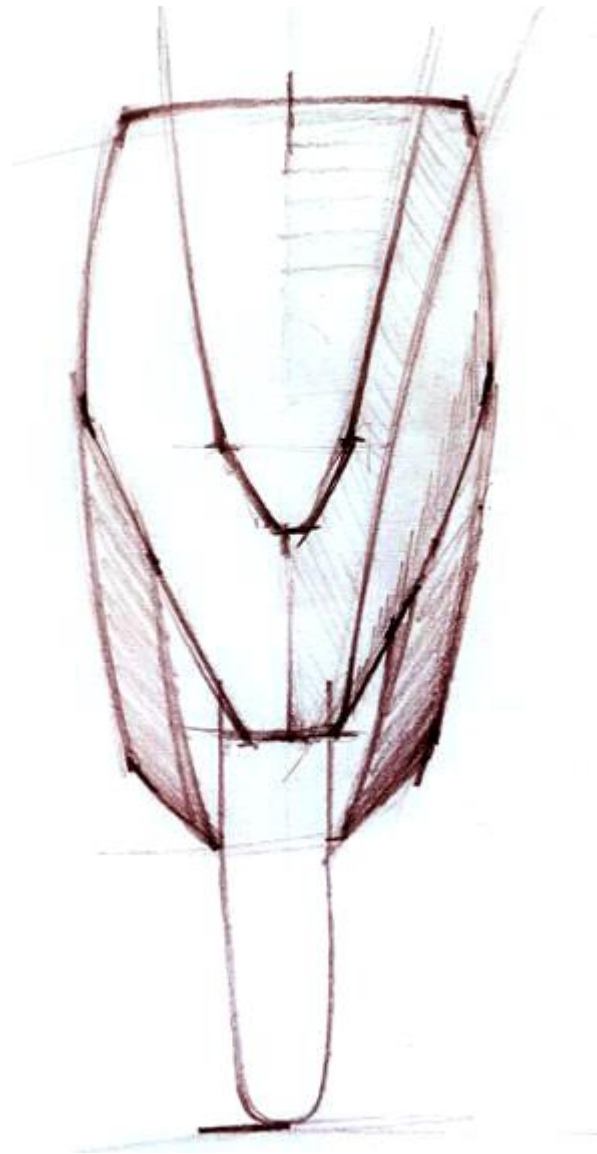
AERODYNAMISM / STREAMLINED



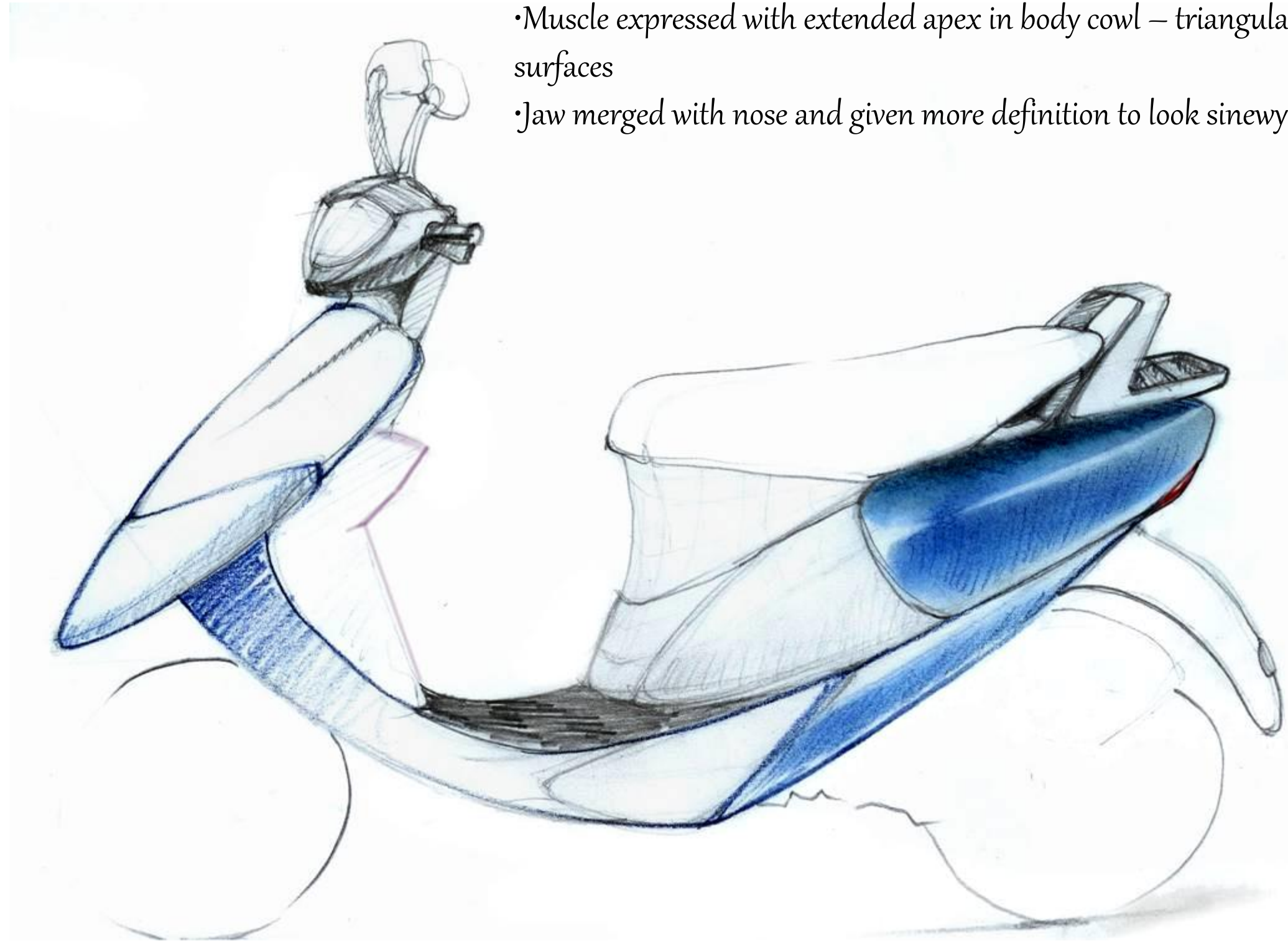
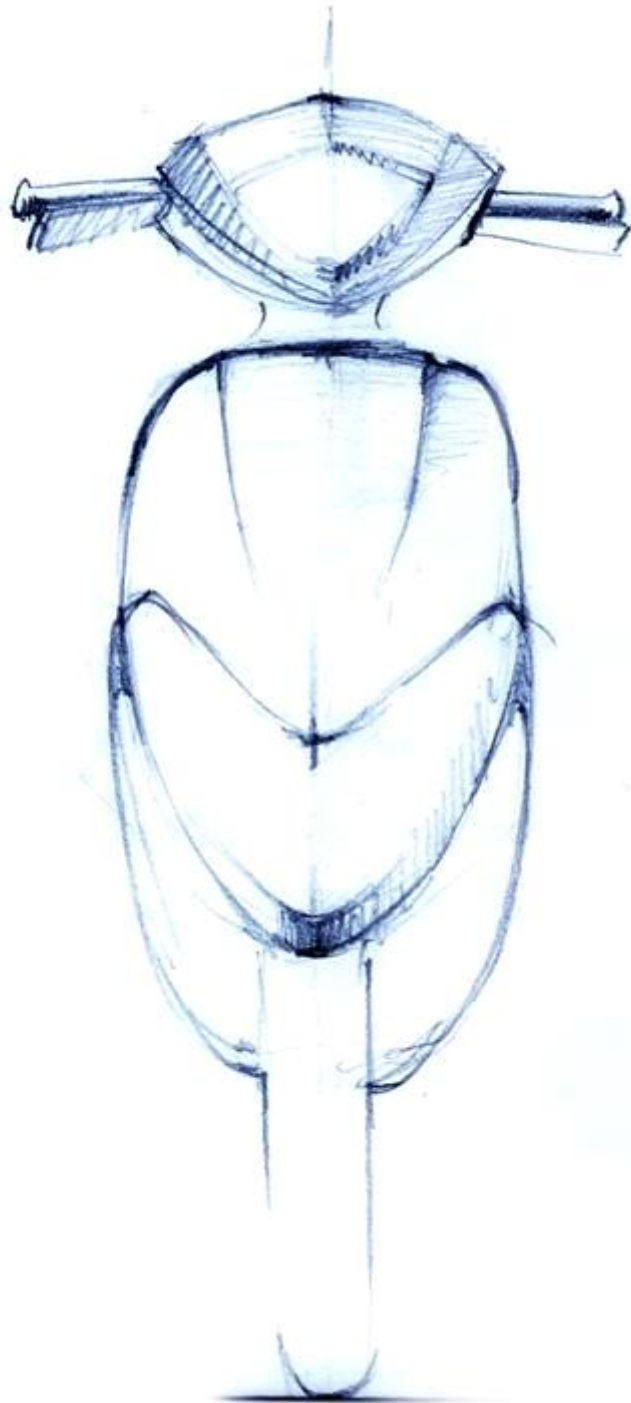
- Form is neatly wrapped around body with a sense of crispness introduced into the edges
- Rear end tapers to a point and is cutting bulk
- Cutout is too large in proportion
- Streamlined curves on front cowl
- Seat with grey area still occupies a large visual mass

AERODYNAMISM / STREAMLINED

- Pushed back shoulders with harsh edges following a convex path
- Surfaces intersect at acute angles
- Seat angle sloped down too much
- Split line in step through not feasible – tapered corners

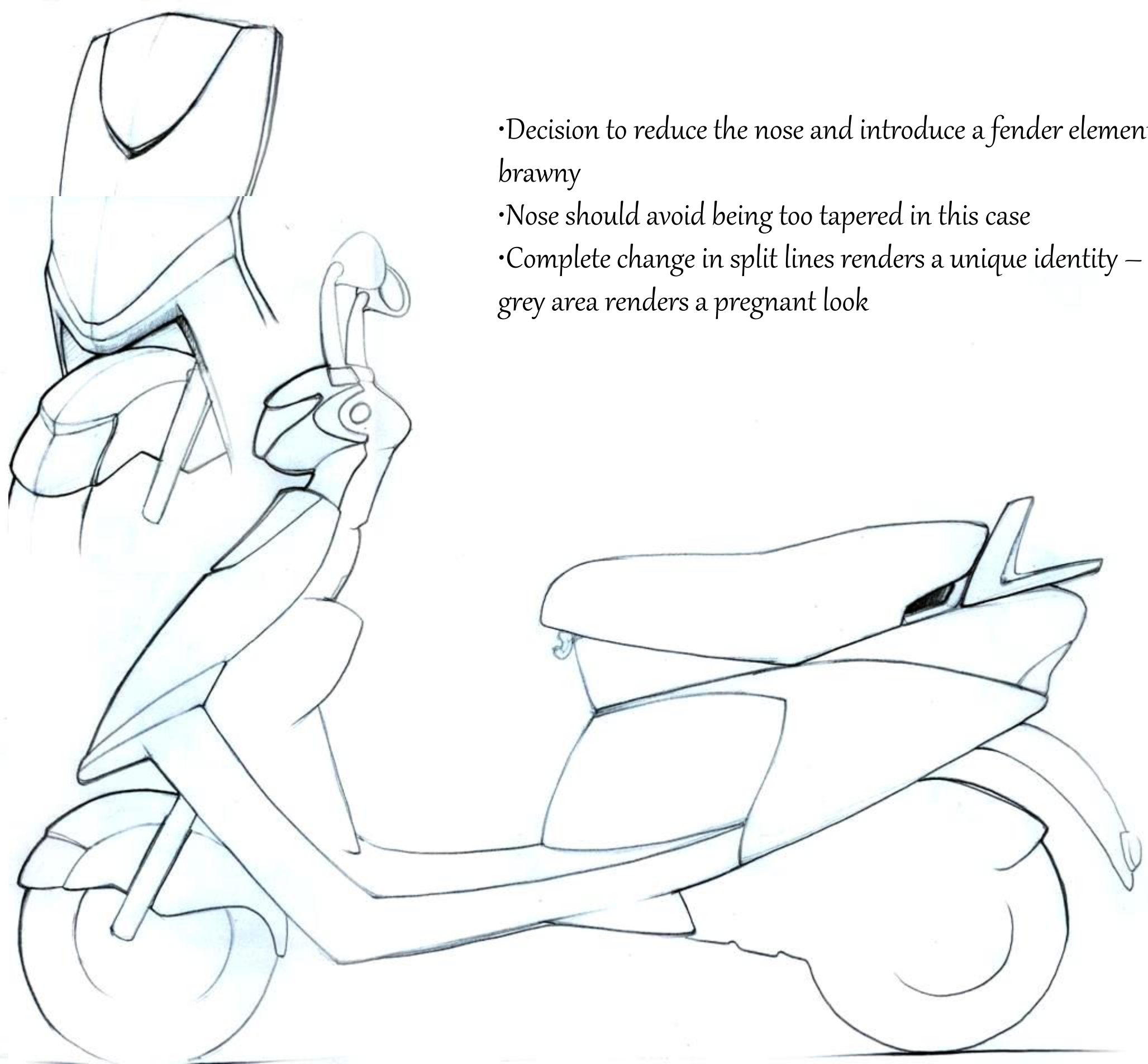
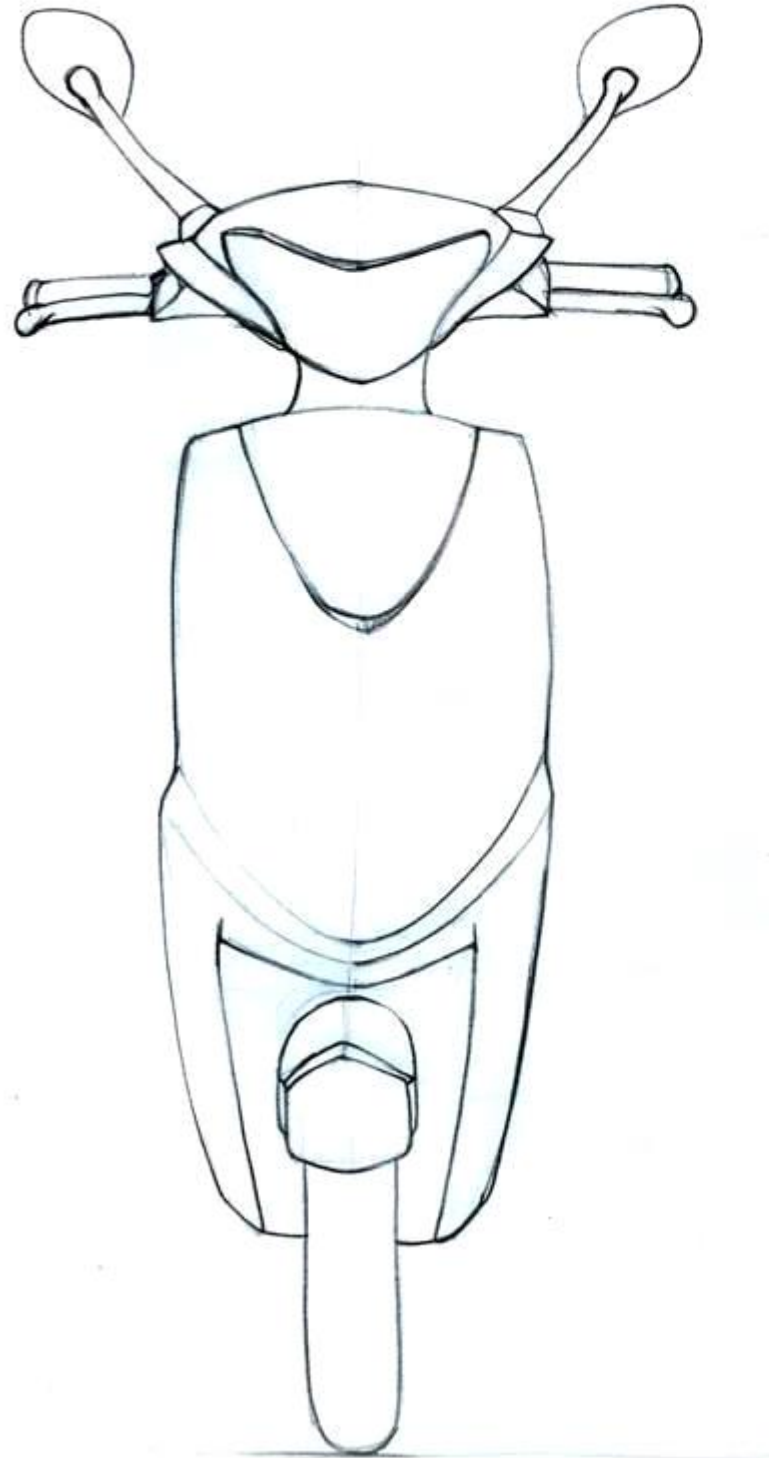


MUSCULAR / ROBUST



- Muscle expressed with extended apex in body cowl – triangulation of surfaces
- Jaw merged with nose and given more definition to look sinewy

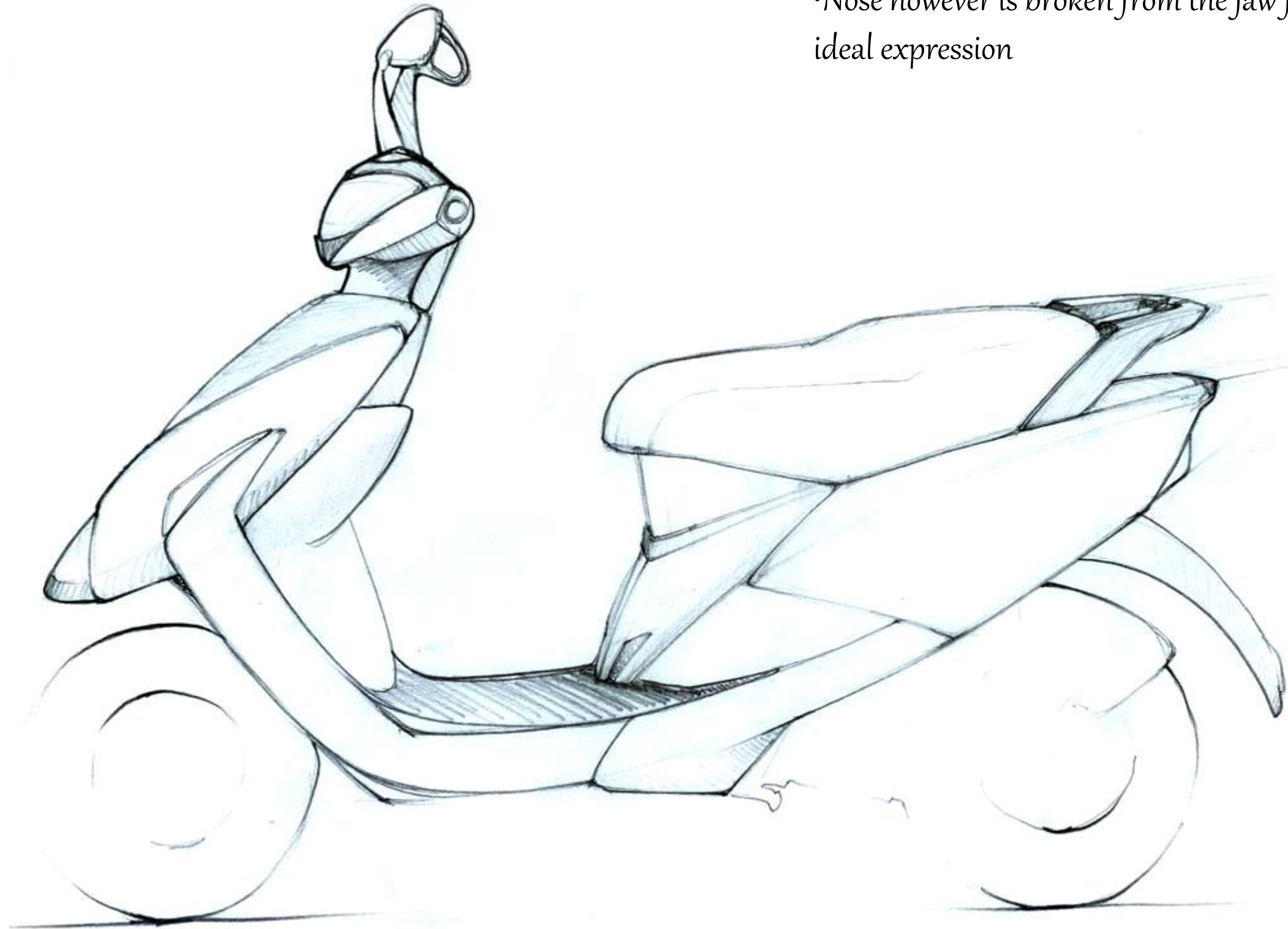
MUSCULAR / ROBUST



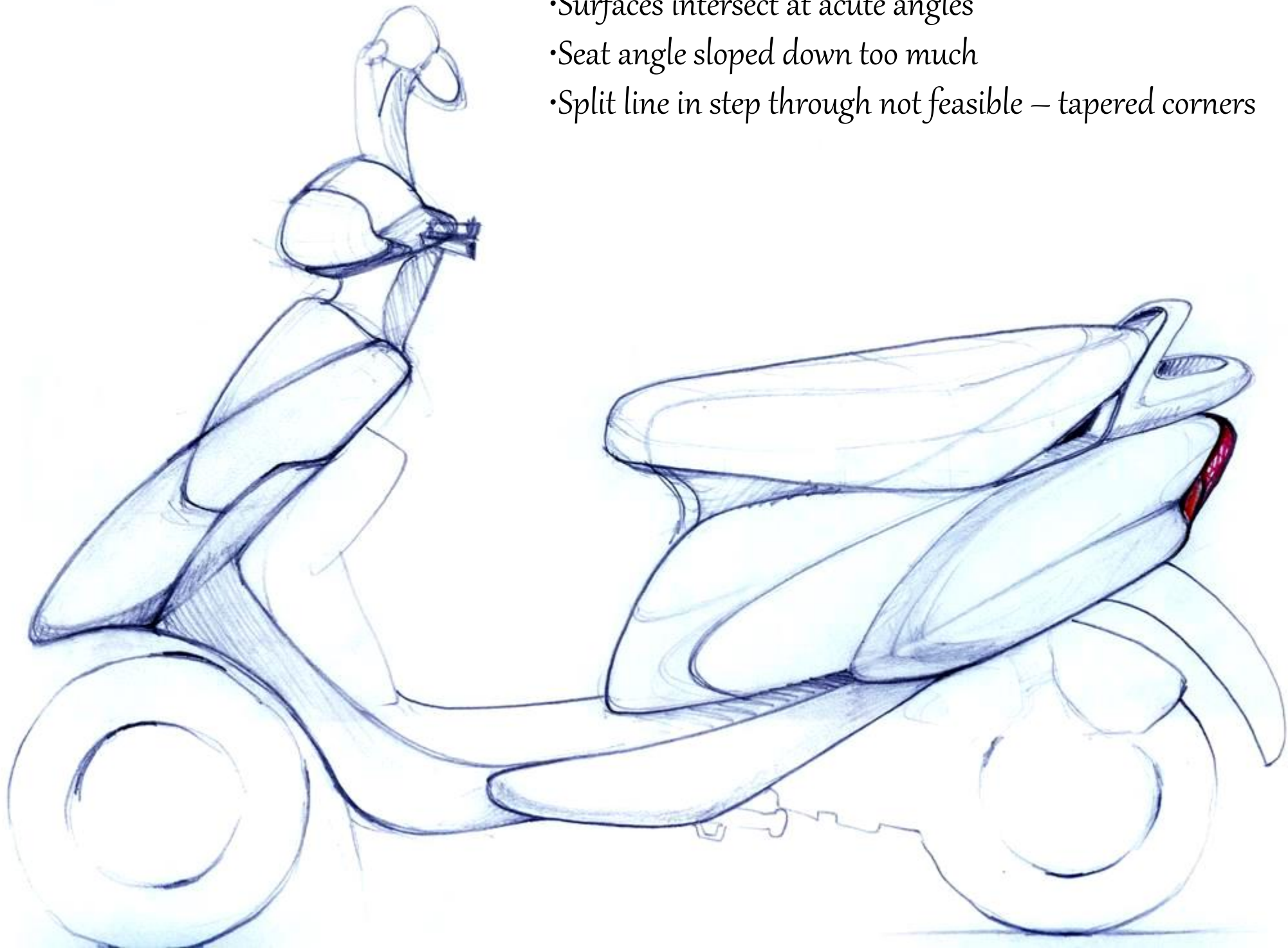
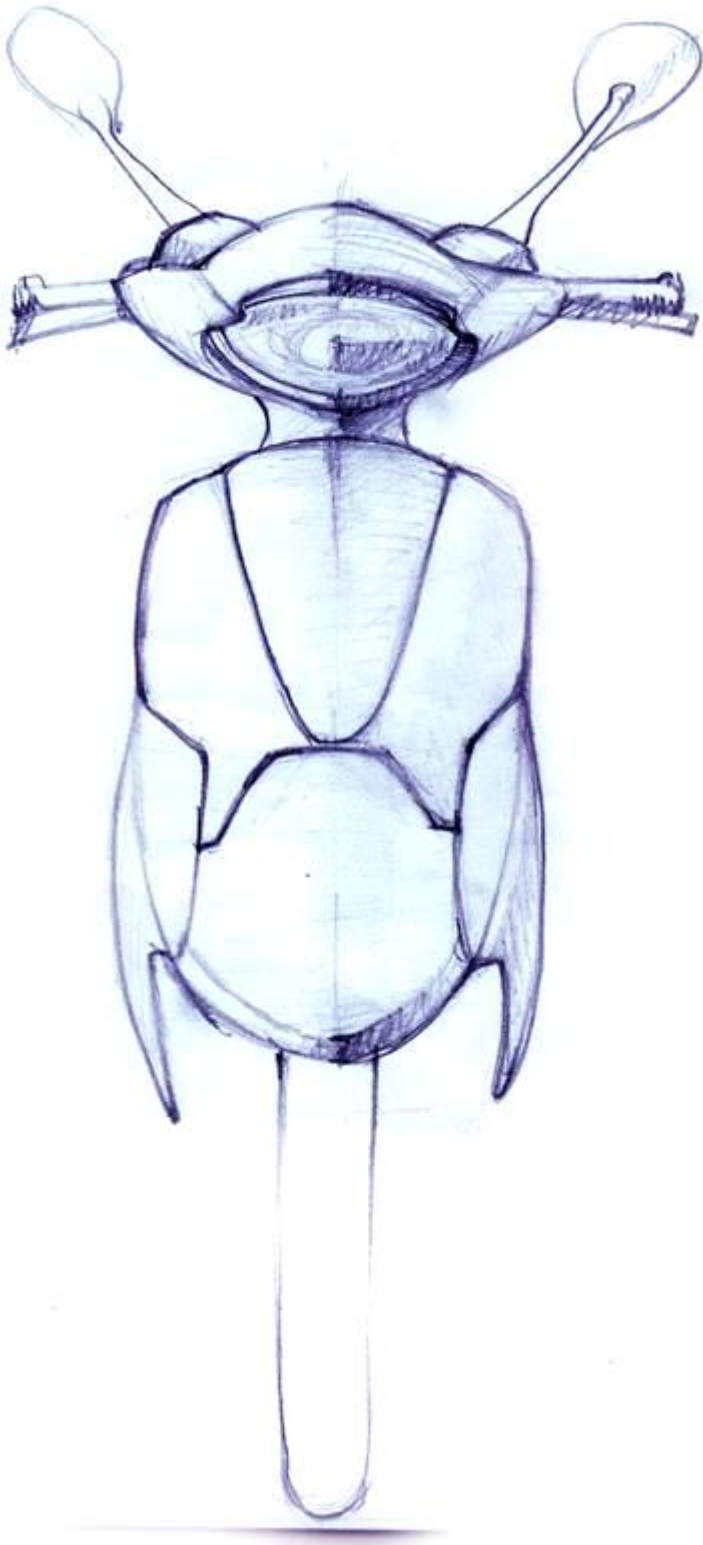
- Decision to reduce the nose and introduce a fender element – more macho, brawny
- Nose should avoid being too tapered in this case
- Complete change in split lines renders a unique identity – however, bulk of grey area renders a pregnant look

MUSCULAR / ROBUST

- Relatively sporty character given a more muscular and sinewy frontal face
- Nose however is broken from the jaw feature and tapers down to evade the ideal expression

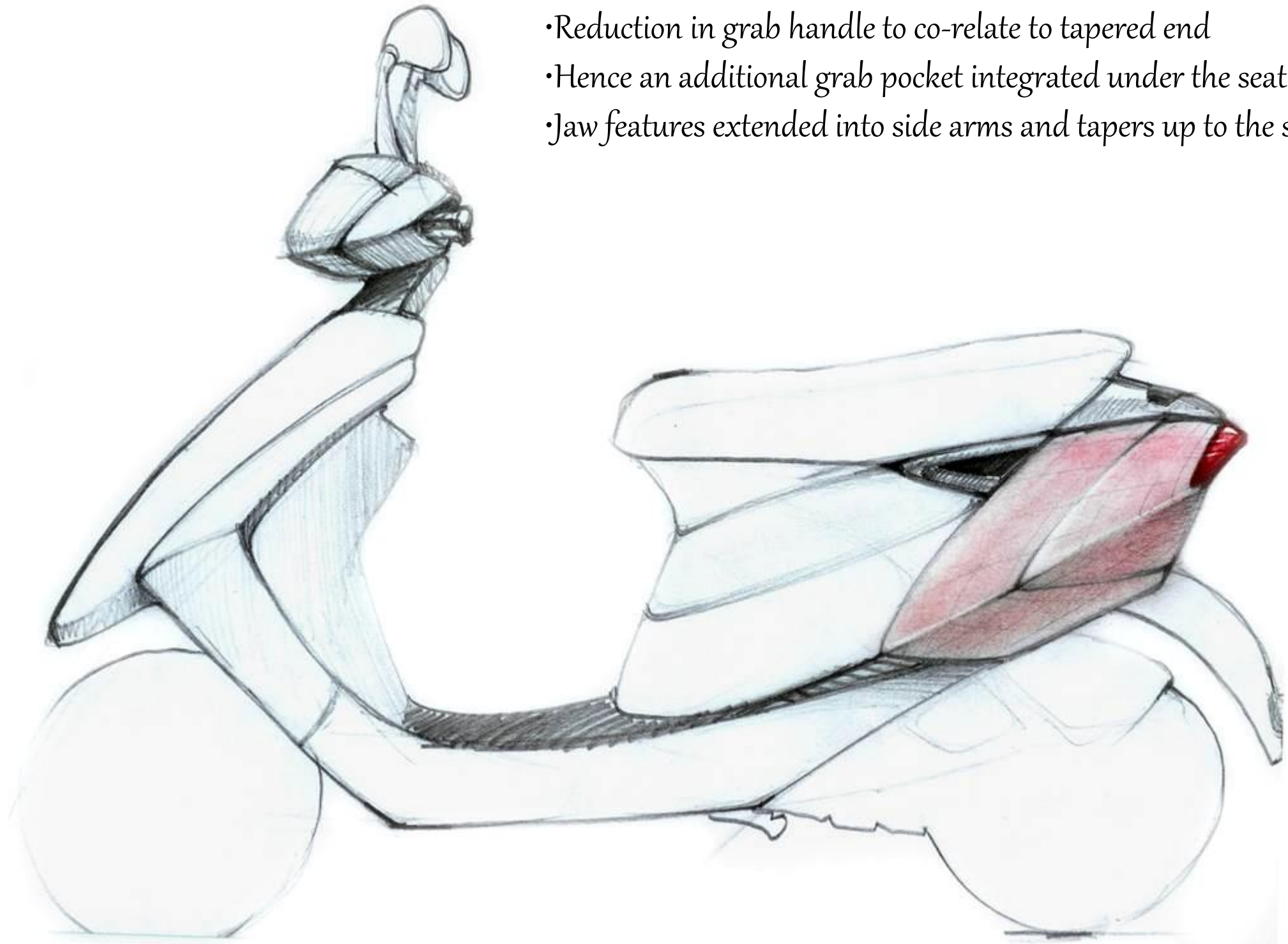
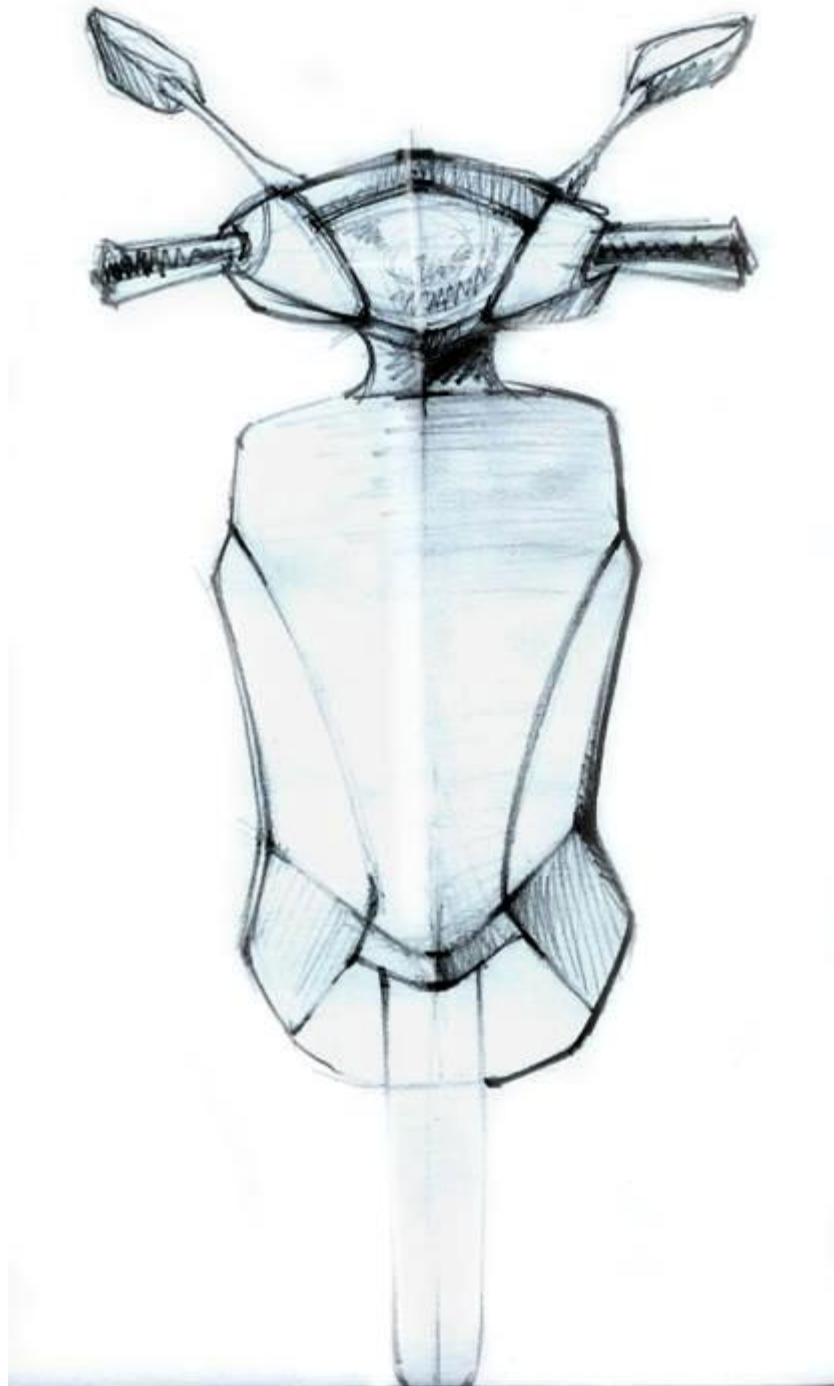


MUSCULAR / ROBUST



- Pushed back shoulders with harsh edges following a convex path
- Surfaces intersect at acute angles
- Seat angle sloped down too much
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MUSCULAR / ROBUST

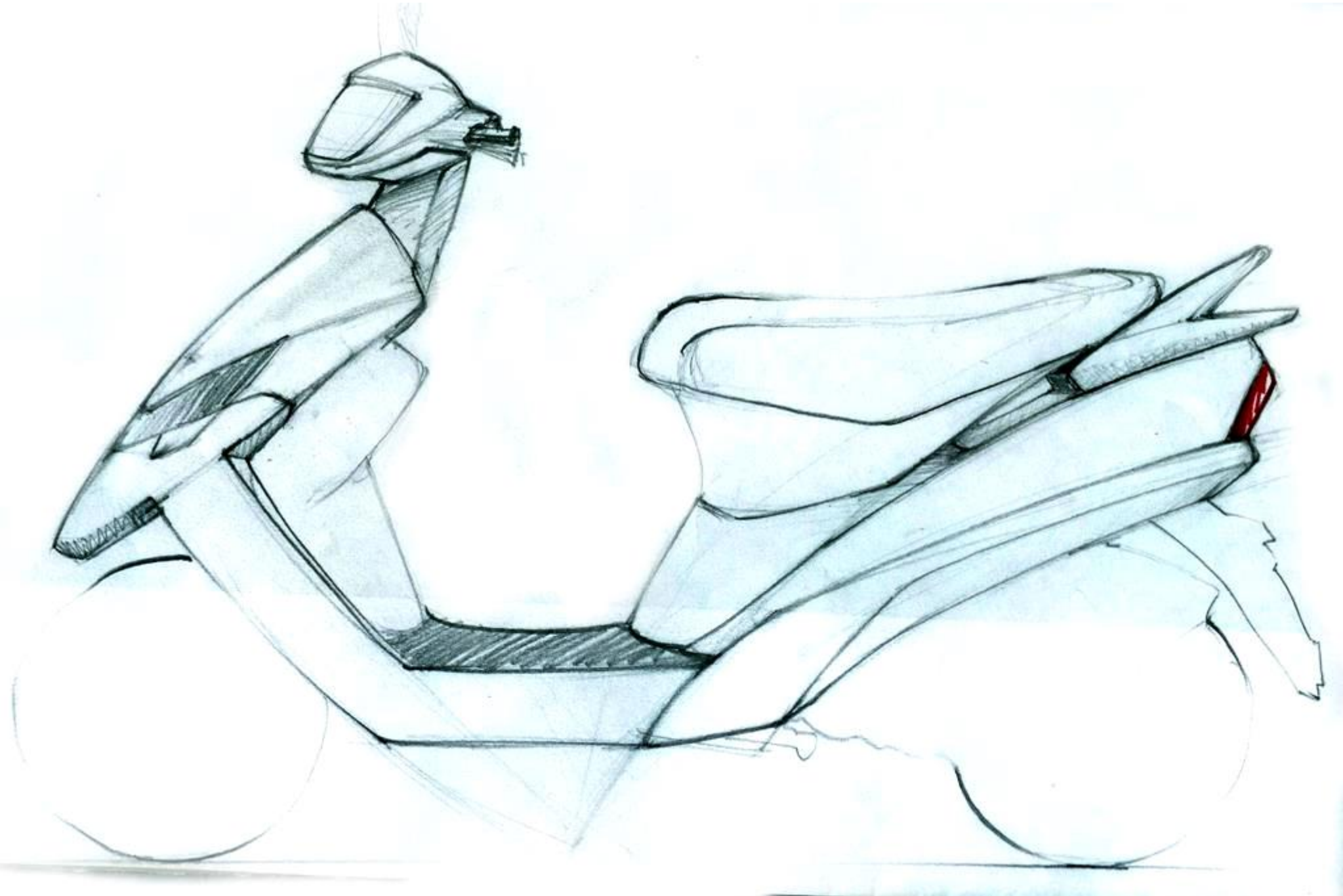


- Sinewy sharp featured body cowl
- Proportion of grey area is too big
- Reduction in grab handle to co-relate to tapered end
- Hence an additional grab pocket integrated under the seat
- Jaw features extended into side arms and tapers up to the shoulder

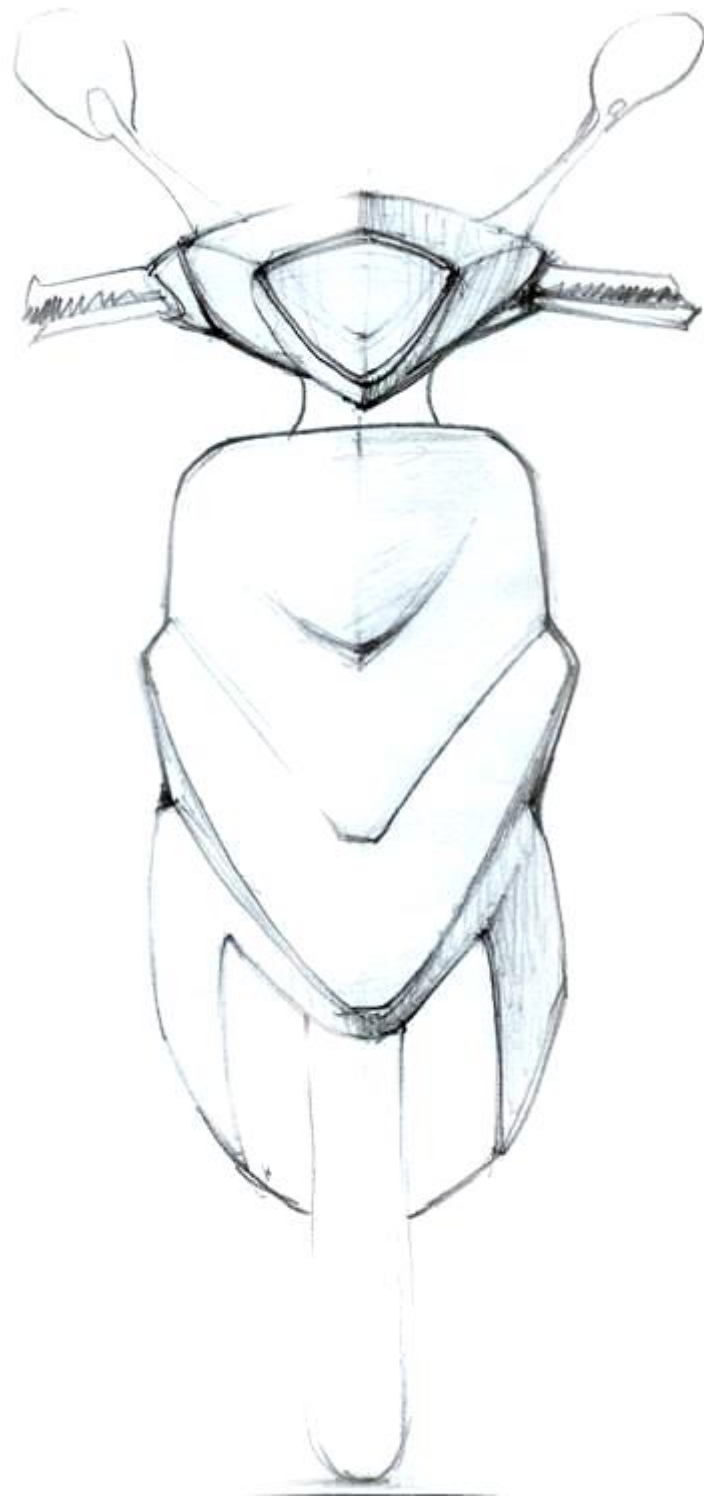
MUSCULAR / ROBUST



- Frontal expression has too many tapered intersections
- Faceted surfaces in rear end to express body
- Armoured warrior
- Break in surfaces expressed in headlamp unit also

