

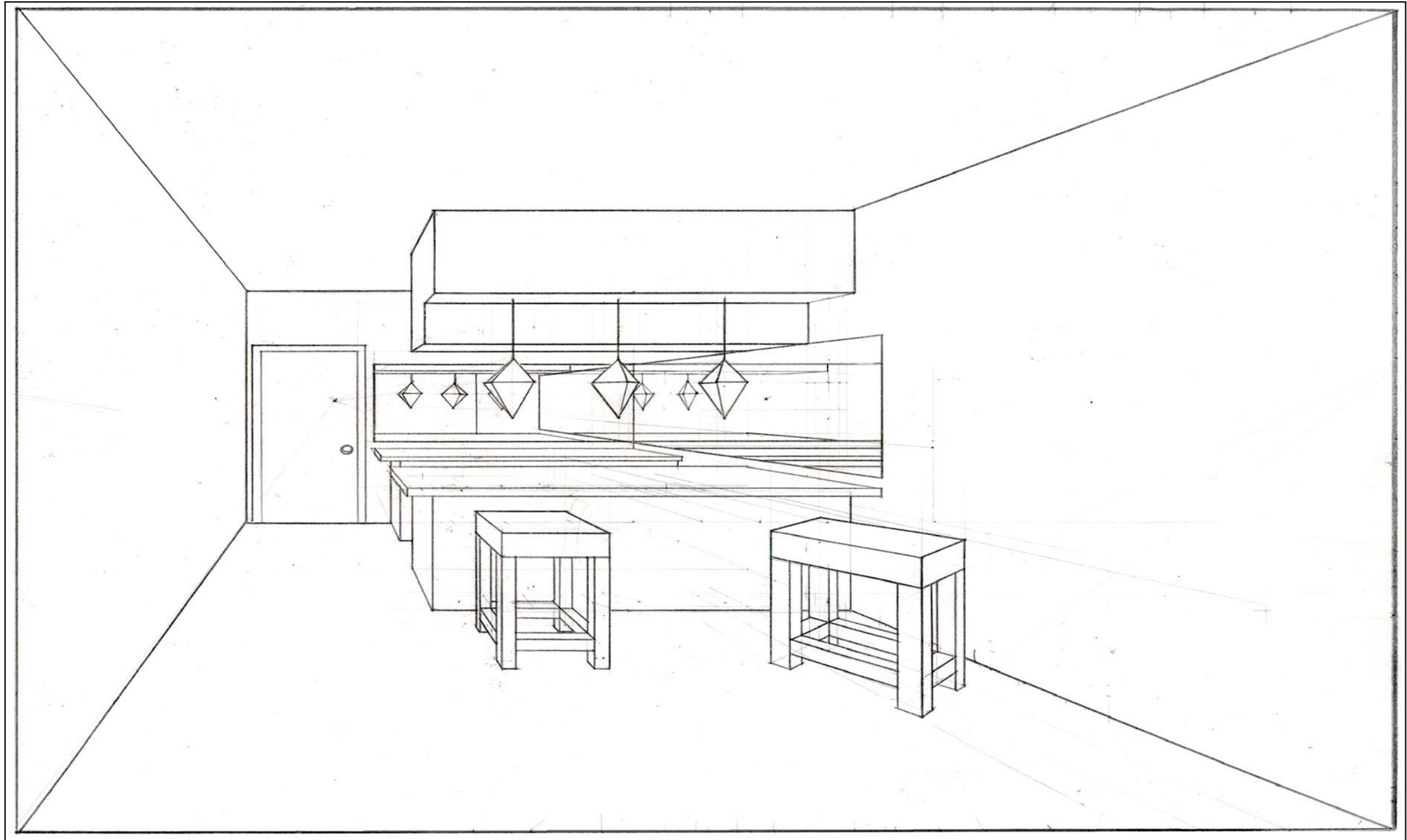
Perspective for  
Industrial Design

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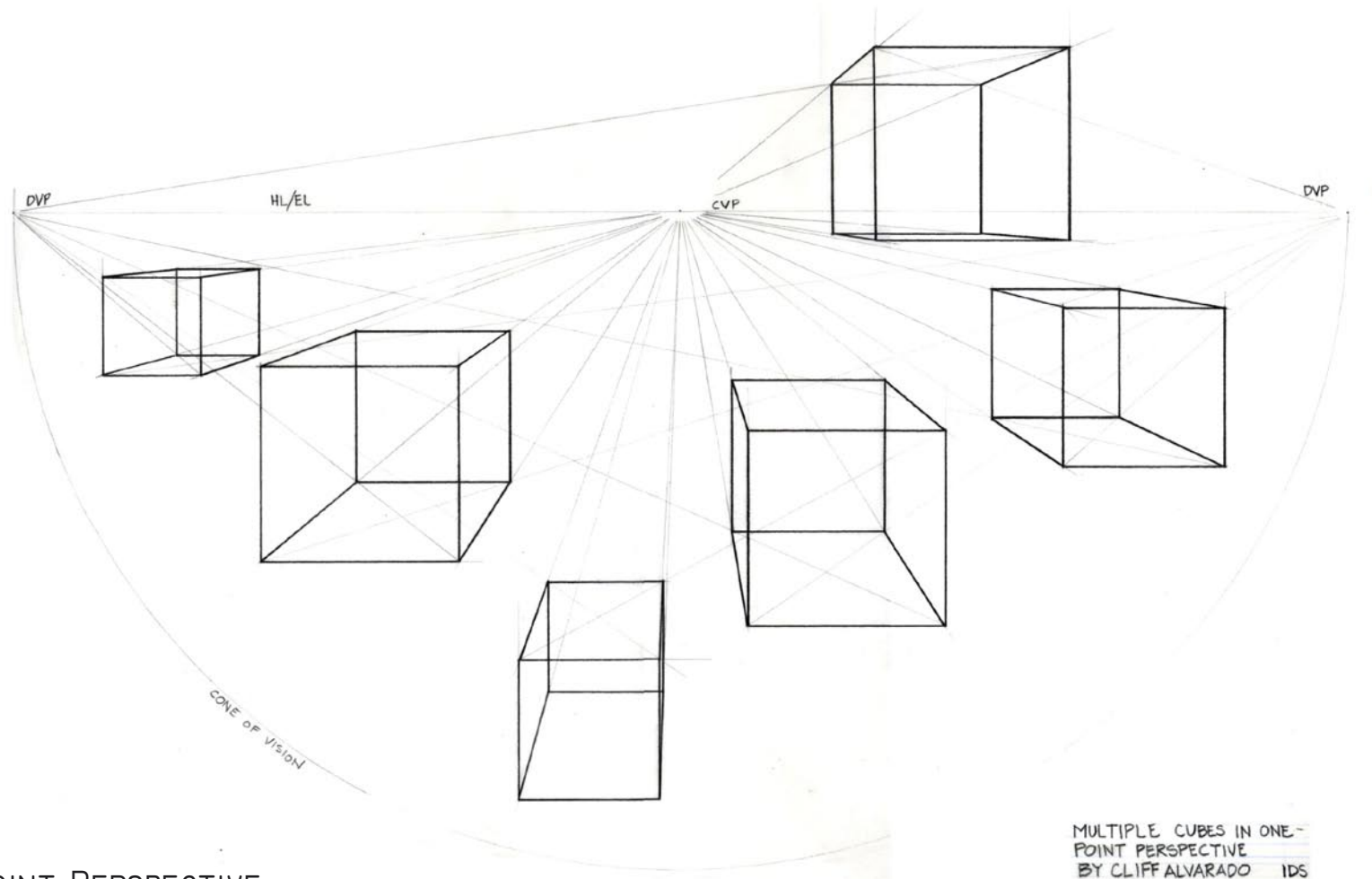
IDS 116  
BY CLIFF ALVARADO



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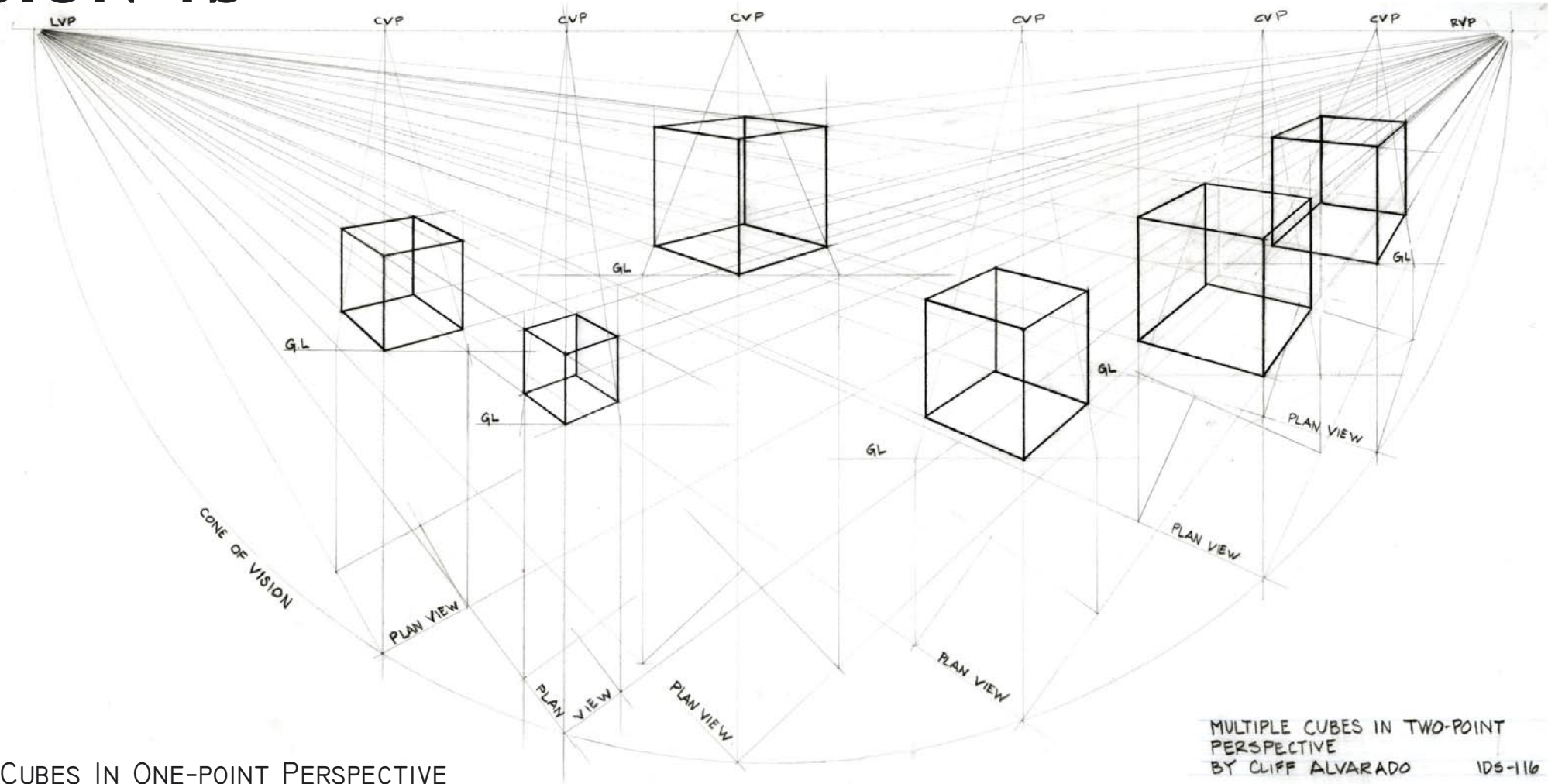
# SESSION 1a



## DRAFTING CUBES IN TWO-POINT PERSPECTIVE

THE TWO POINT METHOD USES THE PLAN VIEW OF THE CUBE TO LAYOUT AND ESTABLISH THE TWO VANISHING POINTS ON THE HORIZON/EYE LEVEL, OR H/EL LEFT AND RIGHT OR LVP AND RVP. A GROUND LINE IS THEN SET PARALLEL TO THE H/EL AND TYPICALLY ABOVE THE PLAN. THE FOUR POINTS OF THE CUBES BASE ARE THEN PROJECTED UPWARDS TO THE GROUND LINE PERPENDICULAR TO THE H/EL.

# SESSION 1b



## DRAFTING CUBES IN ONE-POINT PERSPECTIVE

FOR OUR FIRST ASSIGNMENT WE LEARNED HOW TO CONSTRUCT CUBES IN PERSPECTIVE USING THE "ONE AND TWO POINT" METHODS.

IN THIS EXAMPLE, ONE POINT PERSPECTIVE IS USED TO CREATE OUR CUBES. AS WITH ANY SYSTEM IT HAS ITS PROS AND CONS. THE PLUS SIDE IS IT ALLOWS YOU TO QUICKLY CREATE A FAIRLY ACCURATE PERSPECTIVE WITHOUT TOO MUCH PRE-CONSTRUCTION WORK. ONE OF THE DRAWBACKS IS YOU ARE LIMITED TO SHOWING ONLY THE FRONT DETAIL OF YOUR OBJECT.

WHICH IN SOME CASES CAN BE A BENEFIT. FOR EXAMPLE IF YOUR PRODUCT HAS A "USER INTERFACE" THEN REPRESENTING THE OTHER SIDES IS NOT AS CRITICAL AND THIS METHOD WILL WORK FINE .

