



# CARL WEAVER

CADD II FREE MODELING

IDENTIFICATION/APPLICATION/SOLUTION

FINAL PROJECT: MULTI-TOOL DEVELOPMENT

IND2901-101 SPRING 2013



## IDENTIFYING THE NEED:

AN OUTDOOR PROVISION COMPANY IS IN NEED OF A NEW MULTI-TOOL FOR THEIR NEW PRODUCTLINE. THE TOOL NEEDS TO HAVE AT LEAST FOUR TOOLS, BE VISUALLY APPEALING, AS WELL AS UNIQUE. THE KNIFE'S DESIGN SHOULD FOCUS ON EXTRA STABILITY, CONTROL AND GRIP.



## RESEARCH TO SUPPORT THE NEED:

### 10 THINGS THAT MAKE A TACTICAL KNIFE

1. DESIGN
2. PURPOSE OF THE KNIFE
3. ERGONOMICS
4. SIZE
5. MATERIALS
6. HANDLE
7. BLADE DESIGN
8. LOCKS
9. FIXED BLADE OR FOLDER
10. CARRY OPTIONS



## RESEARCH TO SUPPORT THE NEED:

IS THE KNIFE A WEAPON? IS THE KNIFE A UTILITY TOOL? IS THE KNIFE AN EMERGENCY RESCUE TOOL? IS THE KNIFE AN ENTRY TOOL?

- THE KNIFE MUST FEEL COMFORTABLE IN YOUR HAND AND SHOULD BE REFLECTIVE OF THE TASK IT IS DESIGNED TO DO.
- CURVED CUTTING EDGES CUT CLOTH AND WEBBING VERY EFFICIENTLY.
- A SERRATED BLADE WILL ALWAYS CUT, EVEN WHEN DULL.



EVIDENCE OF PLANNING:

**ever BLADES**

**SEANERVE**

**BOSS**

**RACUDA CUTLERY**

**FAREN**

**ARION NEBULA**

**SUNDAY APRIL 26, 2015**

**SPARE REBORN BADGER**

**EVOLVE**

**SOLOTTIVE BLADES**

**SPINNAKER SPADES**

**EVERBLADES**

**EQUER BLADES**

**BAR NONE**

**EVERBLADES**

**EVER BLADES**

**EVERBLADES**

**EVERBLADES**

**EVERBLADES**

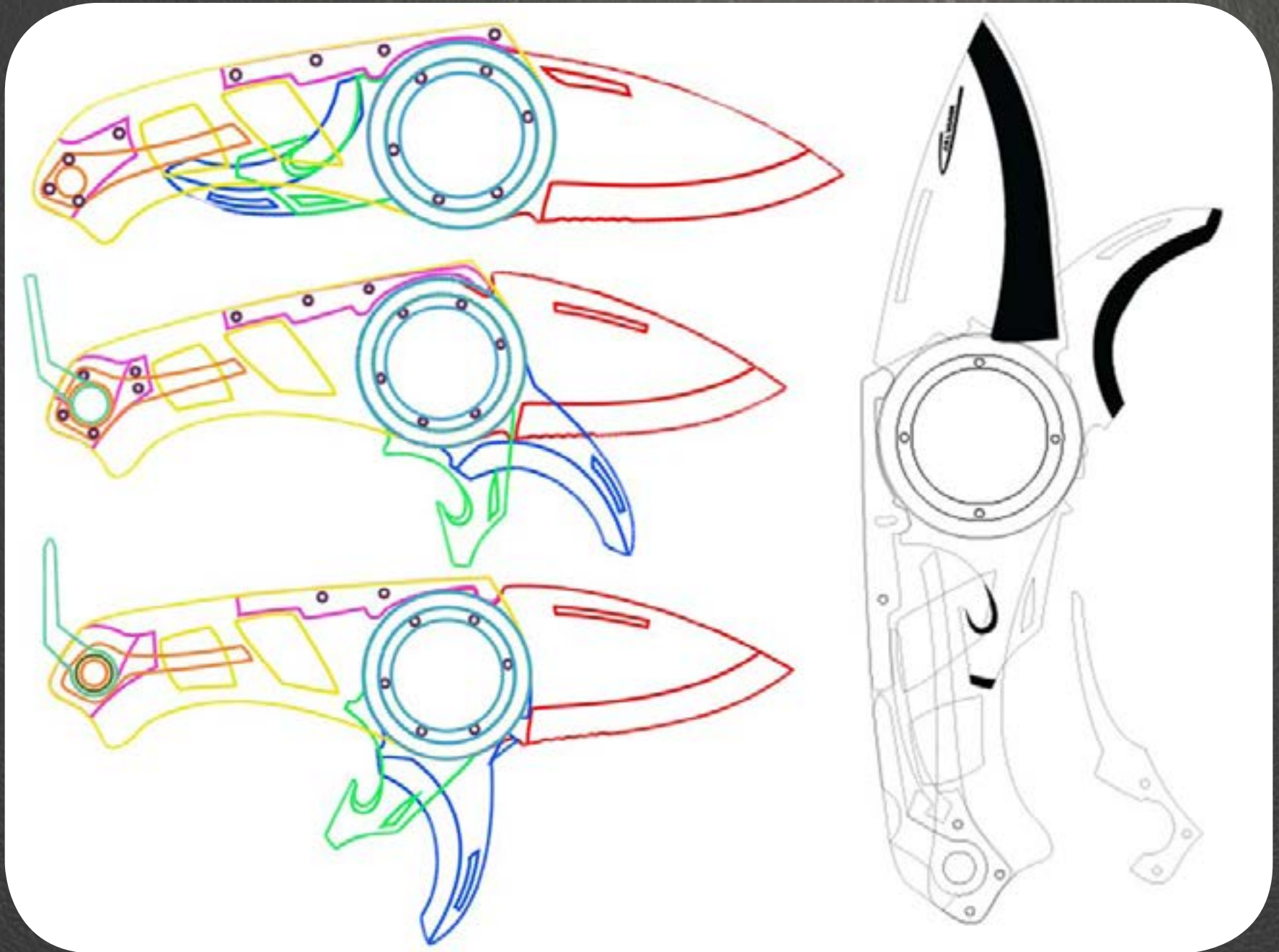
**EVERBLADES**

- THE LAST BLADE. EVER MADE.
- THE END OF THE WORLD HAS FEELISSYS.
- TAME THE WILD
- NEVER ALONE
- TACTICAL
- SURVIVE
- EFFECTIVE
- BLADE
- SIMPLE
- FAST
- FLOW
- CIRCLE
- ROPE
- BALANCE
- GRIP
- SPIN
- CUT
- ONE

• A SPINNAKER IS EXTREMELY USEFUL FOR SAILING WITH THE DIRECTION OF THE WIND.

• EVERGLADES ARE A NATURAL REGION OF SUBTROPICAL WETLANDS "PHER OF GARSS"

# EVIDENCE OF PLANNING:





# EVIDENCE OF PLANNING:



# CONSTRUCTION LOG:





# CONSTRUCTION LOG:





# CONSTRUCTION LOG:





# DEVELOPED WORKING MODELS:





# DEVELOPED WORKING MODELS:





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# DEVELOPED WORKING MODELS:



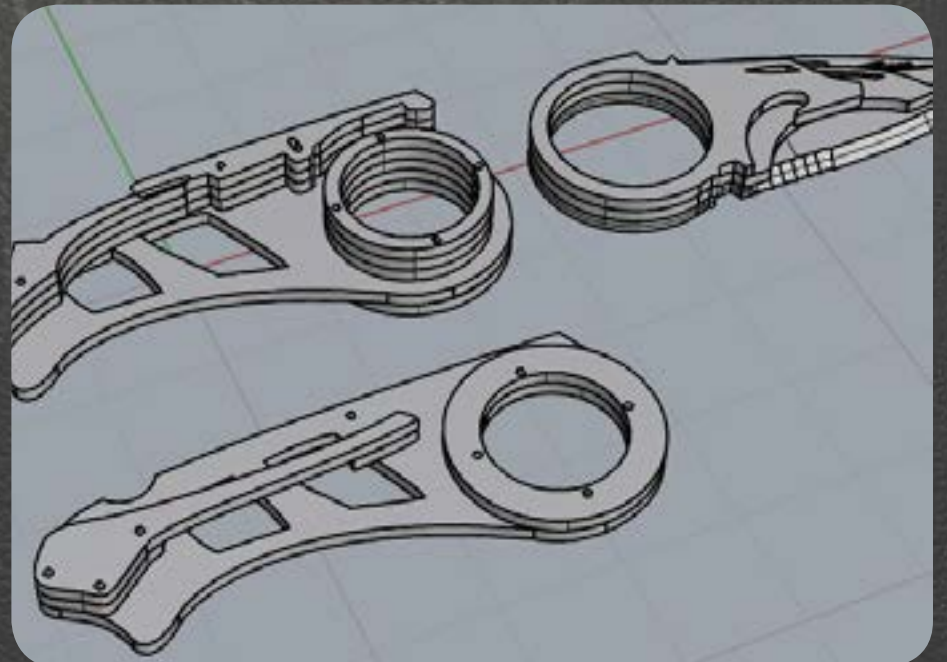
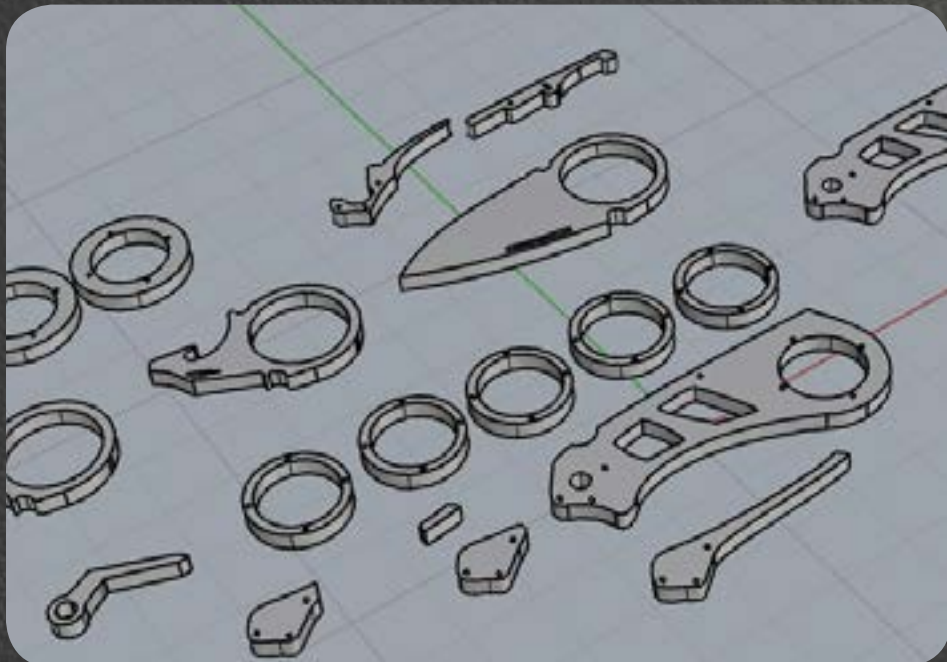
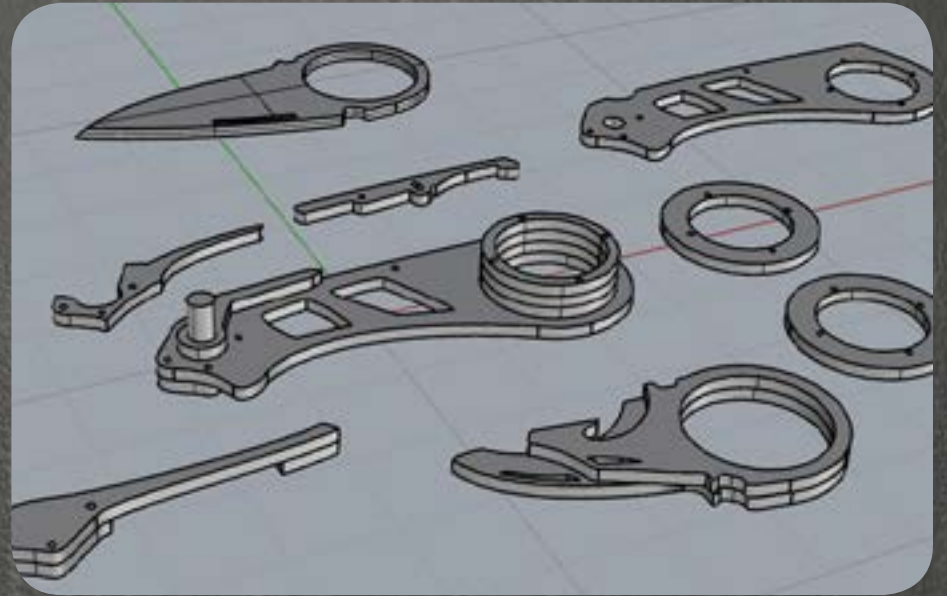
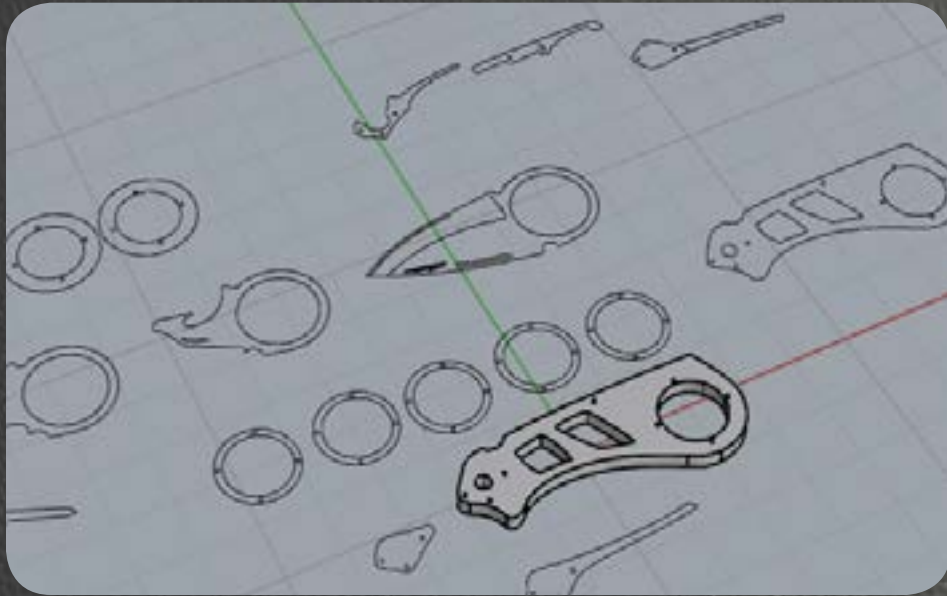