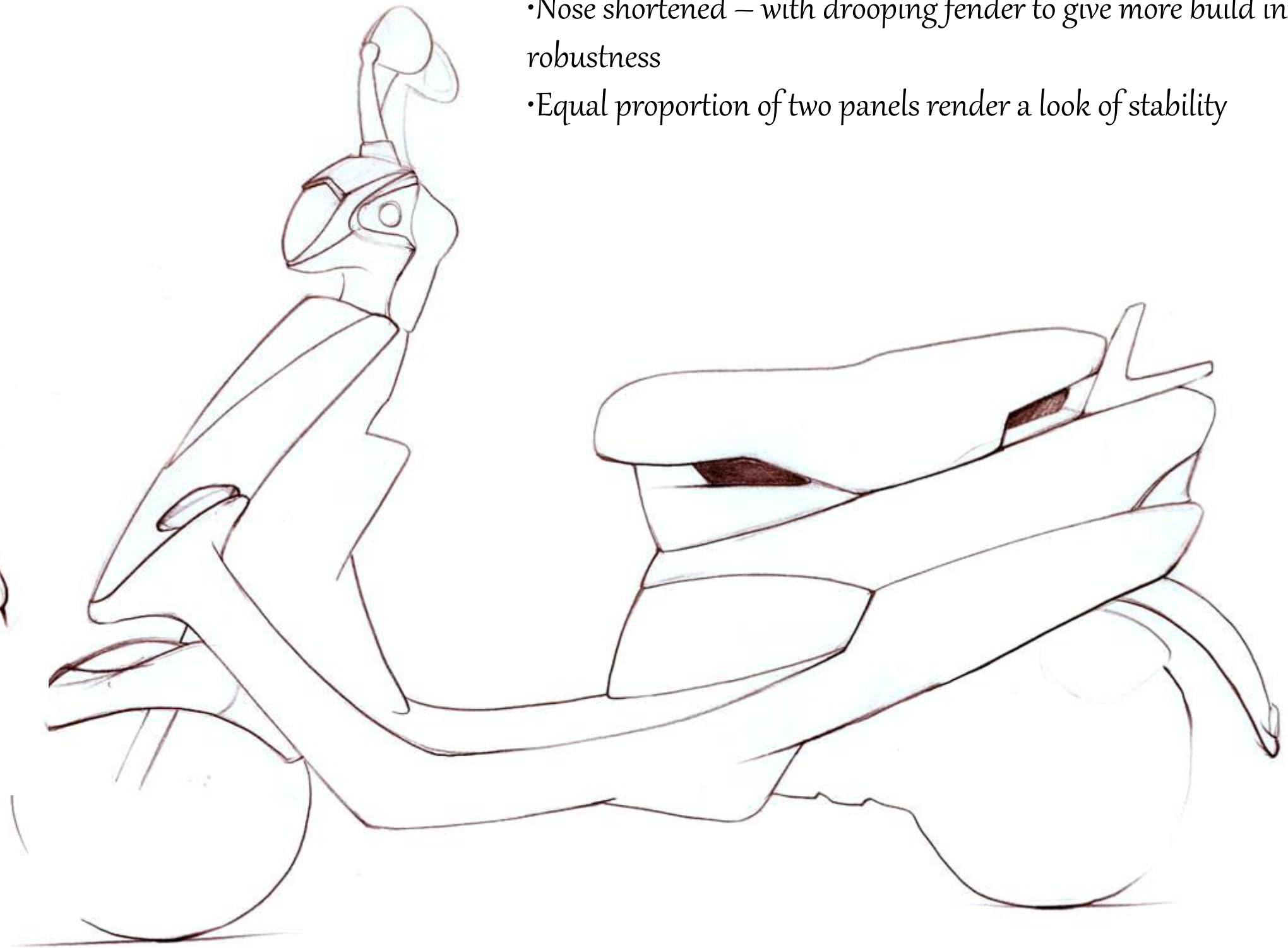


MUSCULAR / ROBUST



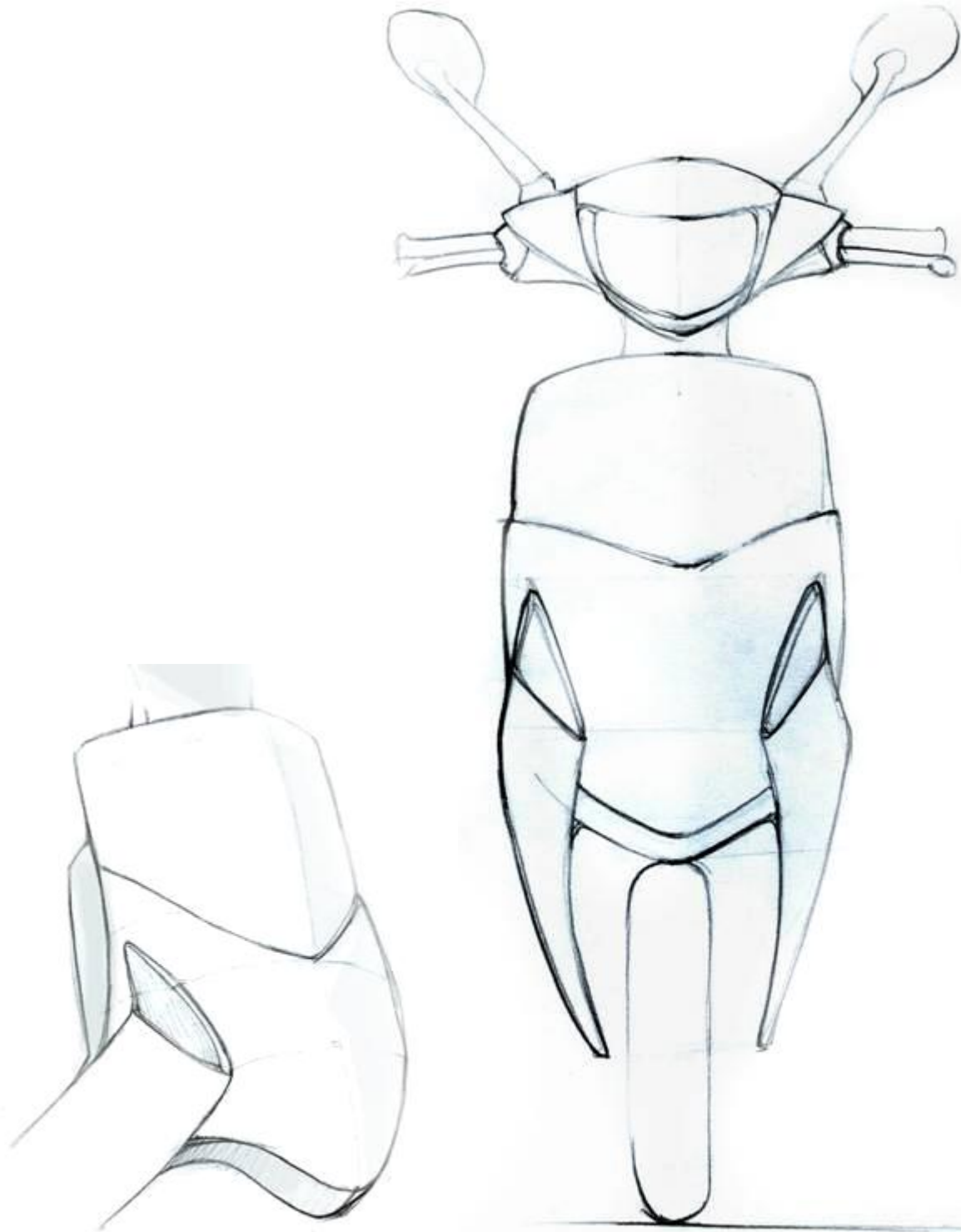
- Variation in jaw feature to understand what degree of continuity should be achieved
- Headlamp – acrylic faceted and extended out of housing for a more faceted look

MUSCULAR / ROBUST



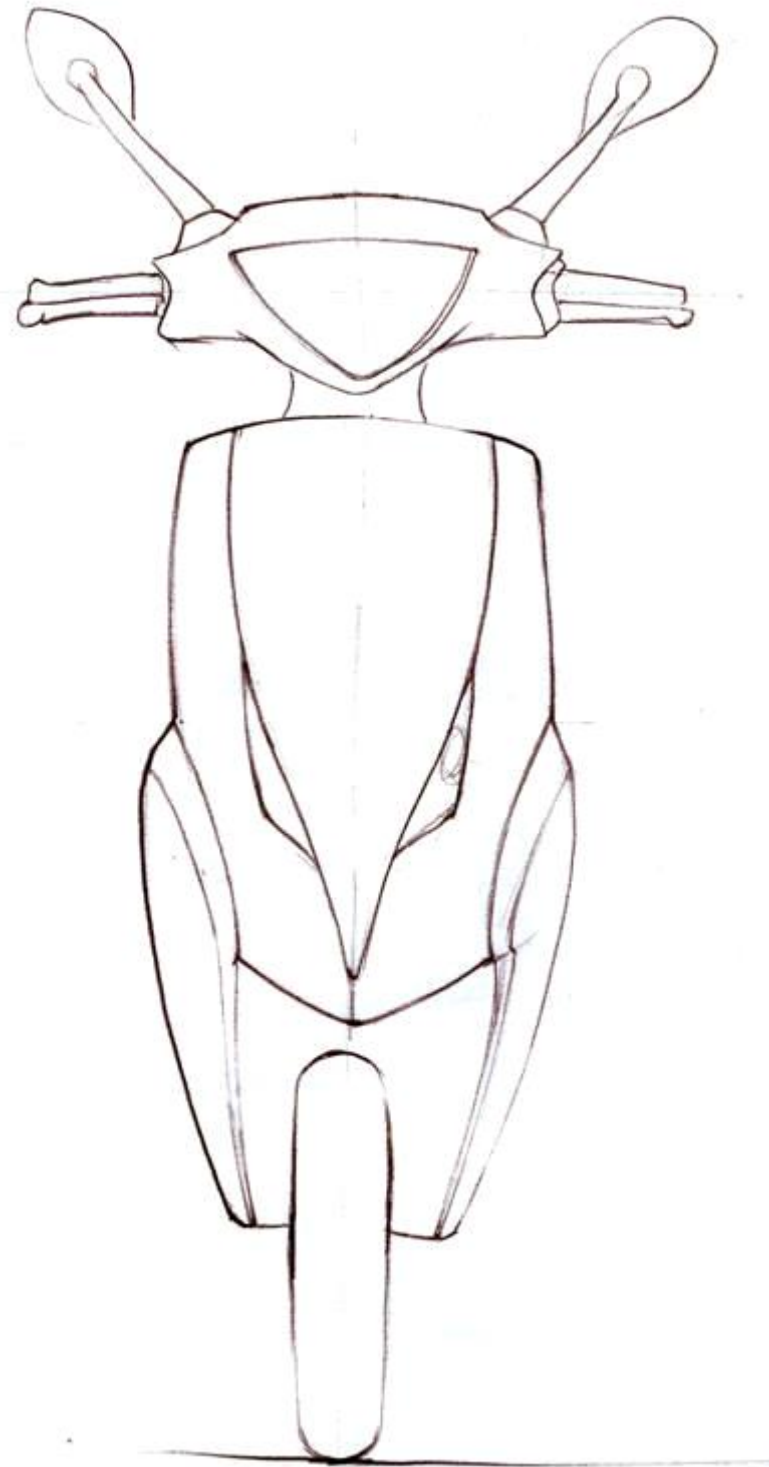
- Nose shortened – with drooping fender to give more build into expression of robustness
- Equal proportion of two panels render a look of stability

MUSCULAR / ROBUST

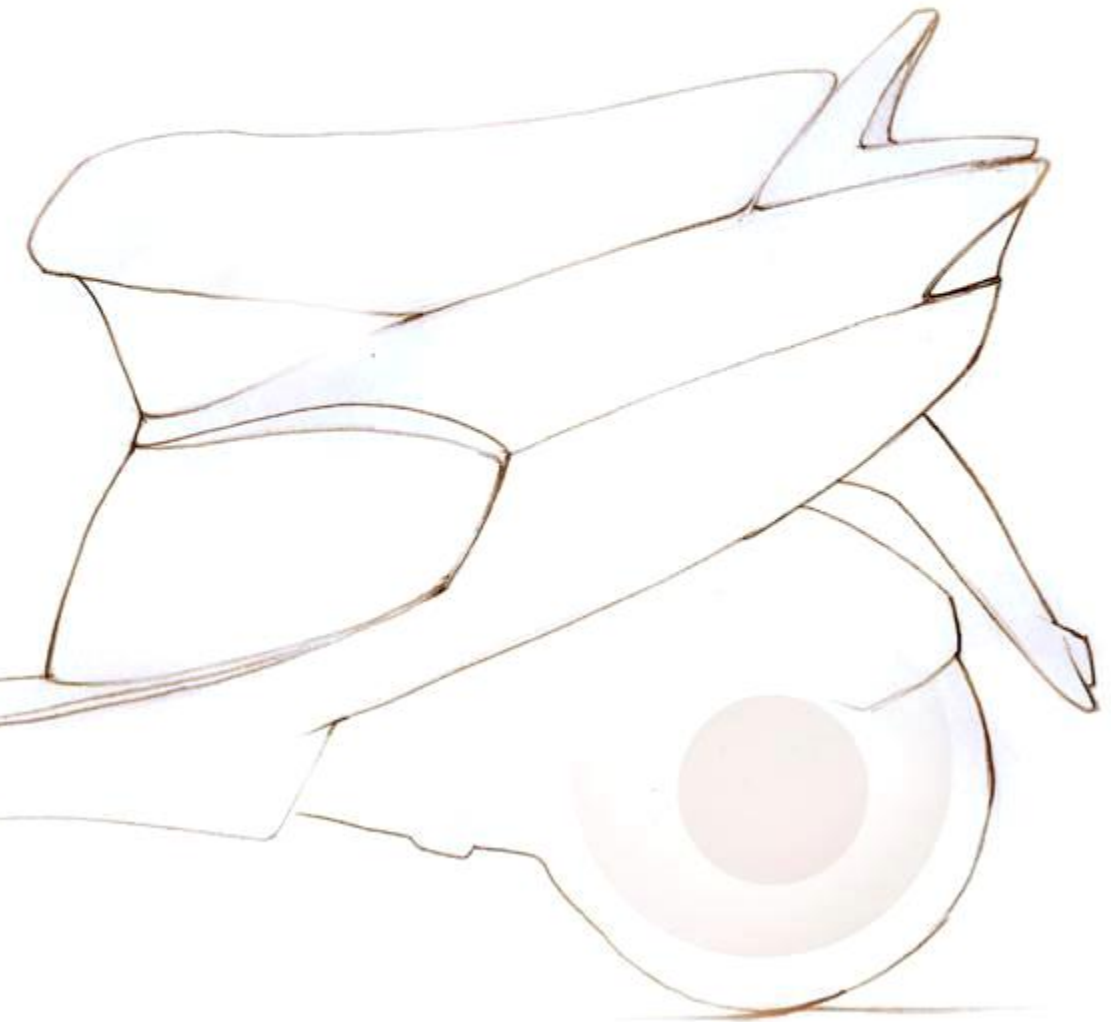


- Overlapping elements within body – too sculptural
- Side indicators integrated into arm feature
- Rear still appears too bulky

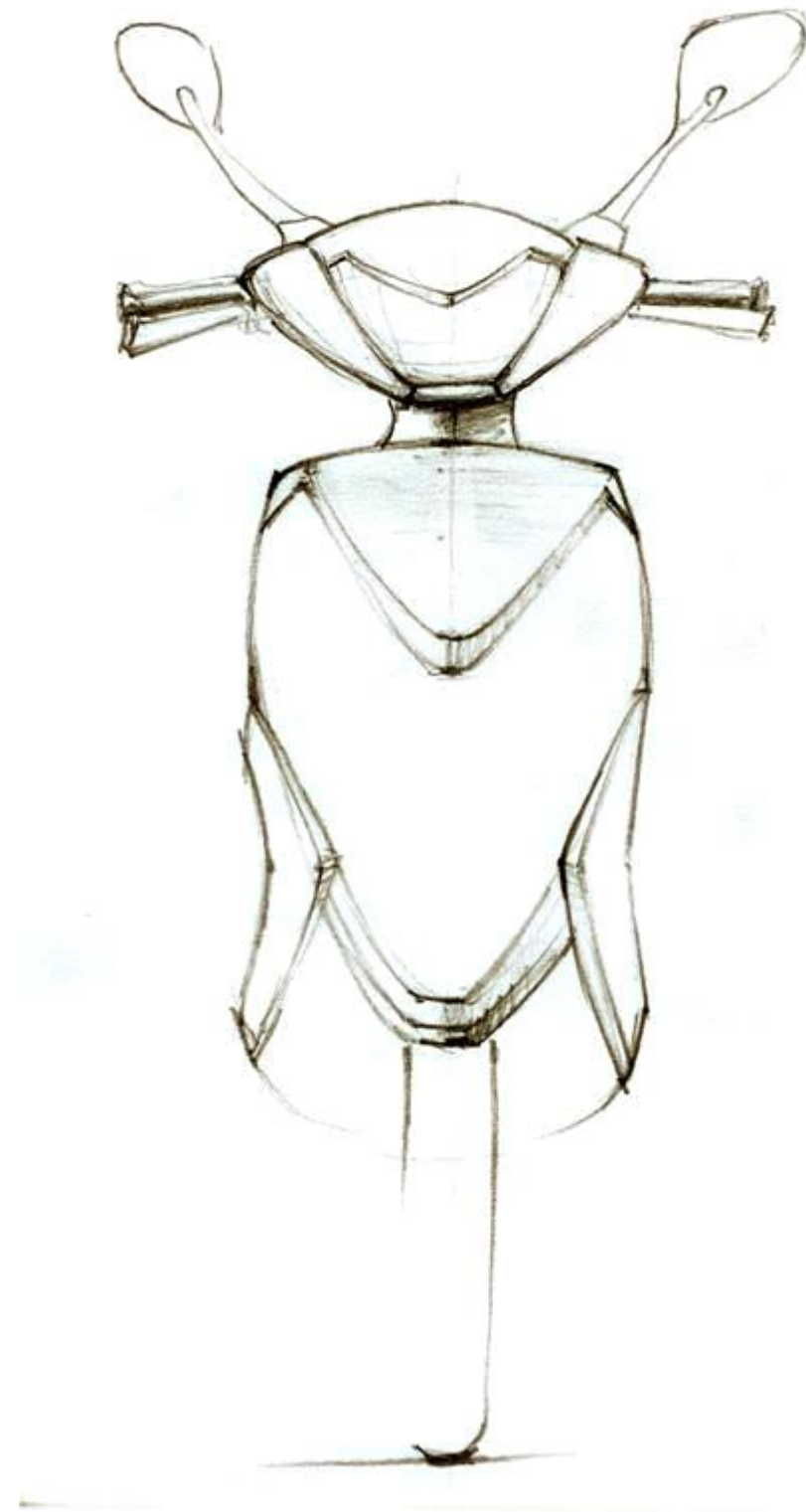
MUSCULAR / ROBUST



- Pointed nose with frontal expression gives a piercing aggressive character
- Body shell is larger and more aggressive
- Arms are given more bulk at apex but prove to appear out of proportion



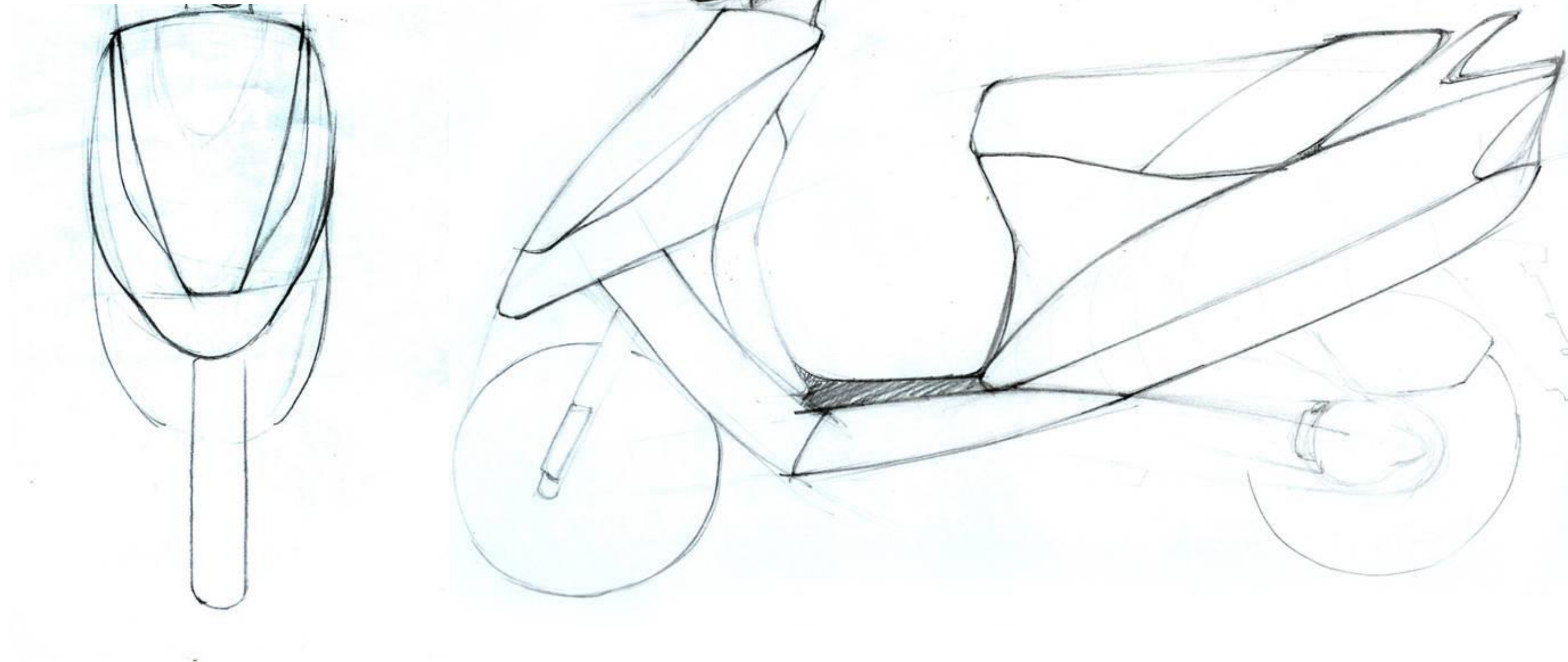
MUSCULAR / ROBUST



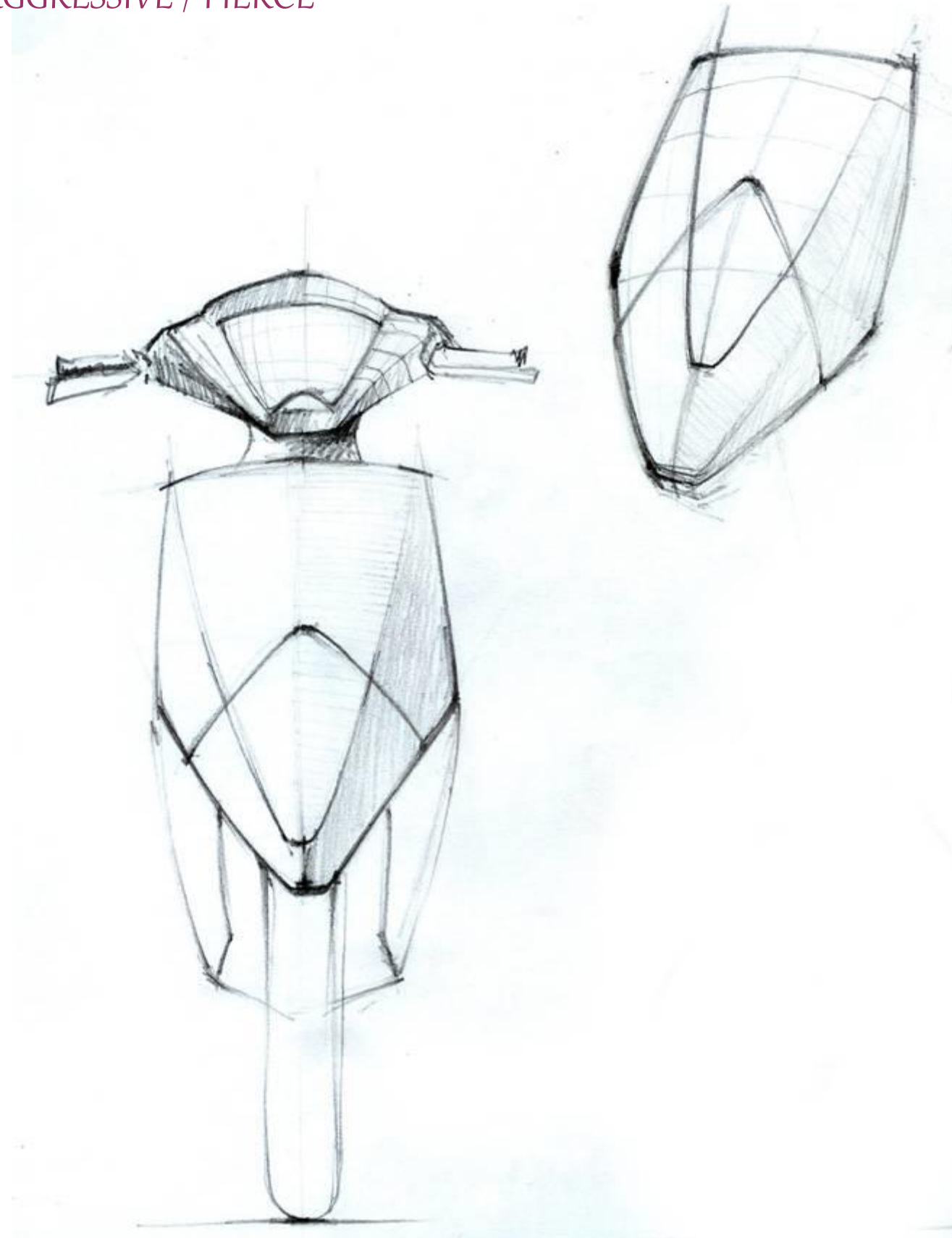
- Break in chest surface with cut out appears muscular
- Arms are tapered in front to appear more dynamic
- Sharp triangulated intersections not feasible
- Single color at rear end will have to be broken visually by use of decals
- Headlamp ends at broader chin and not at a point – more robust expression

AGGRESSIVE / FIERCE

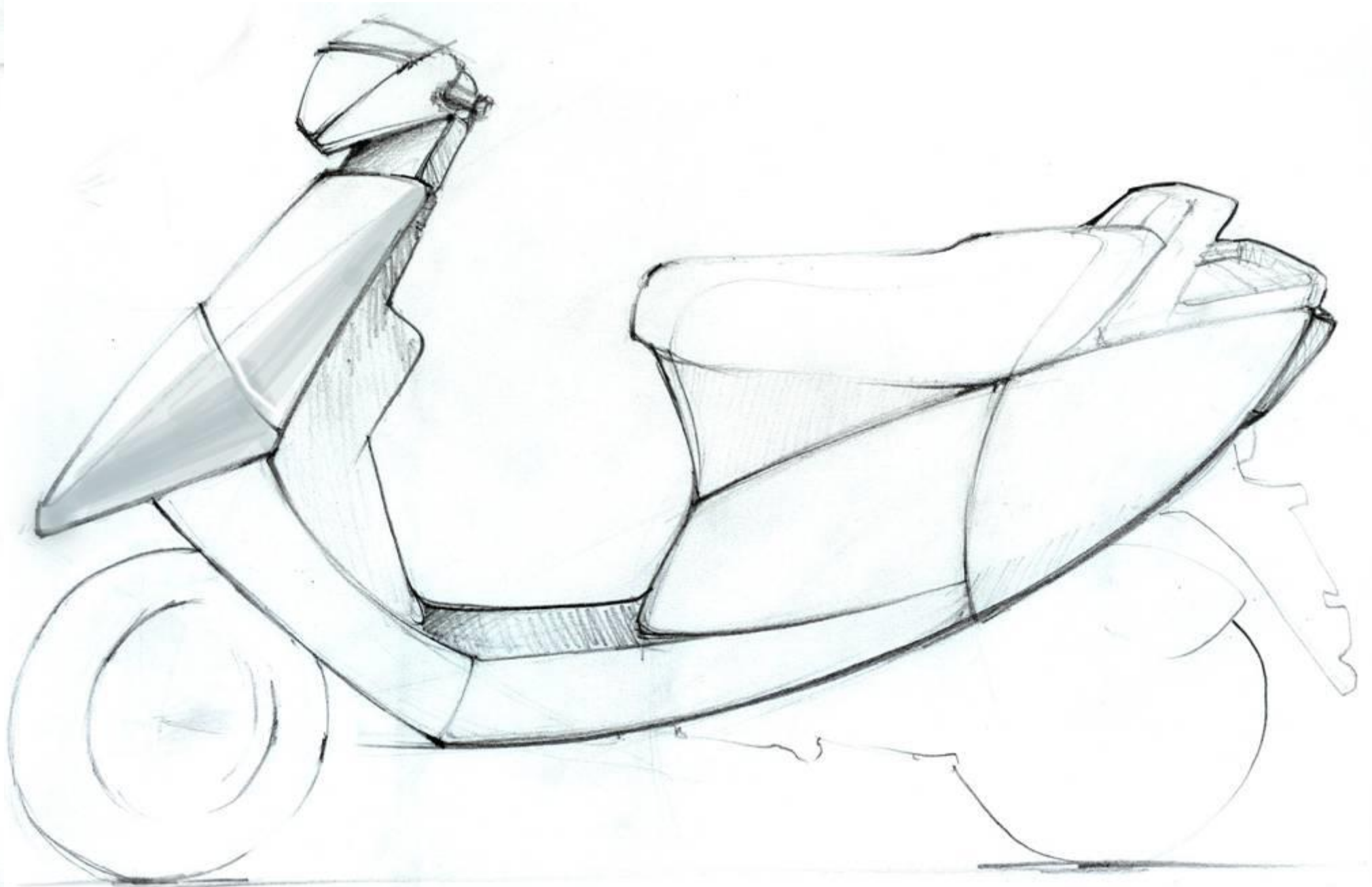
- Aggressive look expressed in indicators dipping in jaw towards nose inspired from a serpent
- Stance of the neck and the headlamp also indicate charging stance
- Dip in body cowl flow lines – too spread out over a large length



AGGRESSIVE / FIERCE



- Hard nose with boxy chin to impart charging stance
- Reduction in front width – more piercing – too extended over the front wheel
- Rear end too soft and in contradiction to expression



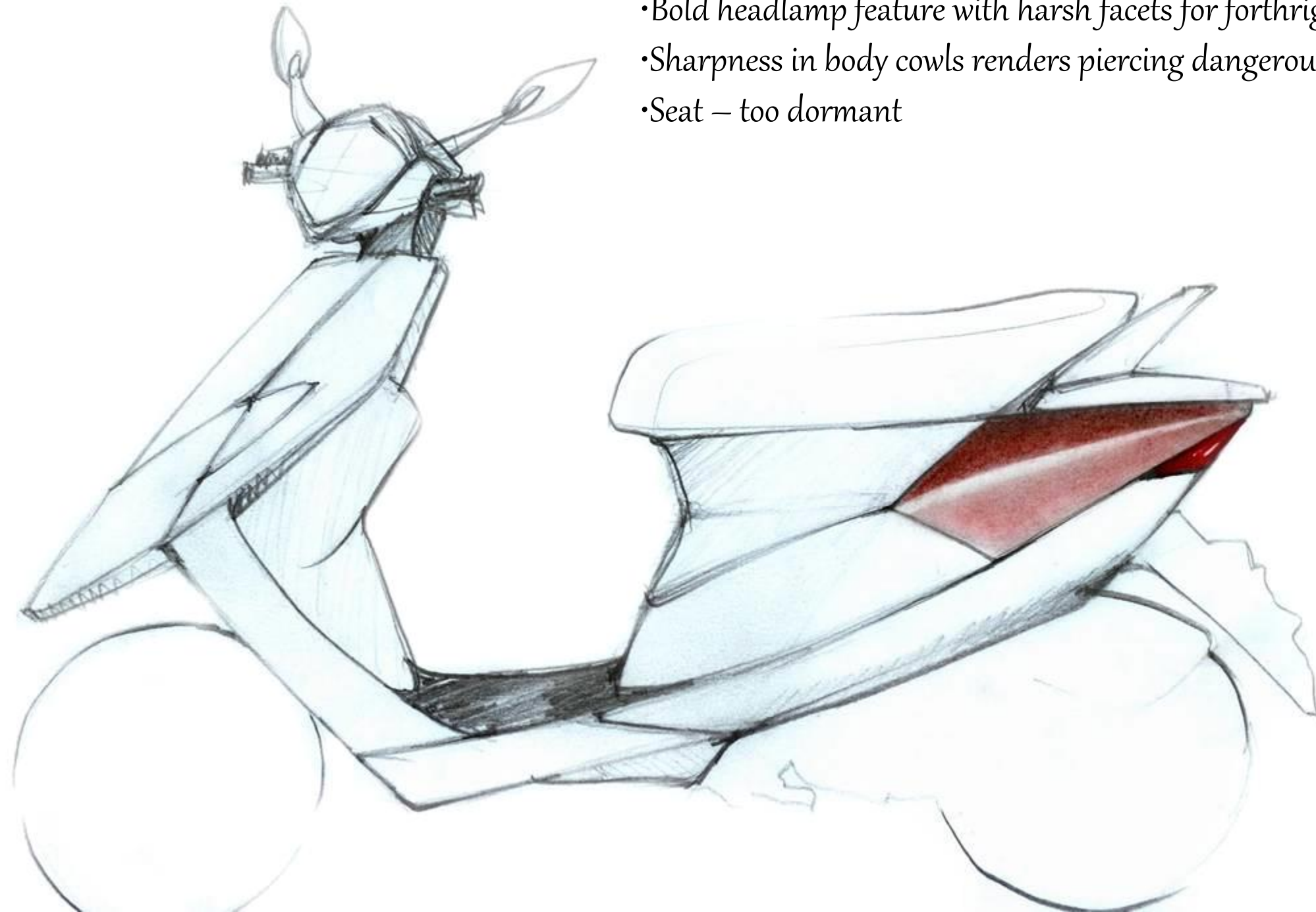
AGGRESSIVE / FIERCE



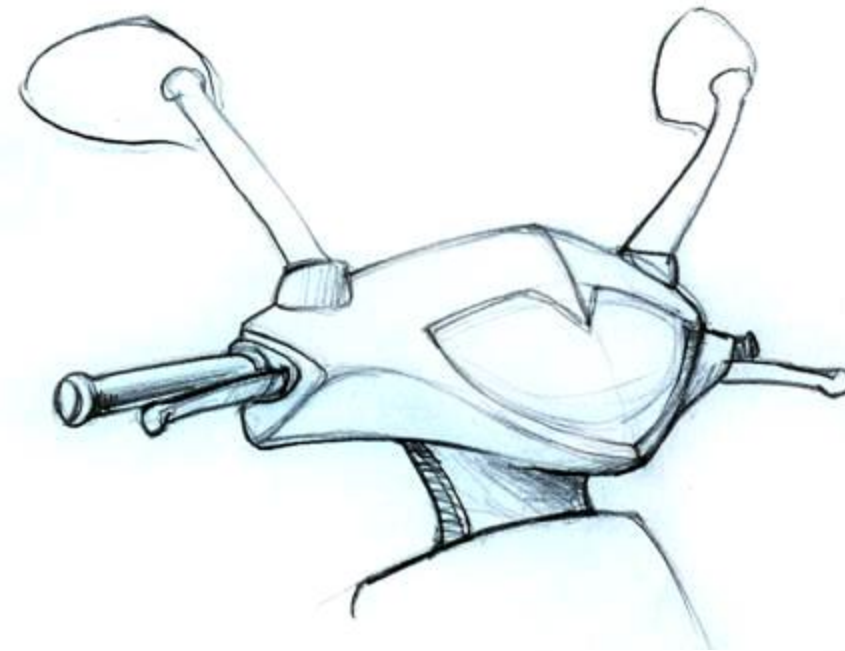
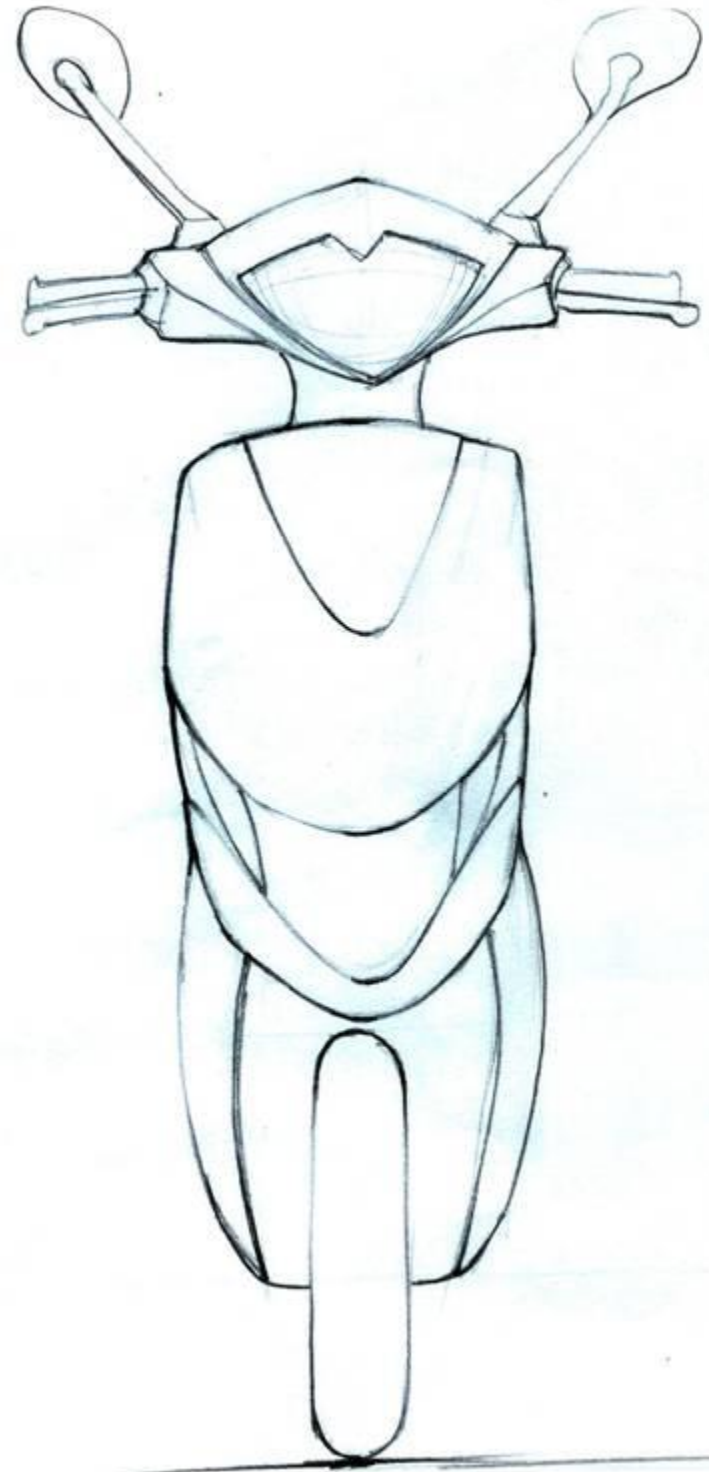
- Front cowl – division of split lines - fierce look
- Thin edges make it look fragile
- Grab handle reduced form
- Tapered body cowl with greater convex dips for more forthright / bold stance