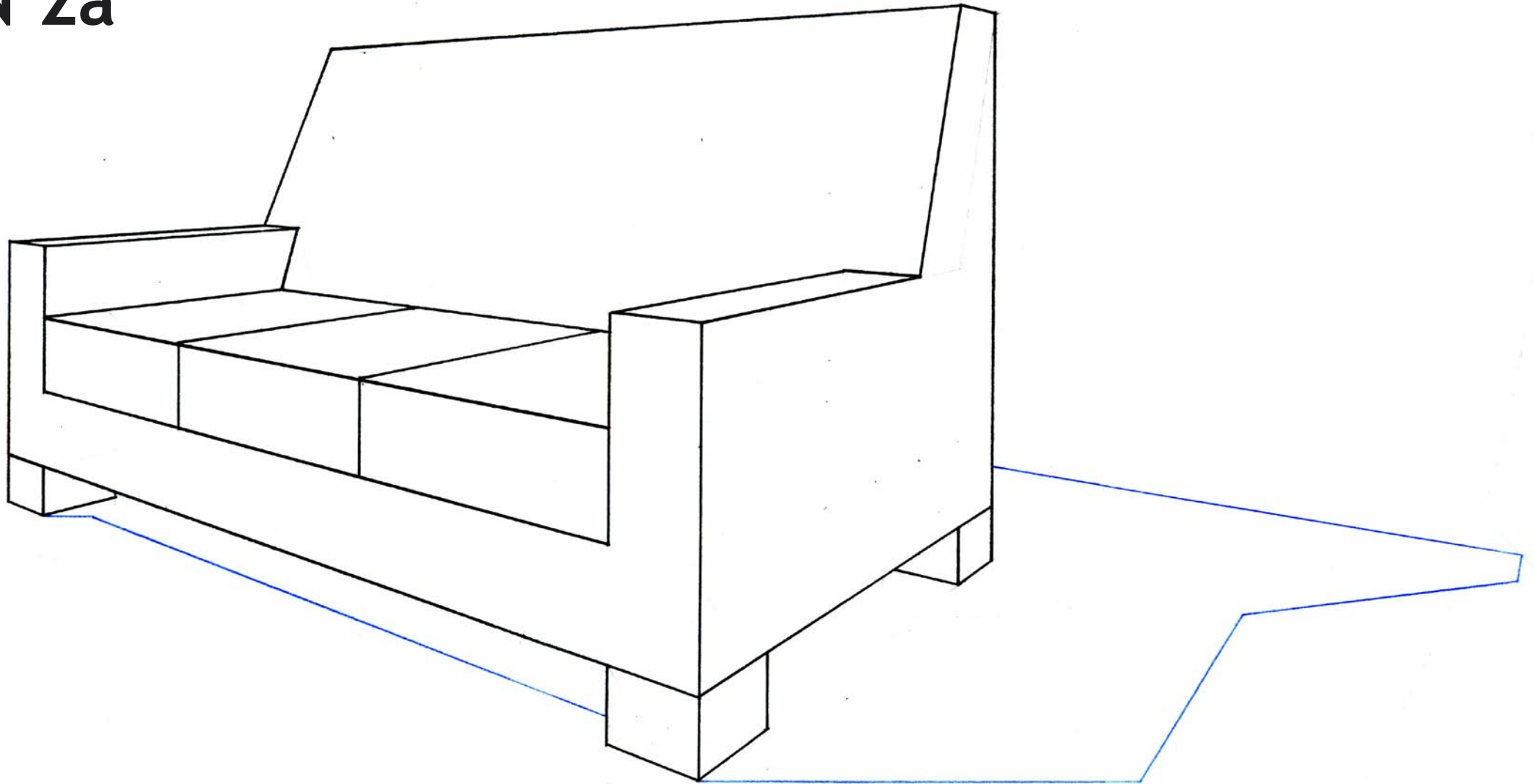
SOME OF THE CHARACTERISTICS ARE AN OBVIOUS COMMON POINT AT WHICH THE RECEDING LINES MEET. DISTORTION CAN HAPPEN QUICKLY IF YOUR OBJECT IS PLACED OUTSIDE OF A MUCH NARROWER CONE OF VISION THAN THAT OF A 2-3PP.

I USED PARALLEL SHADOWS FOR THESE CUBES WHICH IS THE

EASIEST METHOD FOR CREATING SIMPLE SHADOWS. JUST DRAW A HORIZONTAL LINE ORIGINATING AT THE BASE OF EACH CORNER OR VERTICAL EDGE THAT TOUCHES THE GROUND. THEN DRAW A 45 DEGREE LINE DOWN FROM THE TOP OF EACH CORRESPONDING POINT, CONNECT THE RESULTING INTERSECTIONS TO CREATE THE SHADOW.

MULTIPLE CUBES IN TWO-POINT PERSPECTIVE  
BY CLIFF ALVARADO IDS-116

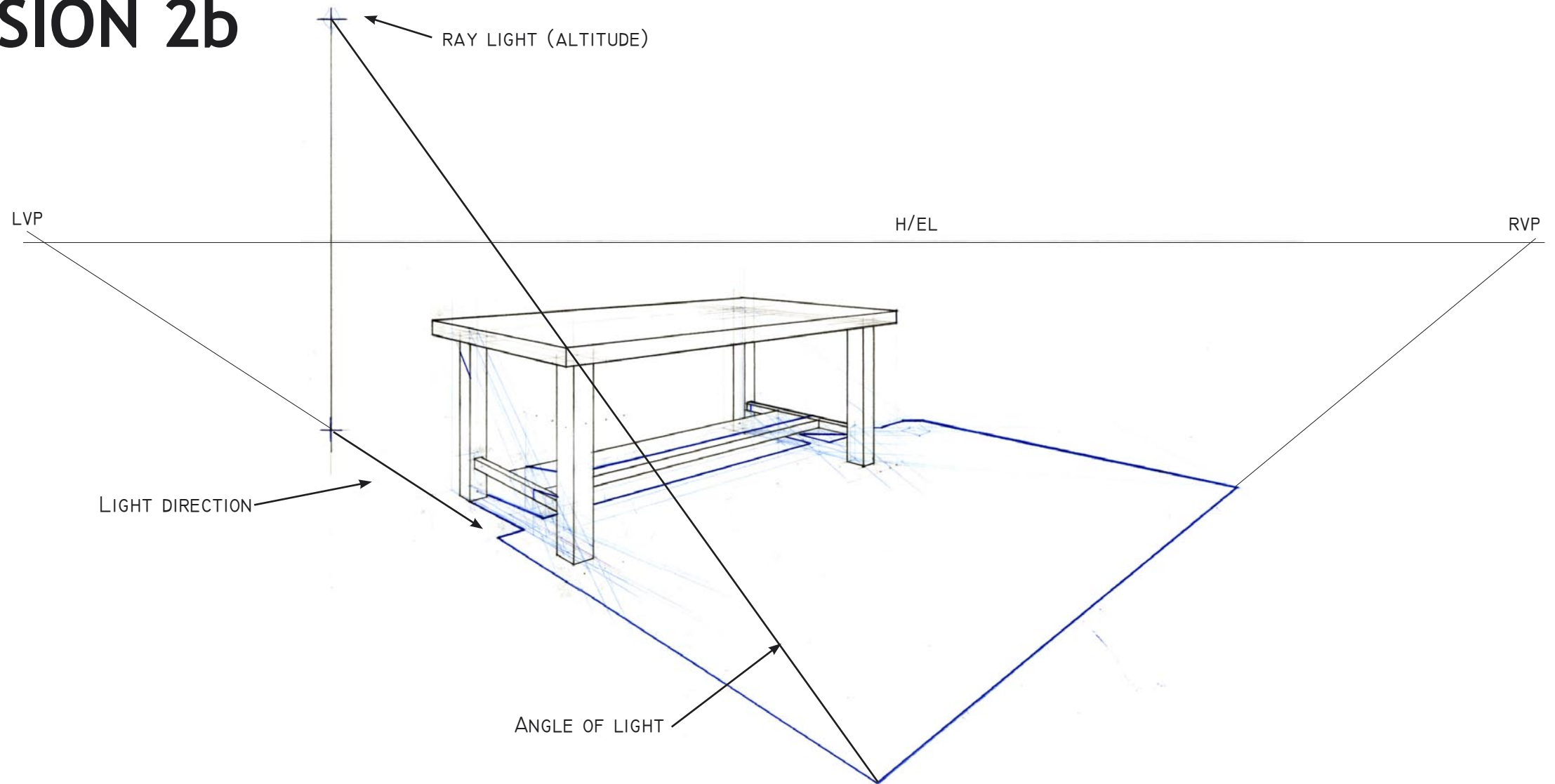
# SESSION 2a



SIMPLE OBJECT CREATED BY PROPORTIONING AND DIVIDING WITH PARALLEL SHADOW

FOR THIS PROJECT I CHOSE TO DO A COUCH FOR MY FIRST SIMPLE OBJECTS. WE WERE TO CREATE THE OBJECT BEGINNING WITH A PLAN PROJECTED CUBE. THEN THE CUBE WAS TO BE DIVIDED AND PROPORTIONED IN ORDER TO CREATE THE DETAILS OF THE OBJECT. FINALLY WE WERE TO USE PARALLEL LIGHT TO CAST THE SHADOWS OF OUR OBJECTS.

# SESSION 2b



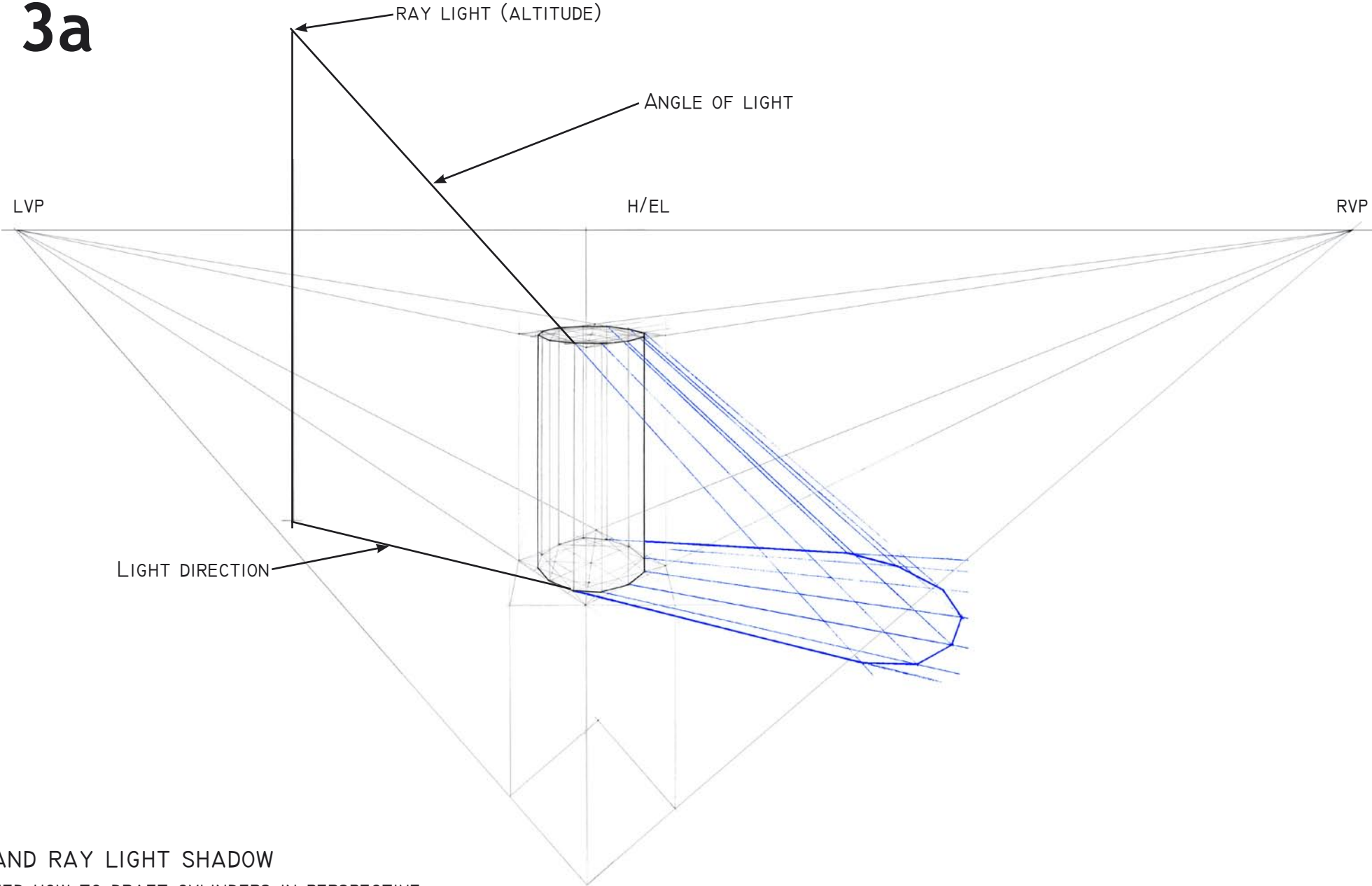
## OBJECT CREATED BY PROPORTIONING AND DIVIDING WITH RAY LIGHT SHADOW

FOR MY OTHER OBJECT I DESIGNED A TABLE. I BEGAN THE TABLE JUST AS I DID WITH THE COUCH BY PROJECTING A CUBE THEN DIVIDING AND PROPORTIONING IT OUT. THE SECOND OBJECT WAS TO BE A BIT MORE COMPLICATED BY USING THE RAY LIGHT METHOD TO CAST THE SHADOW. TO BEGIN YOU NEED TO ESTABLISH TWO THINGS, THE 'ALTITUDE' OF THE

LIGHT AND THE 'DIRECTION' FROM WHICH IT ORIGINATES. A SIMPLE VERTICAL LINE IS ALL THAT IS NEEDED TO CONTROL THE TWO QUALIFIERS. THE ALTITUDE IS ALWAYS SET ABOVE THE H/EL. THE ACTUAL DISTANCE ABOVE THE H/EL IS UP TO YOU AND THE SIZE OF YOUR DRAWING SHEET. THE DIRECTION IS SET IN MUCH THE SAME WAY AS THE ALTITUDE. YOU CAN

SET IT WHERE EVER YOU LIKE BUT NOTE THAT THE FURTHER AWAY FROM THE H/EL, THE RESULTS MAY NOT BE AS APPARENT AS THE SHADOW WILL BE GOING AWAY FROM YOUR POV. A GOOD RULE OF THUMB IS TO LOCATE THE DIRECTION BETWEEN THE H/EL AND THE OBJECTS' REAR FACE.

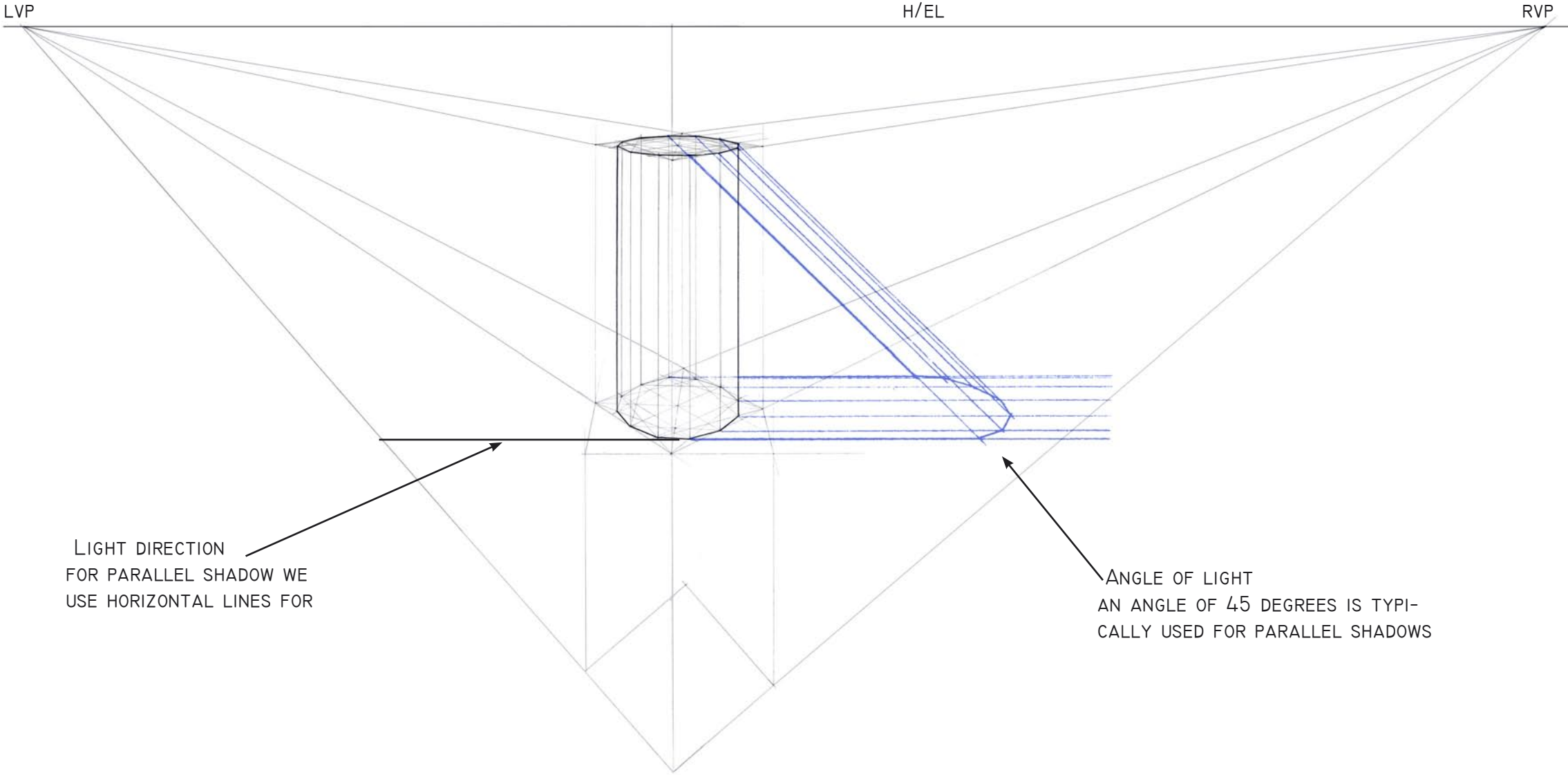
# SESSION 3a



## STANDING CYLINDER AND RAY LIGHT SHADOW

ON THIS PROJECT WE LEARNED HOW TO DRAFT CYLINDERS IN PERSPECTIVE AND ALSO HOW TO DO SHADOWS OF CYLINDERS.

# SESSION 3b

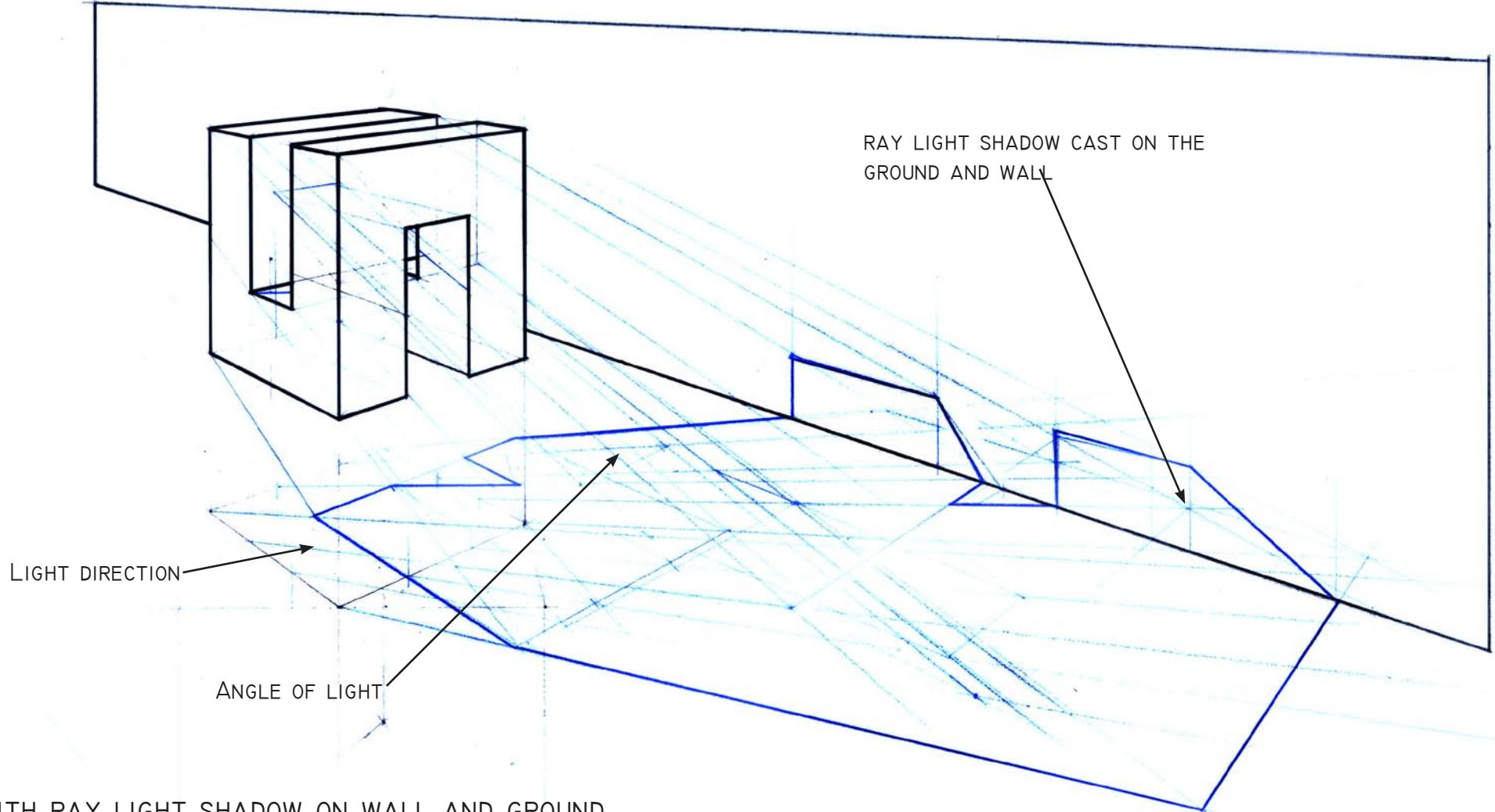


LIGHT DIRECTION  
FOR PARALLEL SHADOW WE  
USE HORIZONTAL LINES FOR

ANGLE OF LIGHT  
AN ANGLE OF 45 DEGREES IS TYPICALLY  
USED FOR PARALLEL SHADOWS

STANDING CYLINDER WITH A PARALLEL LIGHT SHADOW  
FOR THIS WE USED THE SAME METHOD OF CONSTRUCTION, BUT USED A PARALLEL SHADOW.

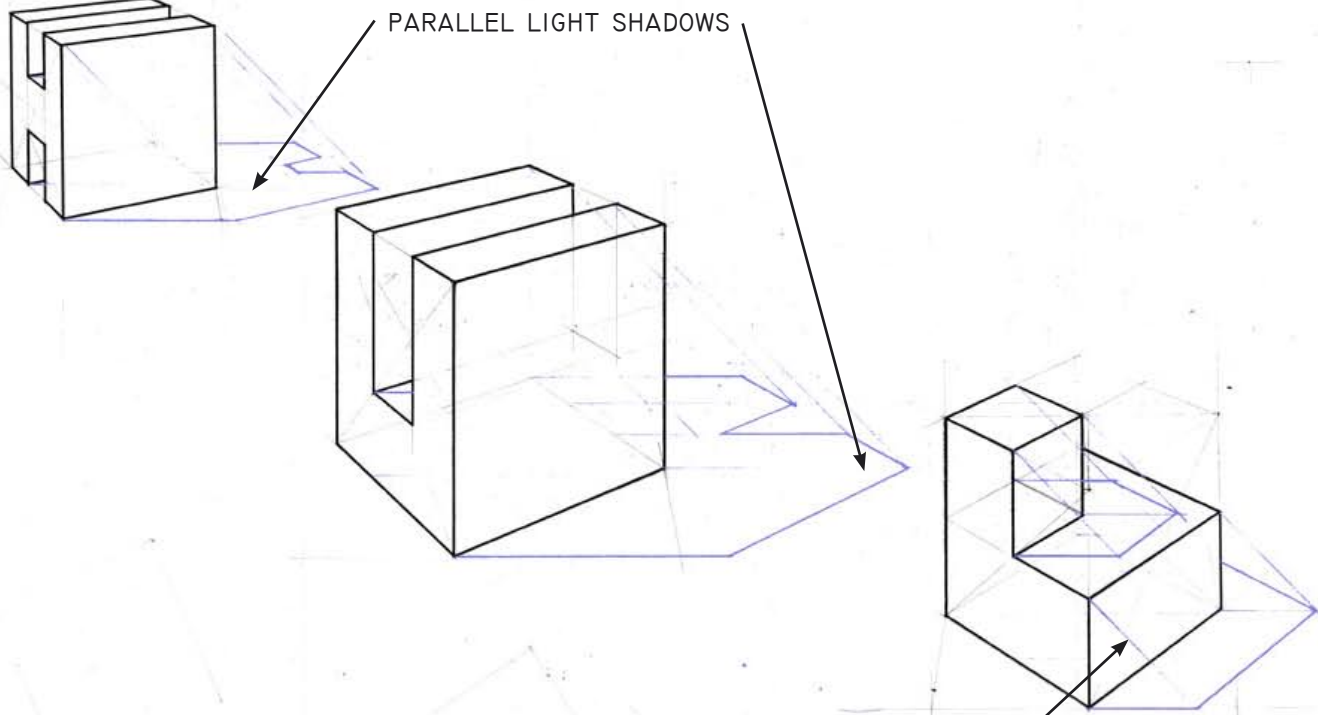
# SESSION 3c



FLOATING DIVIDED CUBE WITH RAY LIGHT SHADOW ON WALL AND GROUND  
WE WERE TO DIVIDE A CUBE AND CAST ITS SHADOW ON THE WALL. I TOOK IT  
ONE STEP FURTHER AND FLOATED THE CUBE TO ADD INTEREST.

# SESSION 3d

PARALLEL LIGHT SHADOWS



ANGLE OF LIGHT  
TYPICALLY AT 45 DEGREES

FIVE CHOPPED CUBES WITH PARALLEL LIGHT SHADOWS  
WE DRAFTED THESE CHOPPED CUBES IN A SINGLE VIEW TO STUDY HOW THE SHADOWS INTERACTED WITH THE DIFFERENT SURFACES OF OBJECTS AS WELL AS PROJECTED ON THE GROUND.

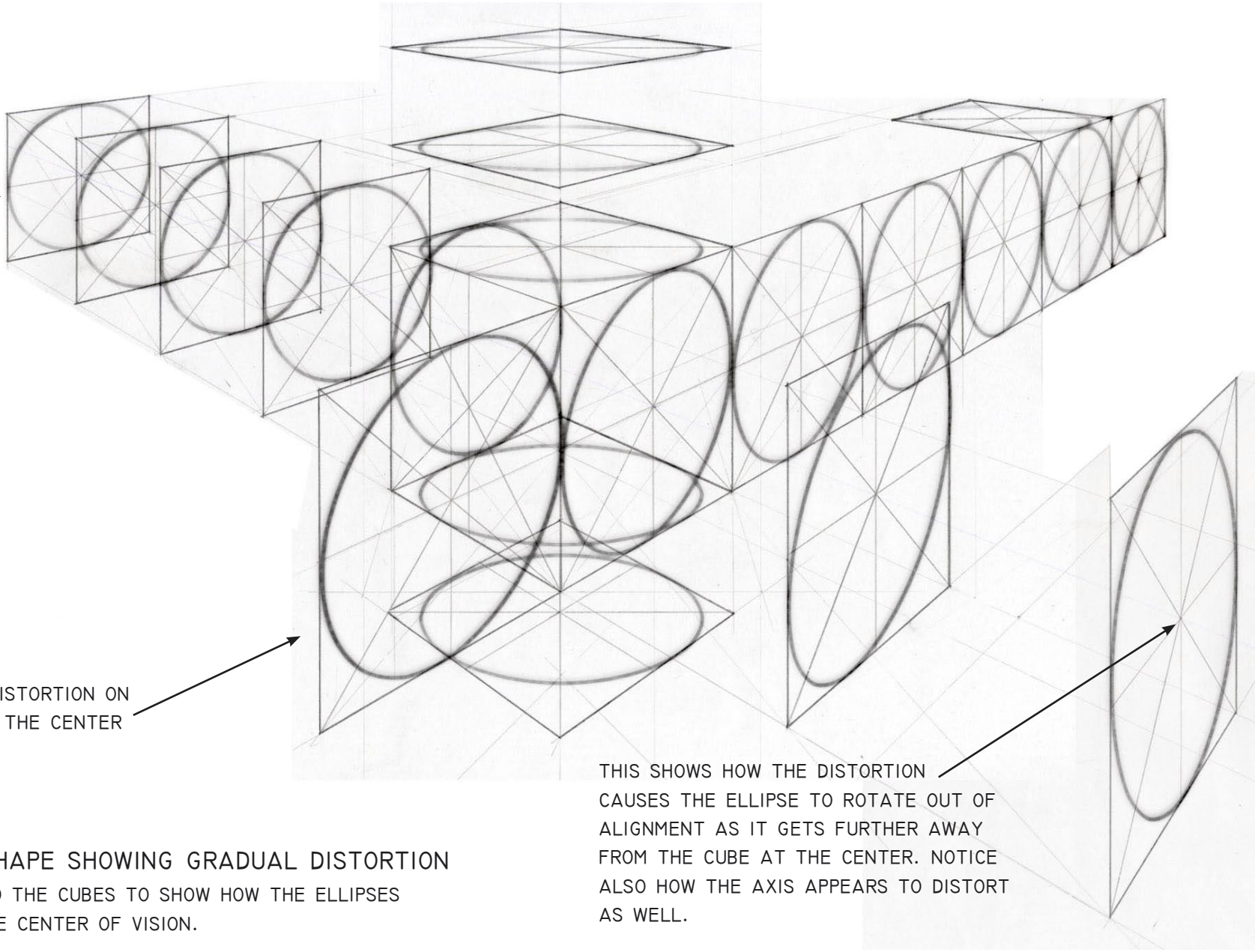
# SESSION 4a

THIS ELLIPSE IS  
NEARLY ROUND.