AGGRESSIVE / FIERCE

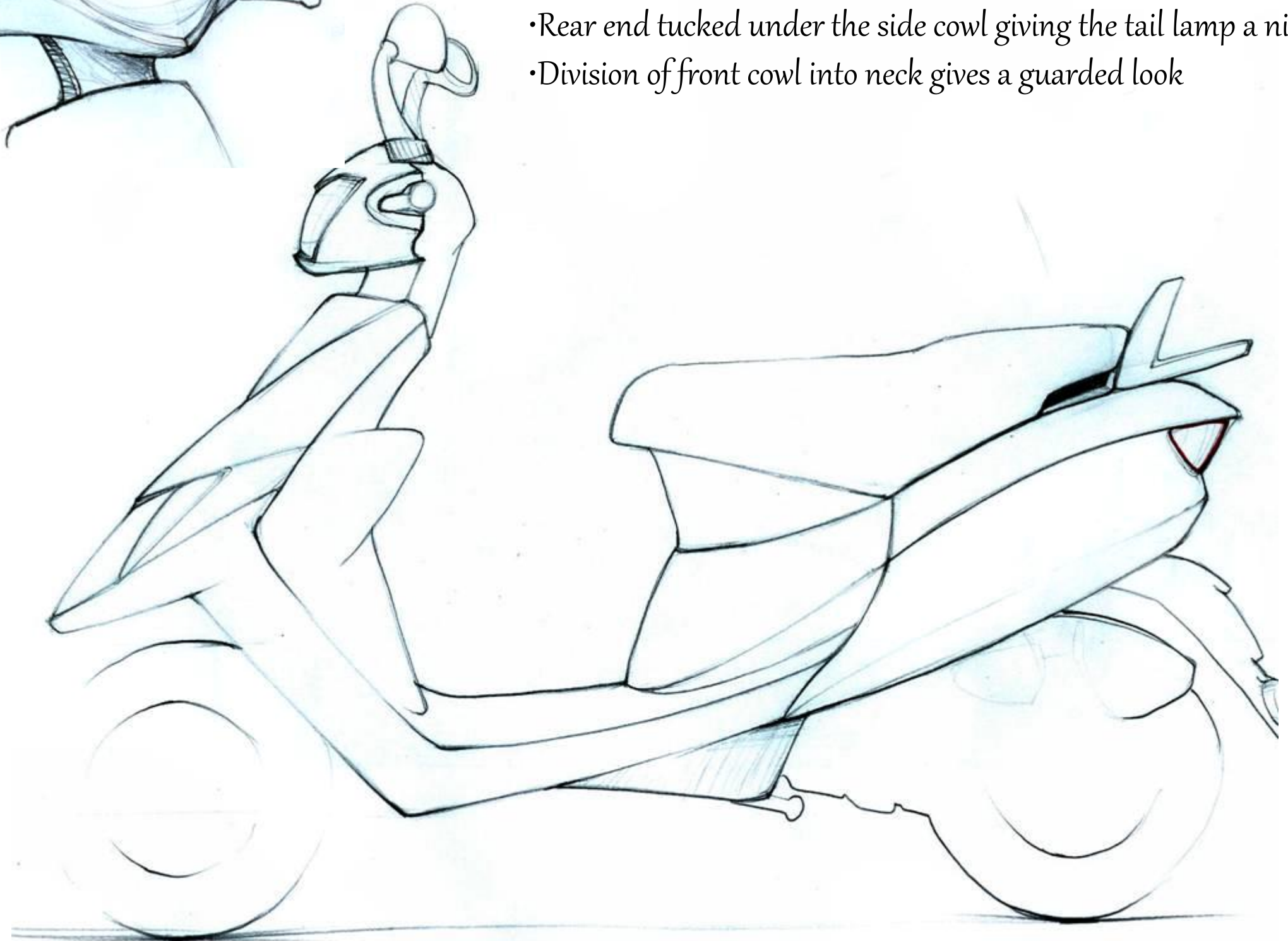
- Aggressive stance with highly tapered nose and wears an armored warrior look
- Charging stance with angles implied in front cowl
- Bold headlamp feature with harsh facets for forthright look
- Sharpness in body cowls renders piercing dangerous expression
- Seat – too dormant



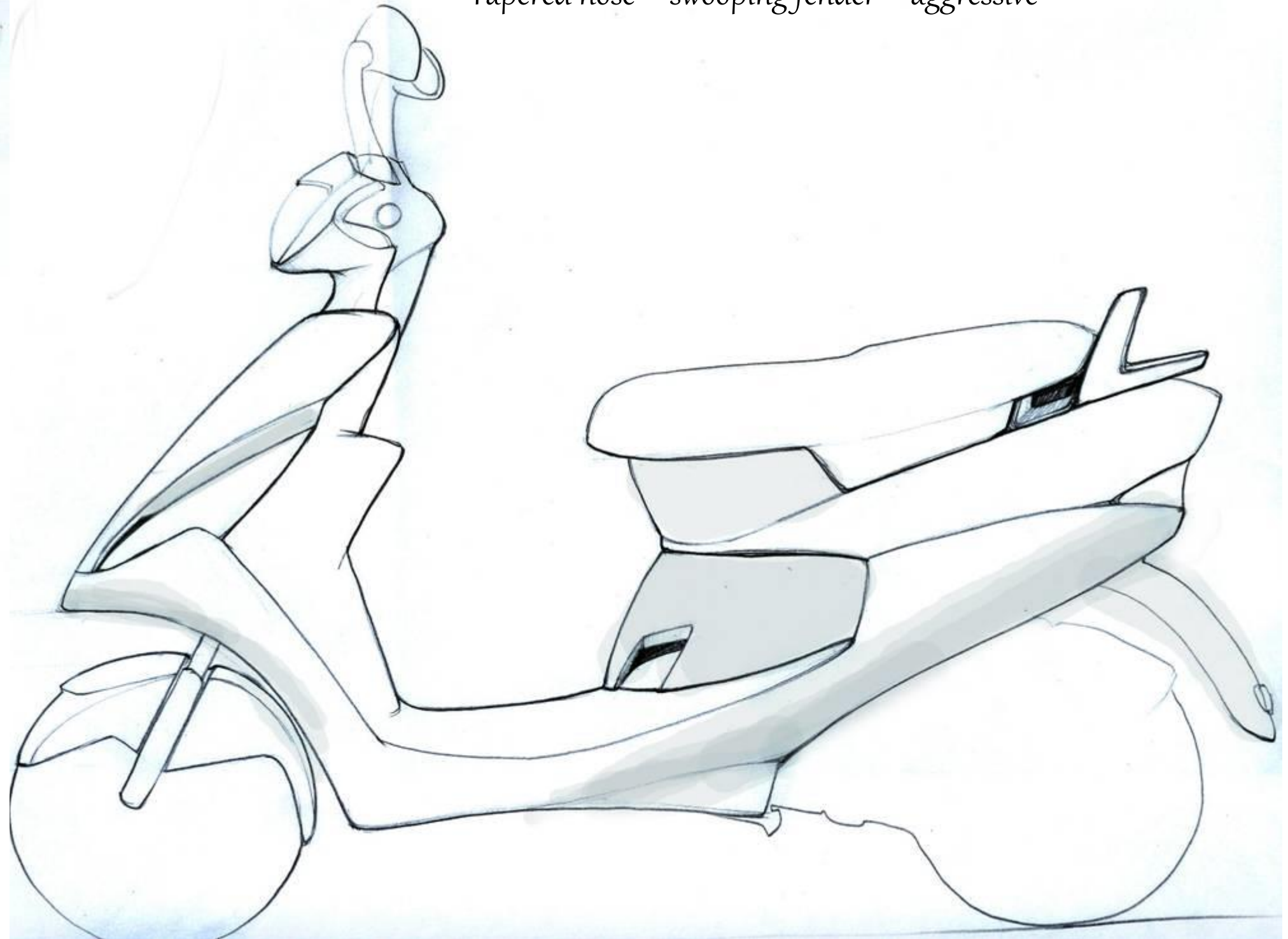
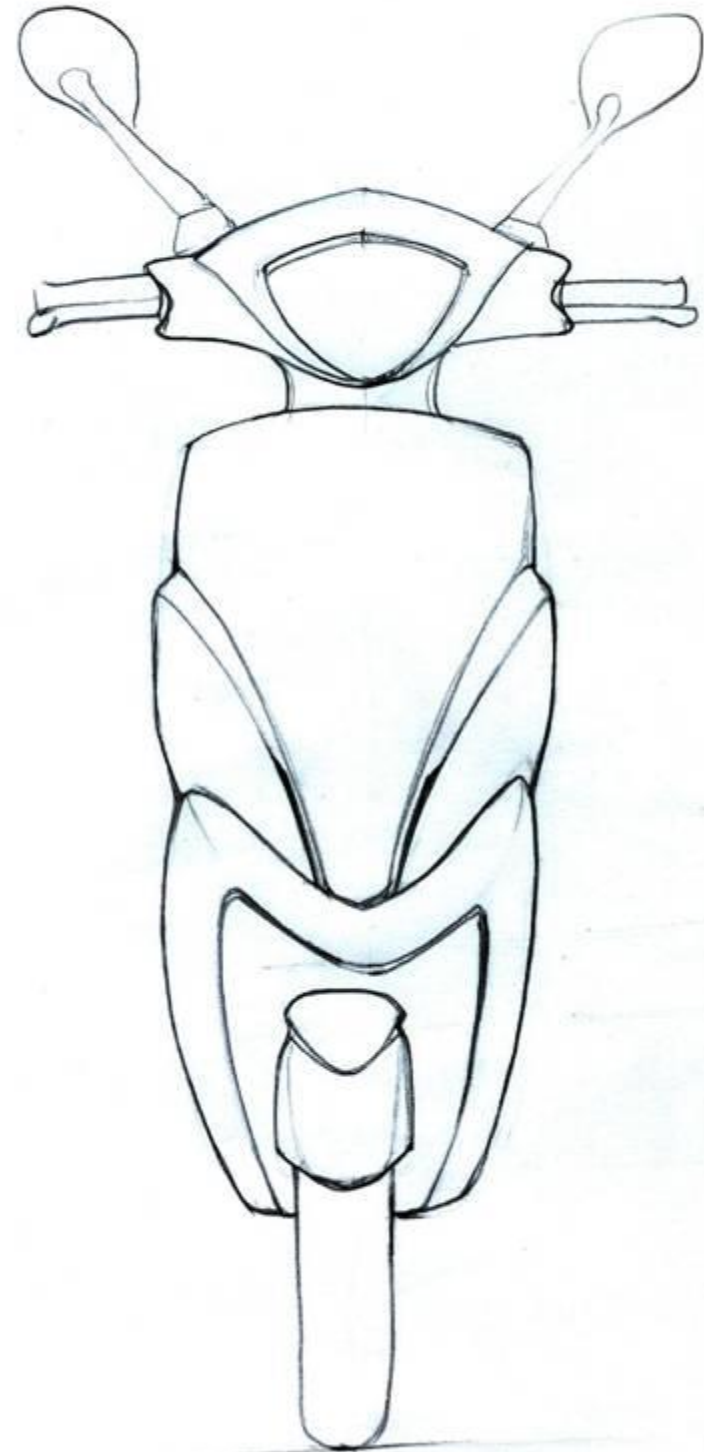
AGGRESSIVE / FIERCE



- Indicators tucked under the front panel to look like a staring brow
- Roman warrior helmet
- Nose – too rounded at apex
- Rear end tucked under the side cowl giving the tail lamp a niche
- Division of front cowl into neck gives a guarded look

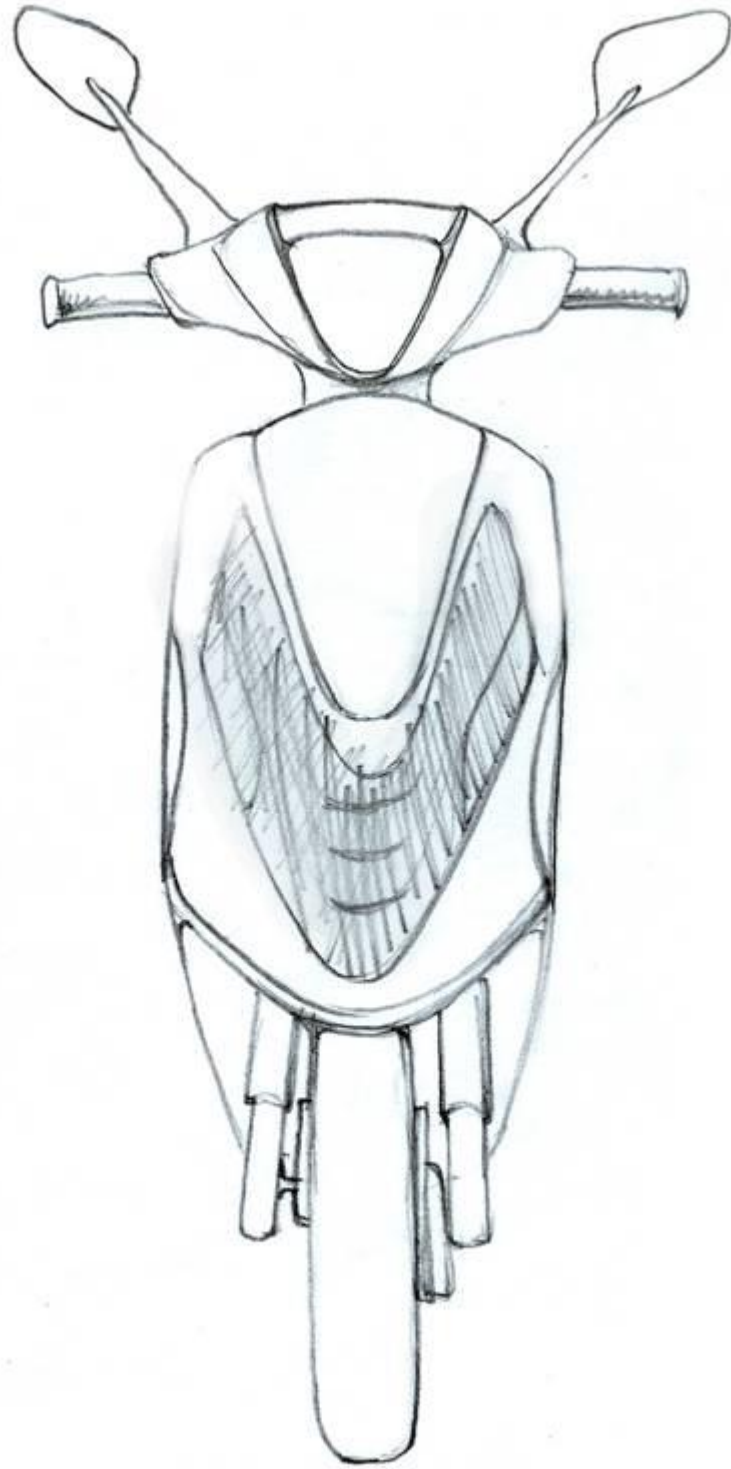


AGGRESSIVE / FIERCE

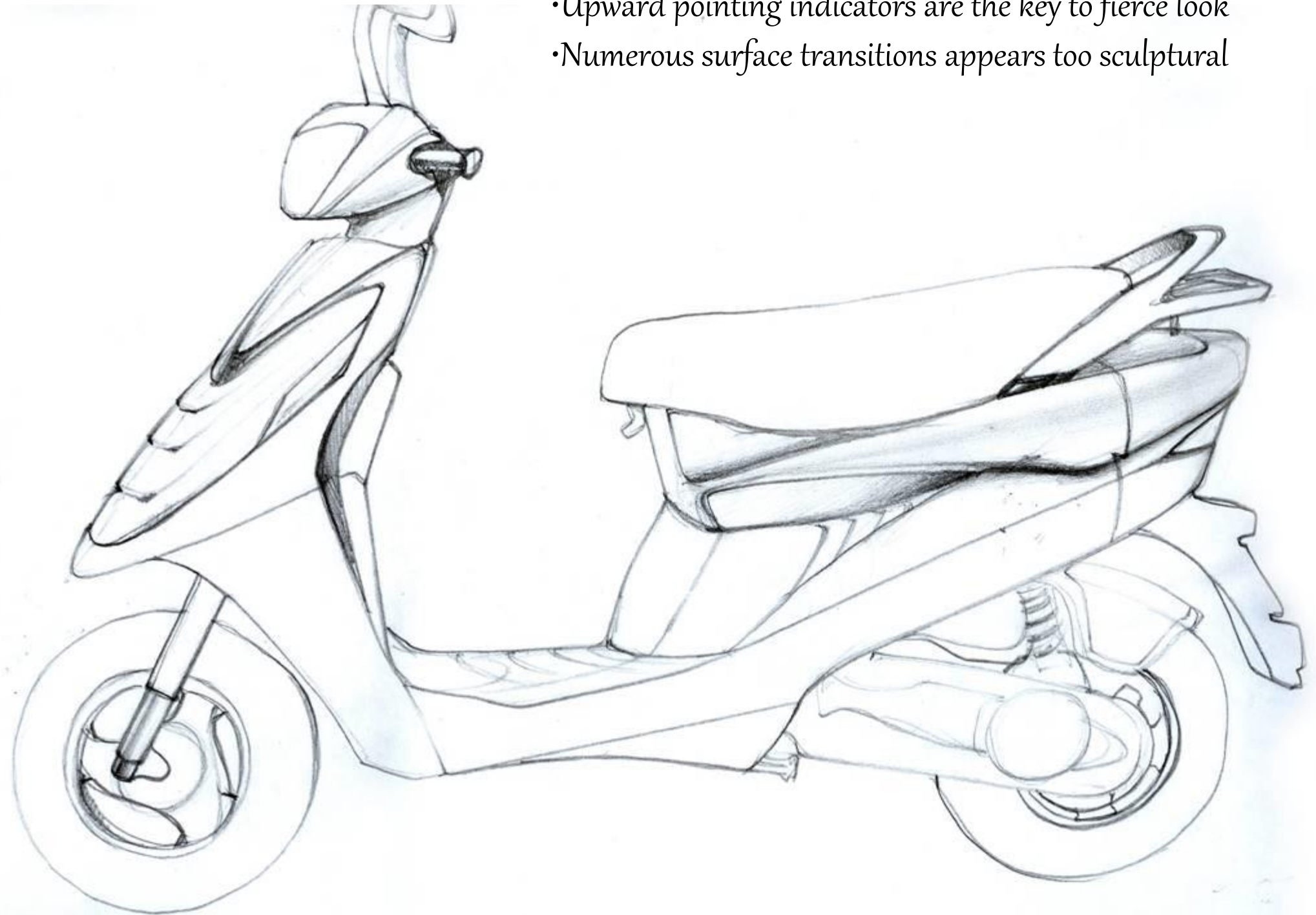


- Faceted front cowl – inspired from battle armours – shields
- Cut-outs – fierce
- Tapered nose – swooping fender – aggressive

AGGRESSIVE / FIERCE

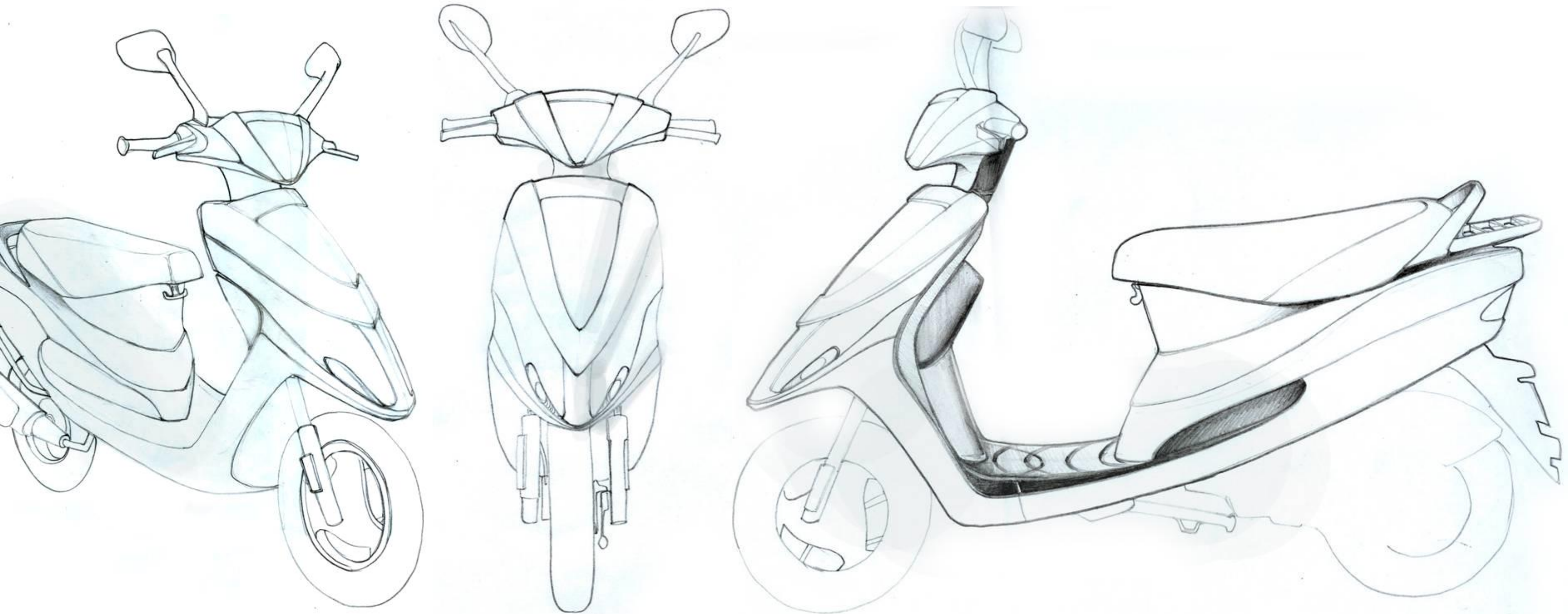


- Cut outs in front grill and body cowl express fierceness and dangerous expression
- Upward pointing indicators are the key to fierce look
- Numerous surface transitions appears too sculptural



AGGRESSIVE / FIERCE

- Eyes in front fierce and very close to the nose
- Impractical owing to legislation that the distance of separation between the two lamps is minimum 240mm

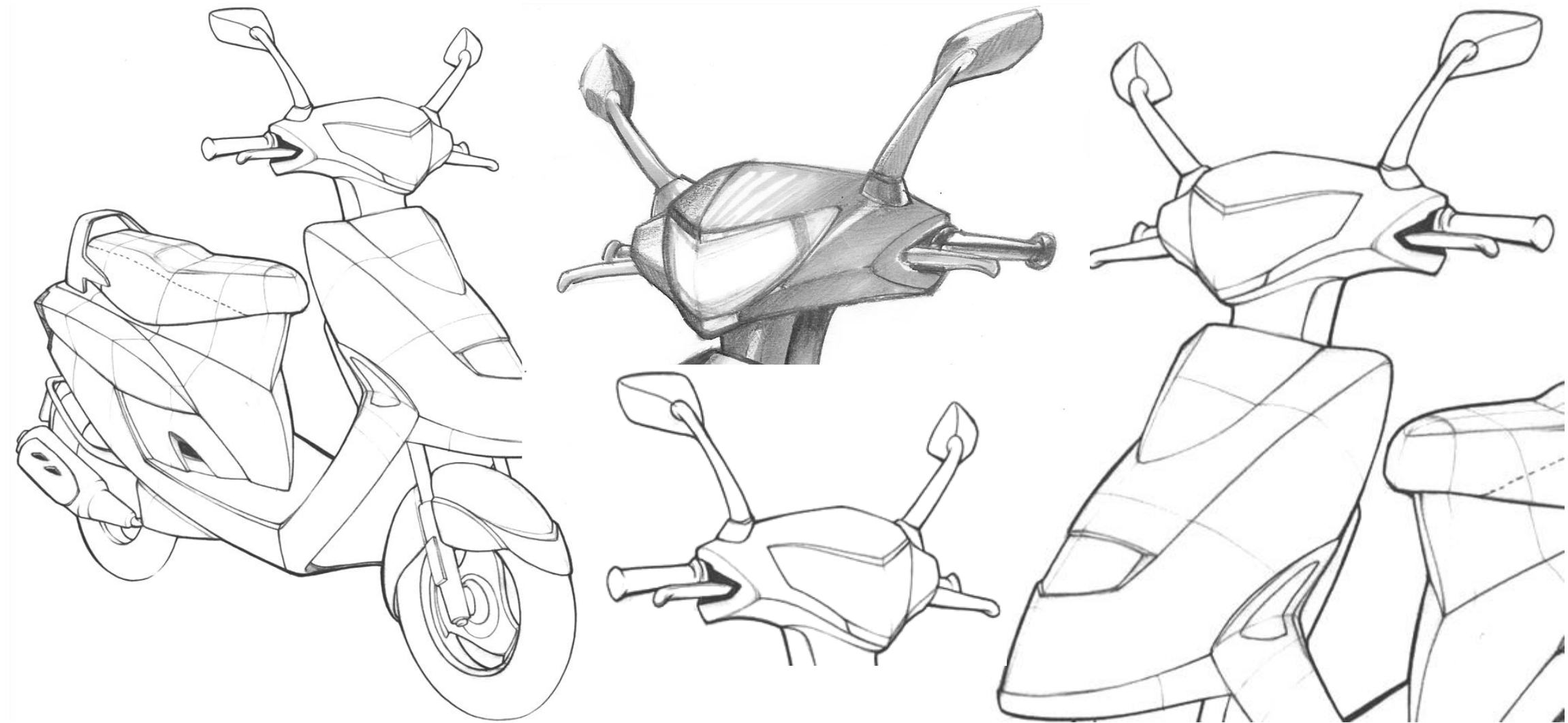


CONCEPT DEVELOPMENT

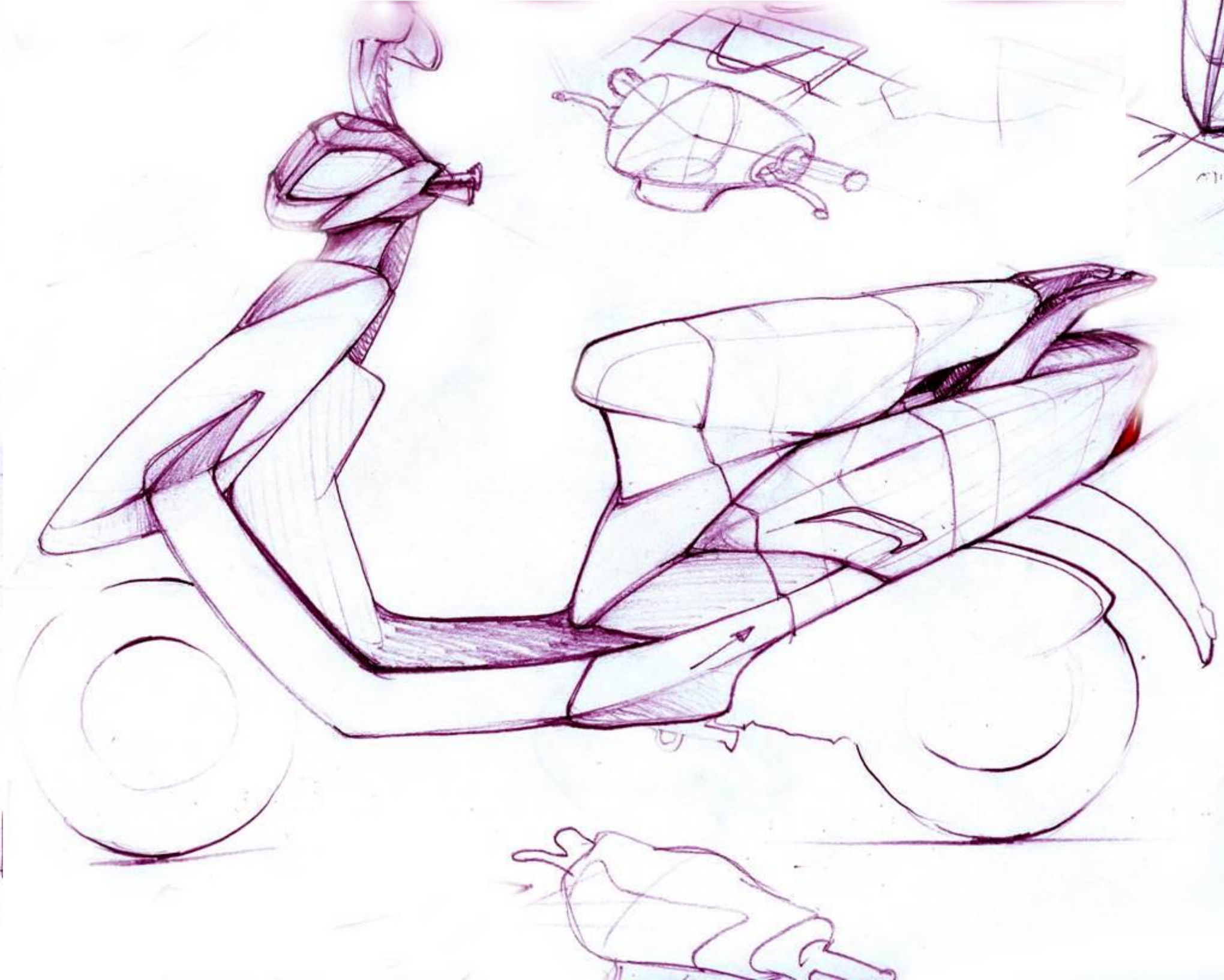
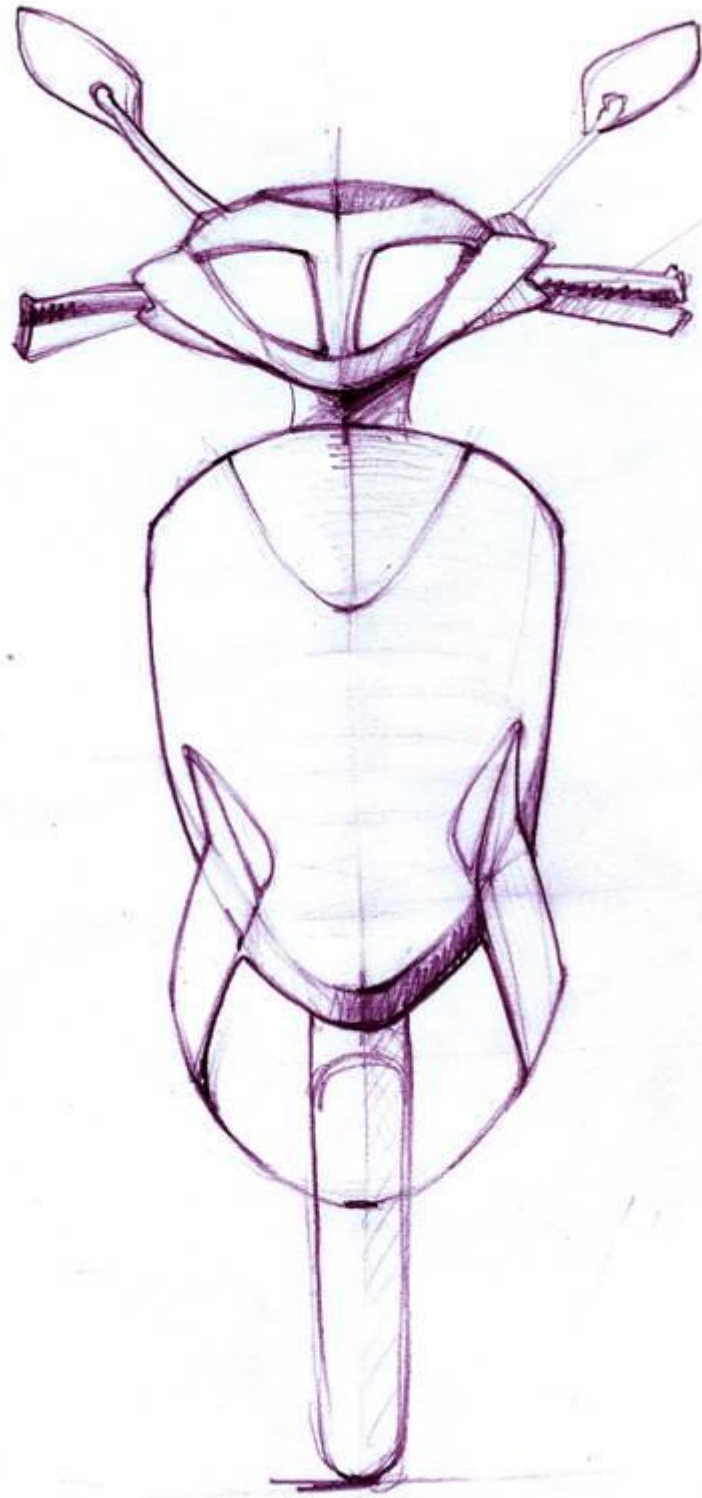
Two directions selected were:

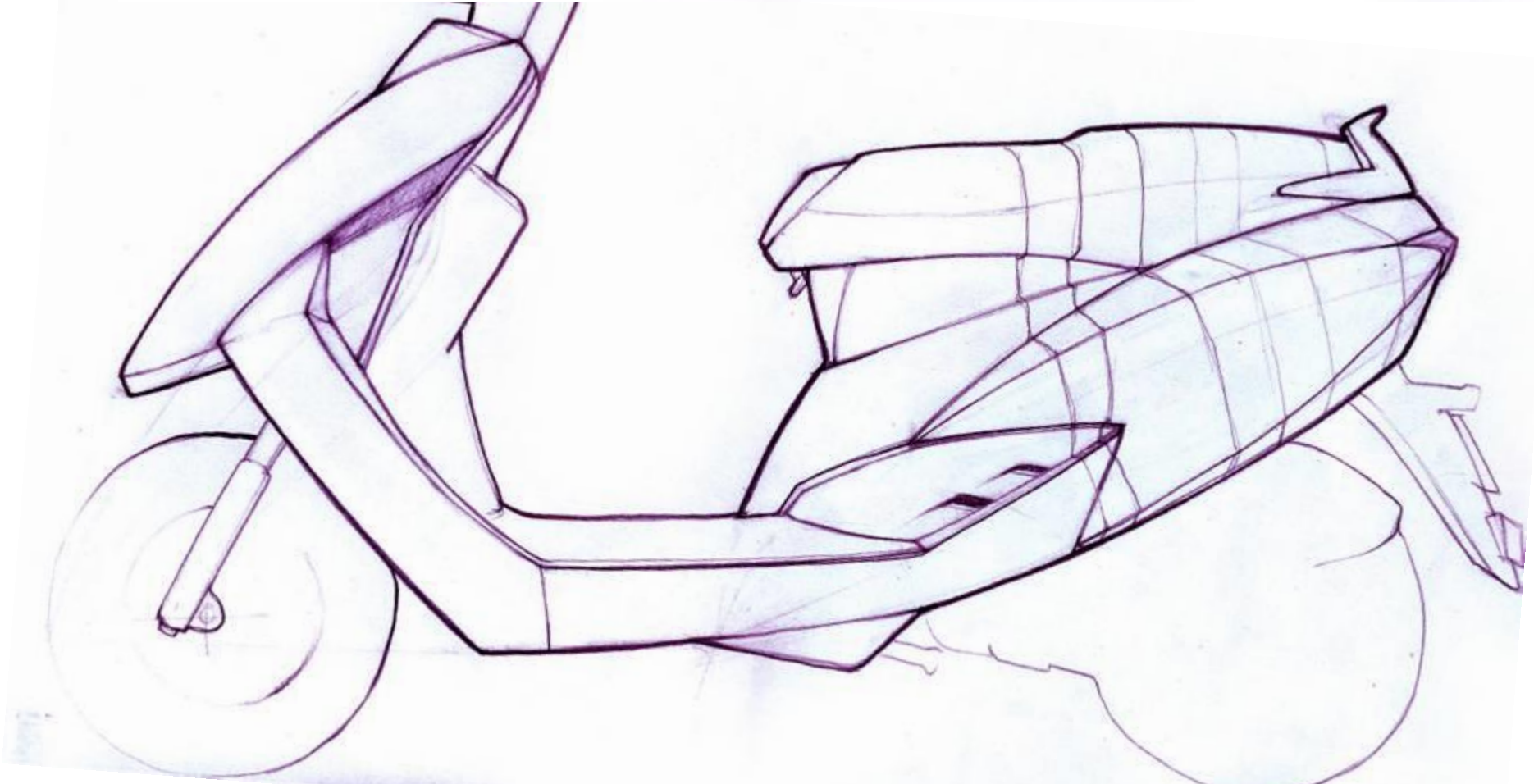
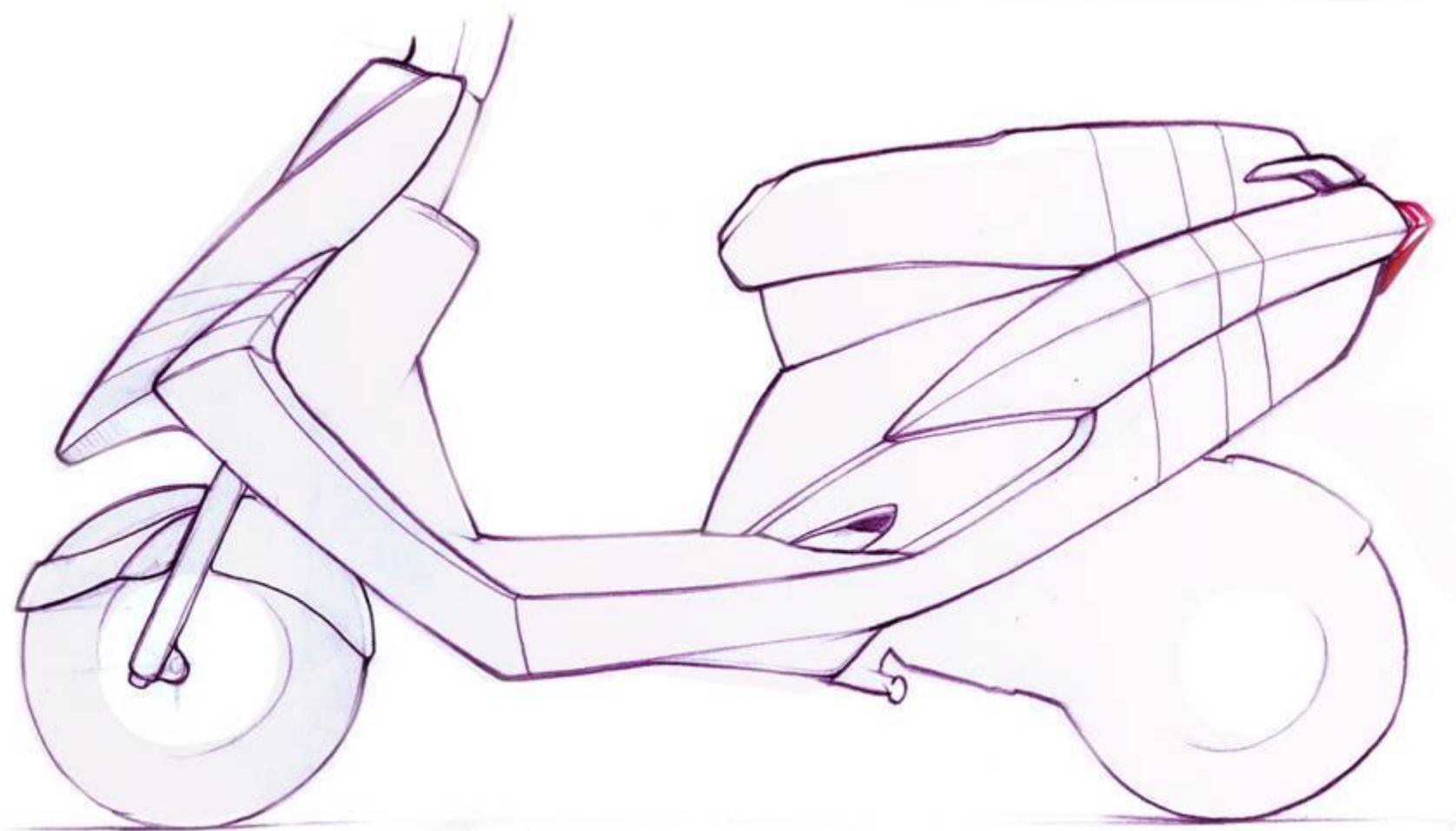
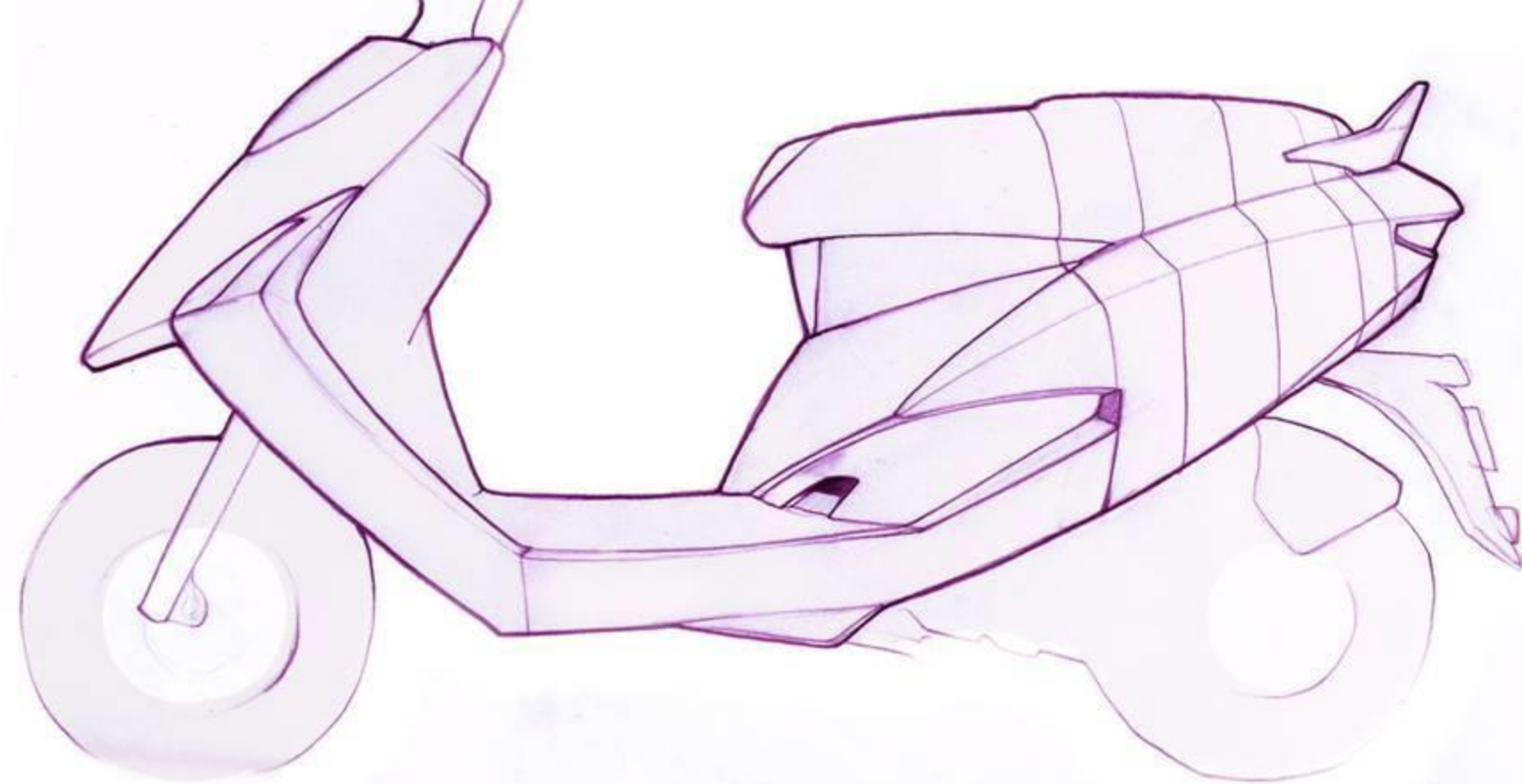
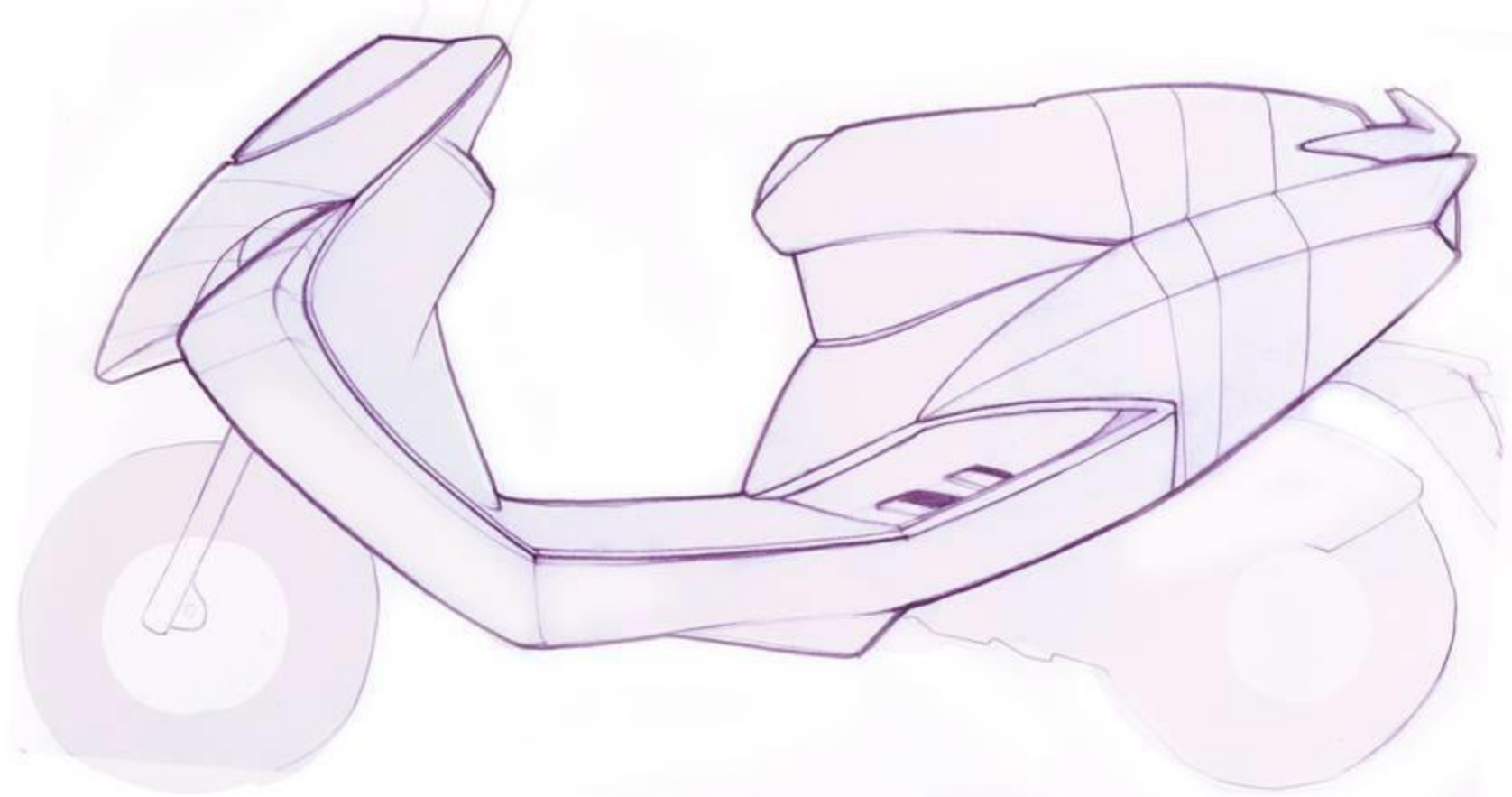
Muscular / Robust expression