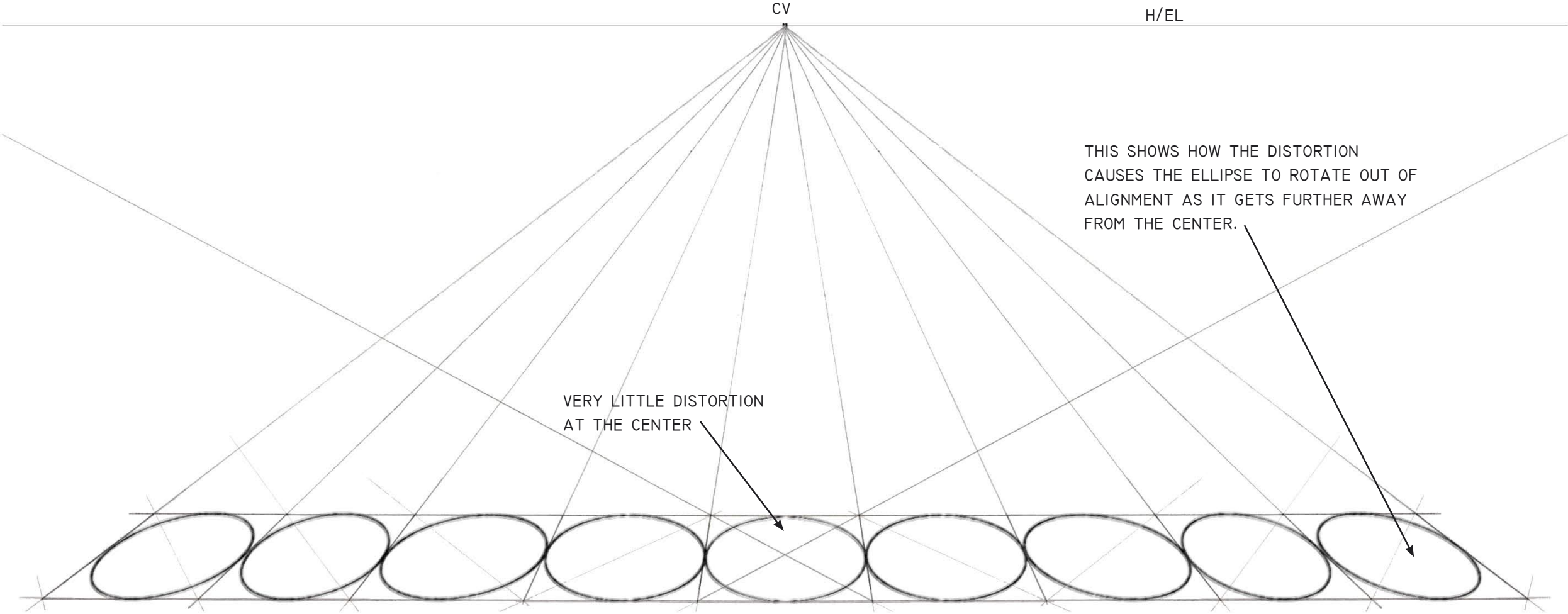
SLIGHT DISTORTION ON  
OR NEAR THE CENTER

RECTILINEAR VOLUMES IN "T" SHAPE SHOWING GRADUAL DISTORTION  
WE WERE TO SKETCH THE ELLIPSES INTO THE CUBES TO SHOW HOW THE ELLIPSES  
DISTORT AS THEY MOVE AWAY FROM THE CENTER OF VISION.

THIS SHOWS HOW THE DISTORTION  
CAUSES THE ELLIPSE TO ROTATE OUT OF  
ALIGNMENT AS IT GETS FURTHER AWAY  
FROM THE CUBE AT THE CENTER. NOTICE  
ALSO HOW THE AXIS APPEARS TO DISTORT  
AS WELL.



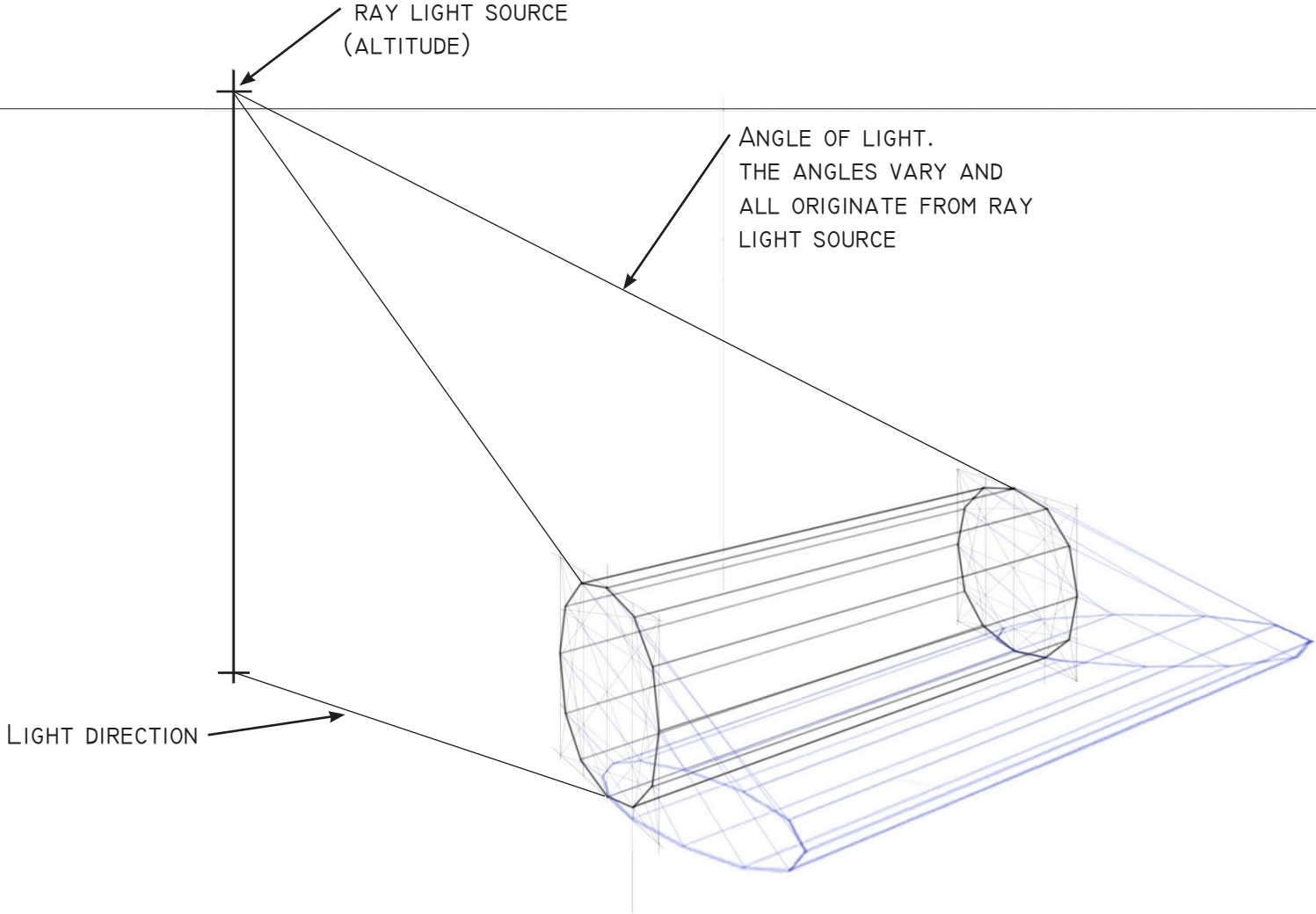
# SESSION 4b



ROW OF SQUARES IN ONE POINT PERSPECTIVE SHOWING GRADUAL DISTORTION

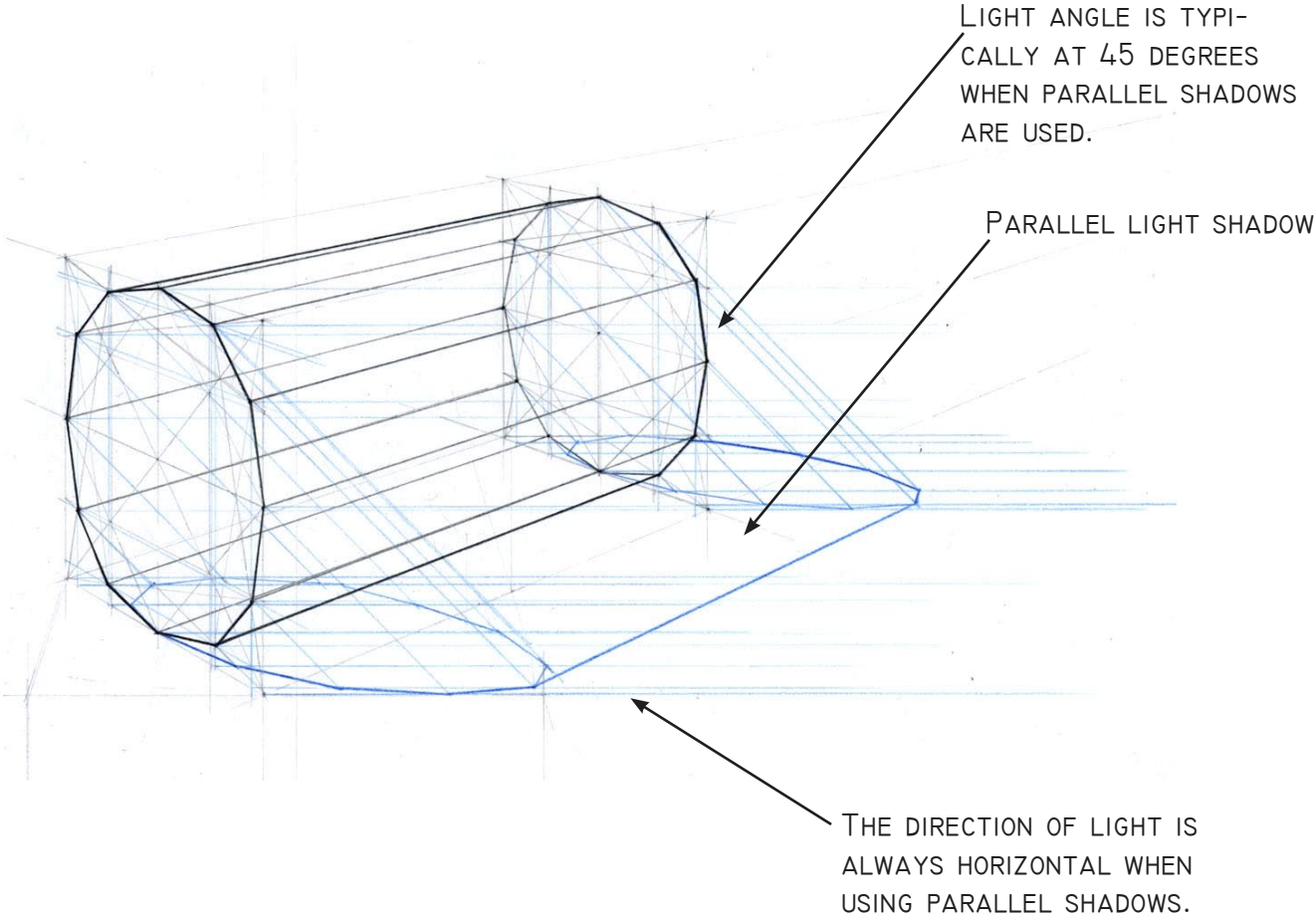
WE WERE TO SKETCH THE ELLIPSES INTO THE CUBES TO SHOW HOW THE ELLIPSES DISTORT AS THEY MOVE AWAY FROM THE CENTER OF VISION.

# SESSION 4c



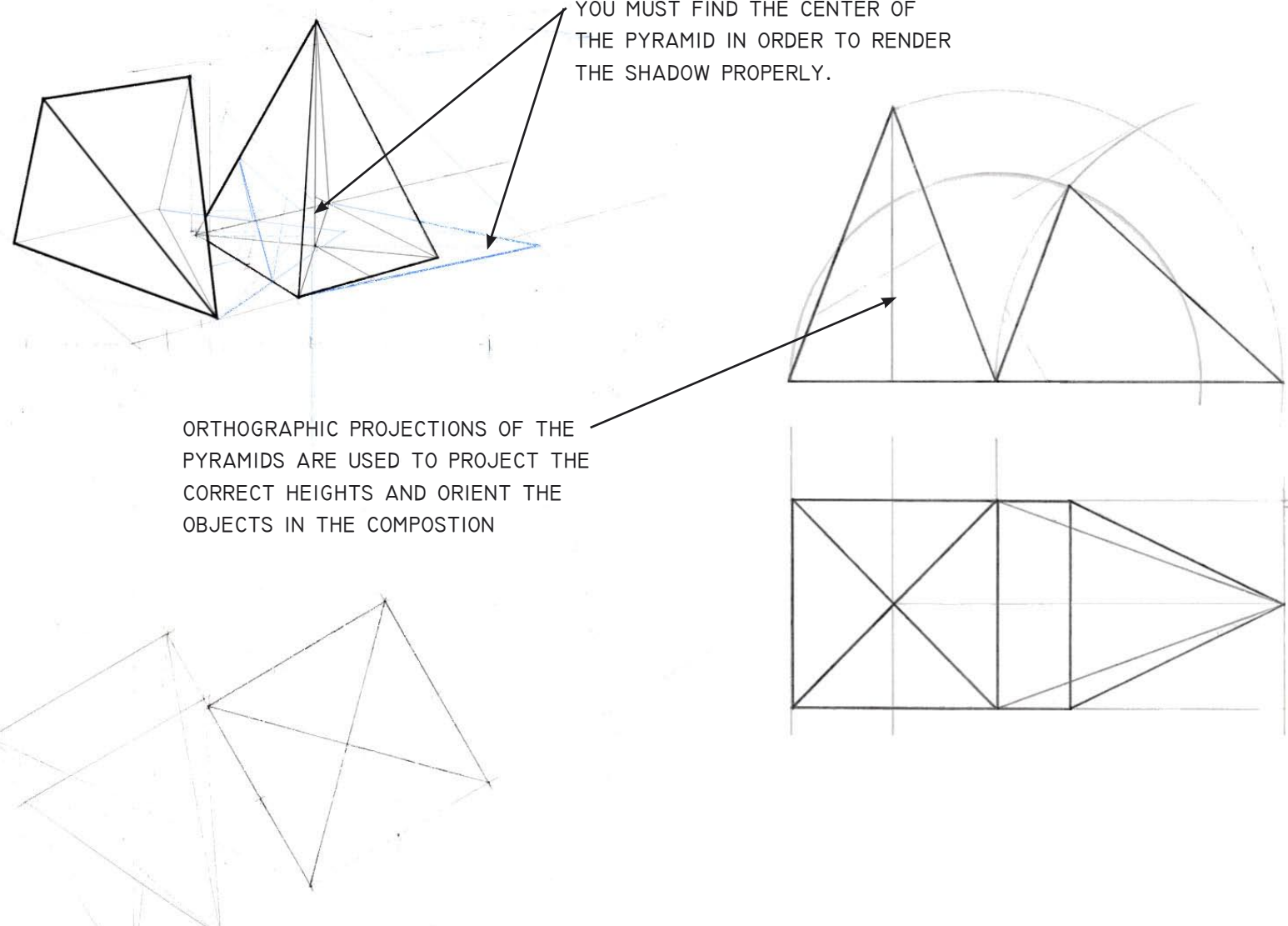
ROLLED CYLINDER WITH RAY LIGHT SHADOW  
FOR THIS PROJECT WE LEARNED HOW TO DRAFT ROLLED CYLINDERS  
AND DO RAY LIGHT SHADOWS.

# SESSION 4d



ROLLED CYLINDER WITH PARALLEL LIGHT SHADOW  
SIMILAR STUDY AS BEFORE ONLY LEARNING HOW TO DO PARALLEL SHADOWS ON ROLLED CYLINDERS.

# SESSION 5a/b



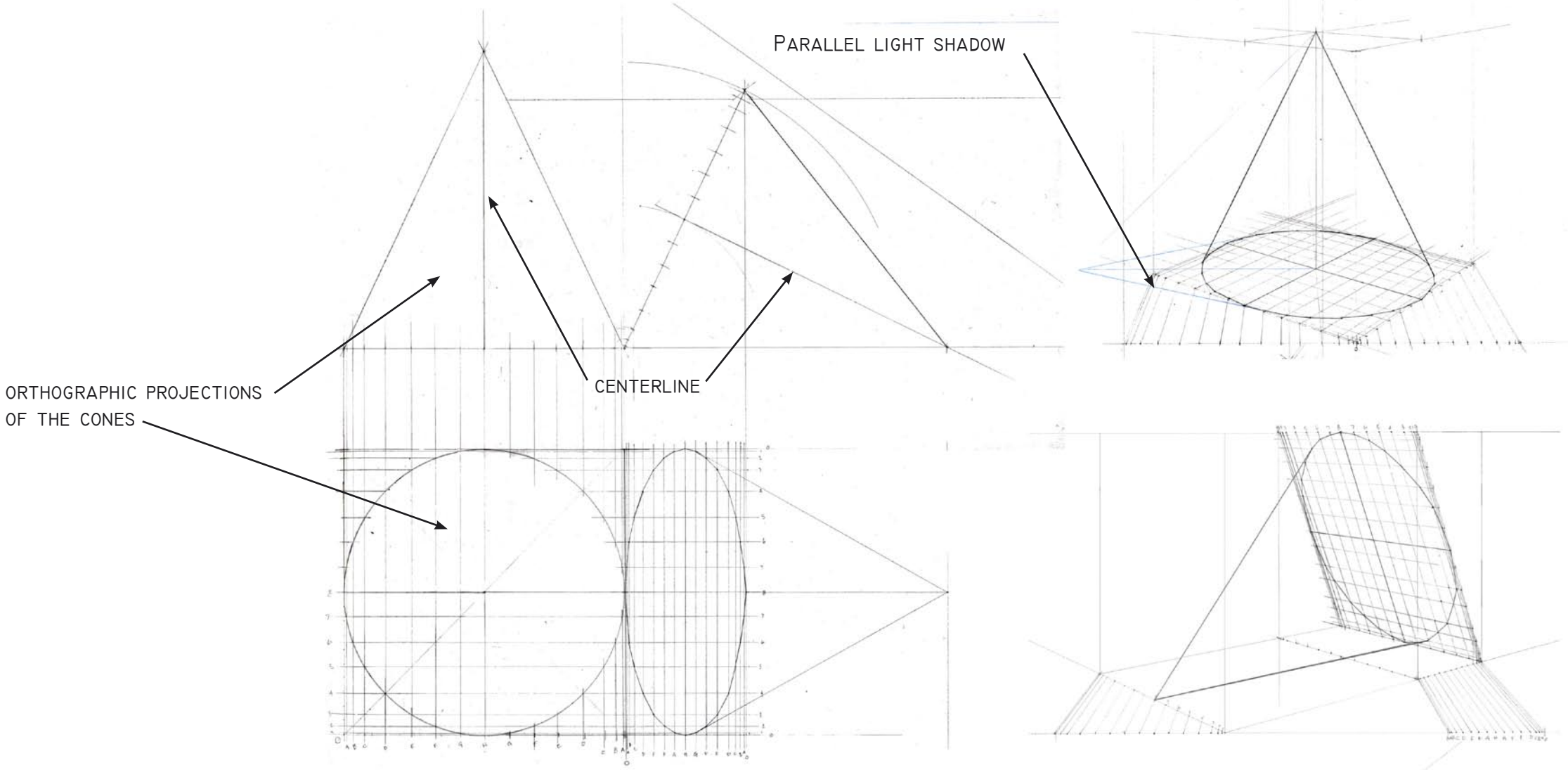
YOU MUST FIND THE CENTER OF THE PYRAMID IN ORDER TO RENDER THE SHADOW PROPERLY.

ORTHOGRAPHIC PROJECTIONS OF THE PYRAMIDS ARE USED TO PROJECT THE CORRECT HEIGHTS AND ORIENT THE OBJECTS IN THE COMPOSTION

## STANDING AND TIPPED PYRAMIDS WITH PARALLEL LIGHT SHADOWS

I CHOSE TO DO BOTH THE STANDING AND TIPPED PYRAMID IN ONE DRAWING FOR ADDED DIFFICULTY. I ALSO CAST A PARALLEL LIGHT SHADOW ON THE STANDING PYRAMID FROM THE TIPPED ONE. WE LEARNED HOW TO FIND THE CENTERLINE OF THE PYRAMID IN ORDER TO LOCATE THE ORIGIN OF THE SHADOW CORRECTLY.

# SESSION 5c

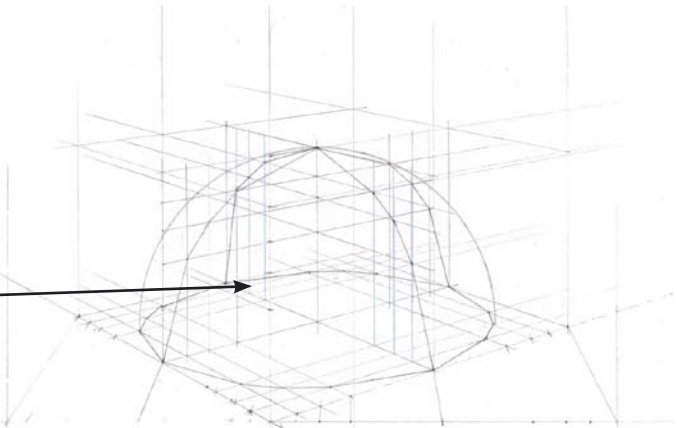


## STANDING AND TIPPED CONES WITH PARALLEL LIGHT SHADOWS

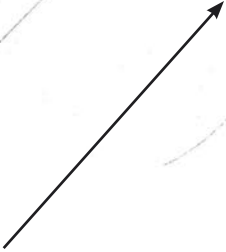
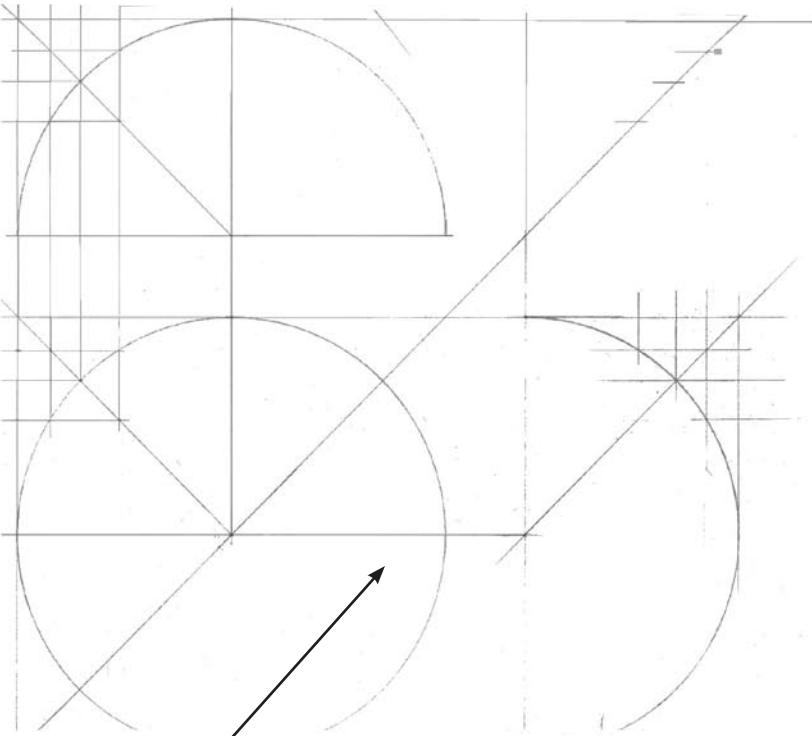
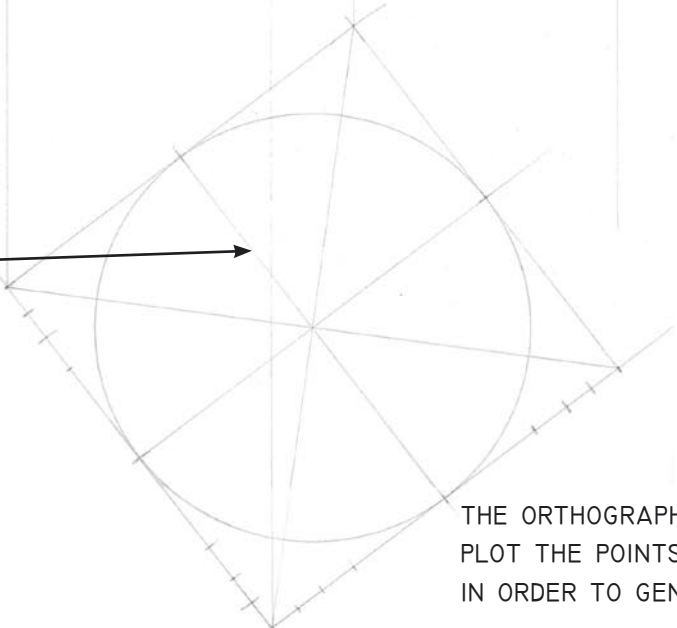
THE CONSTRUCTION OF THE CONES IS SIMILAR TO THE PYRAMIDS EXCEPT YOU MUST LOCATE MANY MORE POINTS FOR THE BASE USING THE SAME METHOD OF GRAPHING A CIRCLE IN PERSPECTIVE.

# SESSION 6a

HERE YOU CAN SEE ALL THREE AXIS ARE LOCATED USING THE GRAPHING METHOD.



PLAN PROJECTION

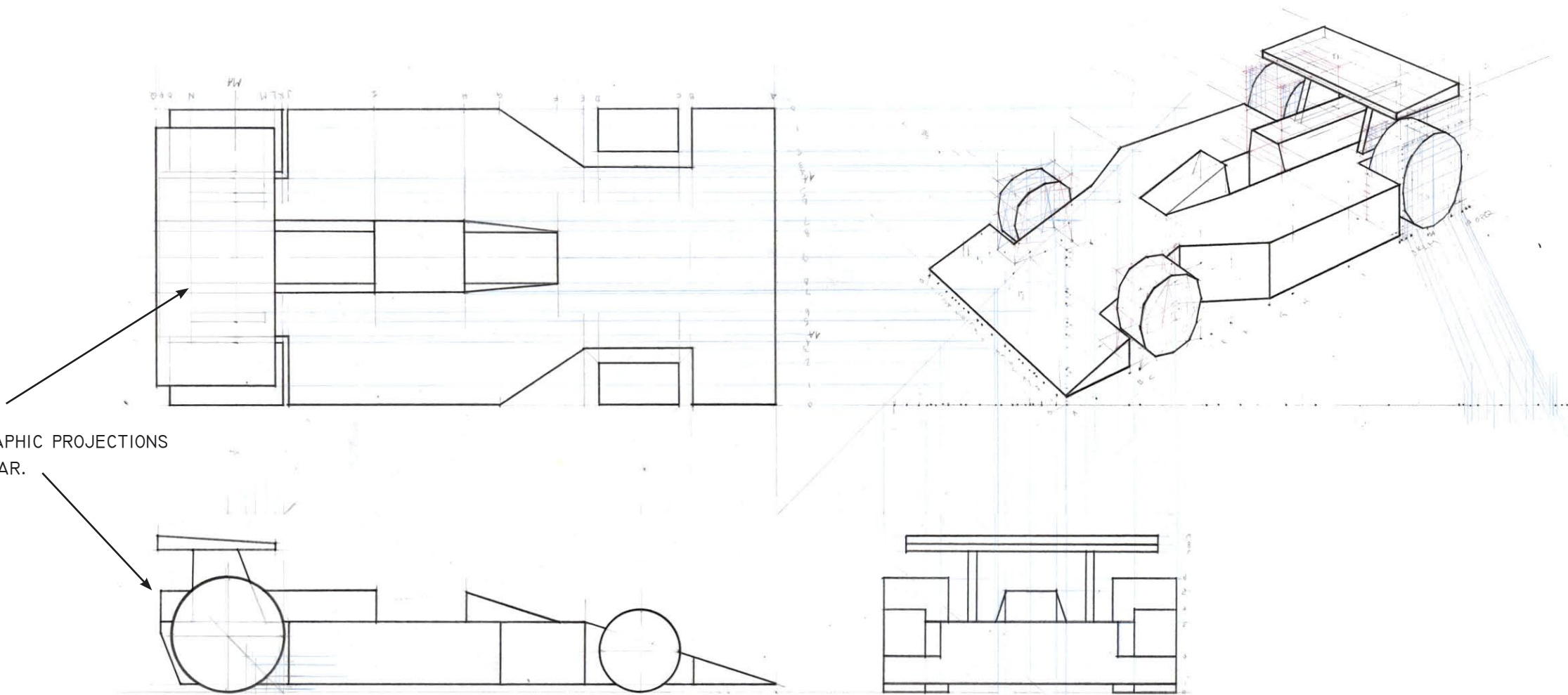


THE ORTHOGRAPHICS ARE USED TO PLOT THE POINTS ALONG ALL AXIS IN ORDER TO GENERATE A DOME.

## DRAFT A DOME

THE CONSTRUCTION OF THE DOME IS SIMILAR TO DRAWING CIRCLES IN PERSPECTIVE. YOU MUST ALSO LOCATE ALL THREE AXIS BY MEANS OF PLOTTING CIRCLES THROUGH FROM THE CENTER.