Aerodynamic / Streamlined expression



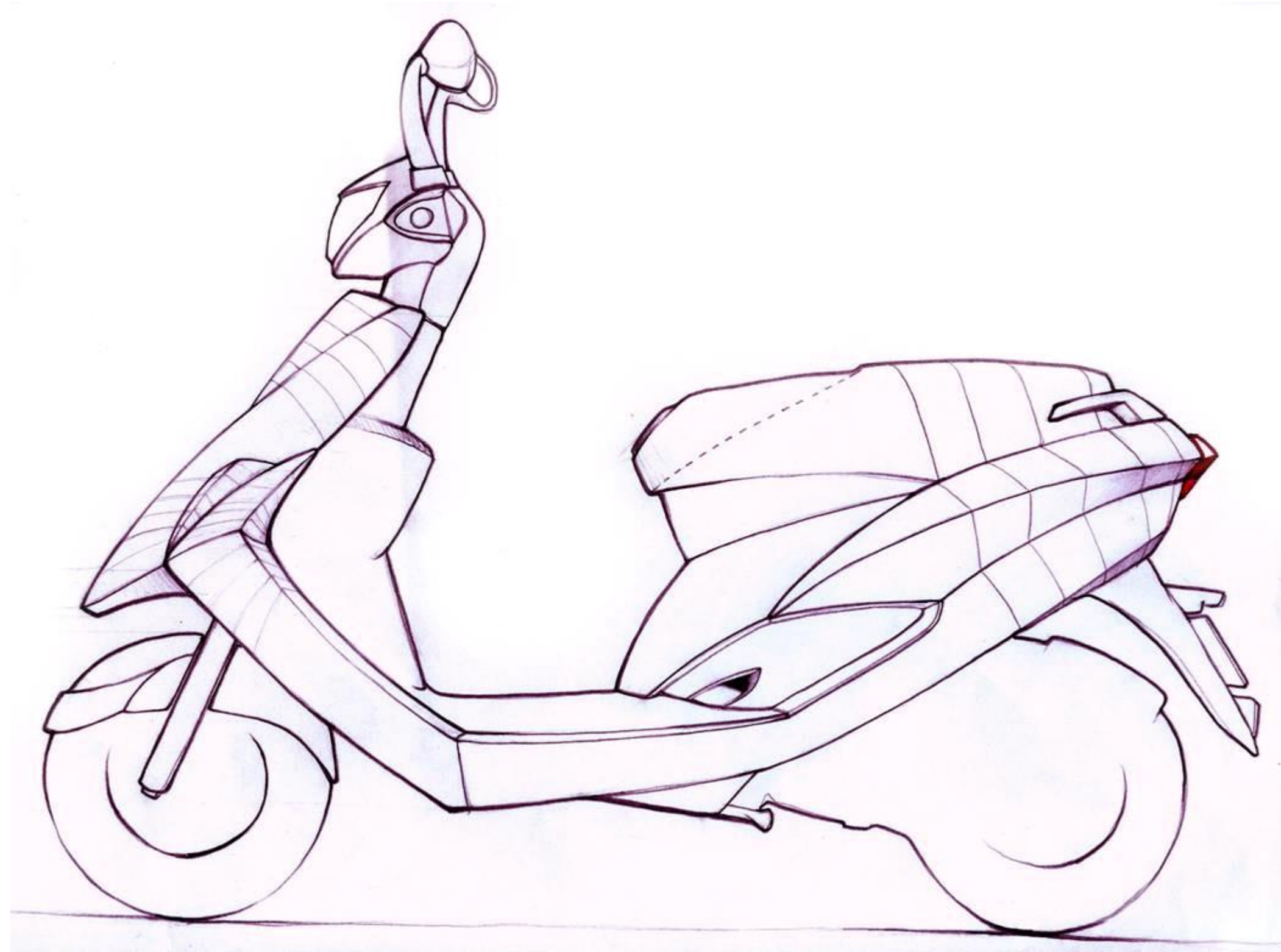
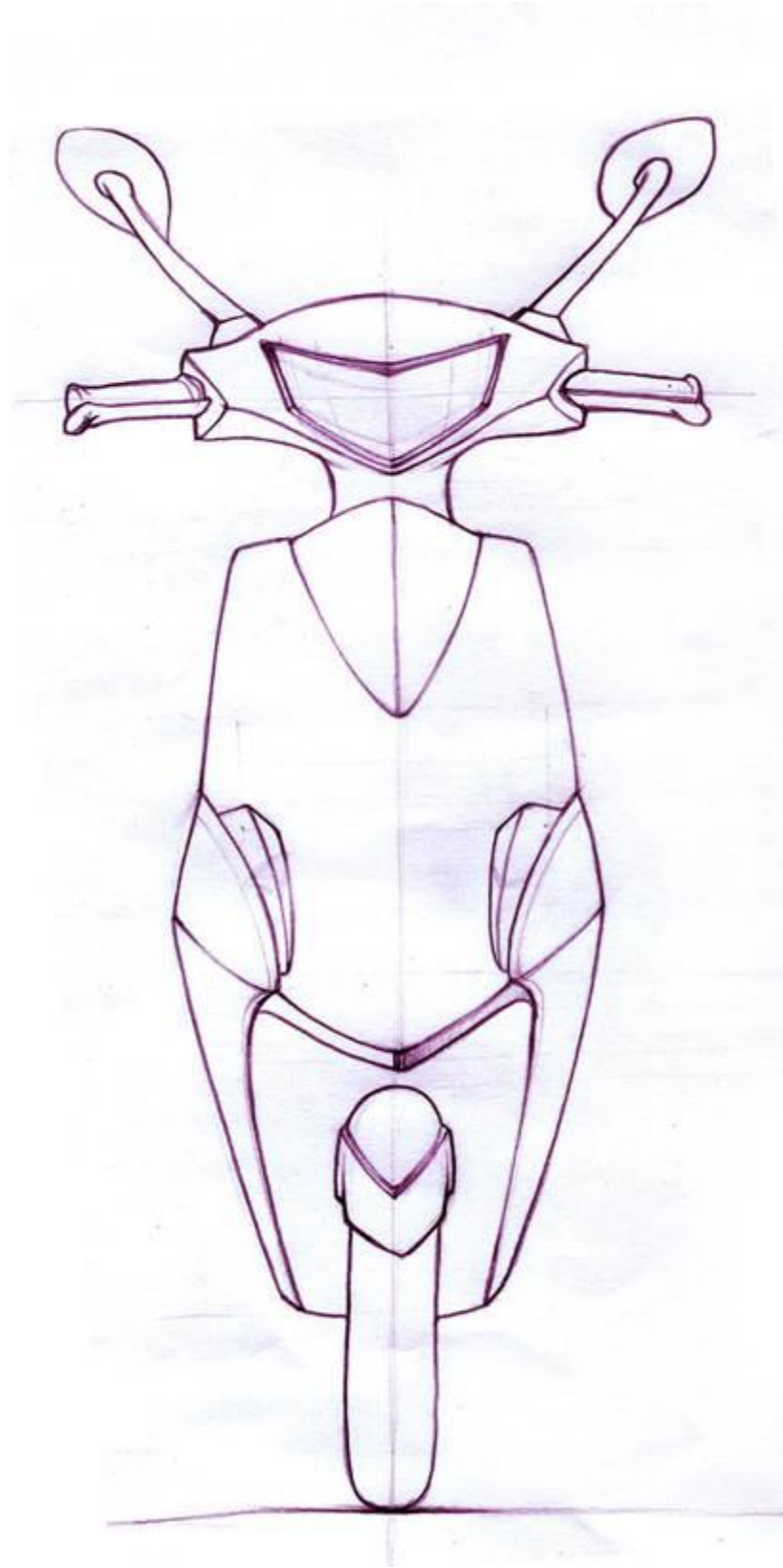
MUSCULAR / ROBUST EXPRESSION

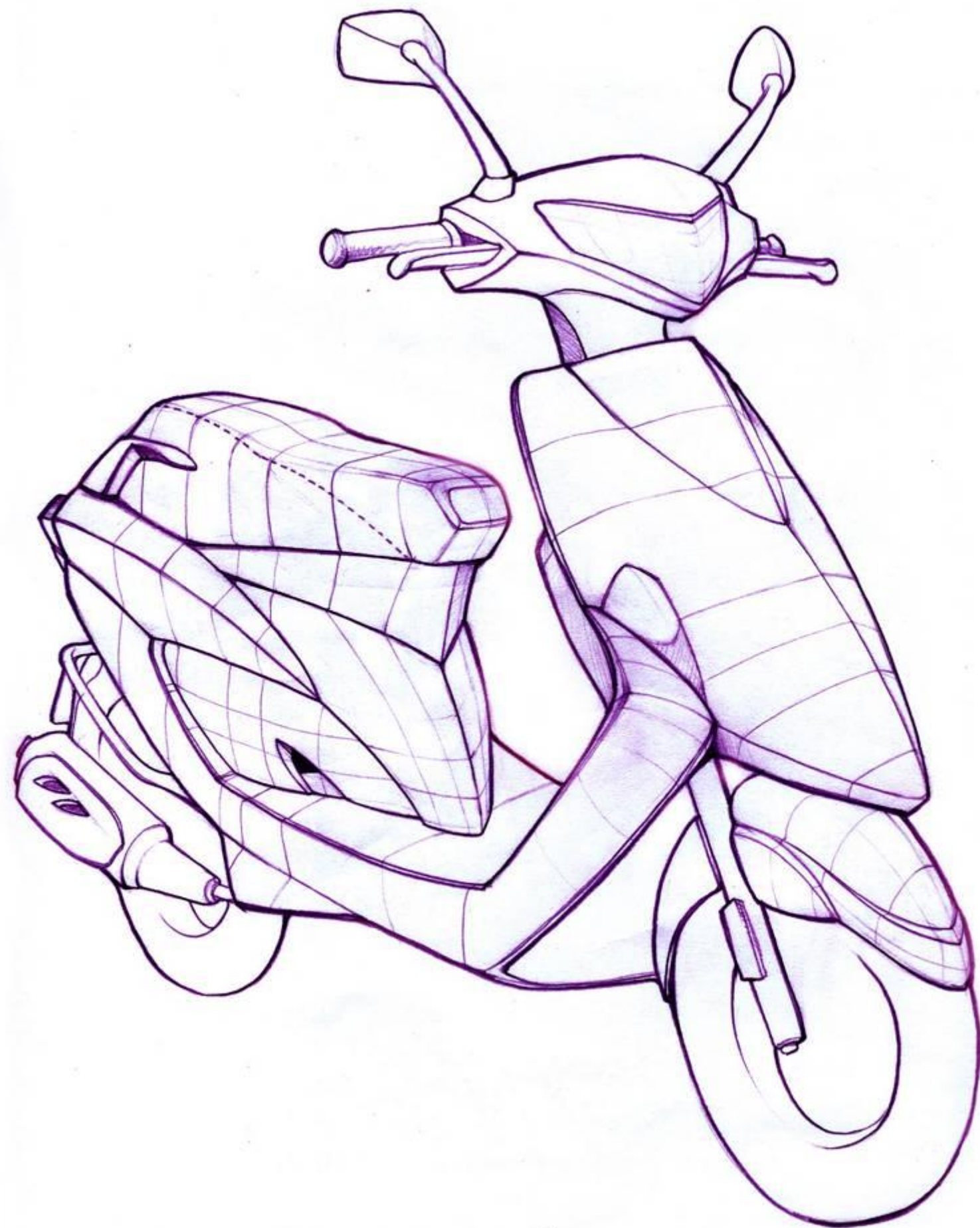




Pinch in the waistline to enhance muscle

Strong arms on either side to enhance sinewy expression



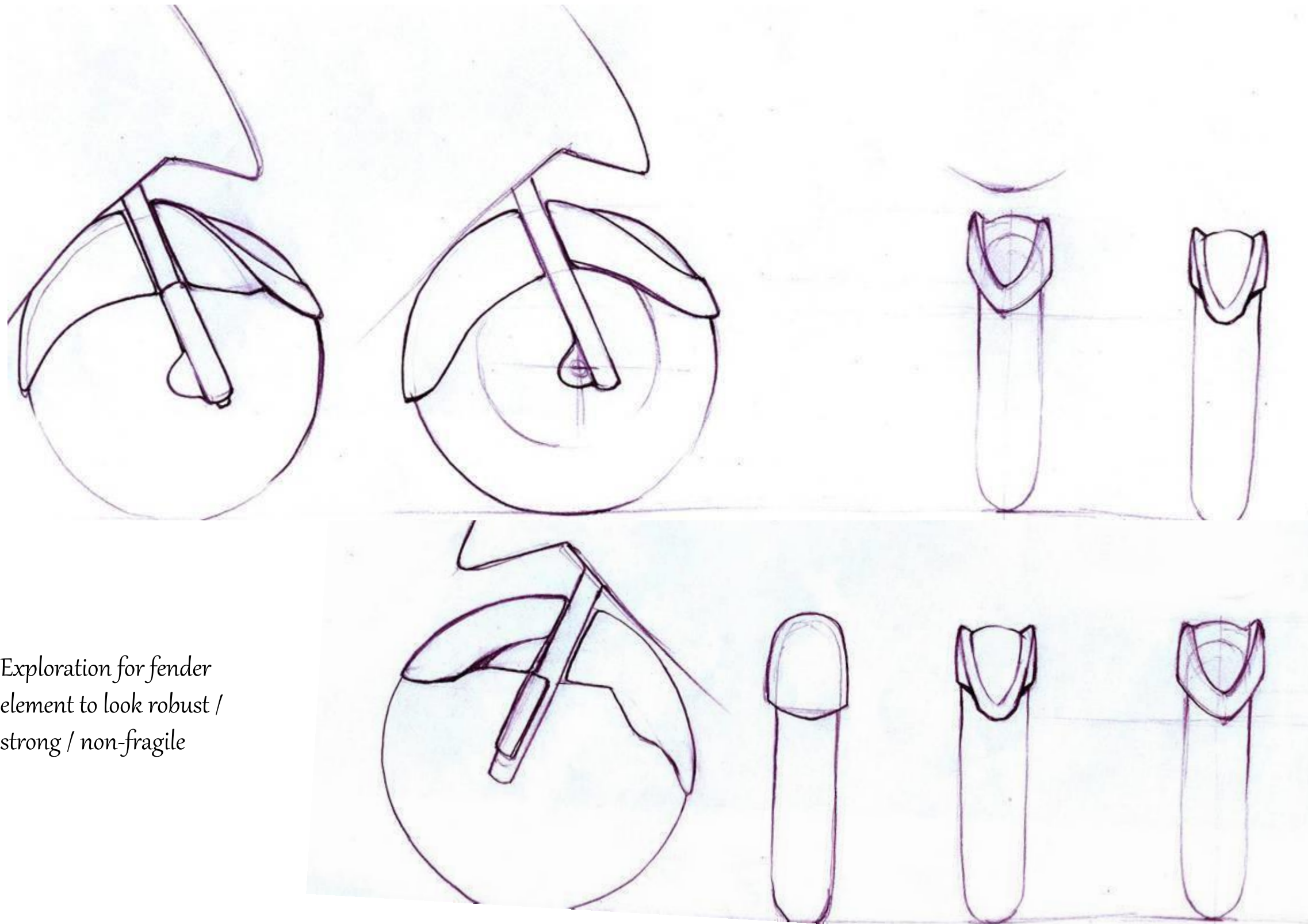


Inspired from muscular arms and claws of a crab

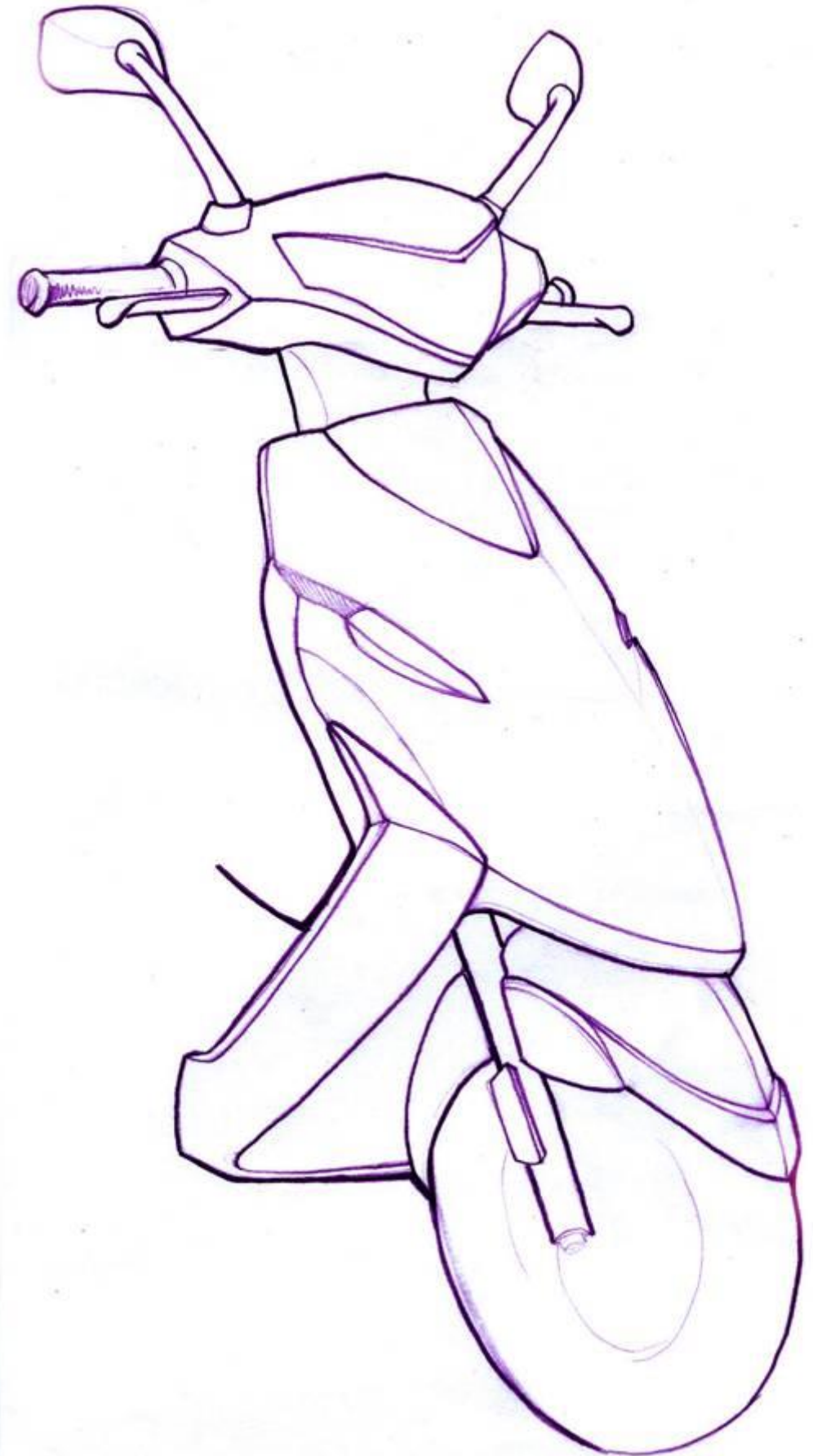
Side indicators are not coherent with the whole front panel

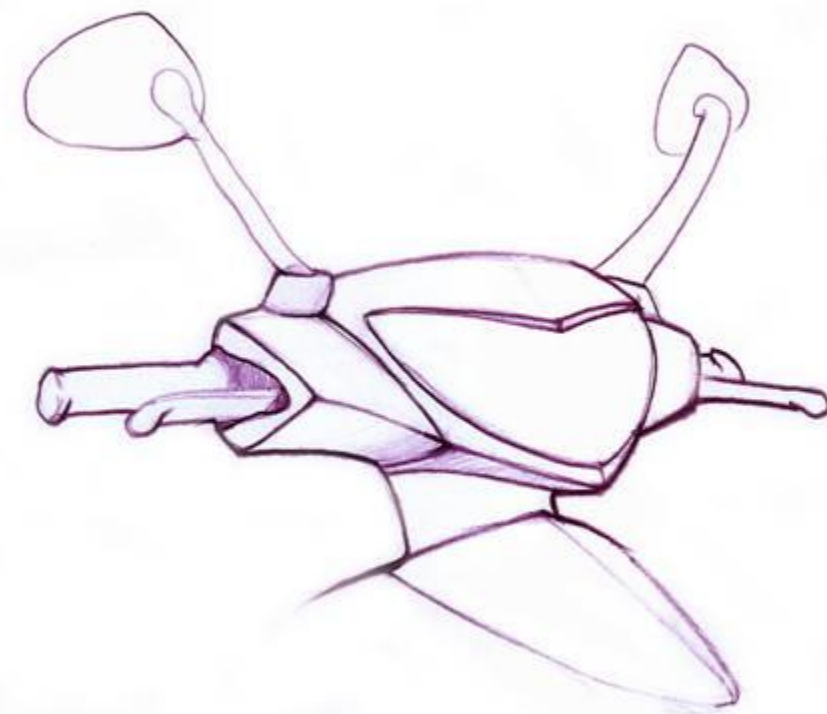
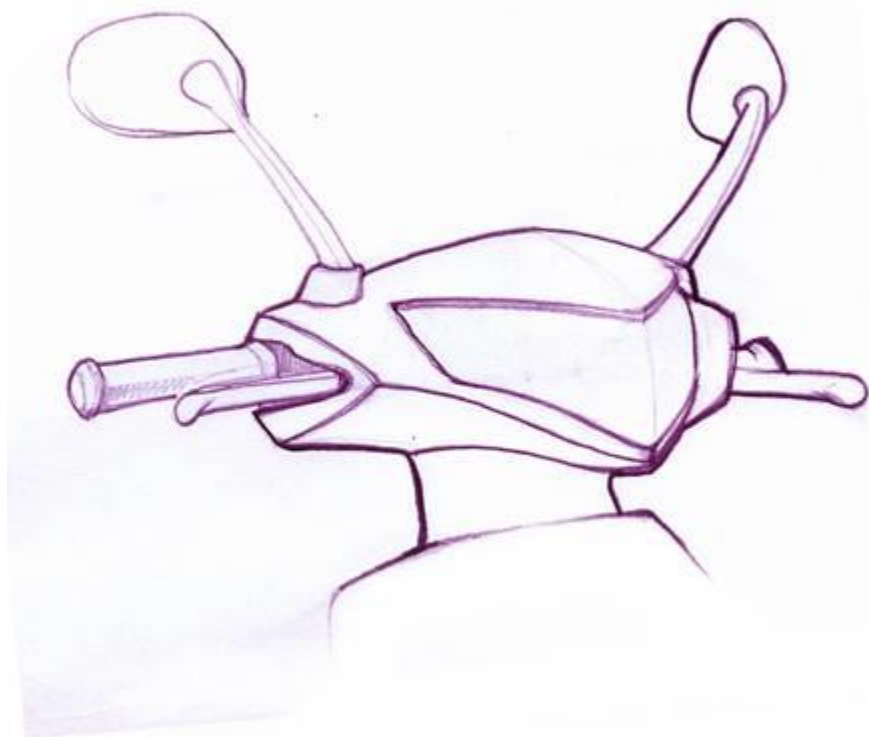
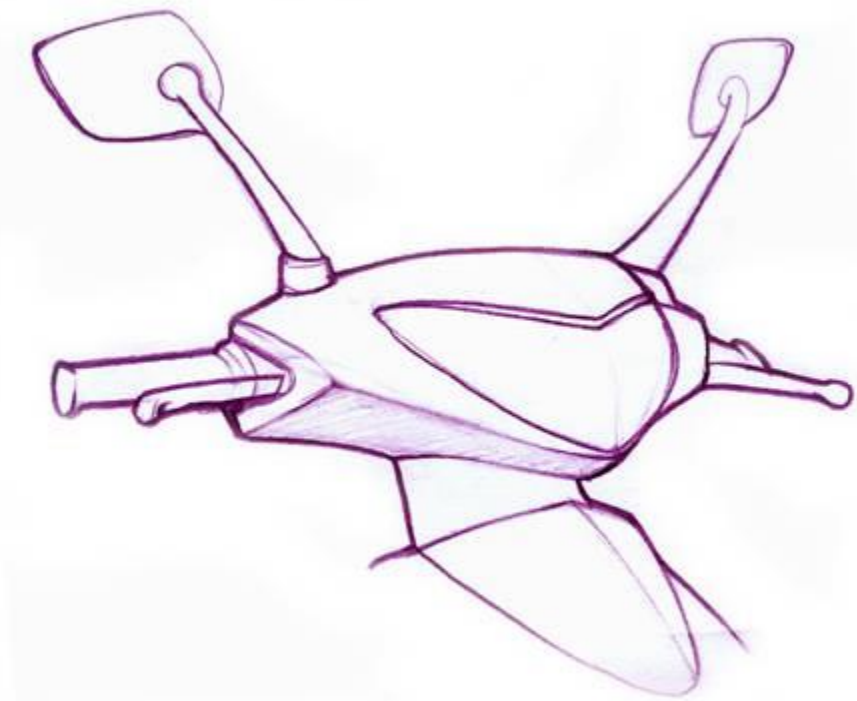
Shortening the nose to give it a charging stance with a strength or robust nature in expressions

The arms would need to cater to the norms of the width of the existing vehicle.

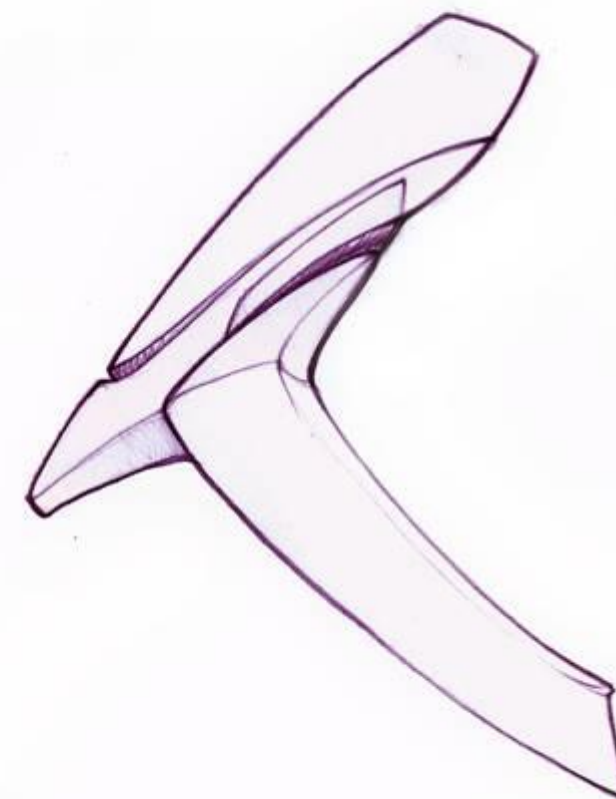
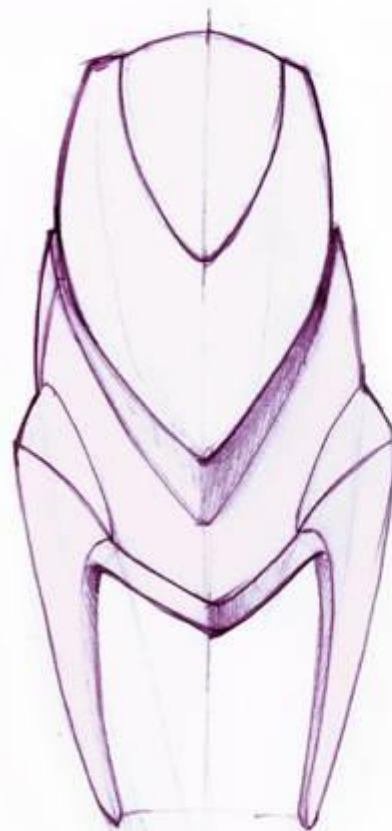
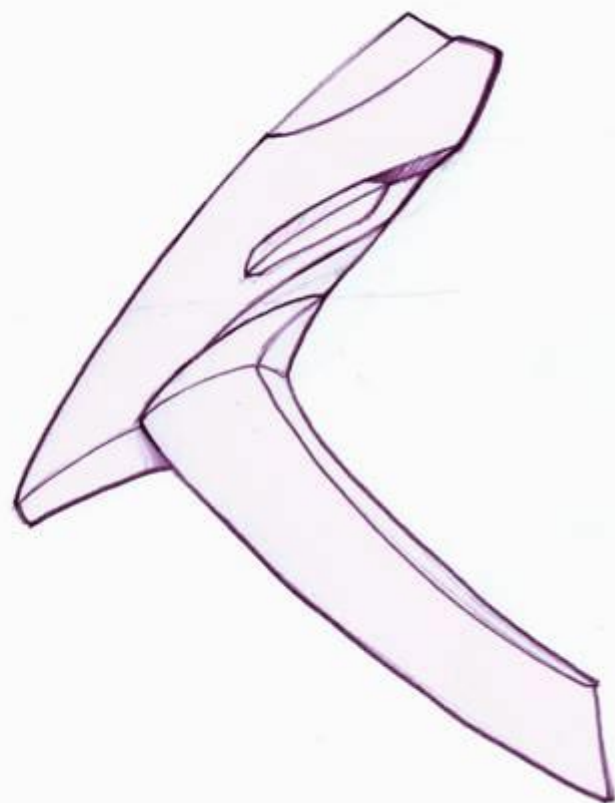
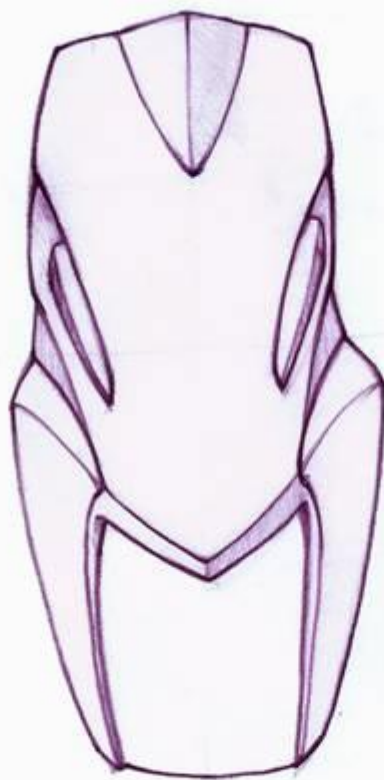


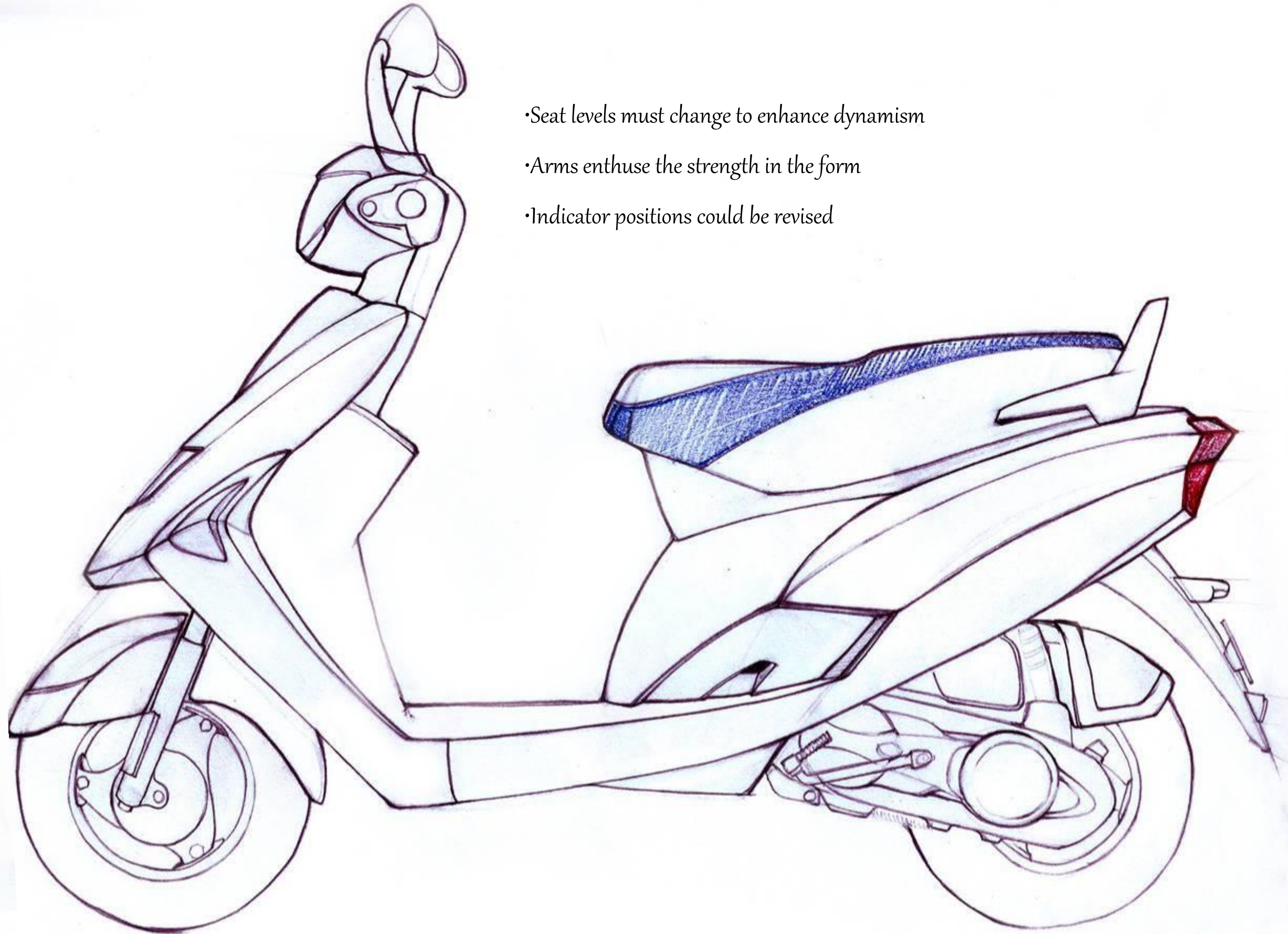
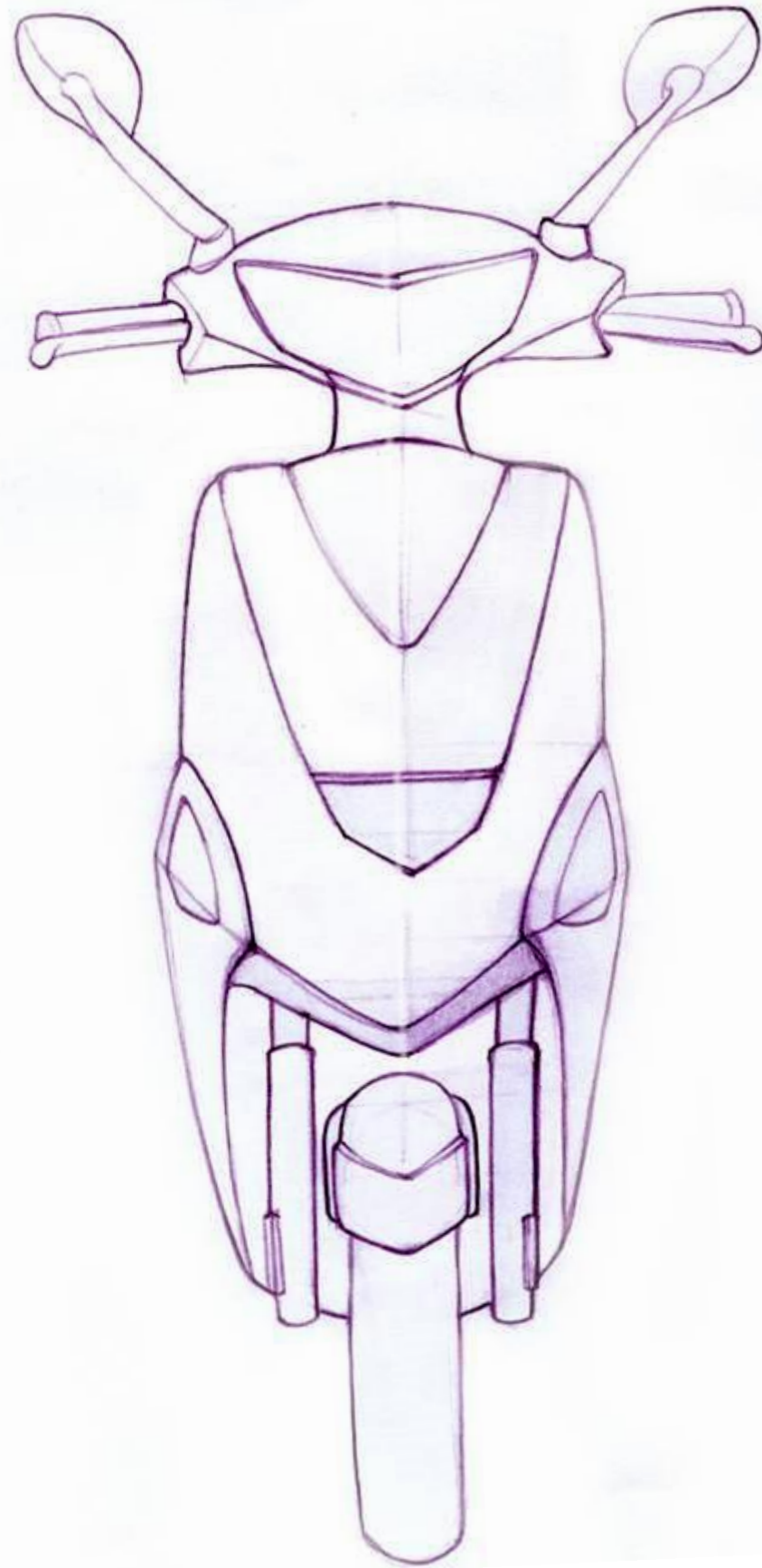
Exploration for fender
element to look robust /
strong / non-fragile