# SESSION 6b

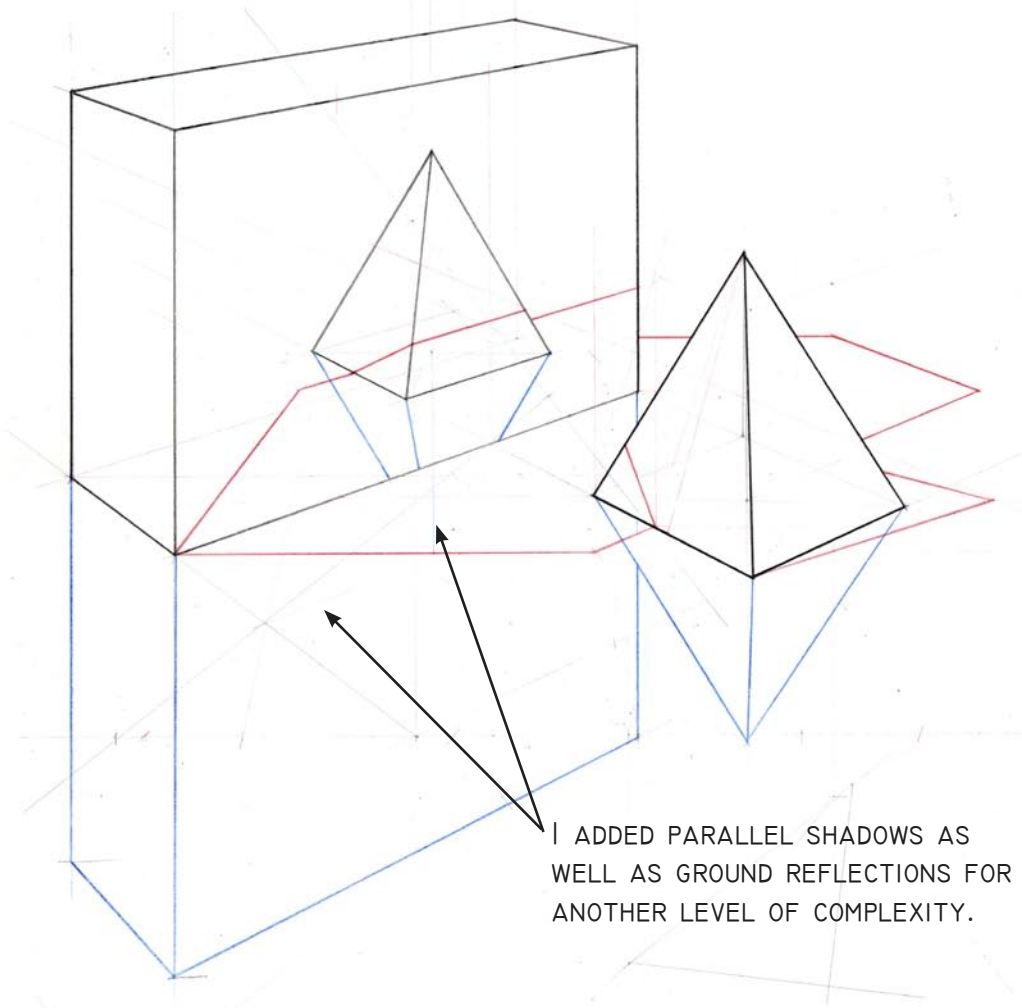


ORTHOGRAPHIC PROJECTIONS OF THE CAR.

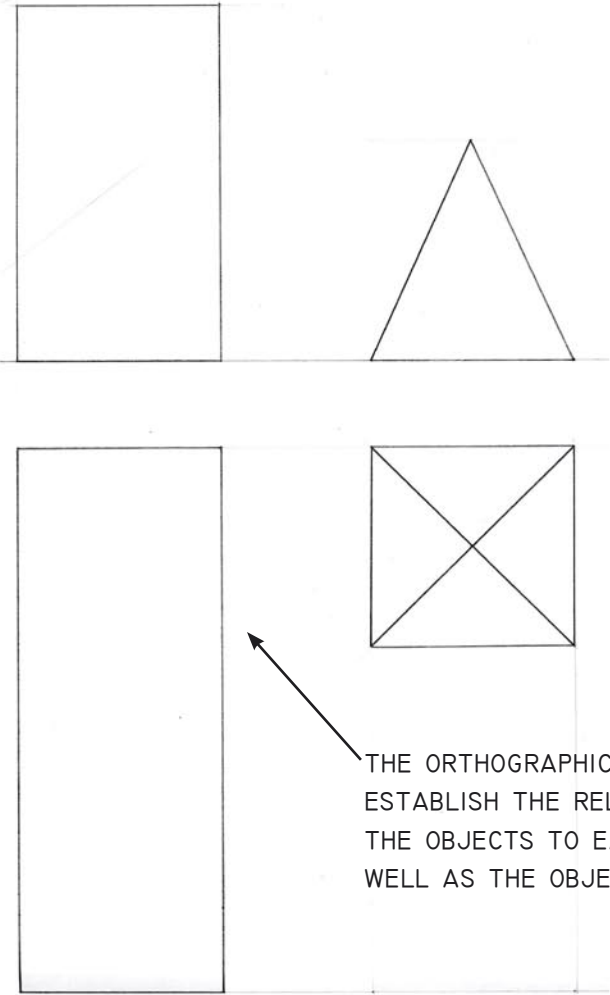
## SIMPLE OBJECT WITH PARALLEL SHADOW

FOR MY SIMPLE OBJECT I DESIGNED A TOY CAR. I TRIED TWO METHODS TO CREATE THE ROLLED CYLINDERS, THE TWELVE POINT AND THE GRAPH. I PREFER THE GRAPH METHOD AS IT GENERATES A SMOOTHER CYLINDER.

# SESSION 7a



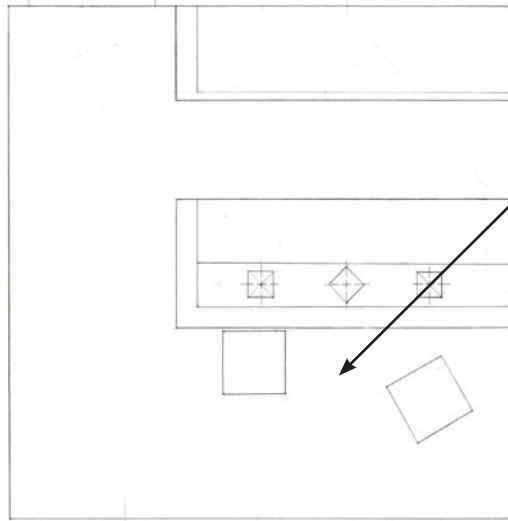
I ADDED PARALLEL SHADOWS AS WELL AS GROUND REFLECTIONS FOR ANOTHER LEVEL OF COMPLEXITY.



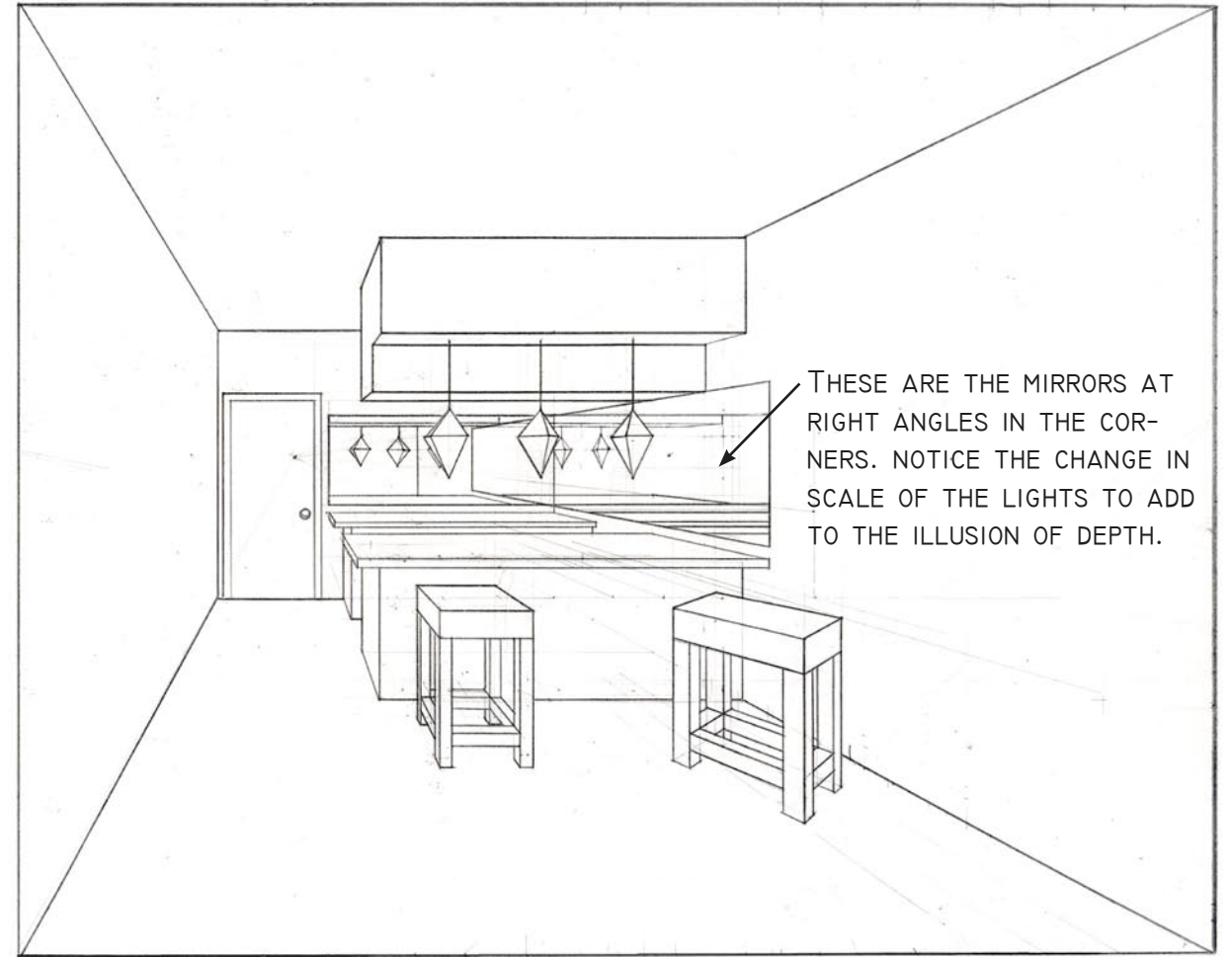
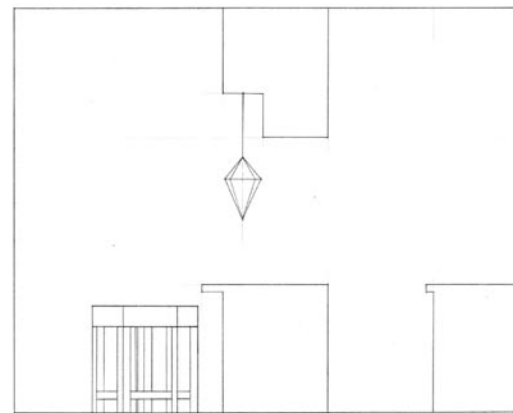
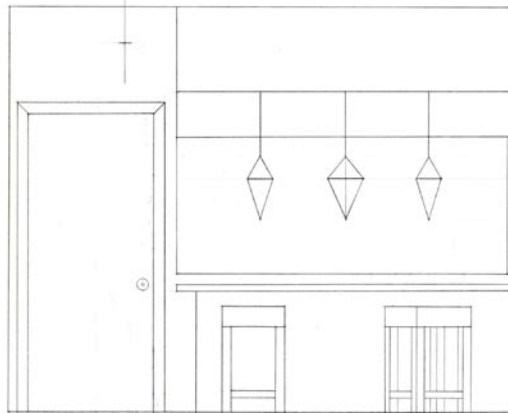
THE ORTHOGRAPHICS ARE USED TO ESTABLISH THE RELATIONSHIP OF THE OBJECTS TO EACH OTHER AS WELL AS THE OBJECTS HEIGHTS

CUBE AND PYRAMID WITH REFLECTION OF ONE IN THE OTHER  
THIS EXERCISE DEMONSTRATES HOW SIMPLE REFLECTIONS  
ADD INTEREST TO THE COMPOSITION.

# SESSION 8a/b



THE ORTHOGRAPHS ARE USED TO ESTABLISH THE RELATIONSHIP OF THE OBJECTS IN THE ROOM, LOCATE THE PROJECTED POINTS AND SET UP THE COMPOSITION.

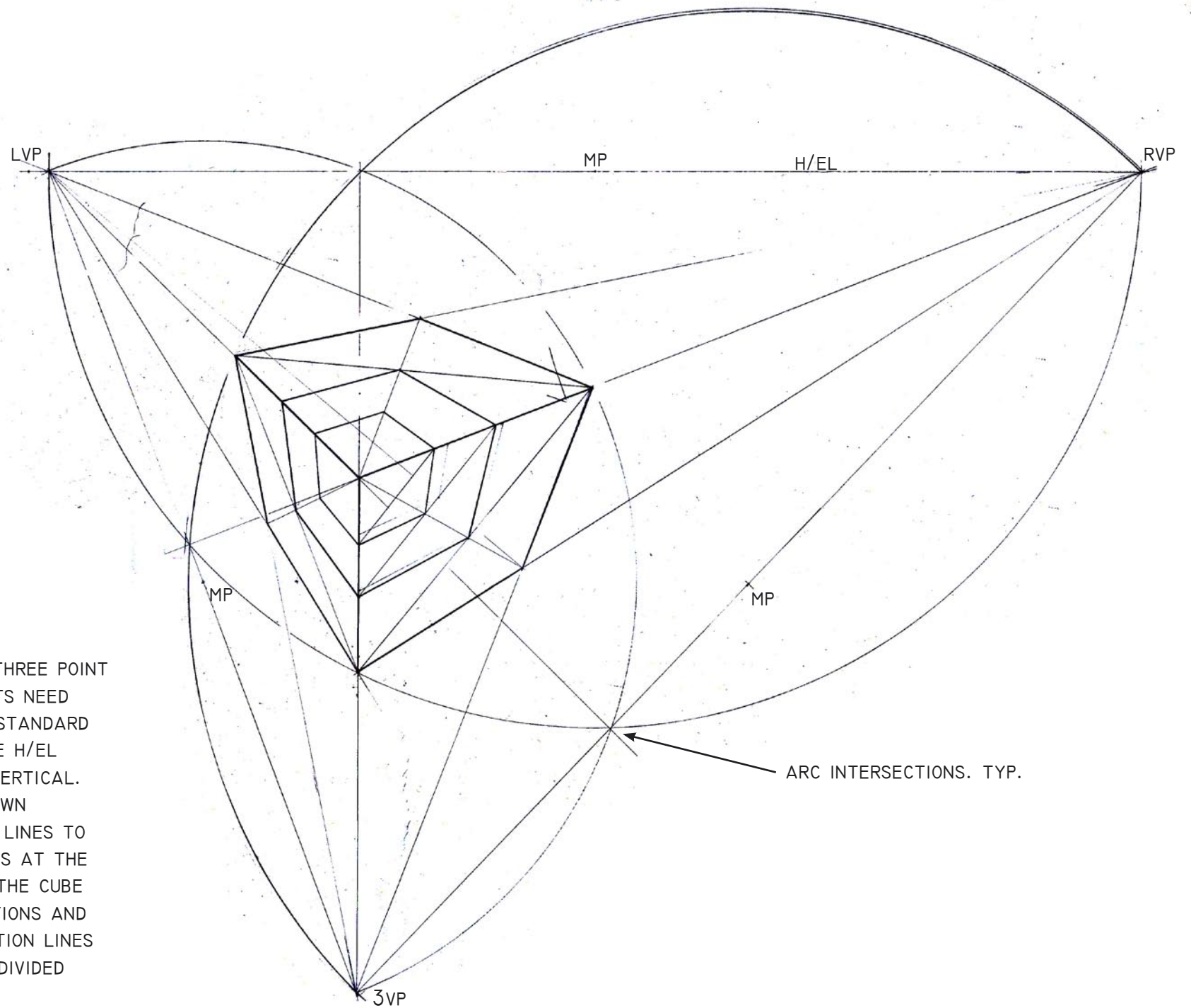


THESE ARE THE MIRRORS AT RIGHT ANGLES IN THE CORNERS. NOTICE THE CHANGE IN SCALE OF THE LIGHTS TO ADD TO THE ILLUSION OF DEPTH.

## ORTHOGRAPHIC VIEWS OF THE SHOEBOX ROOM WITH TWO REFLECTIONS USING ONE POINT PERSPECTIVE

FOR THIS PROJECT I CHOSE TO DO A BAR SCENE. THE PENDANT LIGHTS ARE THE MAIN FOCUS OF THE REFLECTED OBJECTS. IN THE TWO CORNER MIRRORS YOU CAN ALSO SEE THE BAR TOPS AND THE UPPER CABINETS.

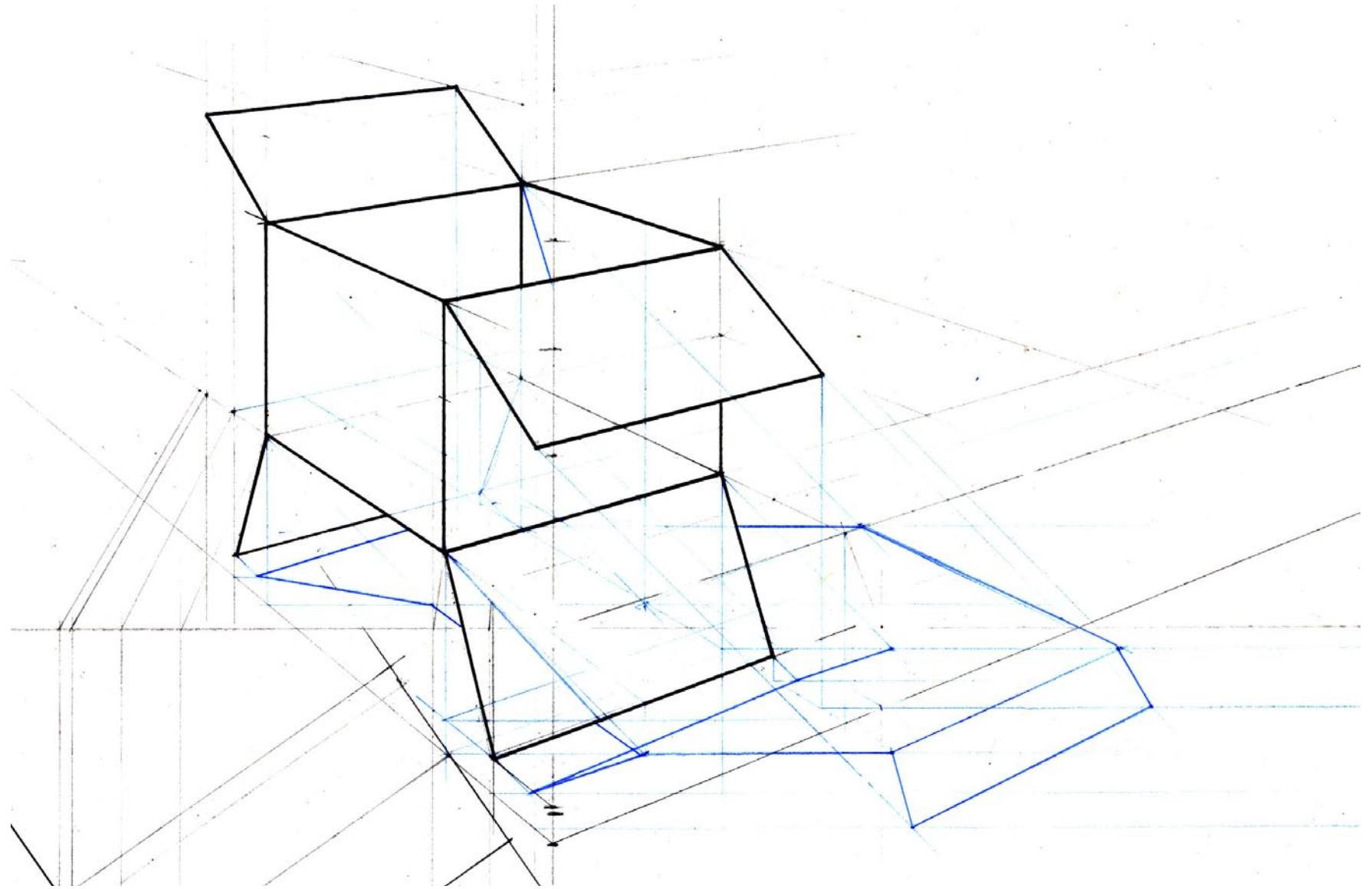
# SESSION 9a



## A CUBE IN THREE POINT PERSPECTIVE

THIS DEMONSTRATES HOW TO DRAW A CUBE USING THE THREE POINT METHOD. IN ORDER TO DRAW THE CUBE ALL THREE POINTS NEED TO BE ESTABLISHED. THE FIRST TWO FOUND USING THE STANDARD METHOD FOR 2PP. TO FIND THE THIRD POINT, BISECT THE H/EL BETWEEN THE LVP AND THE MIDPOINT THEN STRIKE A VERTICAL. CONSTRUCTION LINES ARE PROJECTED FROM THE VPS DOWN THROUGH THE COV TO FIND THE 3VP. BISECT THE NEW LINES TO FIND THE CENTER POINTS FOR ARCS WHICH SHOULD CROSS AT THE SAME POINTS AS THE BISECTED LINES. THE CENTER OF THE CUBE CAN NOW BE FOUND BY CONNECTING THE ARC INTERSECTIONS AND THE VPS. FROM HERE YOU HAVE ALL OF THE CONSTRUCTION LINES NEEDED TO COMPLETE THE CUBE. THIS CUBE WAS ALSO DIVIDED PROPORTIONATELY BY BISECTING THE CUBE FACES.

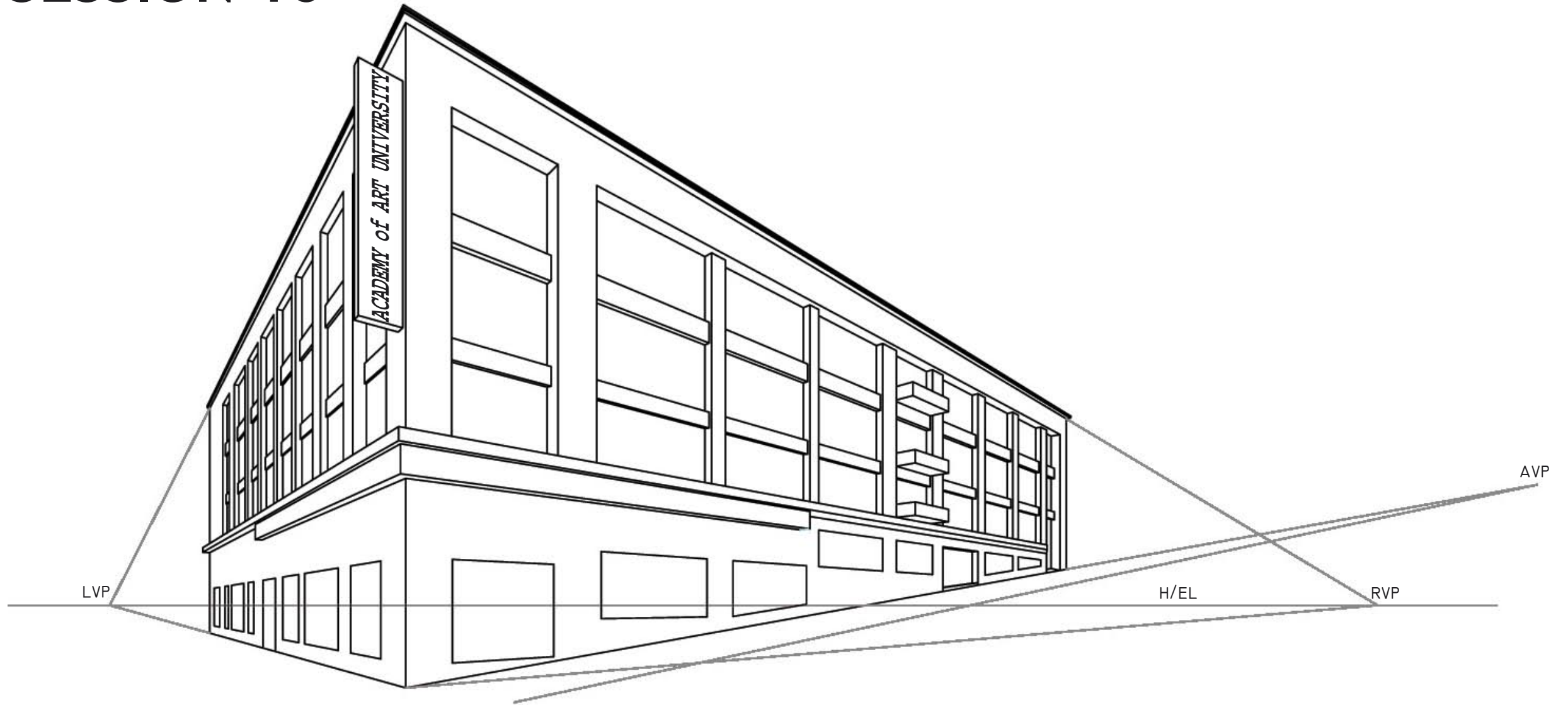
# SESSION 9c



## A BOX WITH OPEN FLAPS AND PARALLEL LIGHT SHADOW

THIS WAS A STUDY ON HOW TO FIND INCLINED SURFACES IN PERSPECTIVE LIKE THE BOX FLAPS. TO ADD A BIT OF INTEREST I CHOSE TO DO THE FLAPS ON THE BOTTOM AS WELL. I HAD TO DO A FLOATING CUBE IN ORDER TO SHOW THE BOTTOM FLAPS CORRECTLY. THE SHADOW WAS FAIR EASY USING THE PARALLEL LIGHT METHOD.

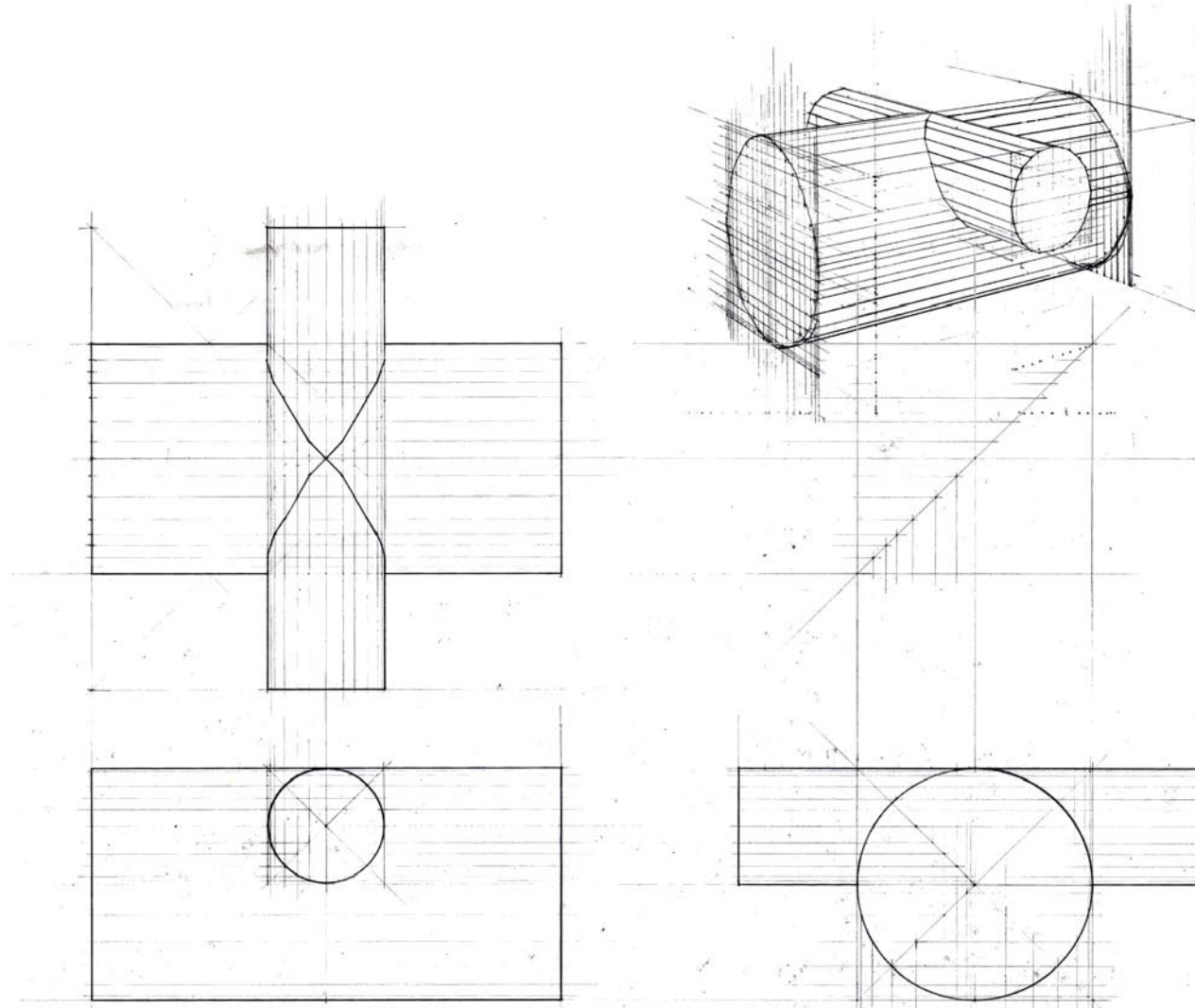
# SESSION 10



## CITYSCAPE WITH AUXILIARY VANISHING POINT

I CHOSE TO DO THE WAREHOUSE FOR MY CITYSCAPE. THE AUXILIARY VP WAS USED TO SHOW THE WASHINGTON STREET HILL WHICH IS THE LARGE FACE ON THE RIGHT.