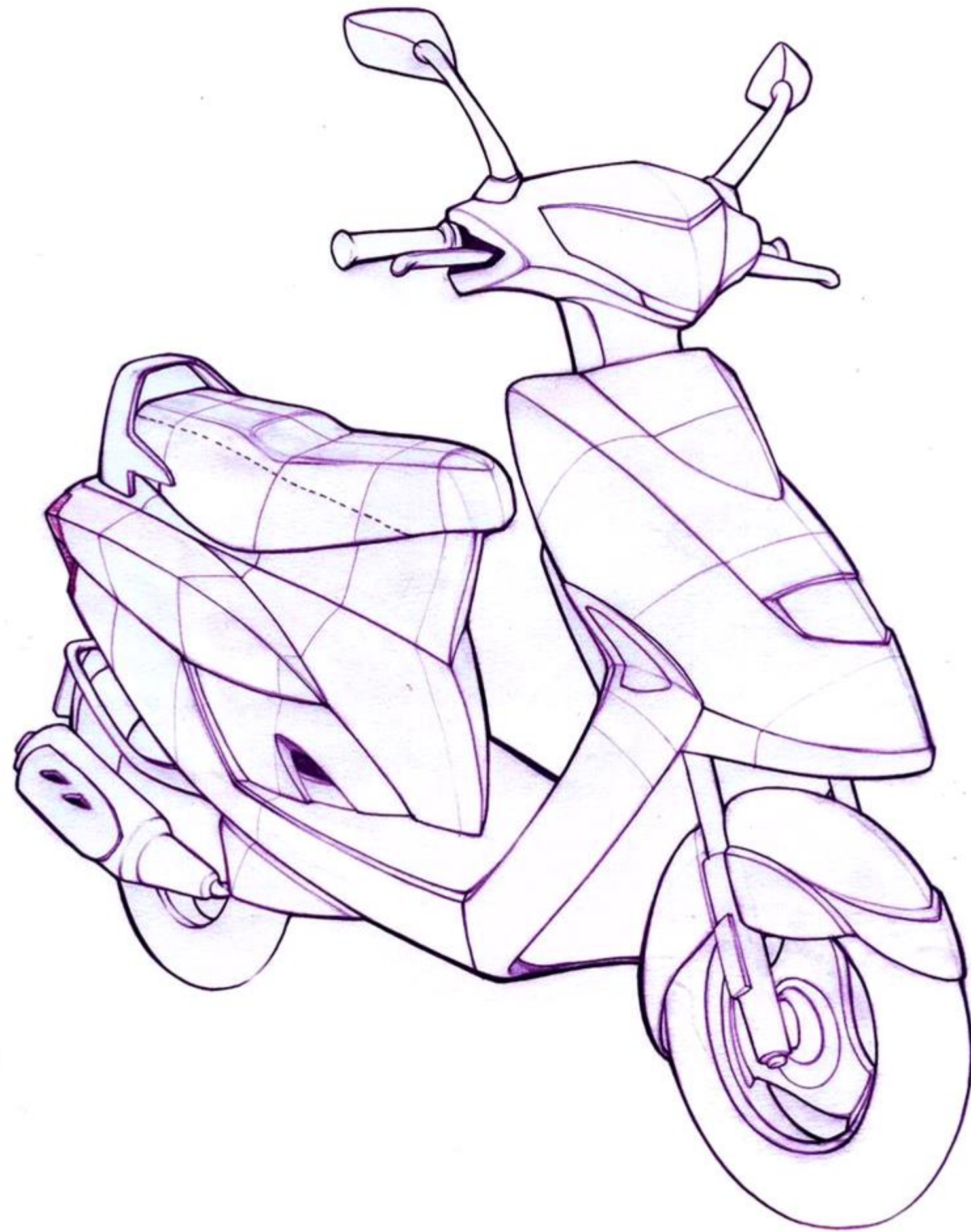


Exploration for front cowl robust character



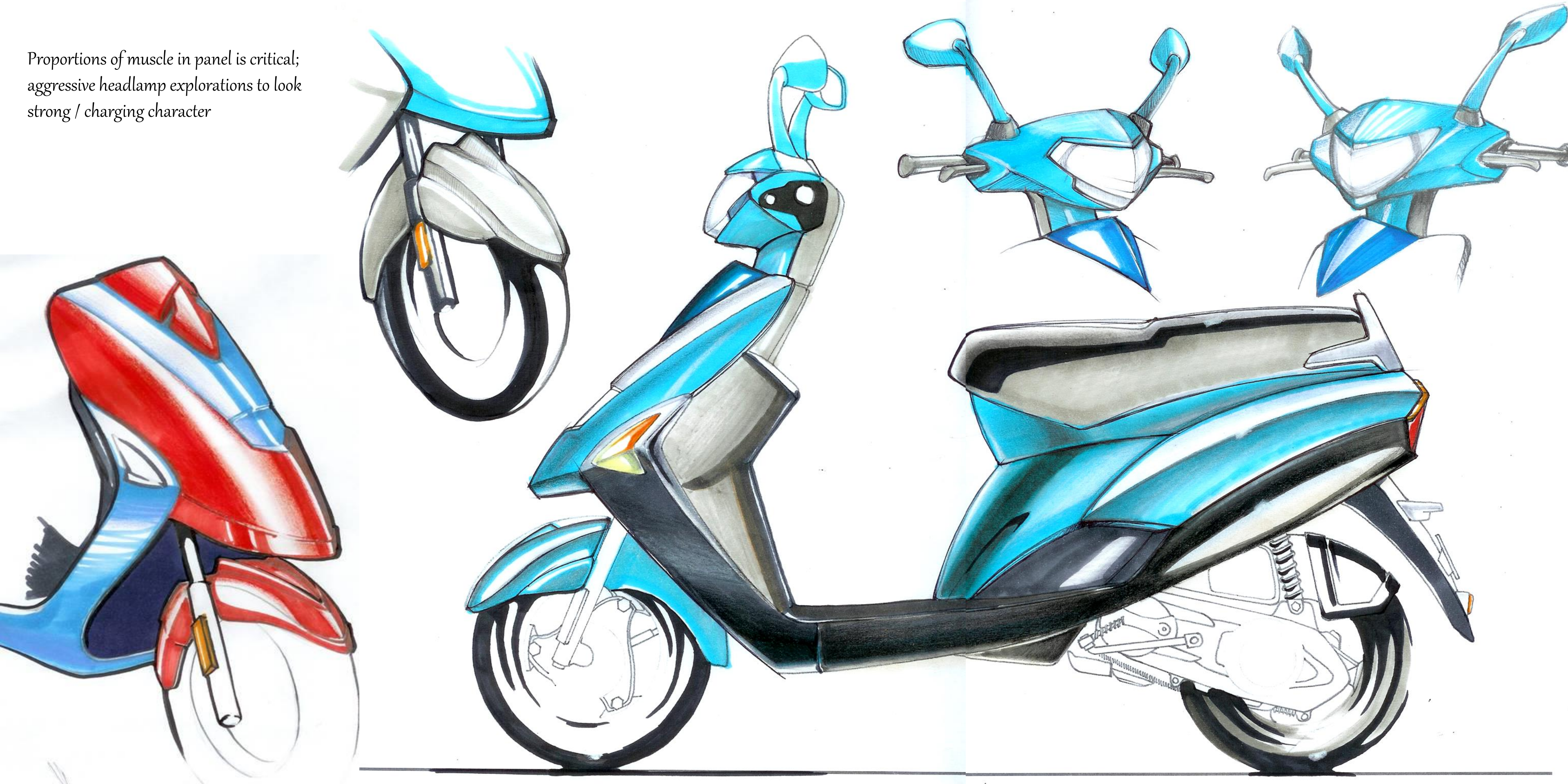


- Seat levels must change to enhance dynamism
- Arms enthuse the strength in the form
- Indicator positions could be revised



•Solid pillion handle to go with the similar expression and a bulky rear ; however stance is too static

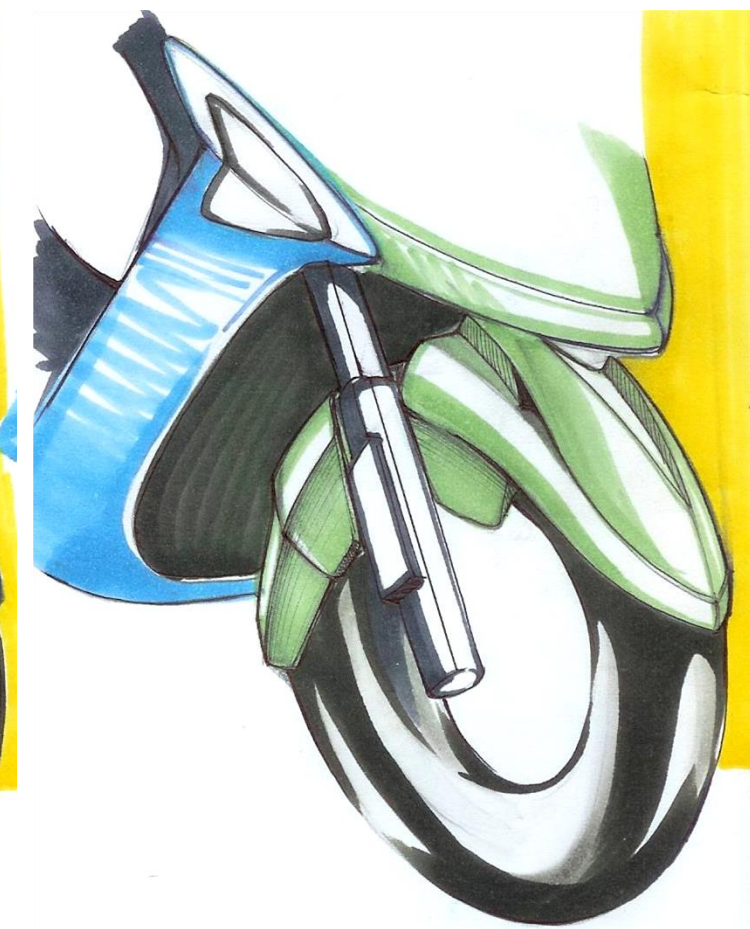
Proportions of muscle in panel is critical;
aggressive headlamp explorations to look
strong / charging character

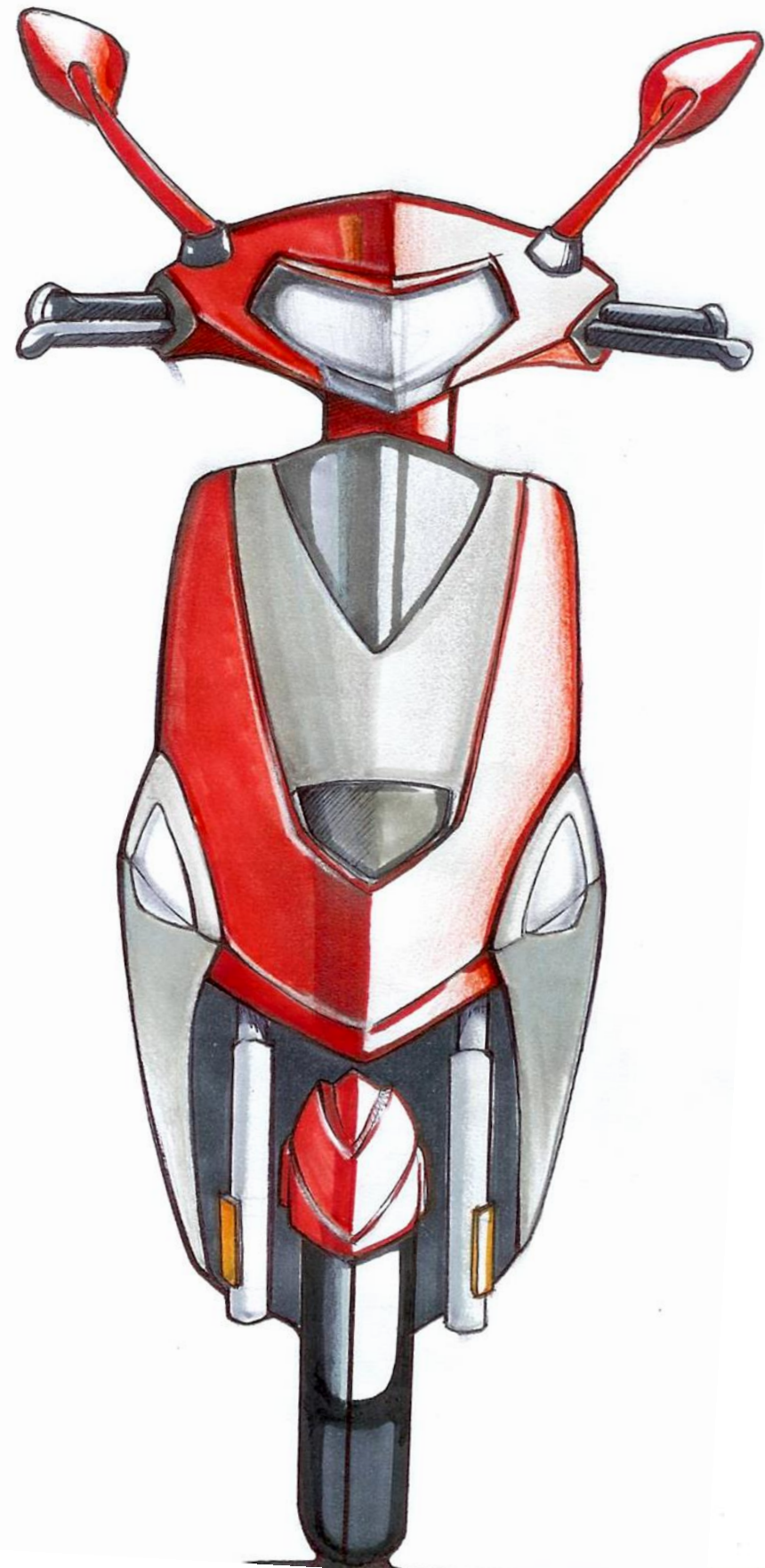




Explorations for fender element:

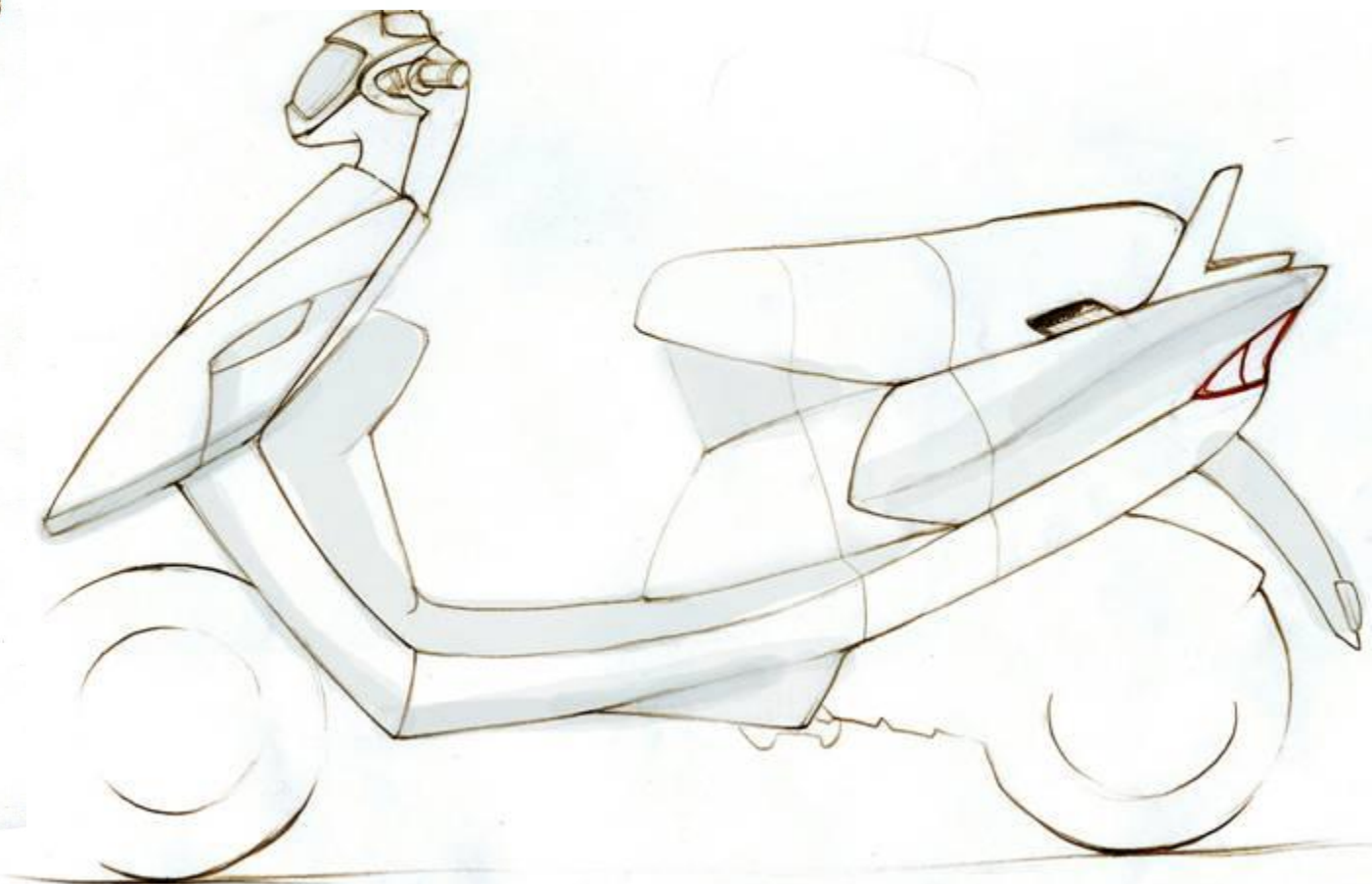
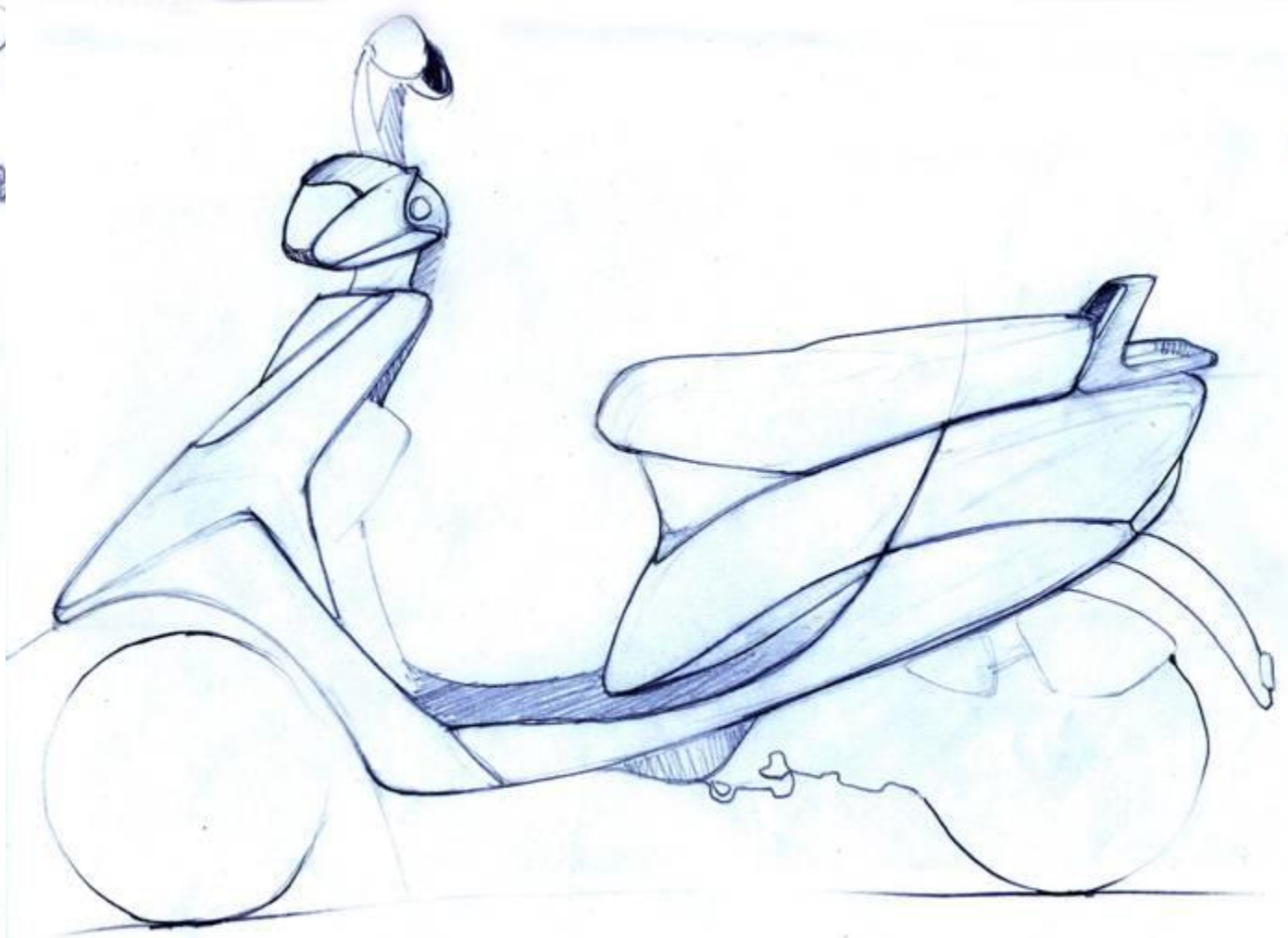
- Deciding on the degree of front swoop
- The volume of the fender element
- Cut-out features to indicate aggressiveness





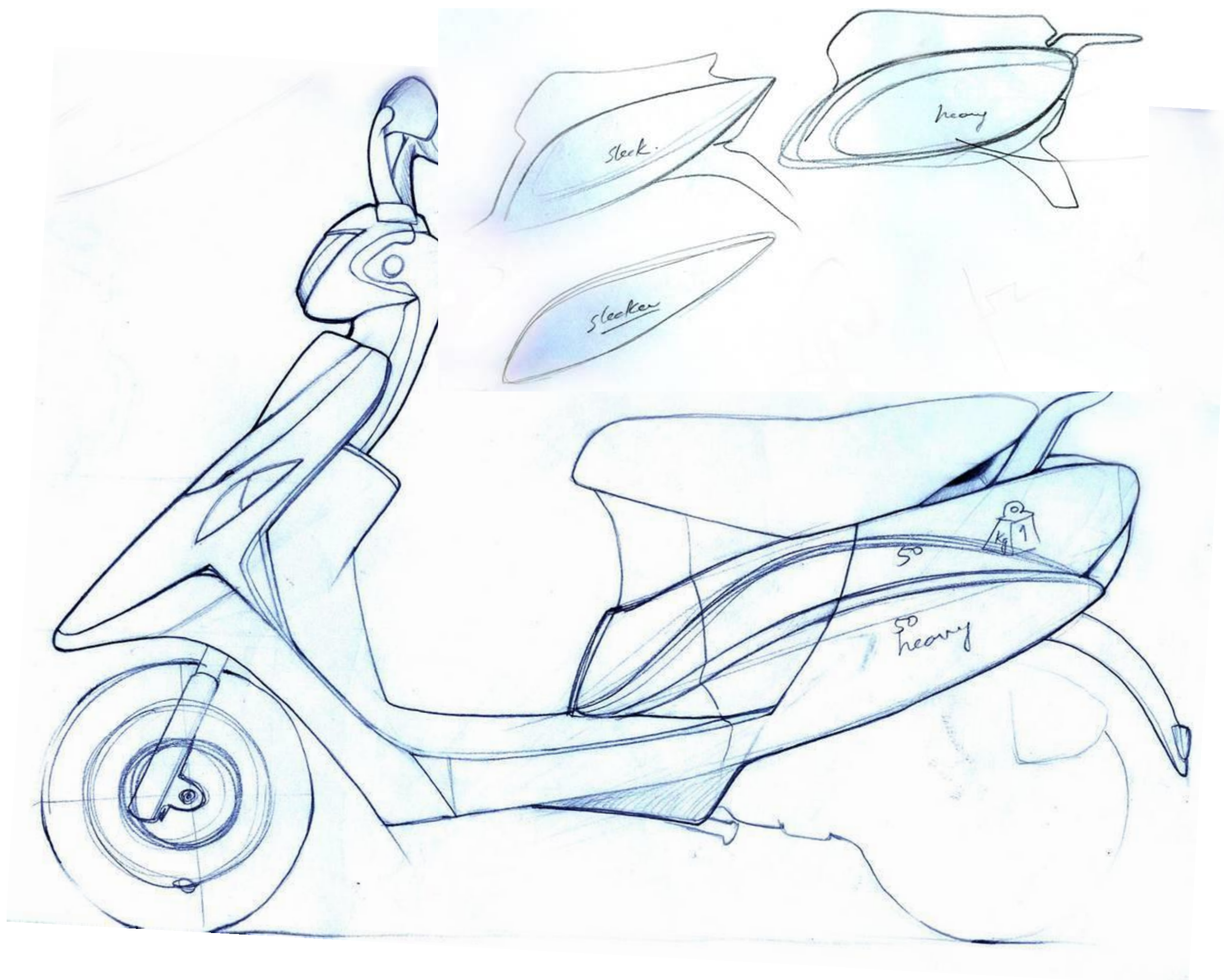
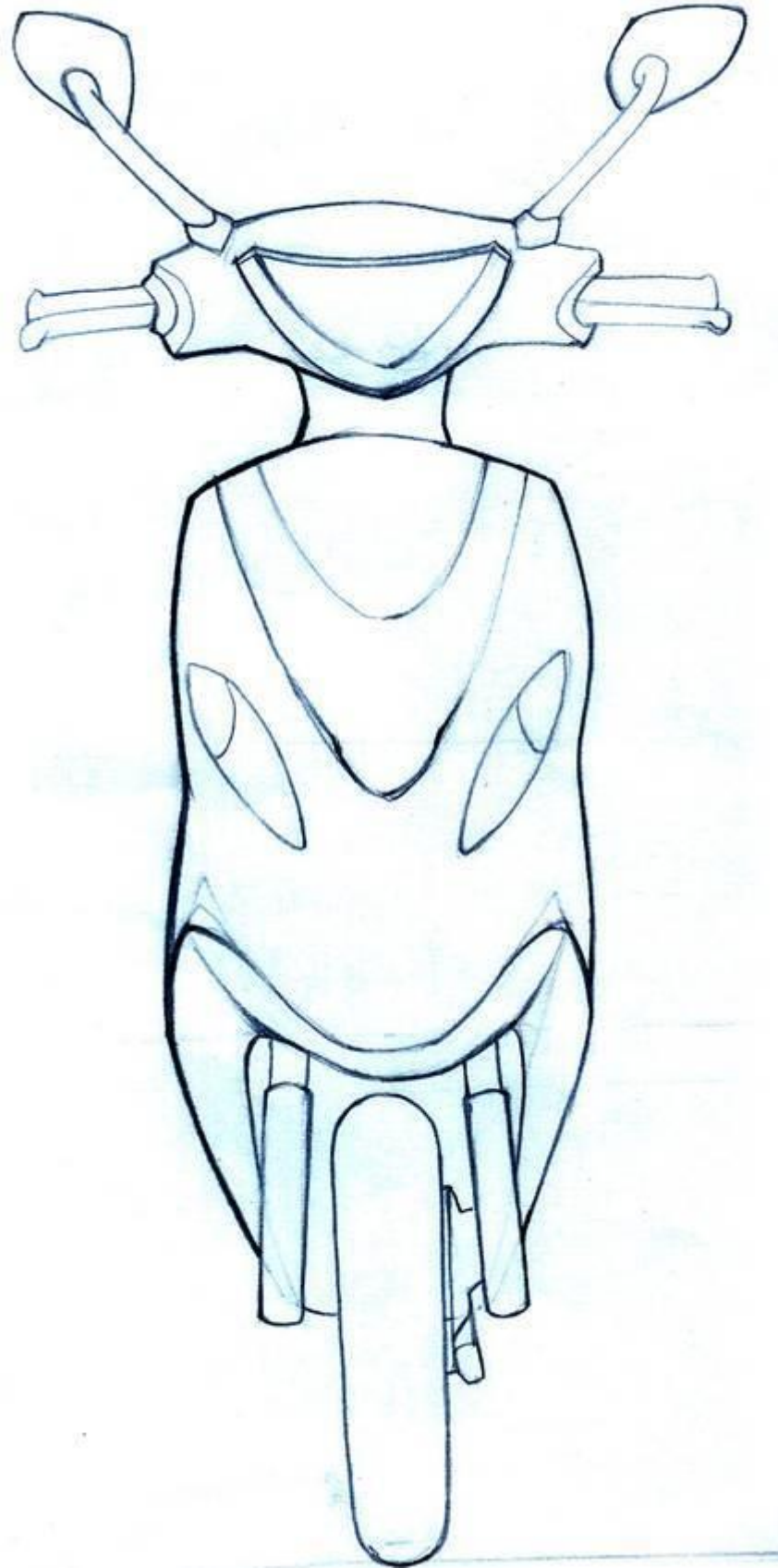
Final concept chosen for this direction

AERODYNAMIC / STREAMLINED EXPRESSION



- Deciding on the visual weight expressed in the rear end

- Side indicators must improve – not coherent

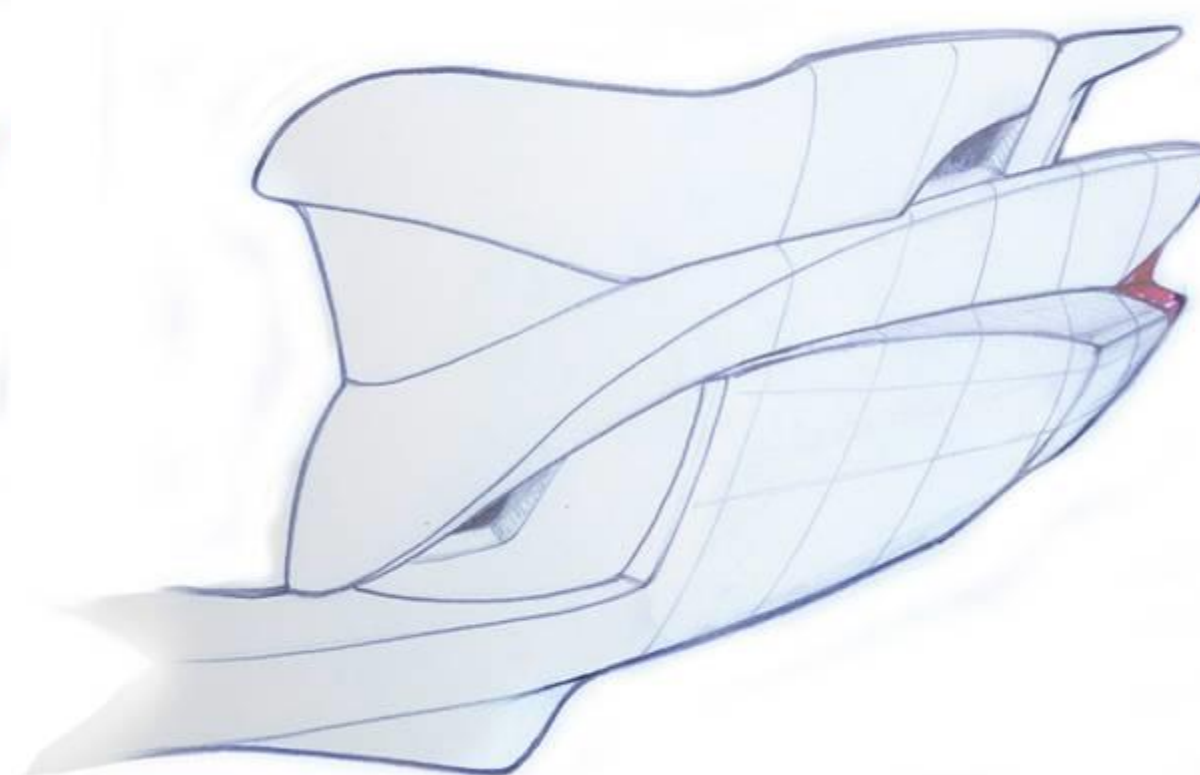
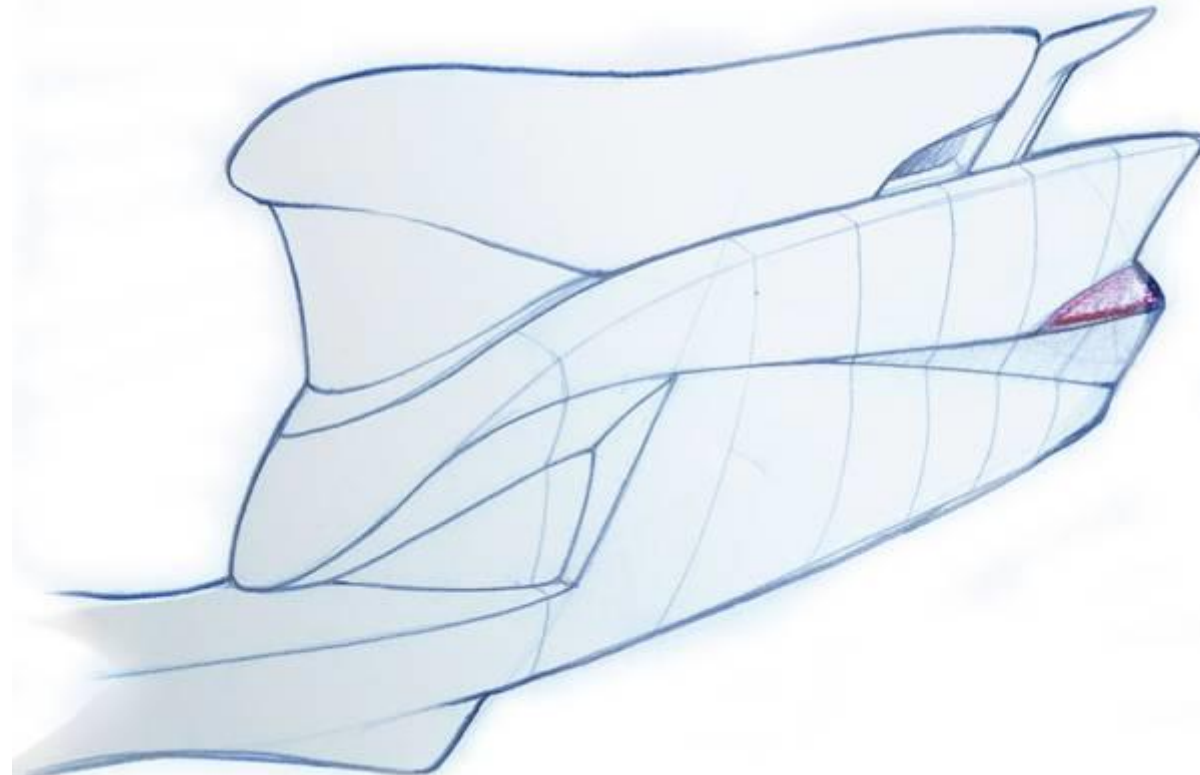
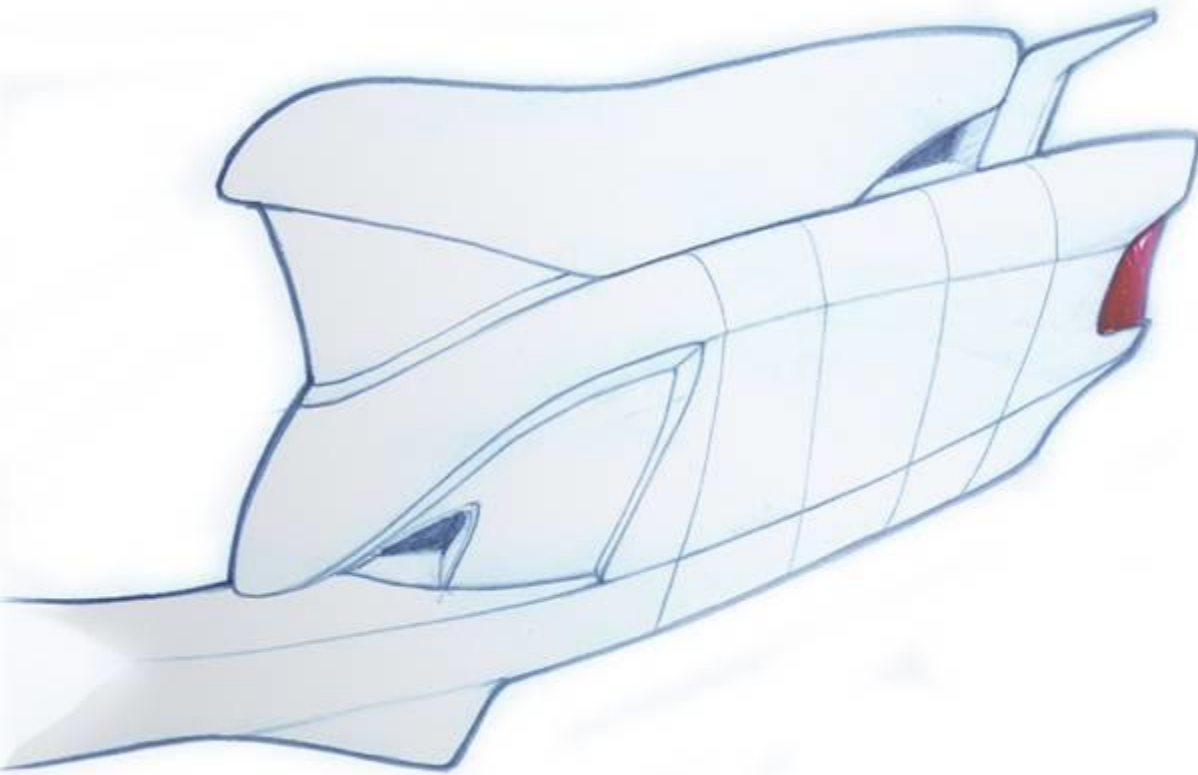




- Details of split lines were worked on to break the visual mass

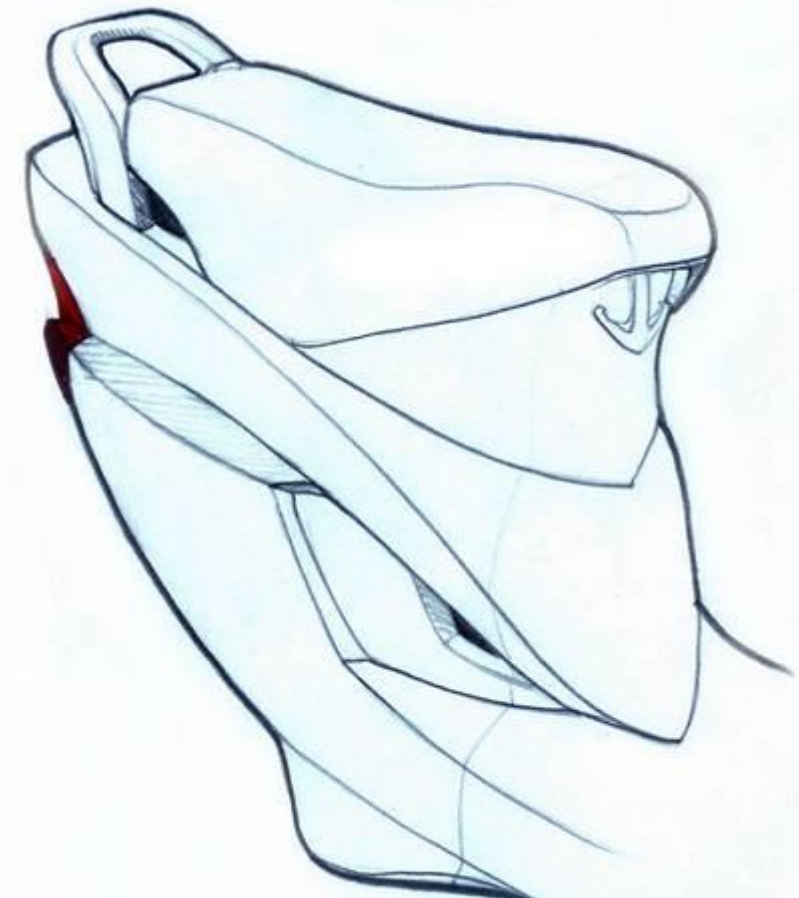
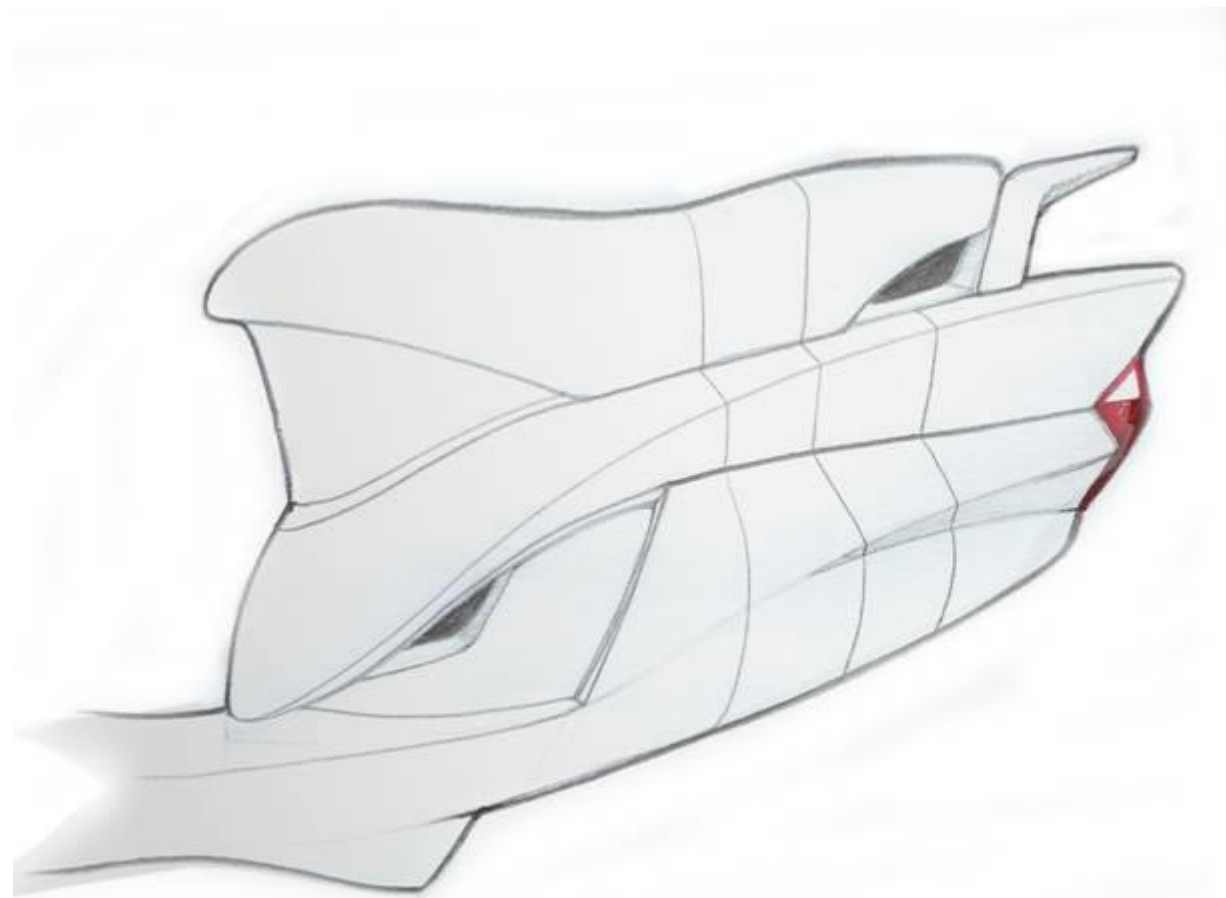
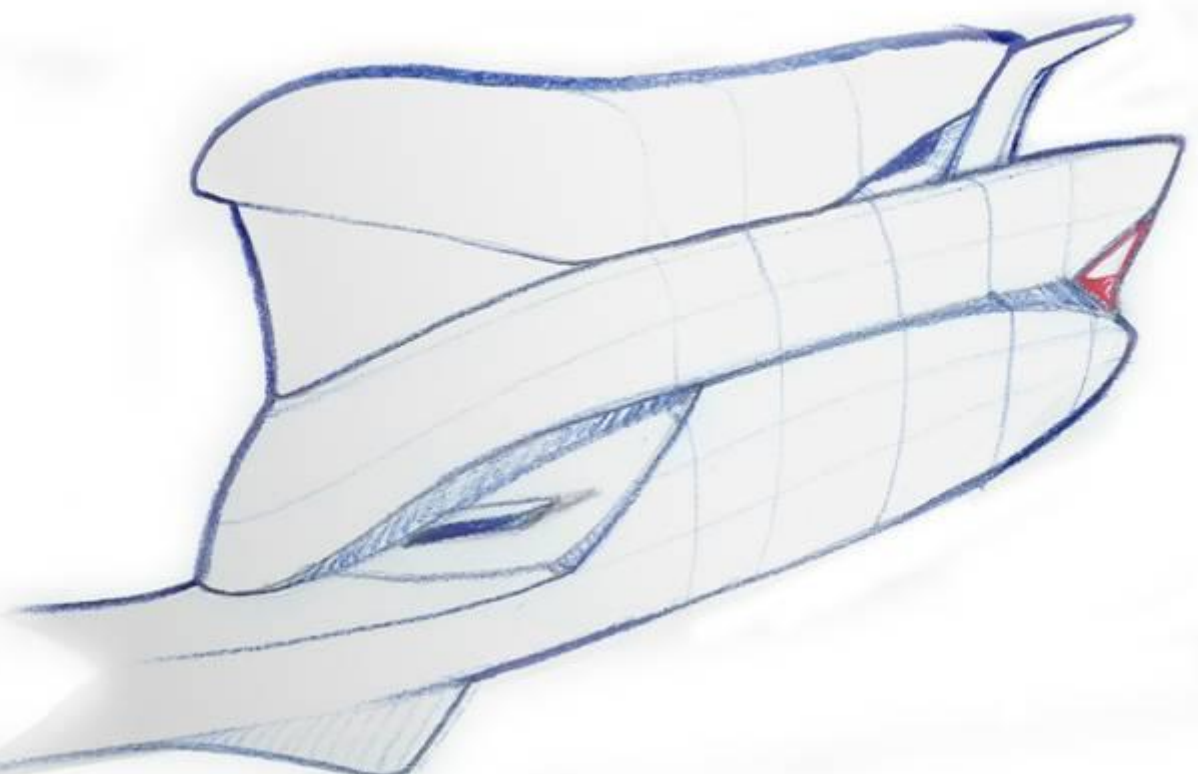
- Rear end still appeared too bulky

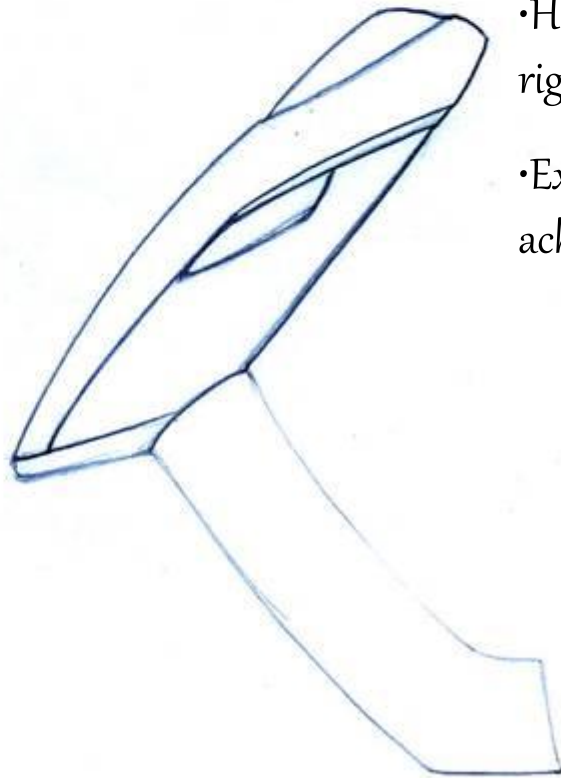
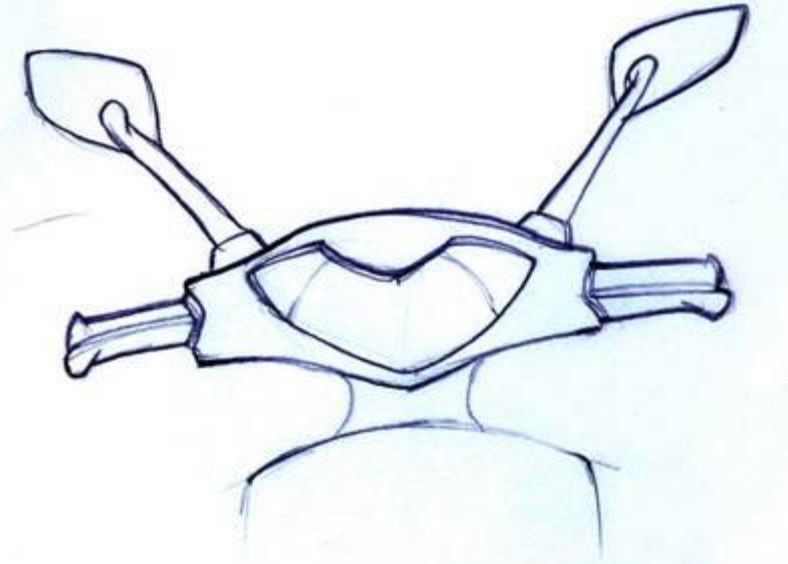
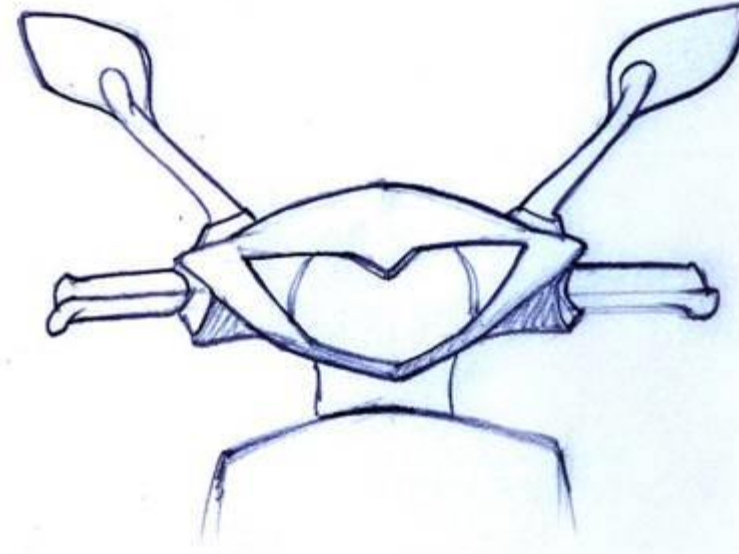
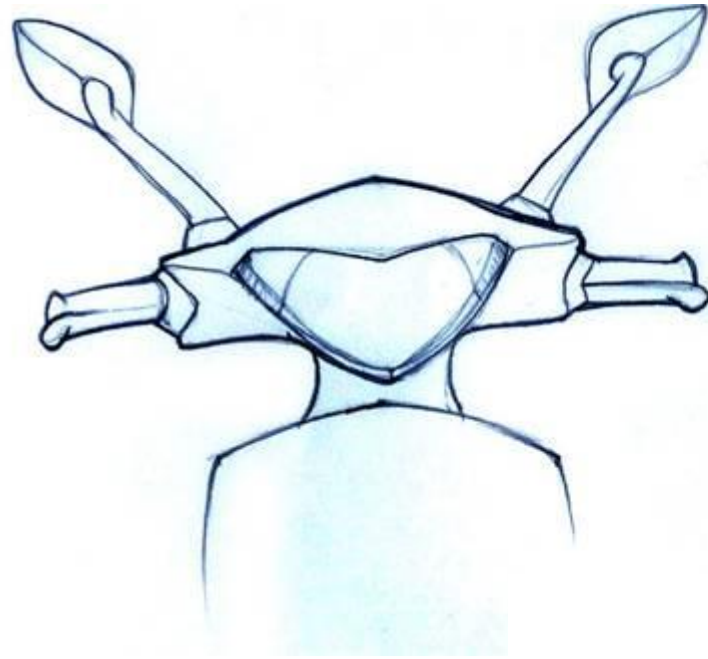
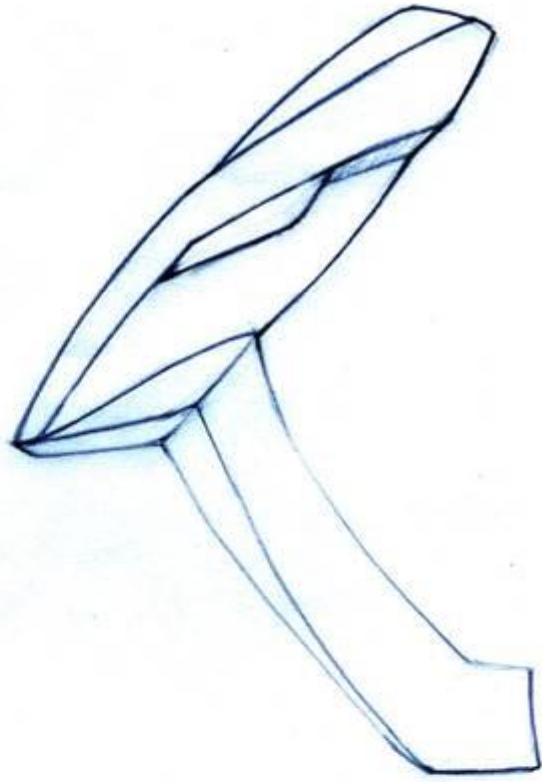
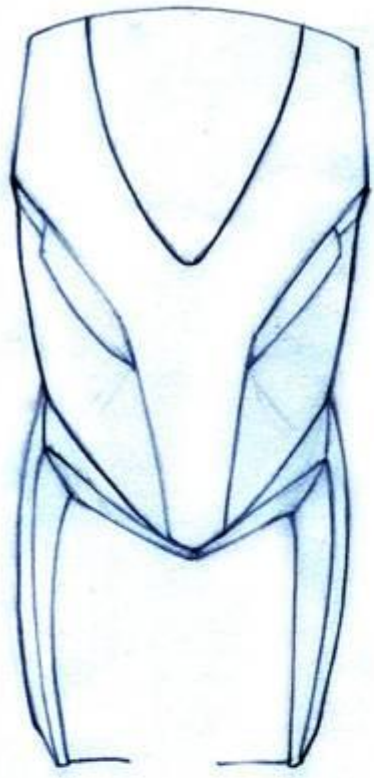




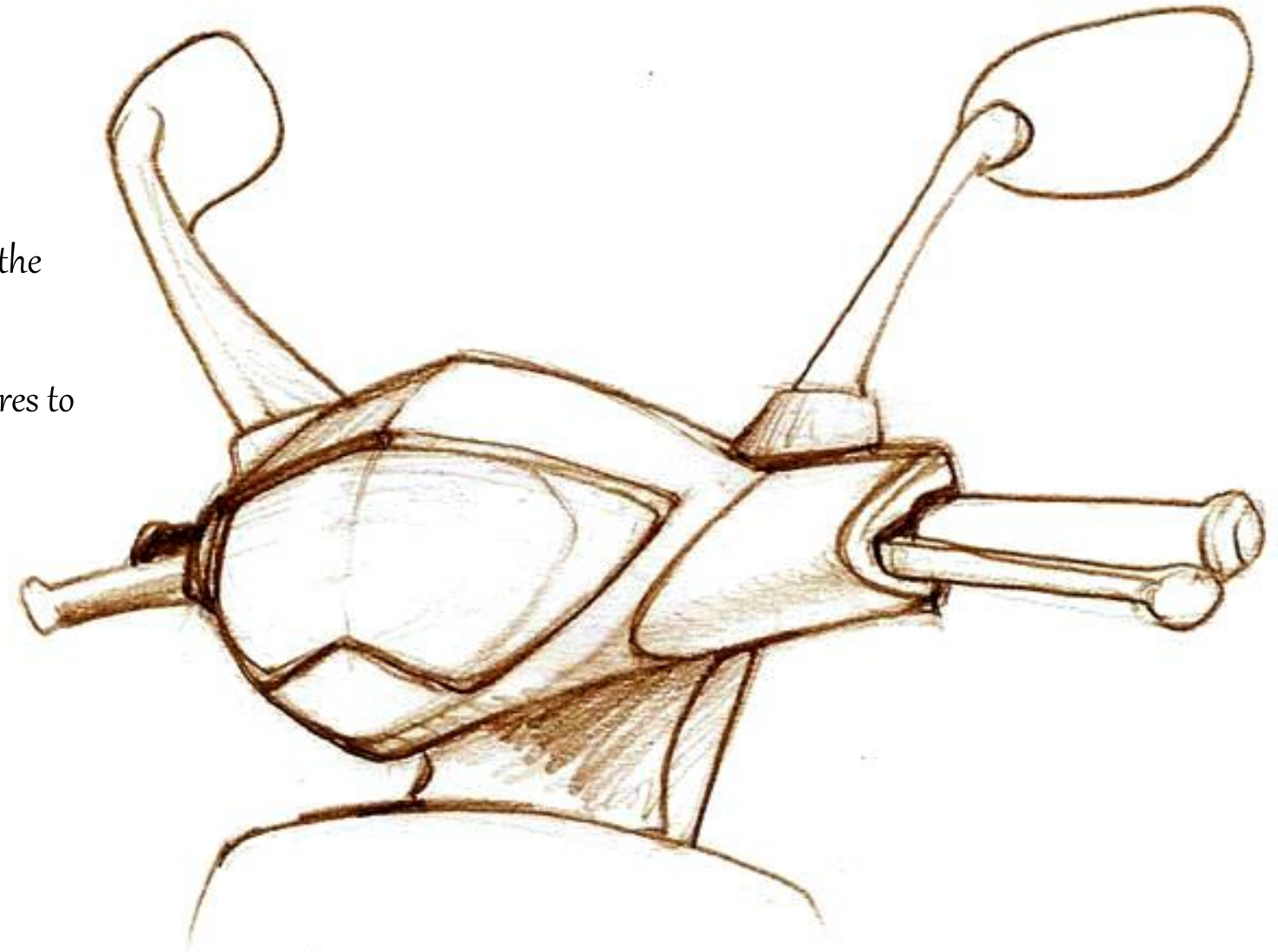
•Developments in the rear end and side cowl to pull out muscles

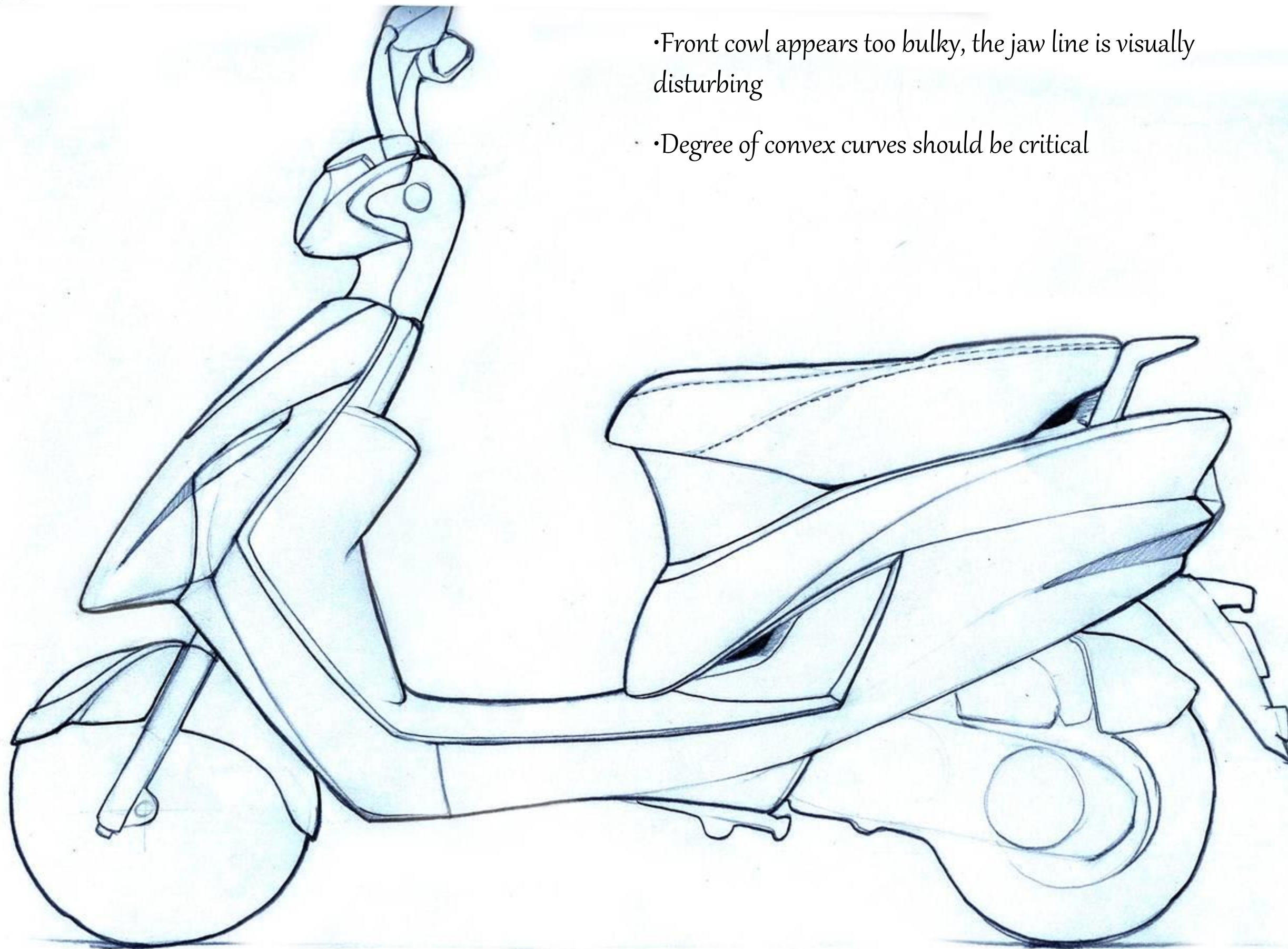
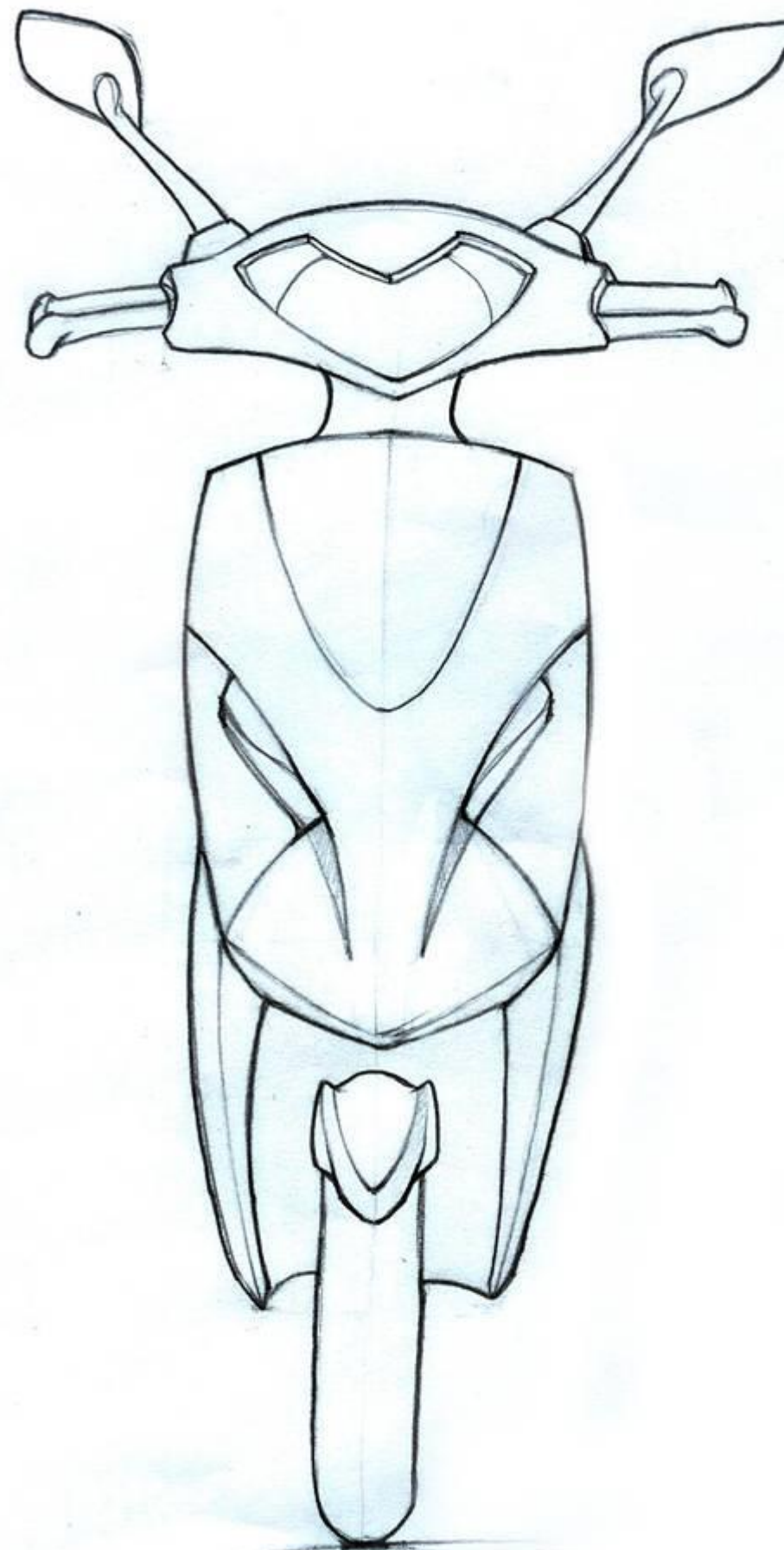
•Proportions of each panel were very critical





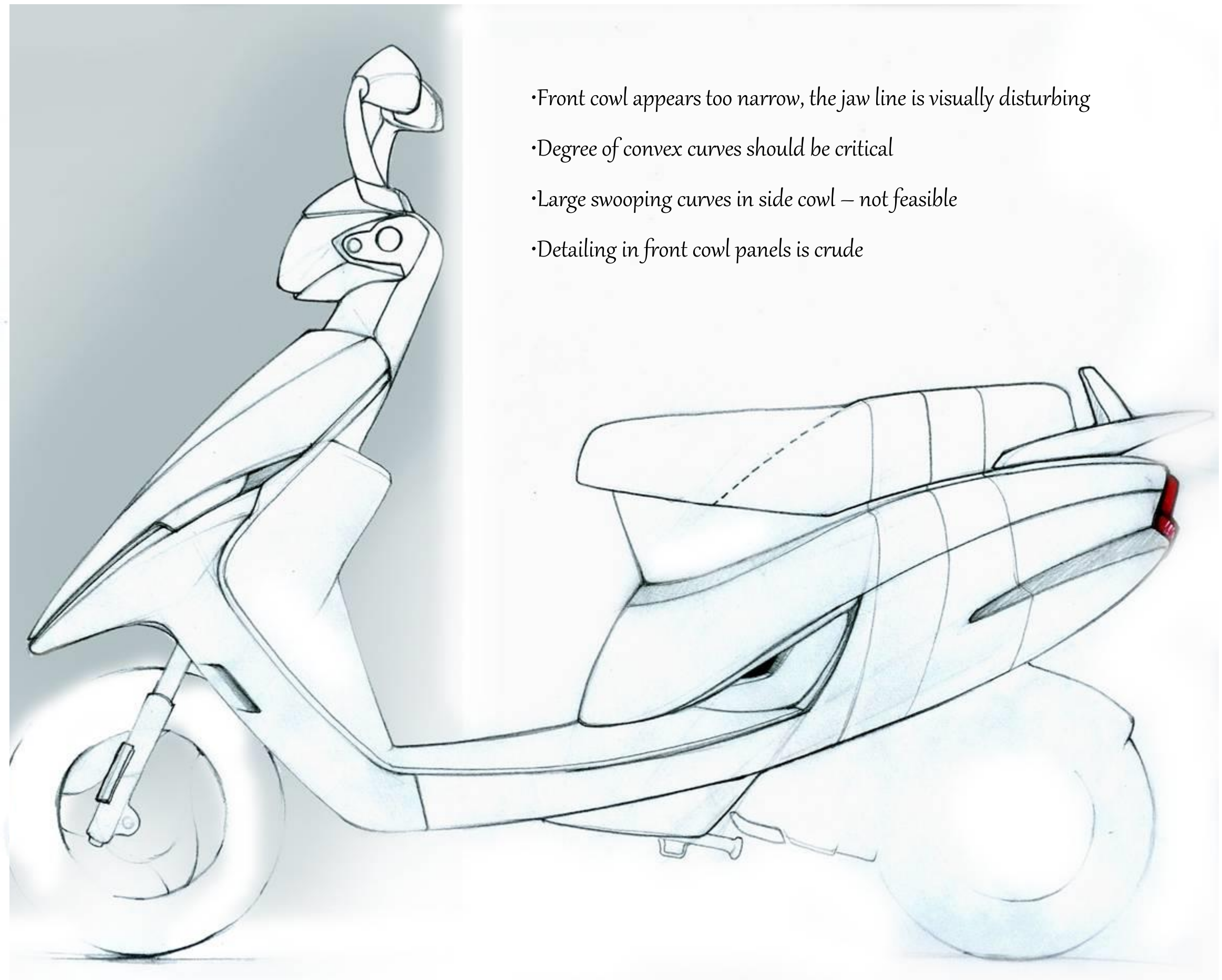
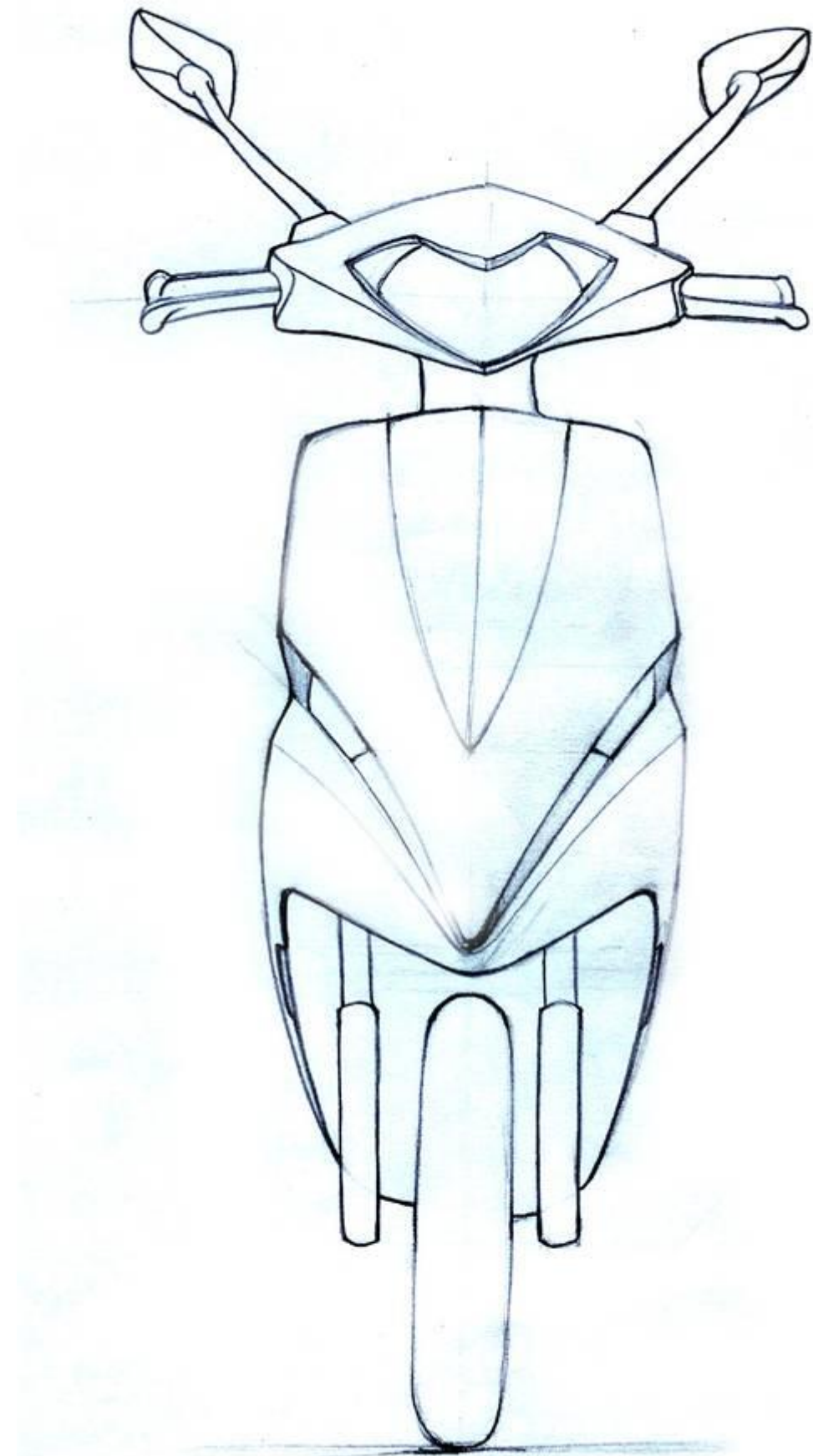
- Highlights and recesses were decided to depict the right mix of crispness with robustness
- Explorations in front cowl and headlamp features to achieve sharpness in character





•Front cowl appears too bulky, the jaw line is visually disturbing

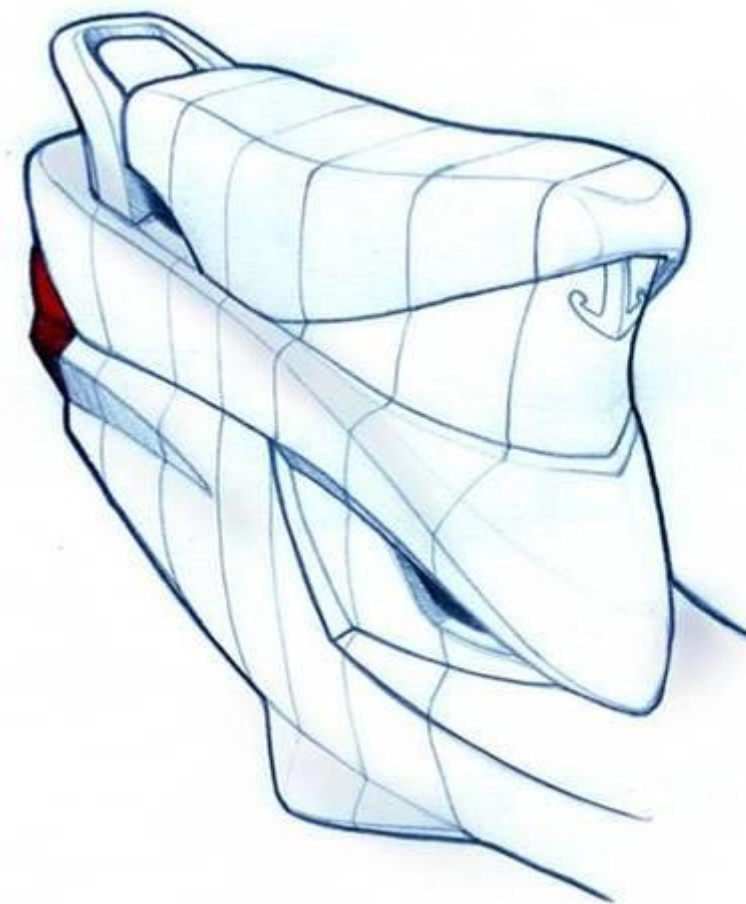
•Degree of convex curves should be critical



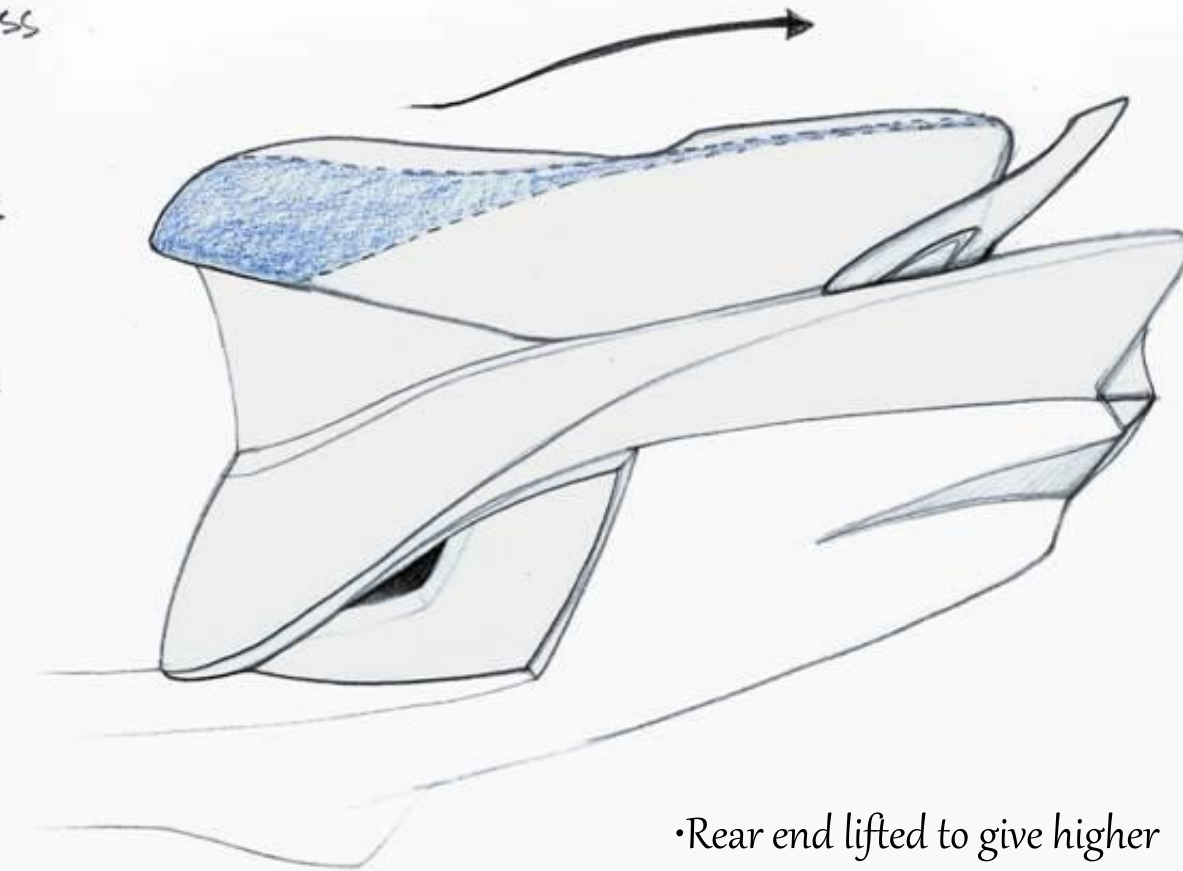
- Front cowl appears too narrow, the jaw line is visually disturbing
- Degree of convex curves should be critical
- Large swooping curves in side cowl – not feasible
- Detailing in front cowl panels is crude



- Side indicators are successful in aggressive expressions
- Front cowl looks stubby owing to negative split lines

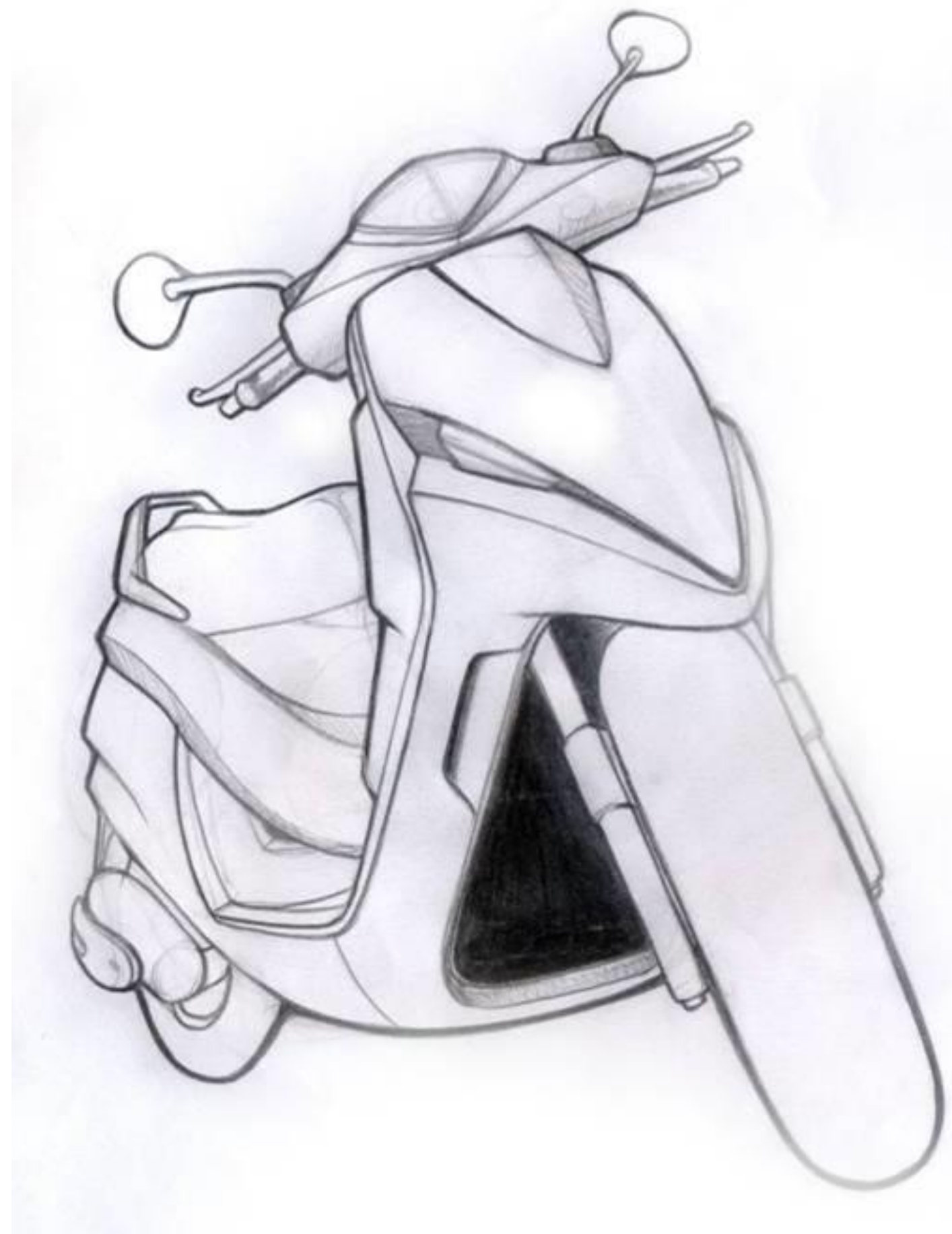
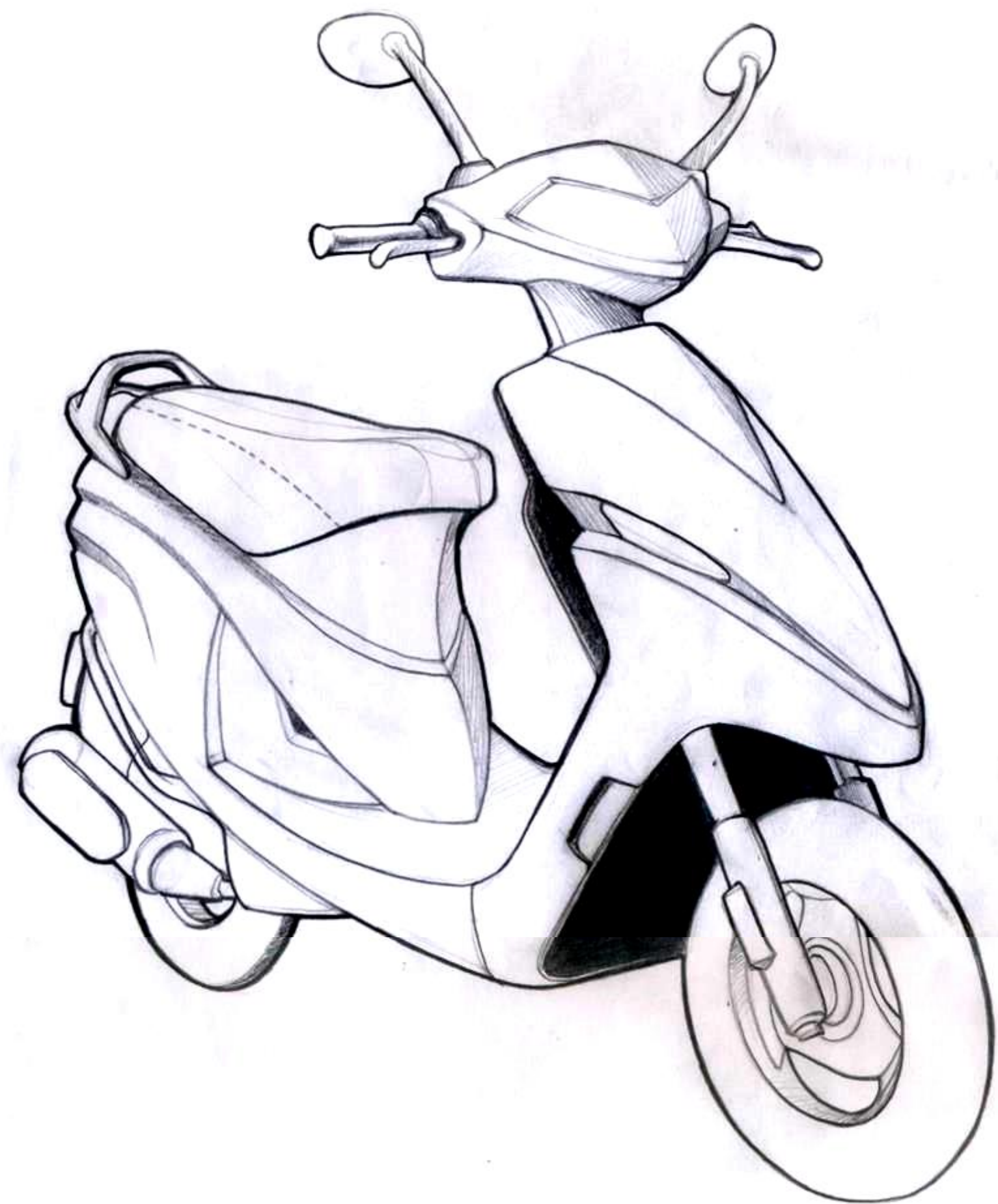