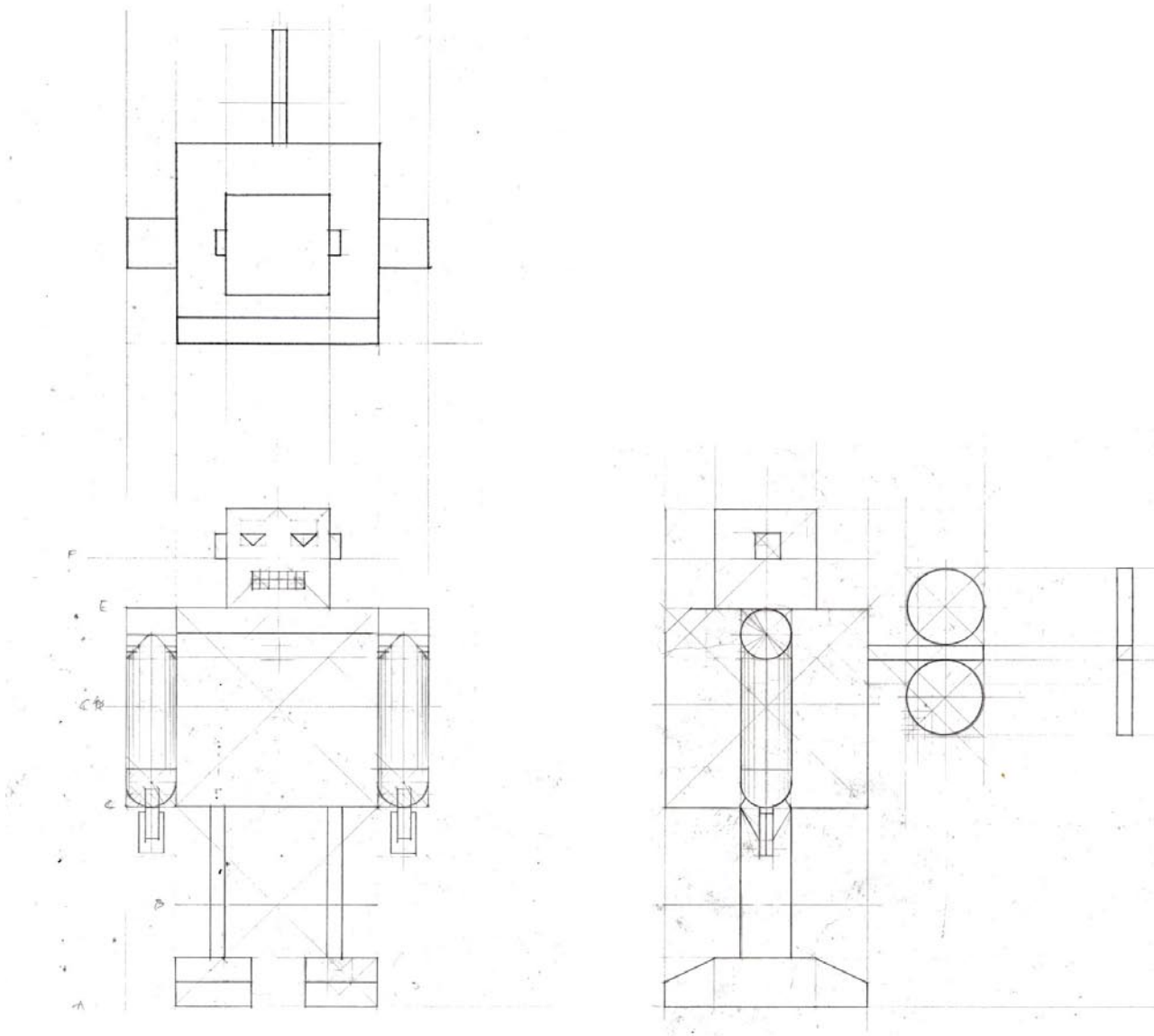
# SESSION 11



## INTERSECTING ROLLED CYLINDERS

THIS IS AN STUDY OF HOW TO ACCURATELY DRAW INTERSECTING ROLLED CYLINDERS. THE KEY TO CREATING A SMOOTH INTERSECTION IS TO DIVIDE UP THE OBJECTS BY THE SAME NUMBER OF INCREMENTS AT THE POINT OF INTERSECTION REGARDLESS OF THEIR RELATIVE SIZE.

# SESSION 12a

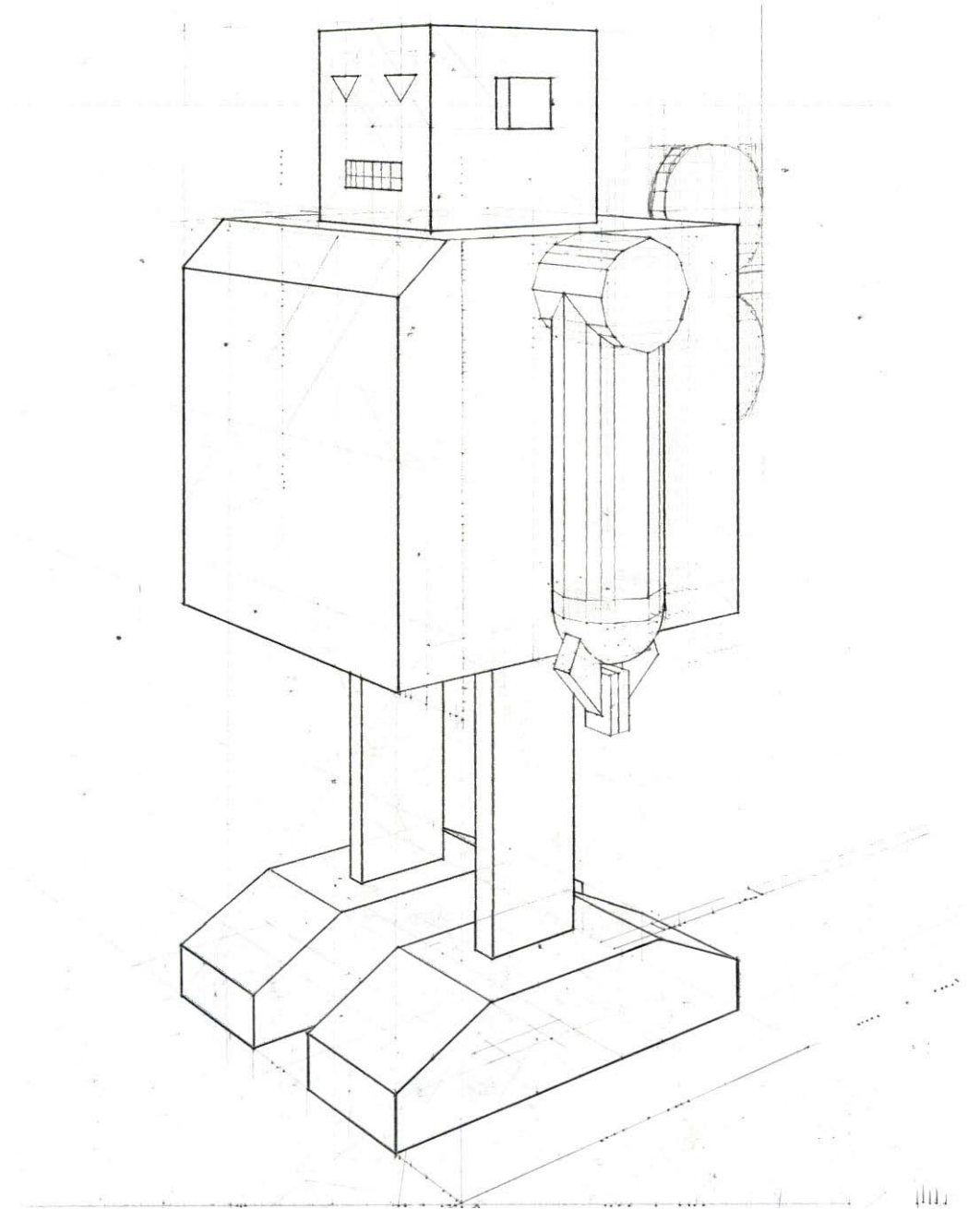


ORTHOGRAPHICS OF OBJECT BUILT FROM MULTIPLE PRIMITIVES SHAPES INSIDE A 3D GRID

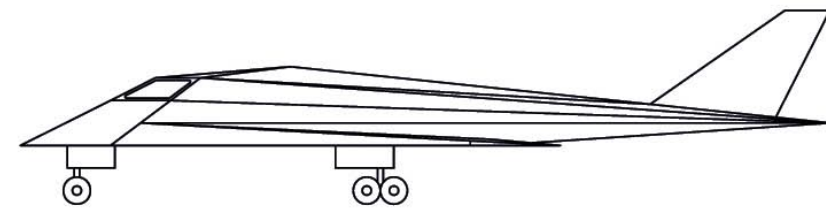
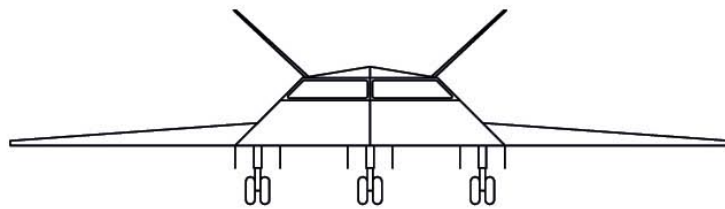
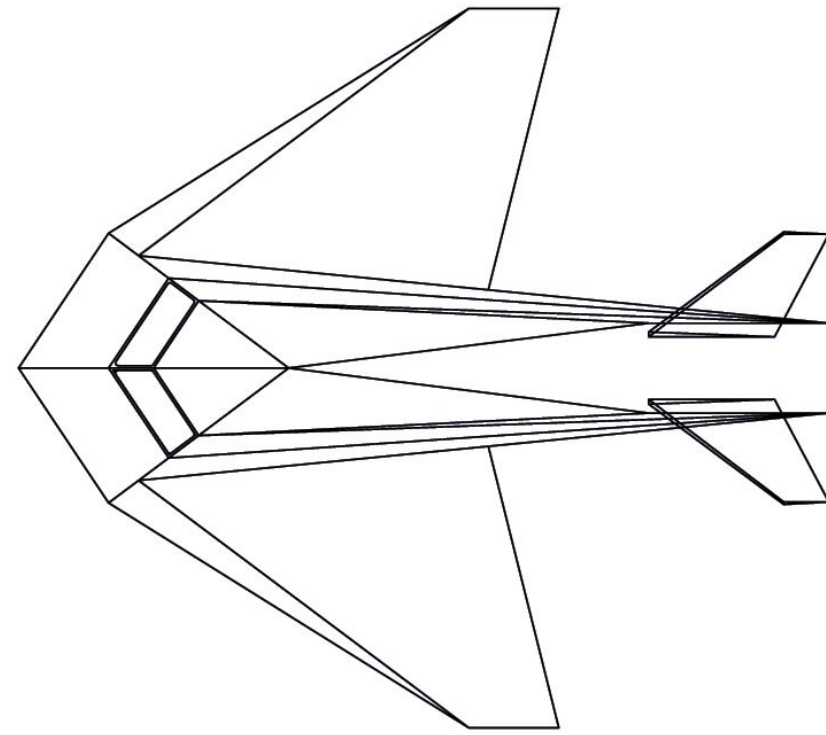
FOR THIS PROJECT WE WERE TO BUILD A TOY USING PRIMITIVES TO CREATE THE OBJECT. THE PERSPECTIVE VIEW WAS TO BE CREATED FROM SLICES THROUGH THE ORTHOGRAPHICS IN ORDER TO SHOW ANY UNUSUAL CURVES OR INTERSECTIONS.

# SESSION 12b

COMPLETED DRAFTING OF OBJECT BUILT FROM MULTIPLE PRIMITIVE SHAPES  
THIS IS MY VERSION OF THE OLD WIND UP TIN TOYS.

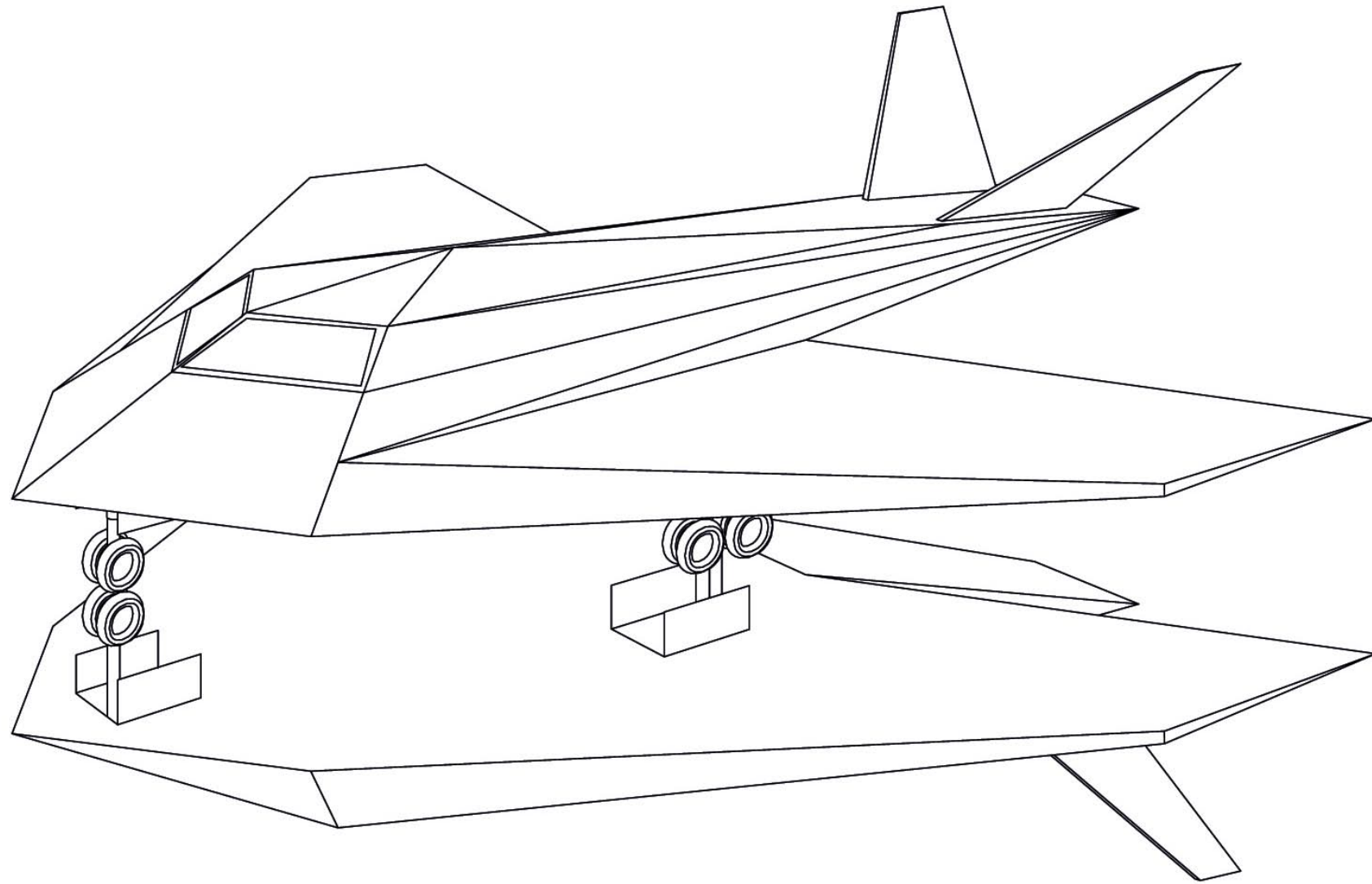


# SESSION 13a



ORTHOGRAPHICS OF COMPLEX TOY WITH REFLECTION  
I CREATED THIS STEALTH FIGHTER OF MY OWN DESIGN.

# SESSION 13b



FINAL DRAFT OF COMPLEX TOY WITH REFLECTION  
I CHOSE TO DO THIS STEALTH FIGHTER OF MY OWN DESIGN.