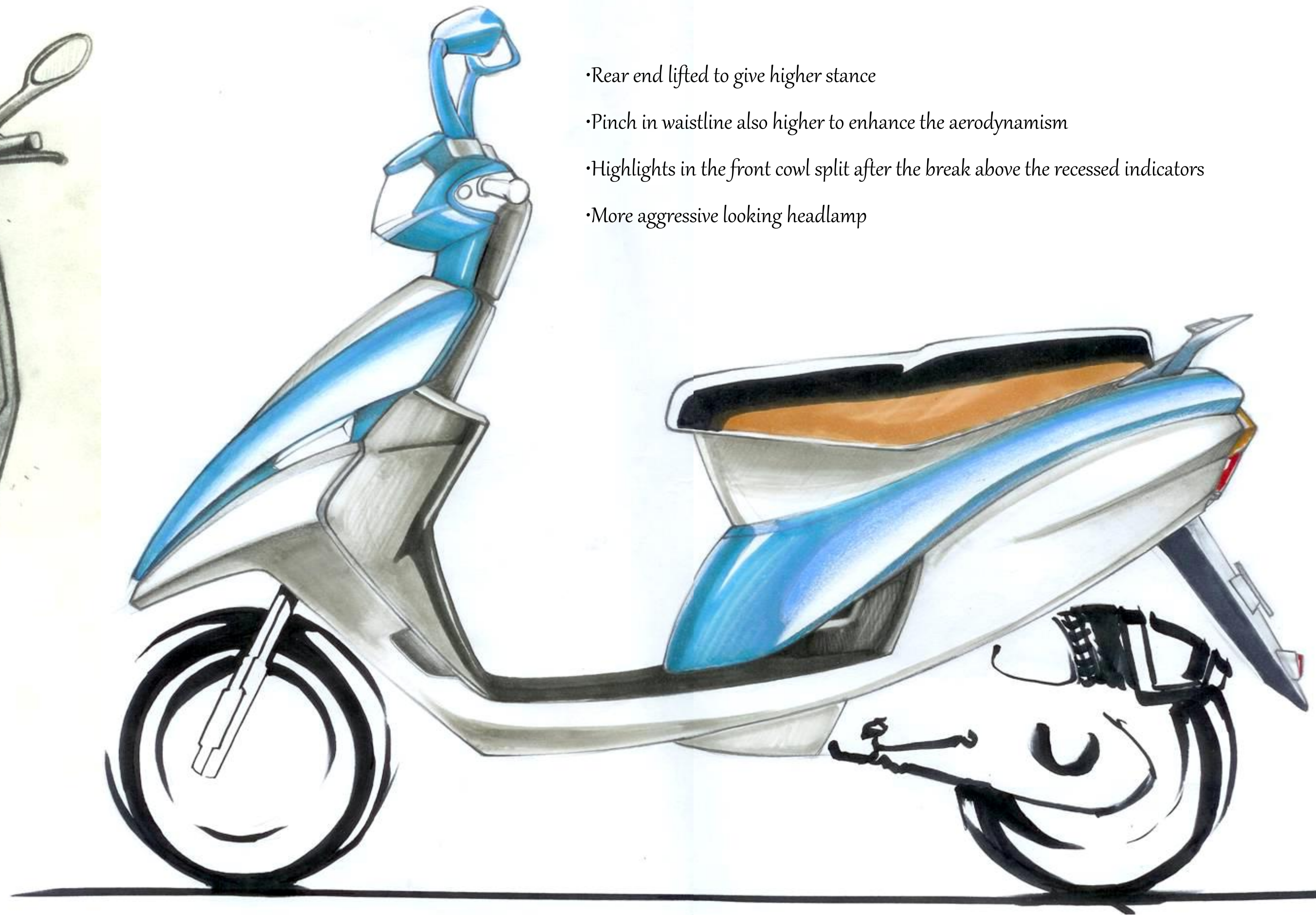
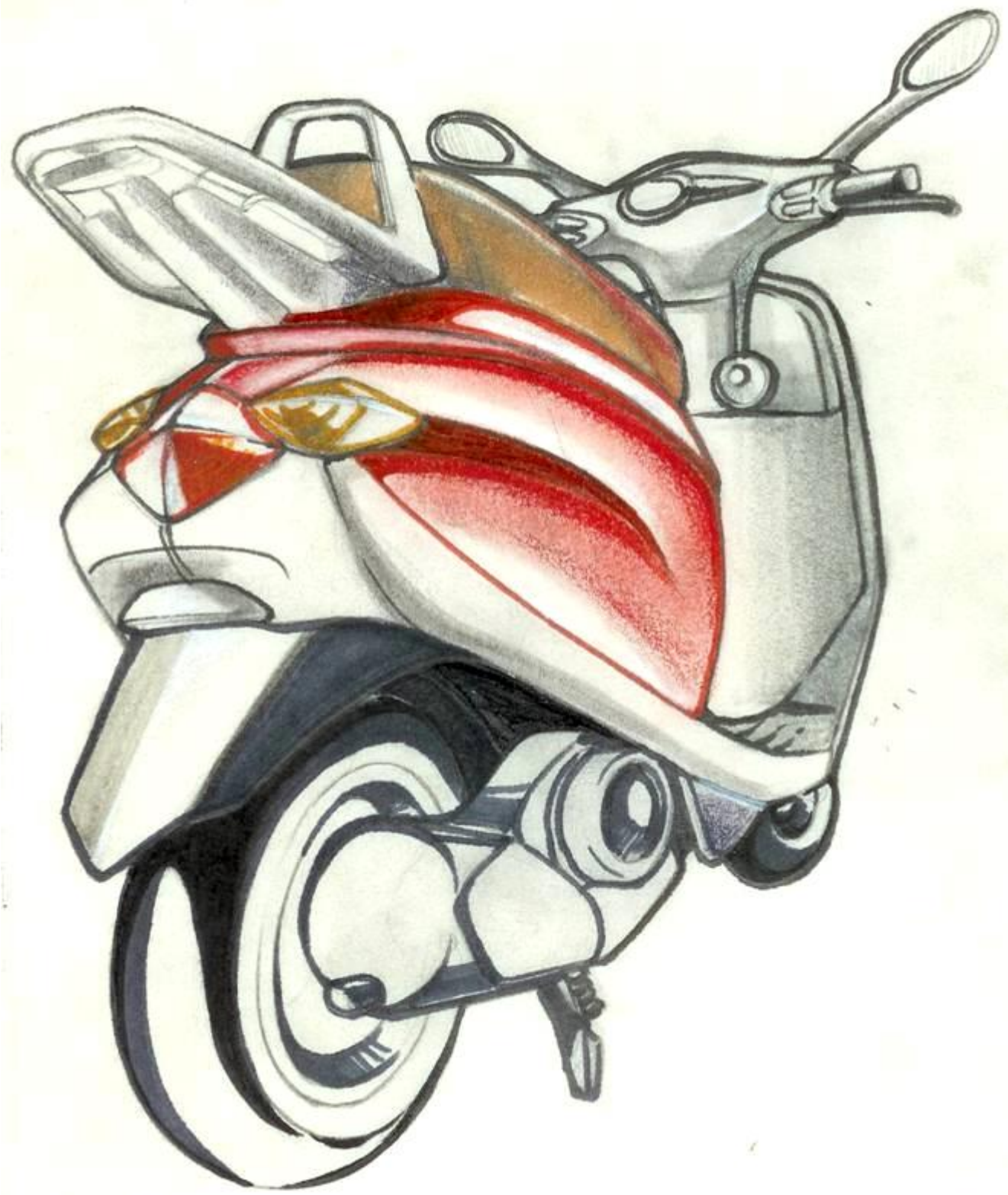
BREAK IN
SEAT MASS
↓
FOLLOWS
SIMILAR FLOW
LINES
↓
DISTRACTS
FROM NEGATIVE
DIRECTION
FLOW LINES



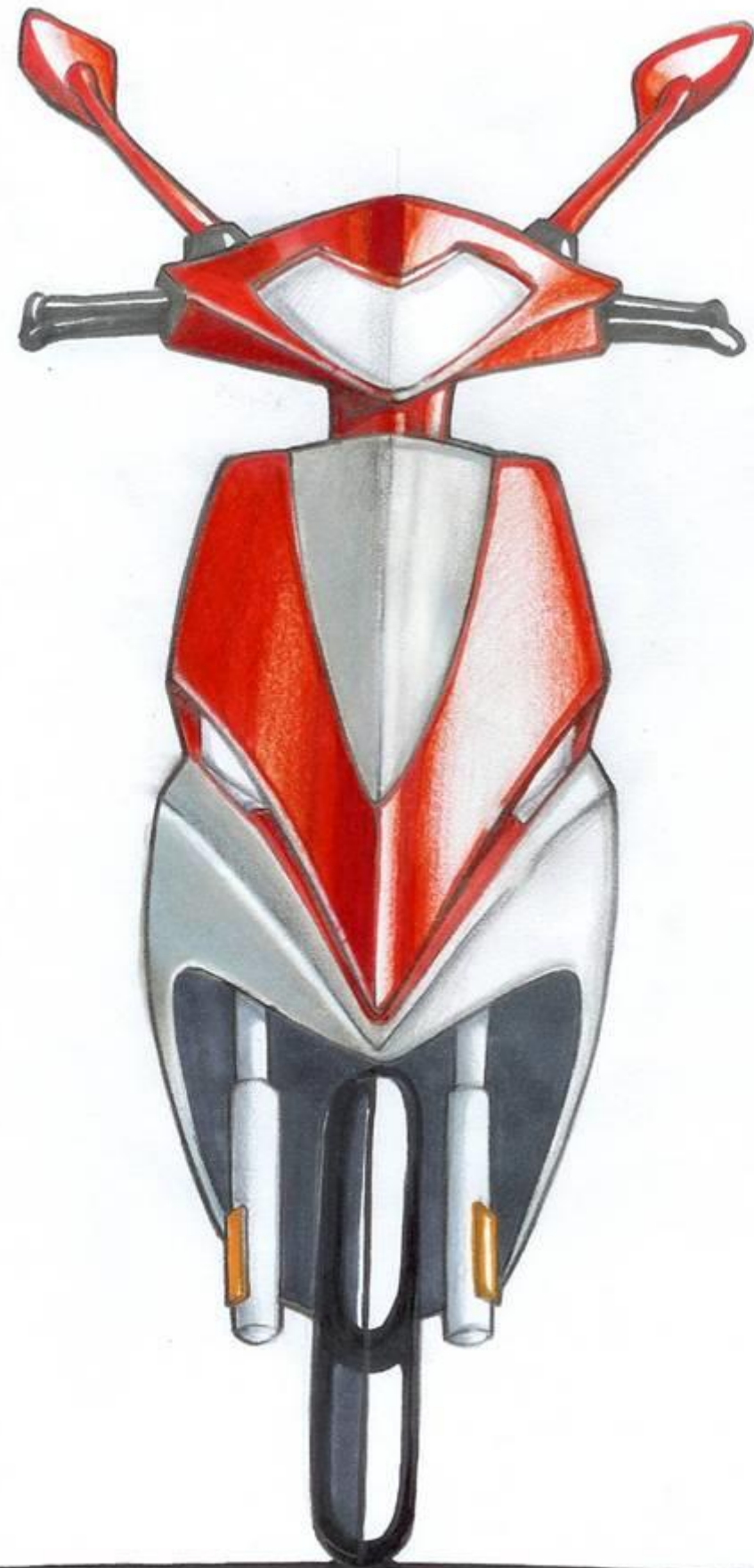
- Rear end lifted to give higher stance
- This led to a change in the length of the vehicle making it longer



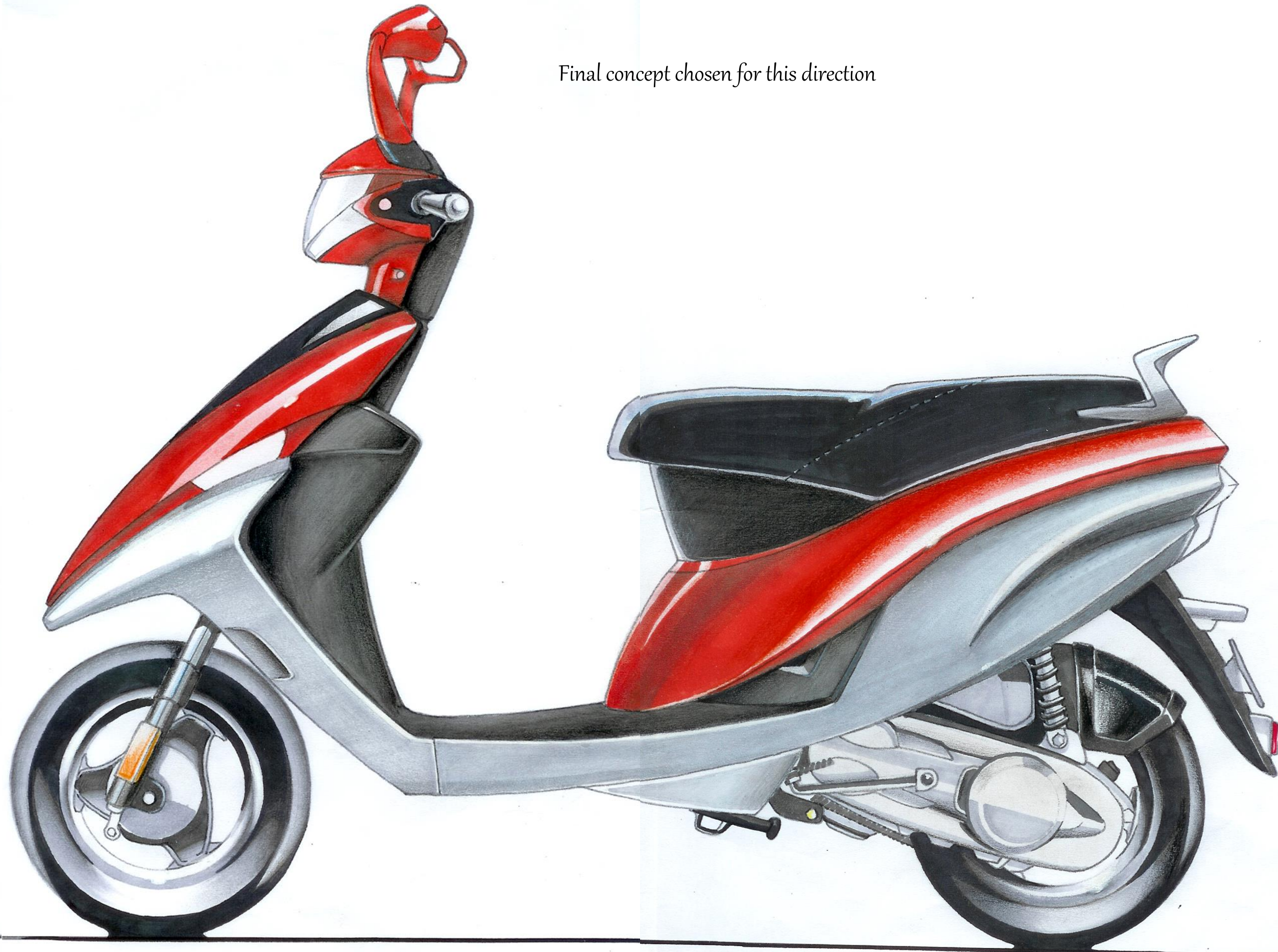




- Rear end lifted to give higher stance
- Pinch in waistline also higher to enhance the aerodynamism
- Highlights in the front cowl split after the break above the recessed indicators
- More aggressive looking headlamp



Final concept chosen for this direction



CONCEPT SELECTION

Out of the two concepts one had to be selected for the final proposal.

For this a critical appraisal of the form of Scooty was done to evaluate which of the two was better in terms of a **REFRESH DESIGN**.





Typical **colour splits** in front cowl to break visual monotony.

A very characteristic **highlight** in front partly obstructed by indicator

Too many **surface transitions** causing break in visual continuity

Happy looking headlamp unit

Better **detailing with the water-tight joints** could have avoided the evident surface breaks

Thick supports for the **mirrors** impart a heavy look

Recessed **shoulder** gives a characteristic stance.

Step through is longer than most vehicles and curvaceous

The **tapered nose reduces** the **bulk** of the body.

The flow lines of the nose are **incoherent** with the rest of the styling flow lines.

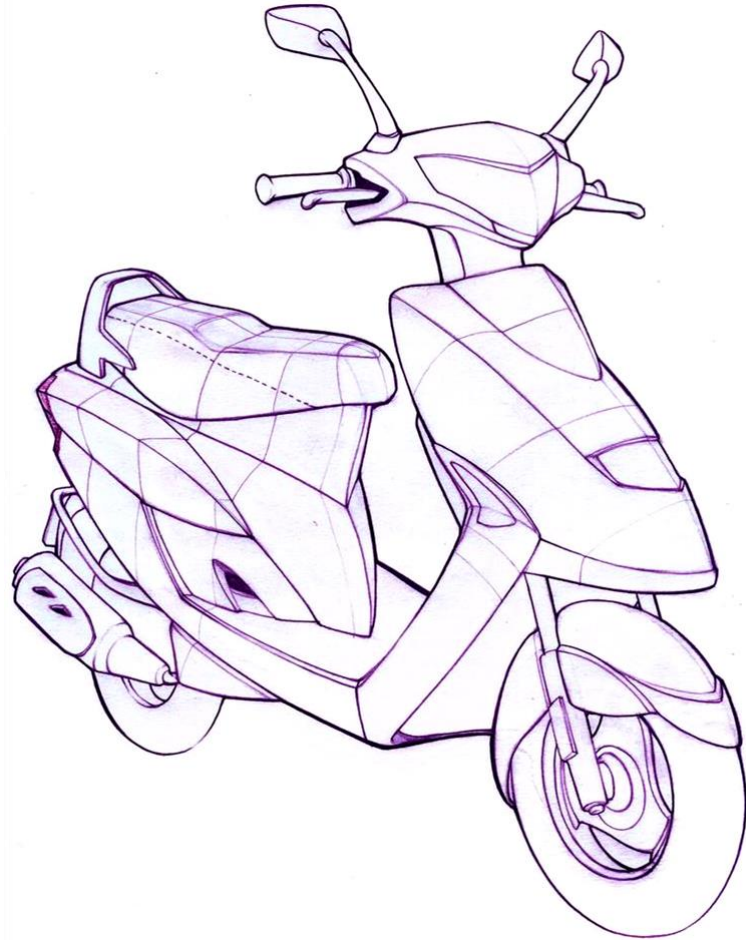
Nose is so positioned that the driver hardly sees the wheel turning.

Rear half appears too **bulky** for the front half.

The tail lamp is a derivative of flow lines of the rear and is very **curvaceous** and gels with the **language of the rear end**

Bulkiness of the **seat** is complementing the bulk of the rear half of Scooty. This enhances mass at rear.

CONCEPT one



MUSCULAR /
ROBUSTNESS



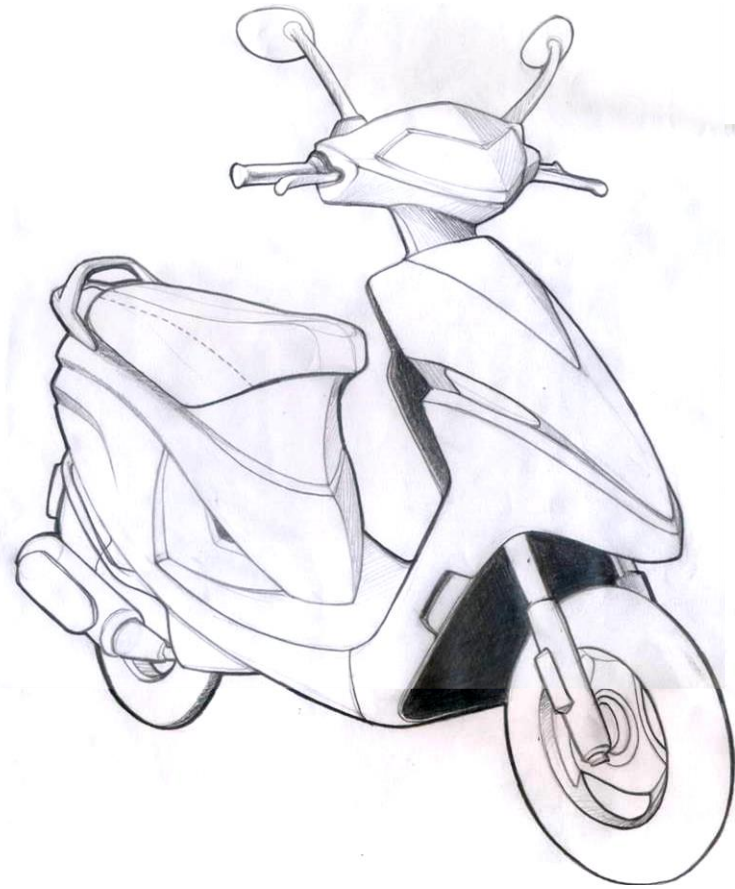
•POSITIVE FEATURES:

- Retaining the same number of **panels and colour splits**
- Giving a **higher stance**
- Modified the **seat** to provide a dynamic stance
- Shortened the nose** to make it look strong
- Tight convex curves** to make it look aggressive
- Providing a **crisp look** to the styling design

•DRAWBACKS:

- Addition of the **fender breaks the identity** of the Scooty, although it gives it a robust character
- The **pillion handle** appears to **stubby**
- The grey appears too little in proportion, making the **rear end bulky**

CONCEPT two



AERODYNAMIC /
SHARPNESS



• POSITIVE FEATURES:

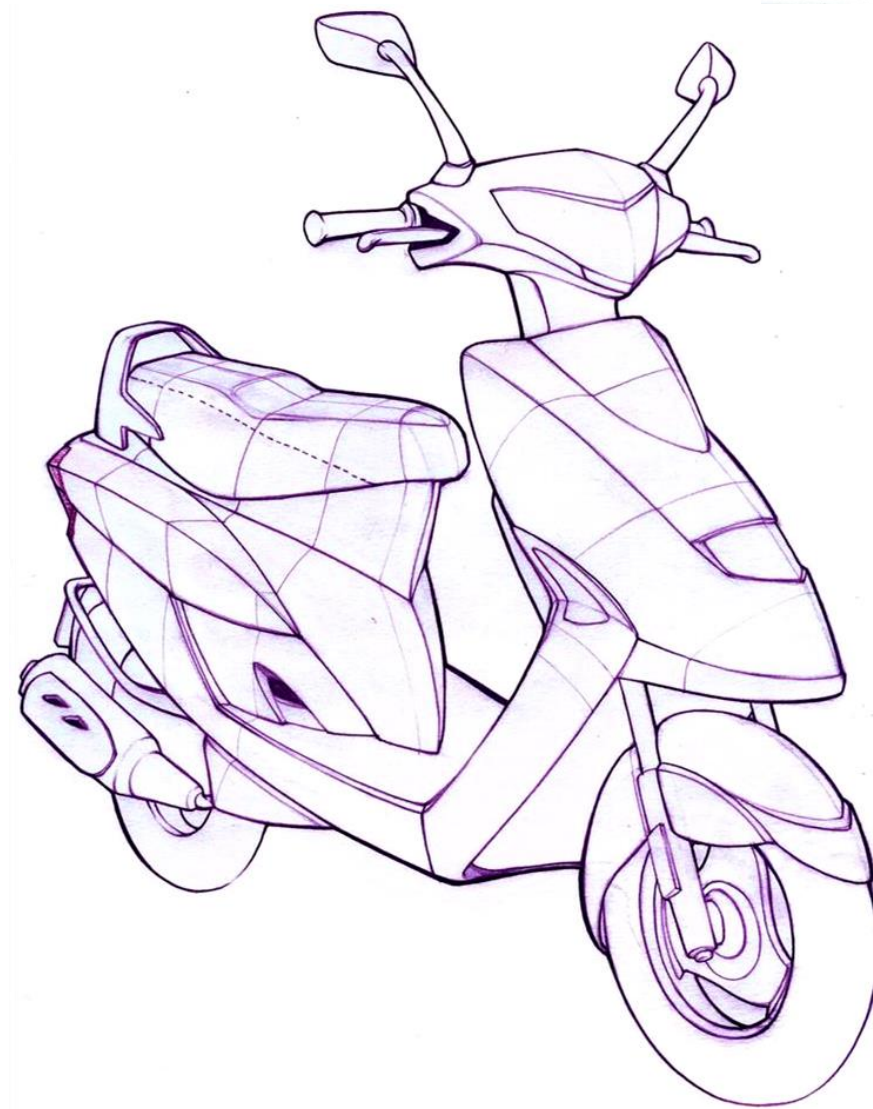
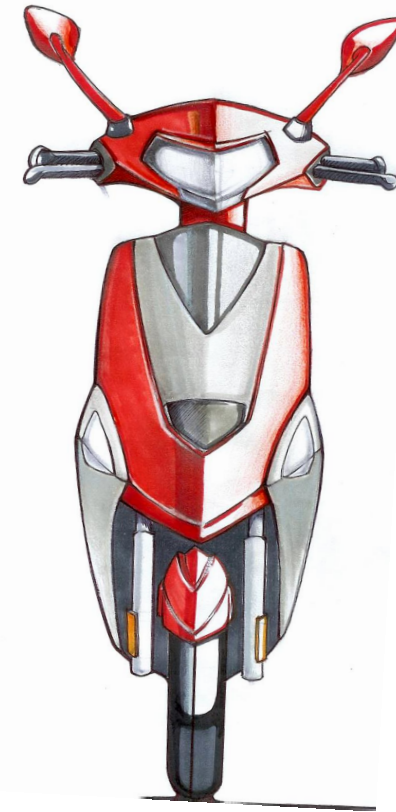
- Retaining the same number of **panels and colour splits**
- **Aggressive** looking headlamp
- Flow lines are **coherent**

• DRAWBACKS:

- Styling is too close to the existing model – **not evolved enough**
- **Rear** still appears **bulky**
- No change in the **seat** makes it look **static**
- Large swooping surfaces that require a **visual break**
- Form still appears to be **sleek** like the existing model

CONCEPT 1 was selected and was taken ahead for further refinement after this stage.

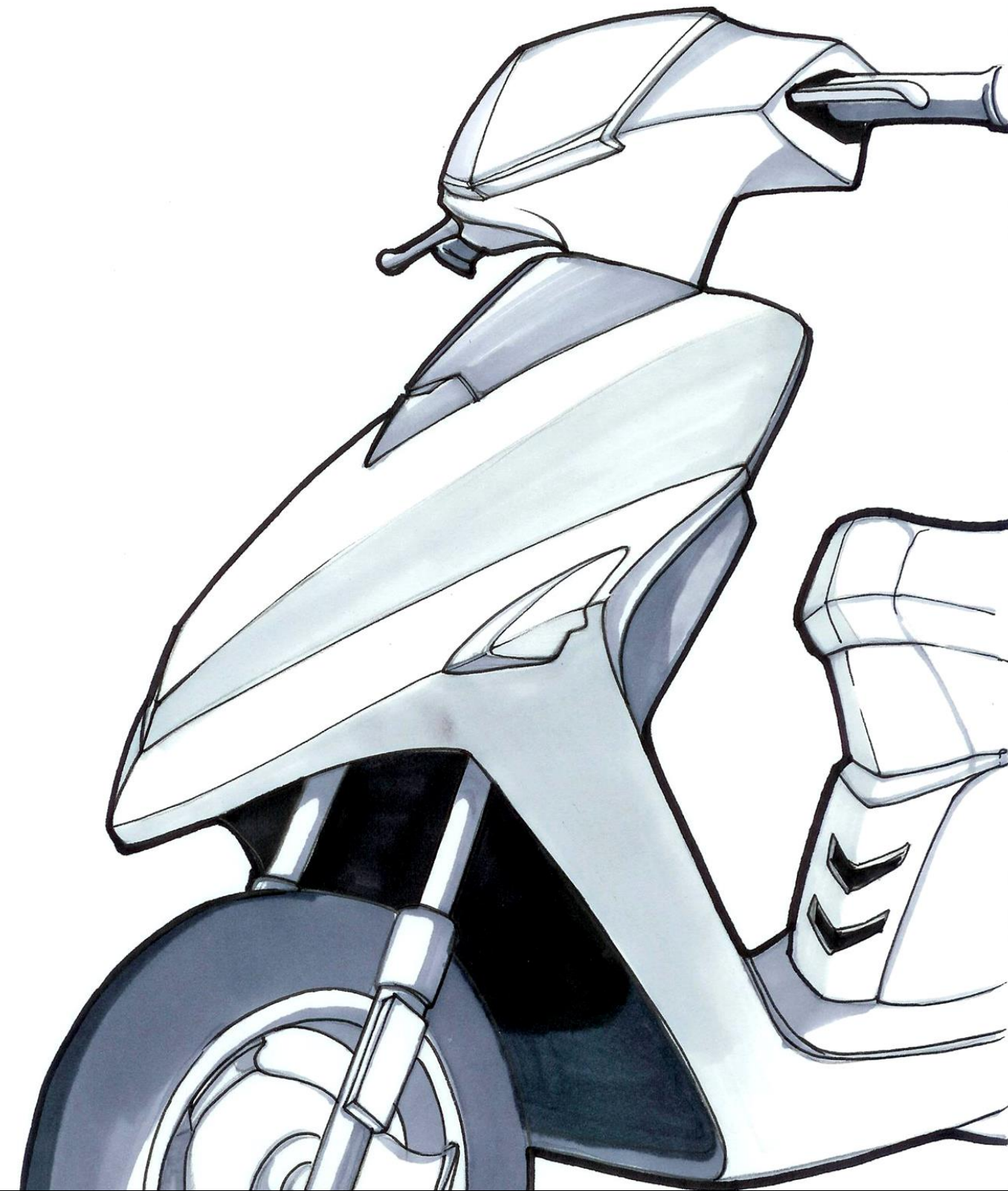
However, a decision was taken to drop the fender element as this would break from the identity of the Scooty Pep Plus.

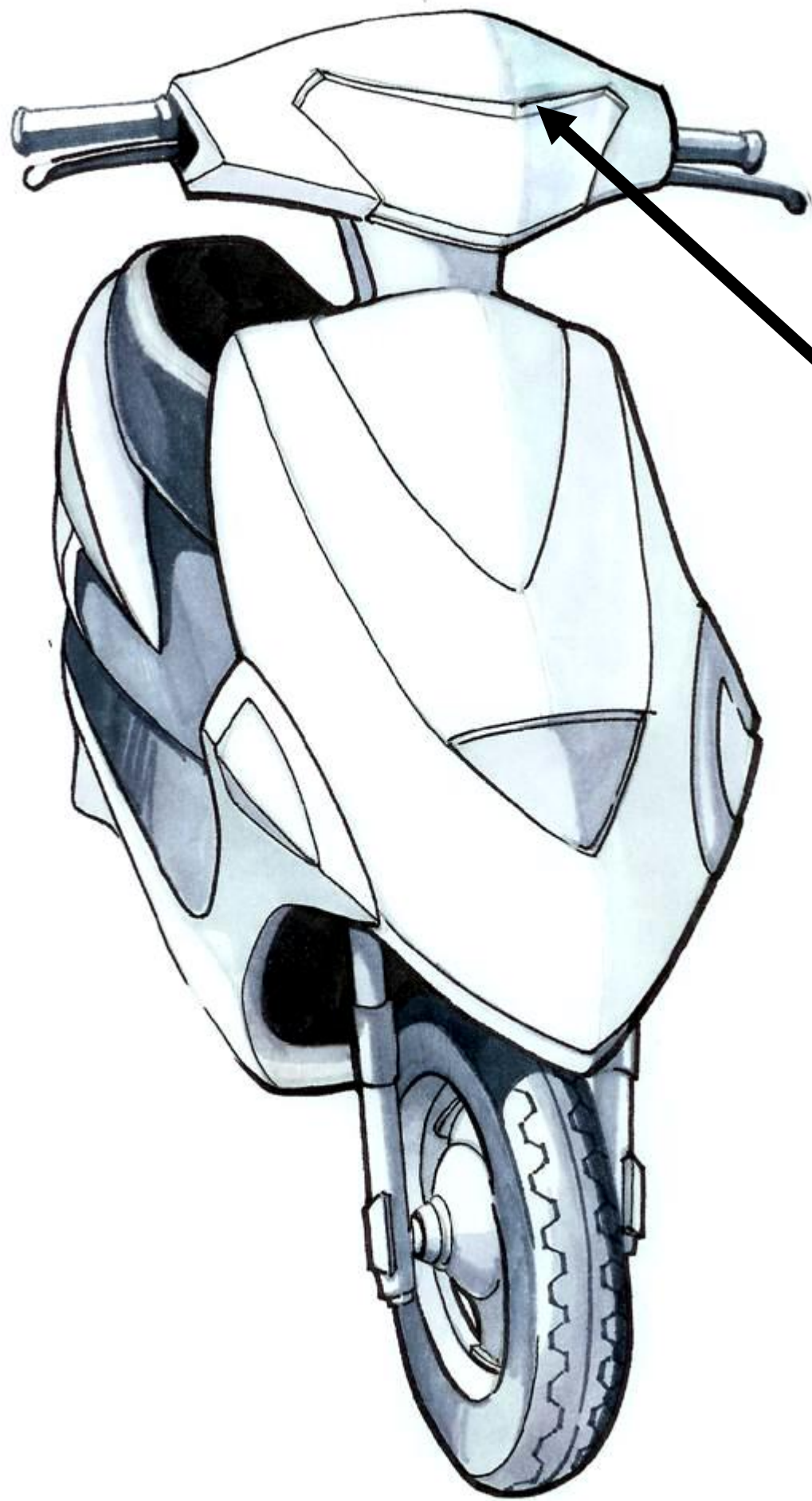


CLAY STYLING

FROM March 12 TO April 23:

- Existing chassis of Scooty taken as *base* with reinforcement
- Clay – soft medium for exploration for easy surface alterations
- Liberty taken to alter the existing seat design
- Instrument panel and rear panel have been maintained with the existing design



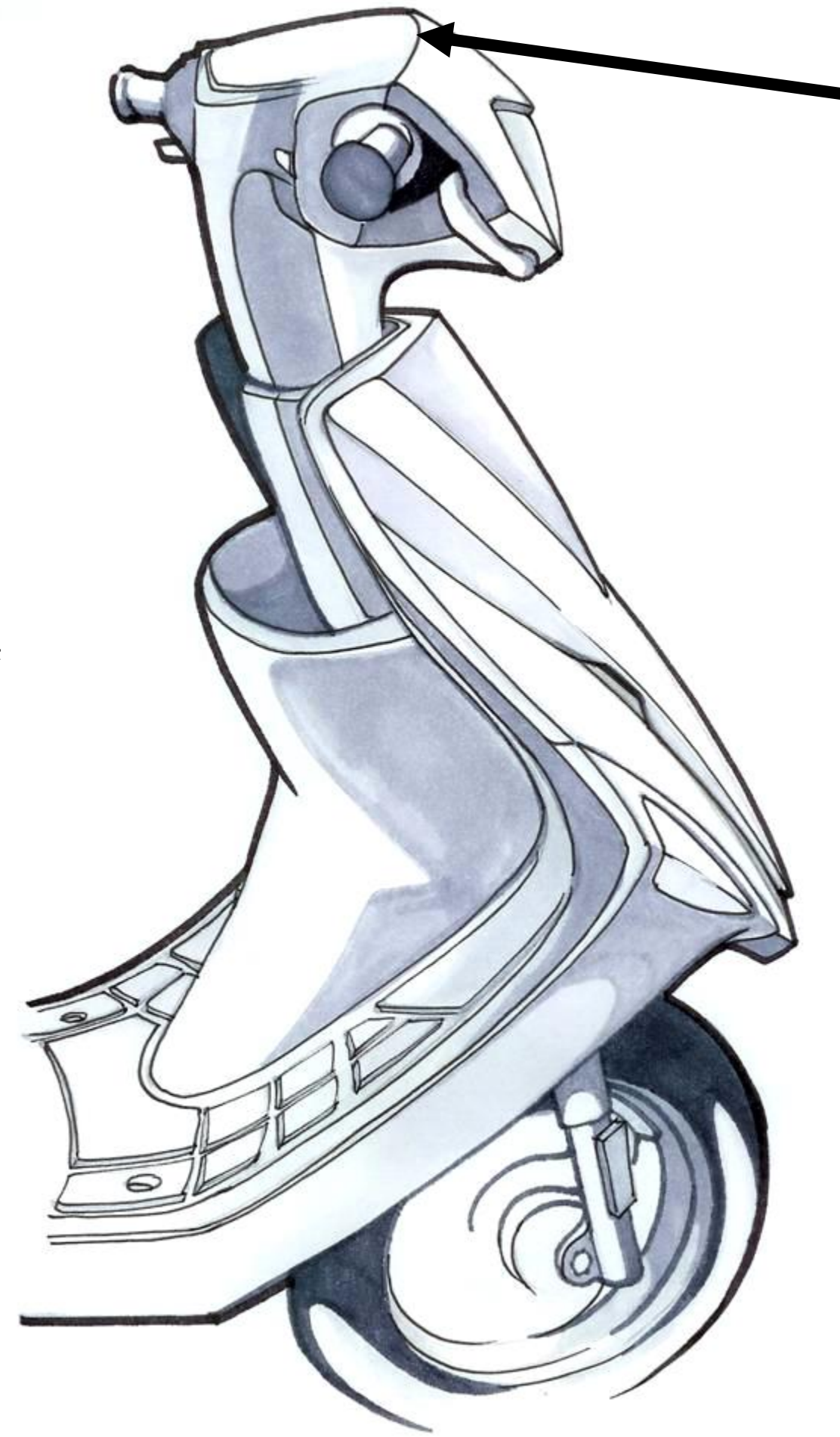


The initial concept had a slightly wider than usual front cowl with arms enveloping the split front panel.

The headlamp was edgy with a defined chin and 6mm ridges along the eared-profile.

The neck was soft and contradicted the rest of the language.

The expressions lacked a sense of crispness



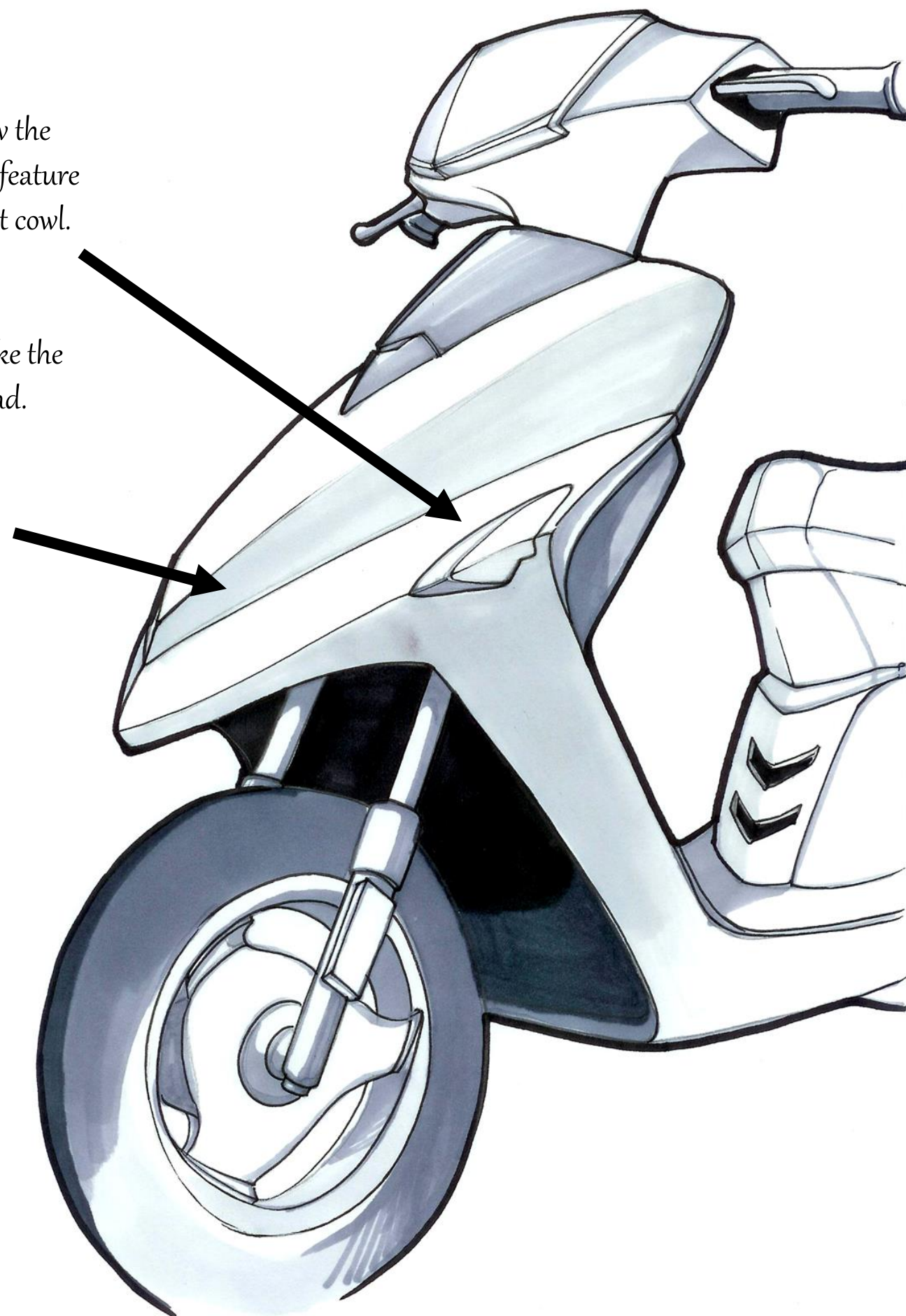
The headlamp was made softer with larger radii and a wider head.

Problems were faced in surface transition of under side of headlamp

The neck and front cowl were turned sharper with the use of harsh edges and cut outs. Arms are retained.

The third iteration saw the morphosis of the arm feature merging with the front cowl.

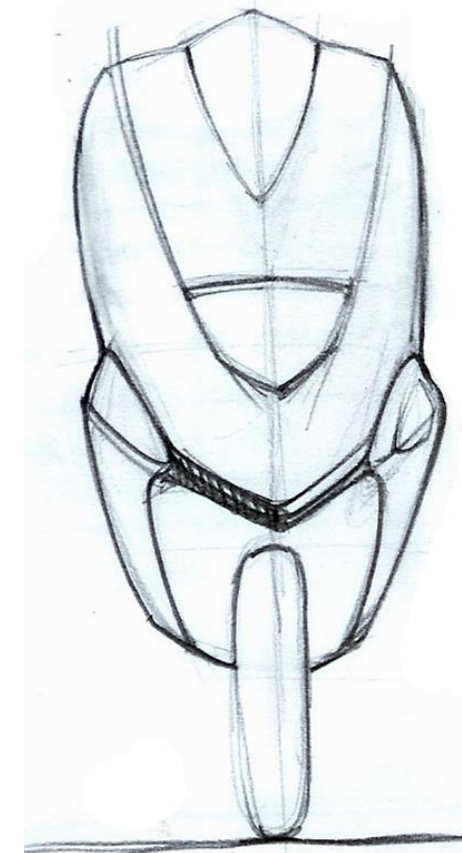
The side chamfer broke the monotony in the spread.



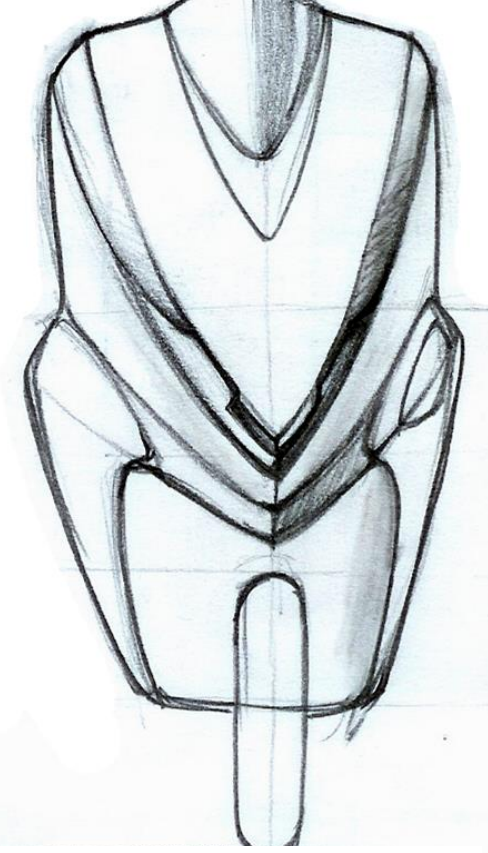
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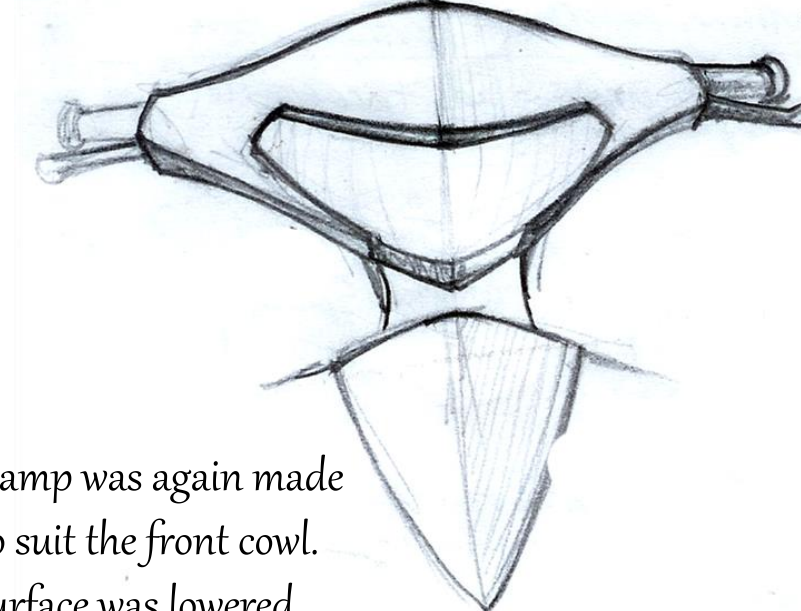
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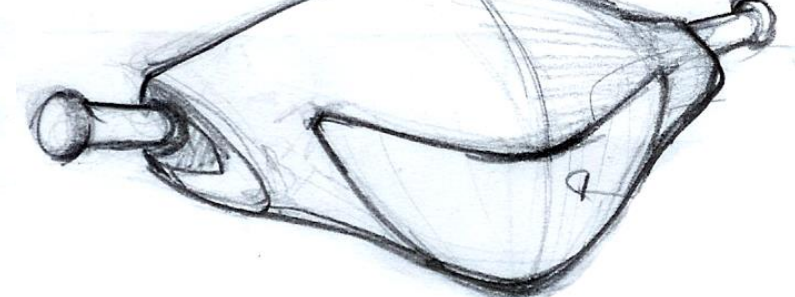
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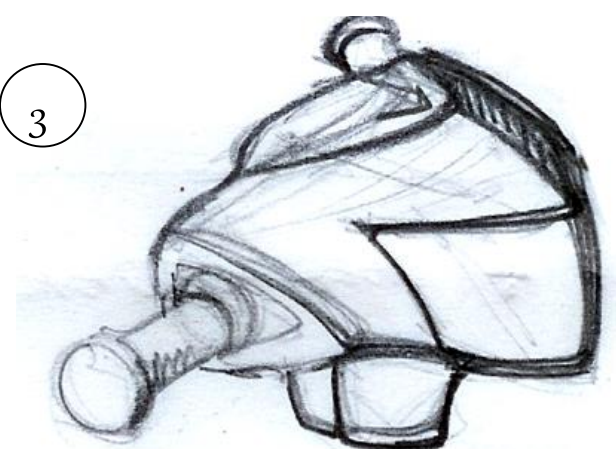
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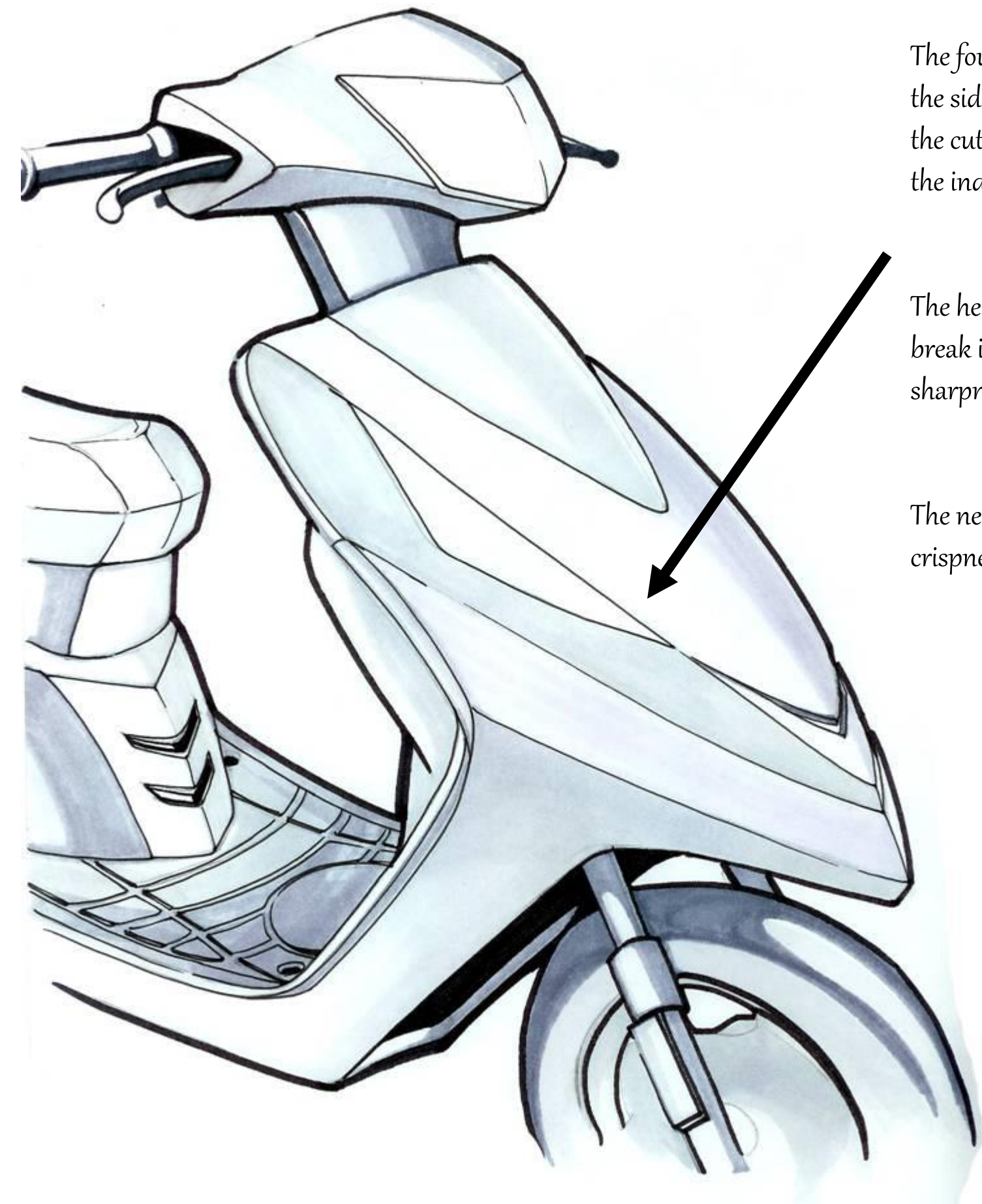
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3



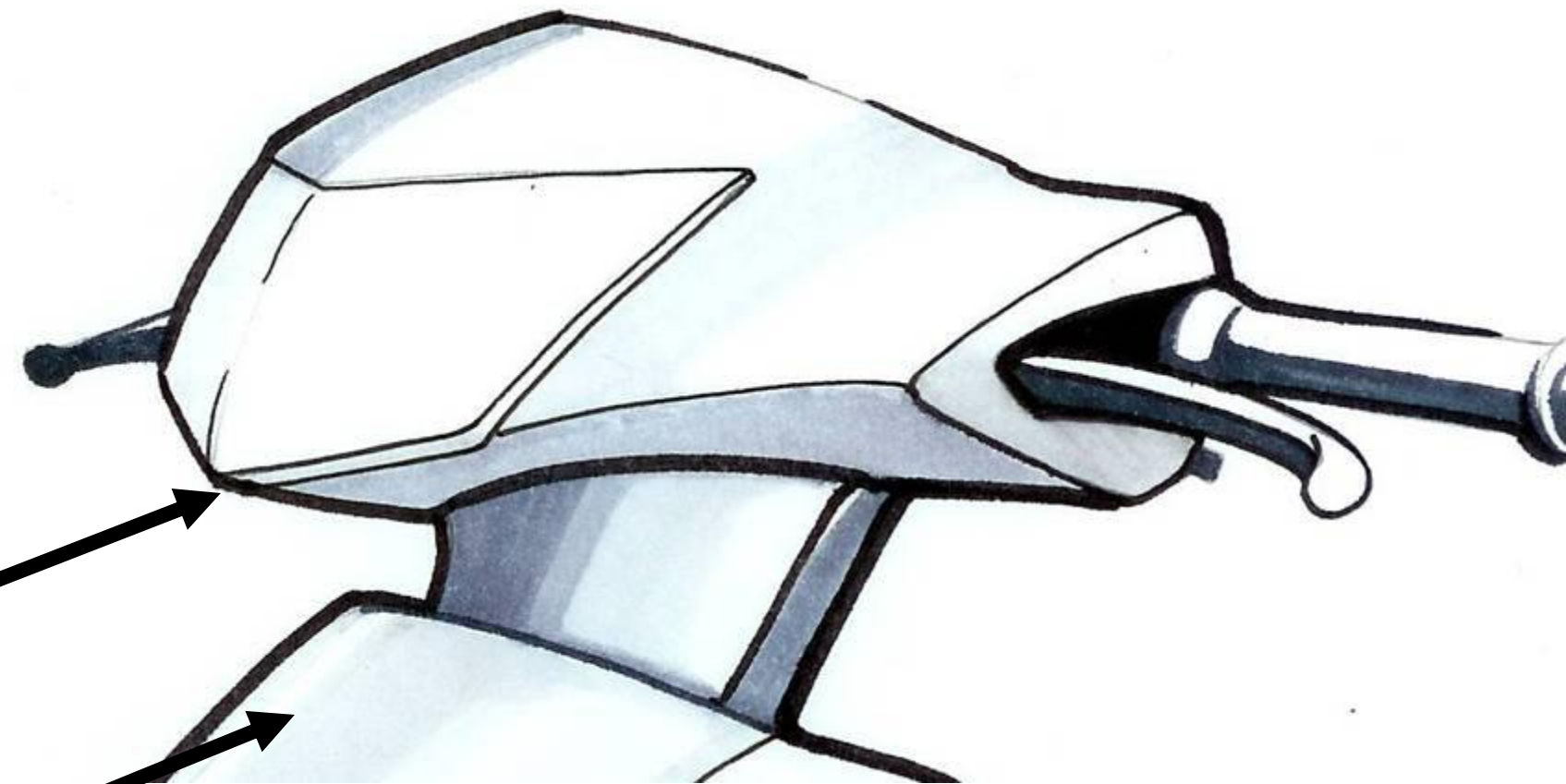
The headlamp was again made sharper to suit the front cowl.
The top surface was lowered.

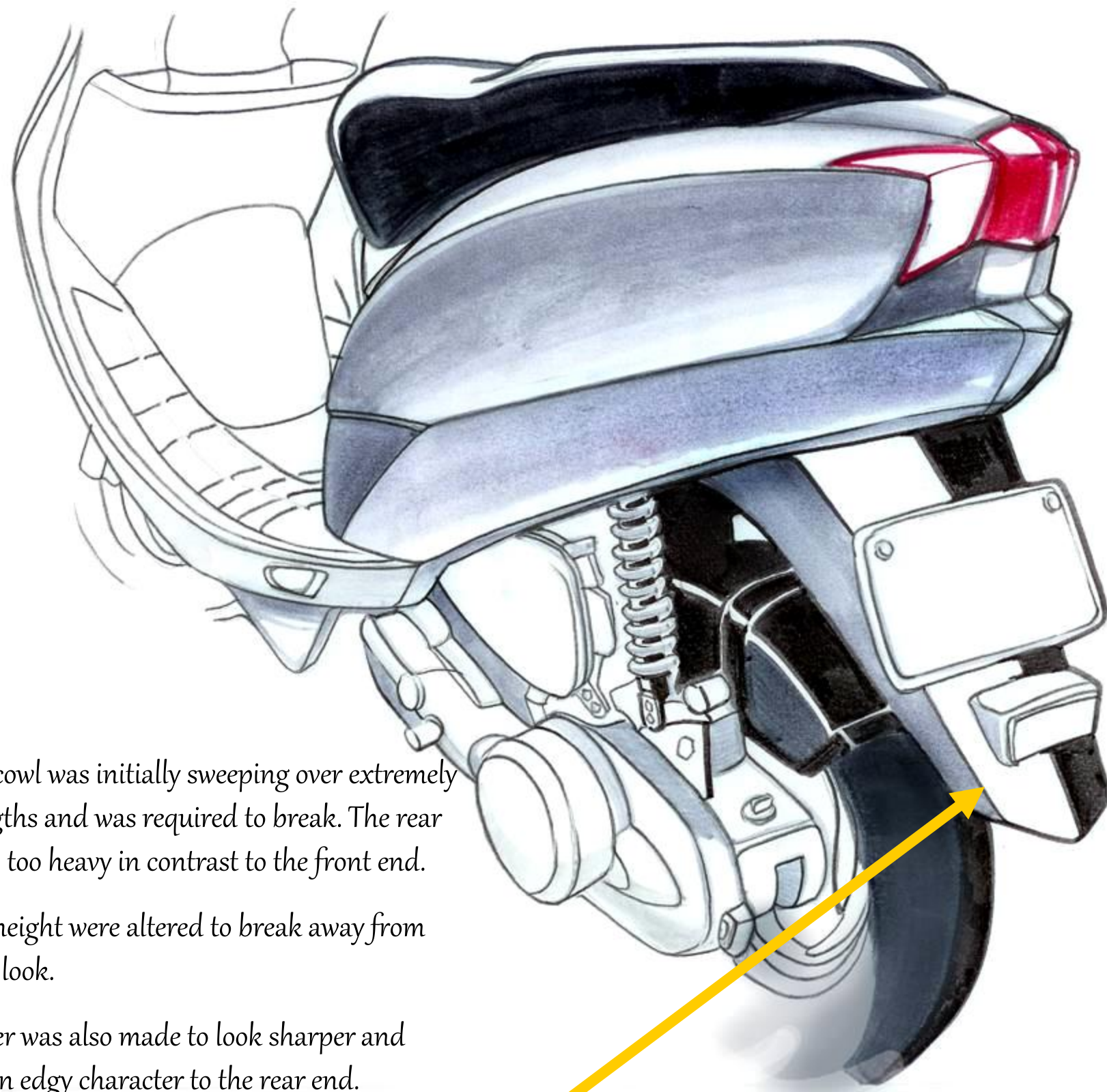


The fourth refinement involved repositioning the side indicators as well as simplification of the cut out position to look like extensions of the indicator cut outs.

The headlamp was simplified with a defined break in the bottom defining line to imitate sharpness.

The neck was given a finer radius to achieve crispness in form.





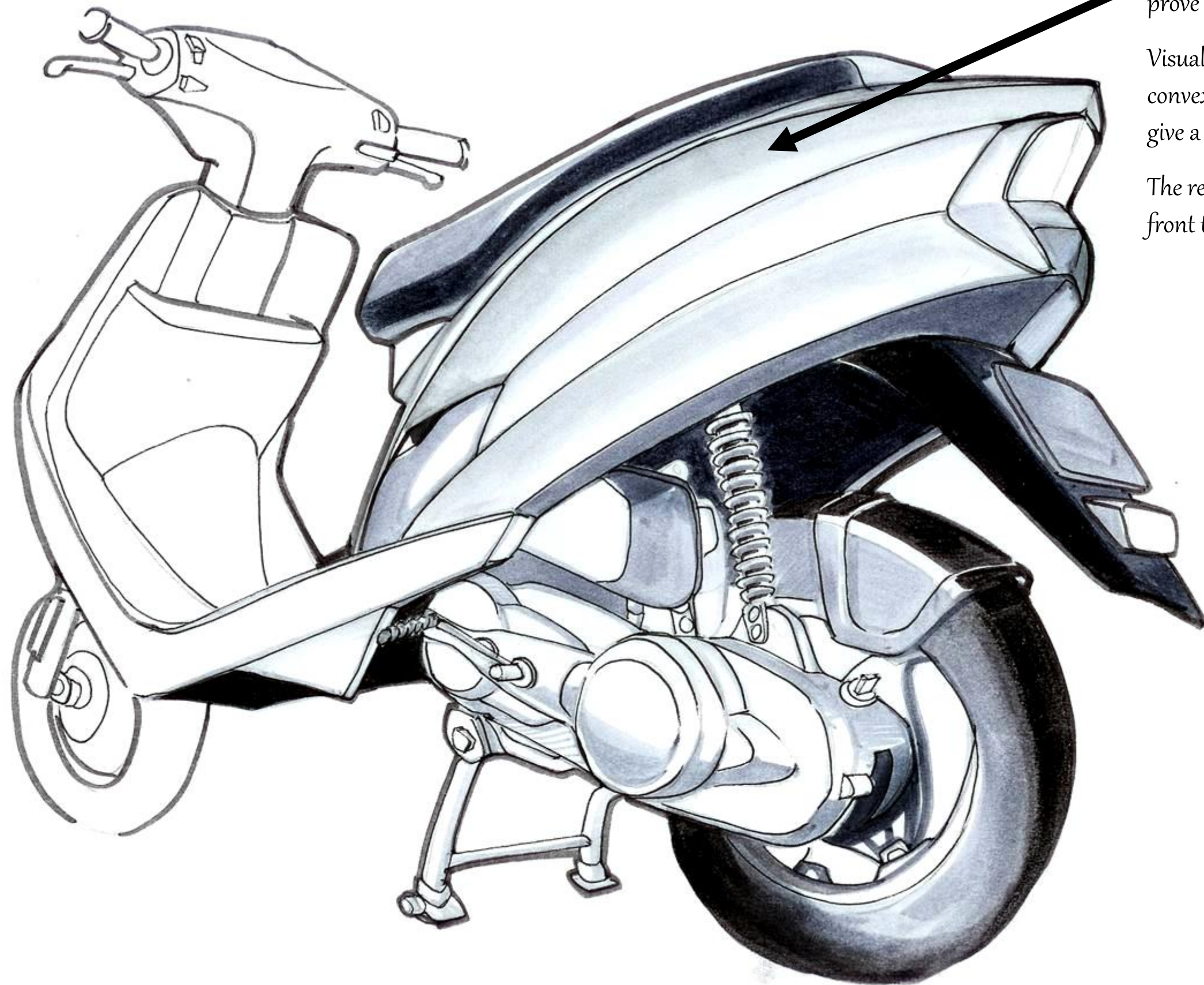
The side cowl was initially sweeping over extremely huge lengths and was required to break. The rear end looks too heavy in contrast to the front end.

The seat height were altered to break away from the static look.

The fender was also made to look sharper and provide an edgy character to the rear end.



The double inner surfaces on the side cowl proved to be difficult to resolve in 3D, especially in the junction between the body panels.



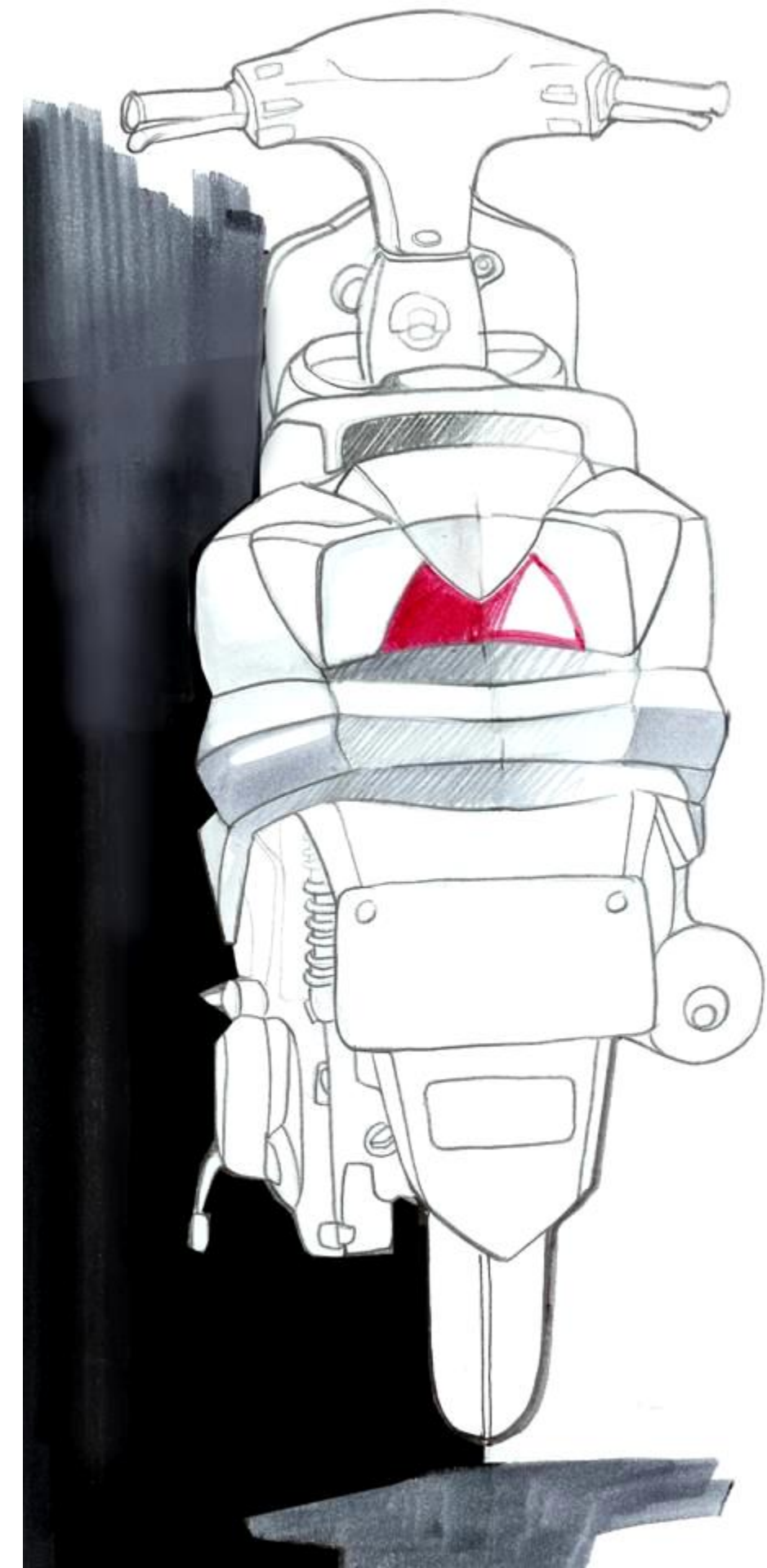
The upper muscle was enhanced to prove to be robust.

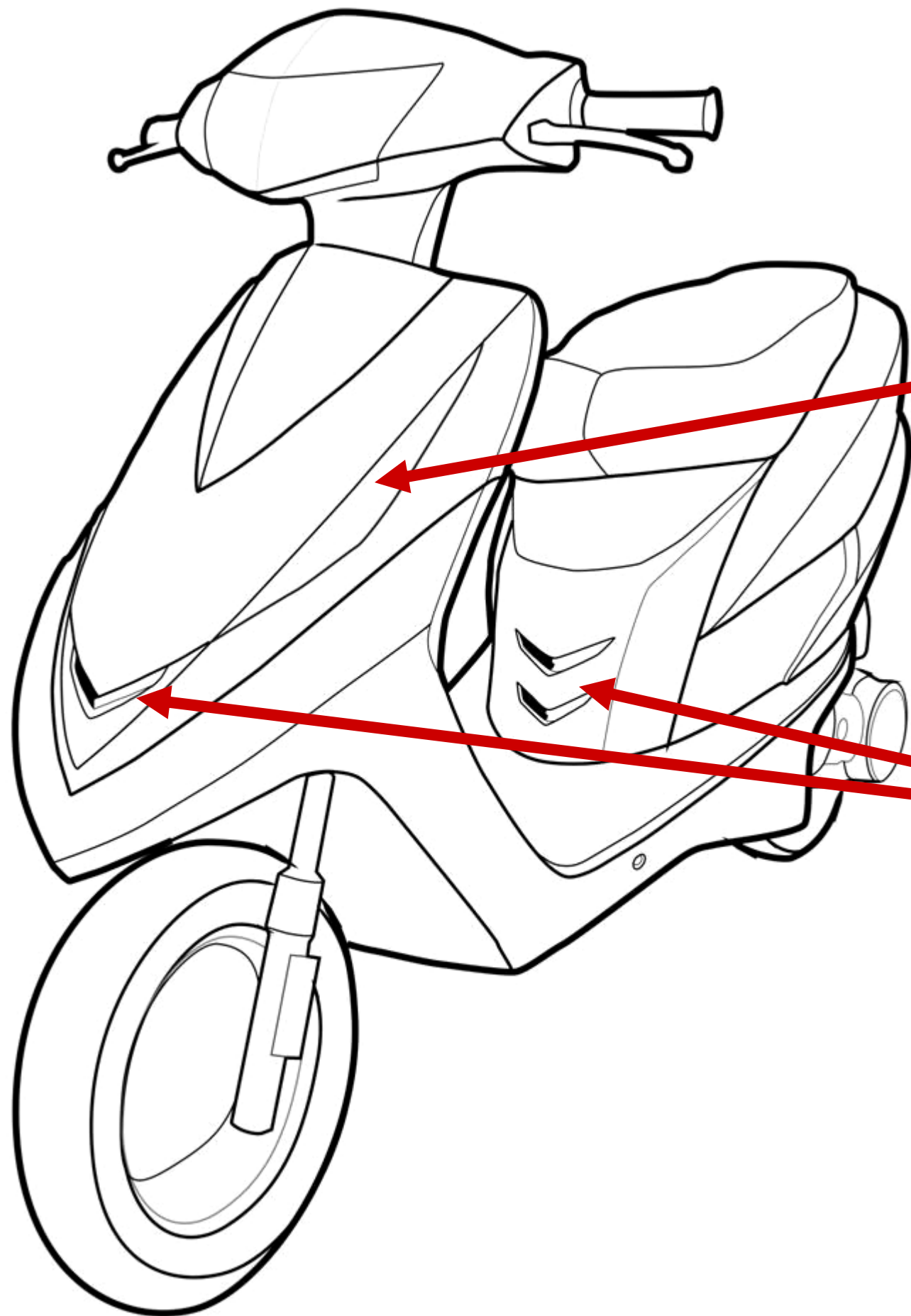
Visual weight was cut by use of tight convex curves and lifting rear end to give a higher stance.

The rear end was altered to suit the front tapering language.

The tail lamp wraps neatly around the form and flushed with the surface.

The key hole for the seat had to be provided for and was decided on top of the rear end.





Side indicators – aggressive look with pointed ends merging with the ends of the cut out

Cut-outs imbuing the sharp character of the front cowl

COLOUR SCHEMES:

Brilliant red –

Front cowl, Side cowl, Headlamp unit

Silver grey –

Side bottom panel, Engine housing, Wheel hubs

Bumper grey –

Rear panel, instrument panel

U86 grey –

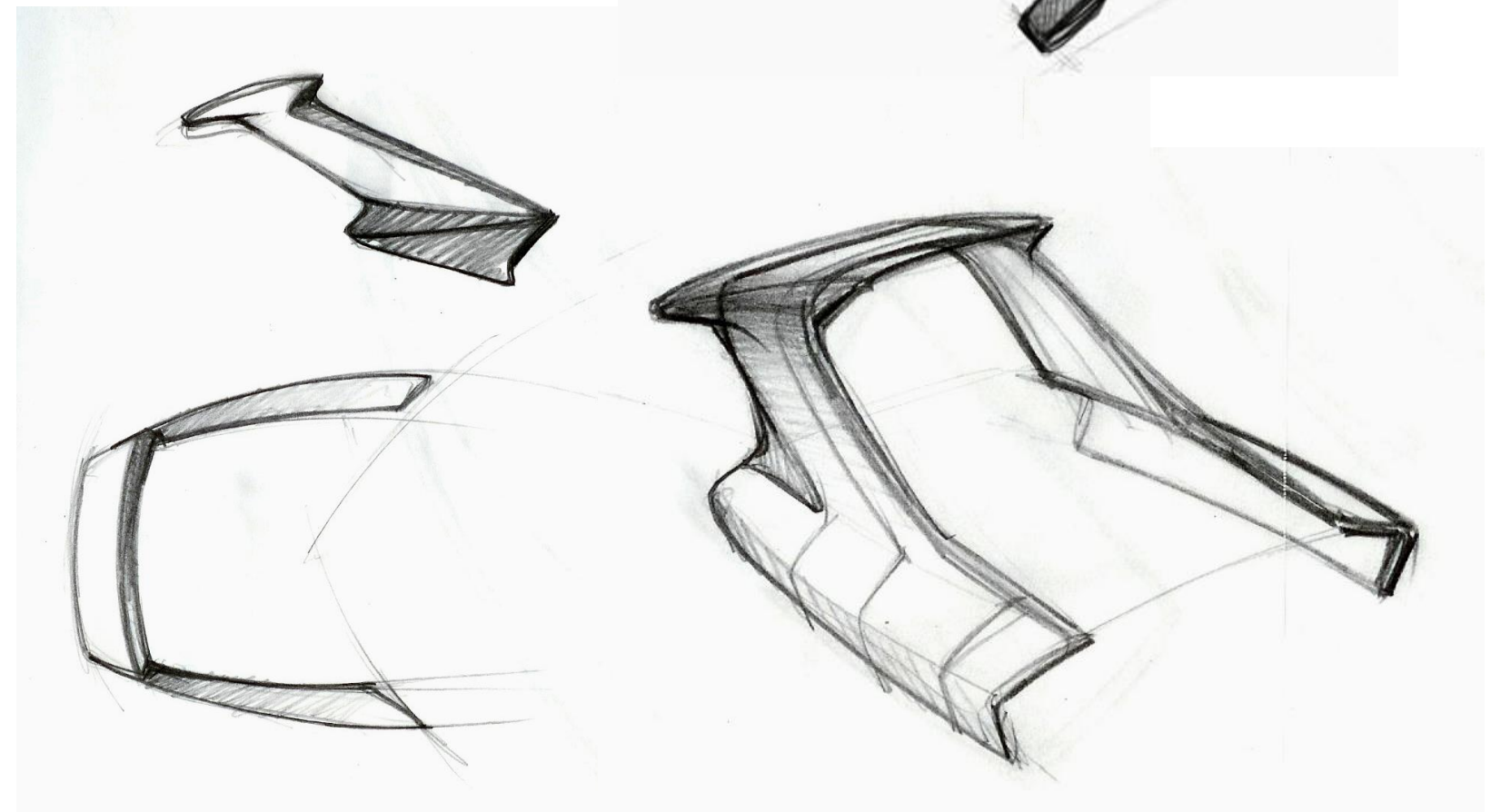
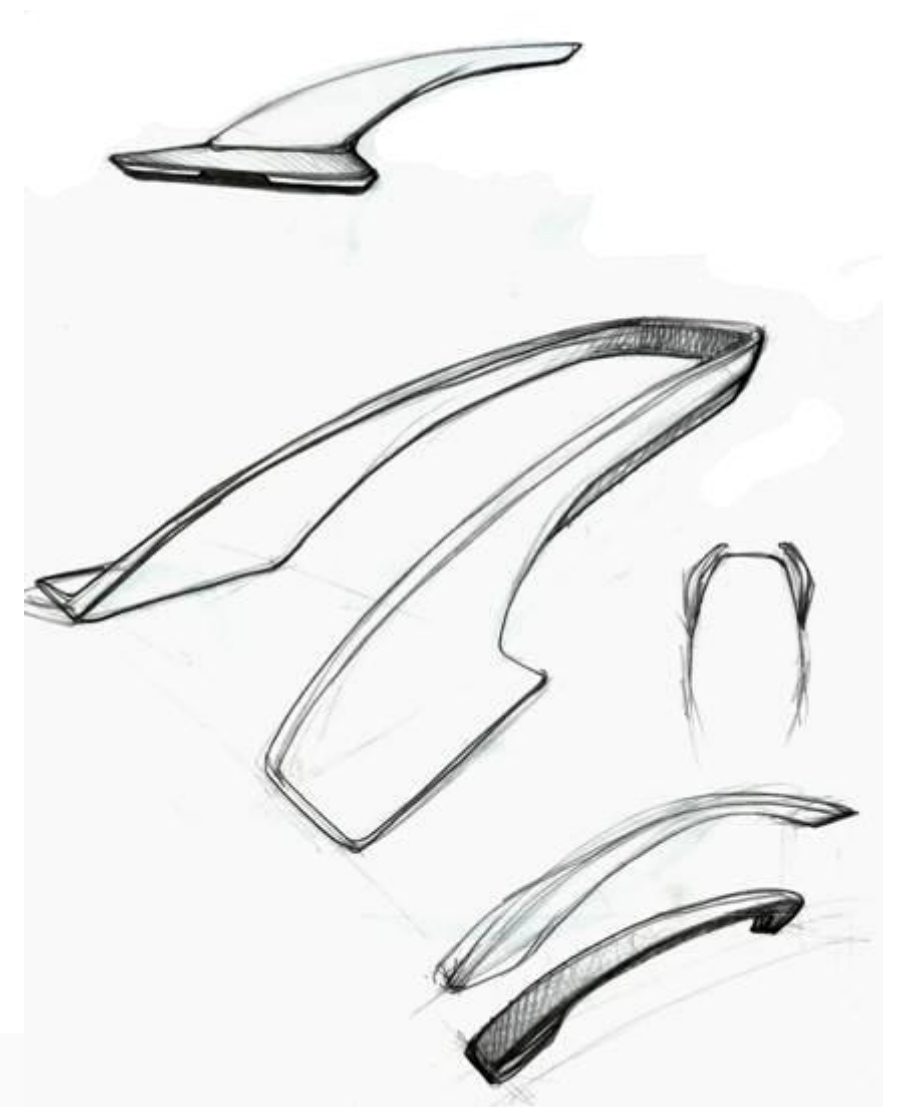
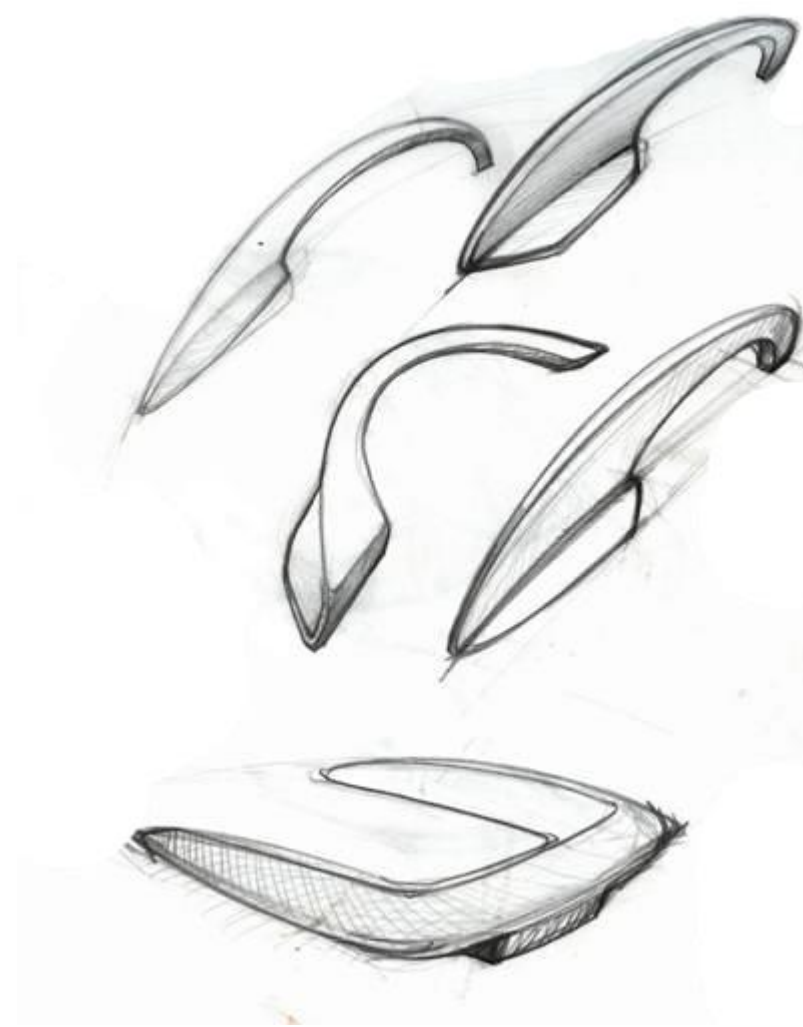
Neck panel, Pillion handle

Black –

Seat



Different options were tried out for the Grab rail and finally the decision for a Split pillion handle proved to be more successful in coherence with the robust look





FINAL PROTOTYPE

SIDE ELEVATION

The clay model was painted with 2K automotive paints, which was close to the production colours –

Brilliant Red

Bumper Grey

Black

Silver Grey

U86 Grey







THANK YOU