# DEVELOPED WORKING MODELS:



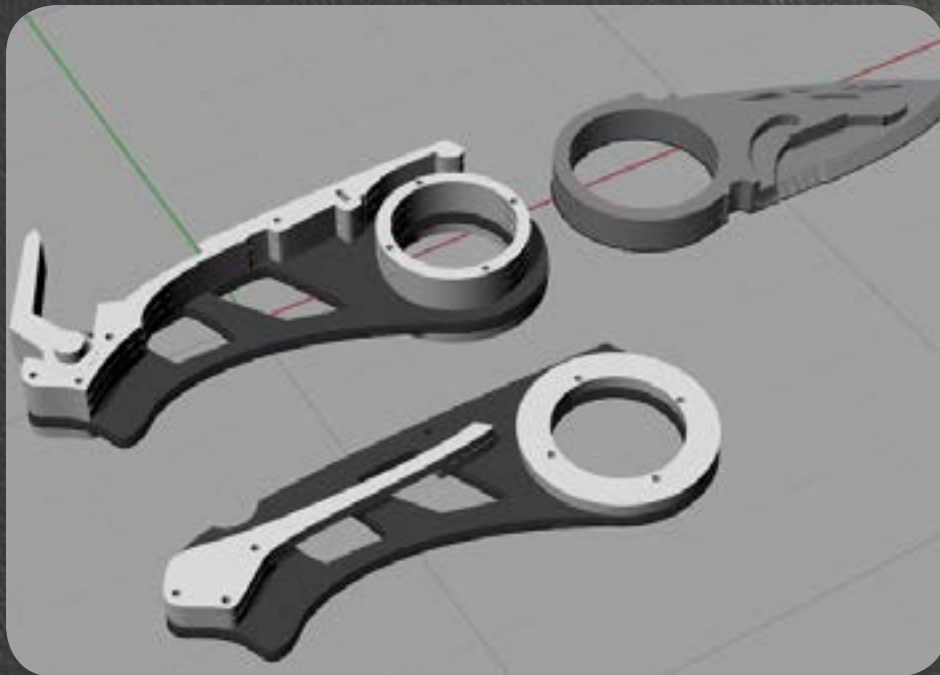
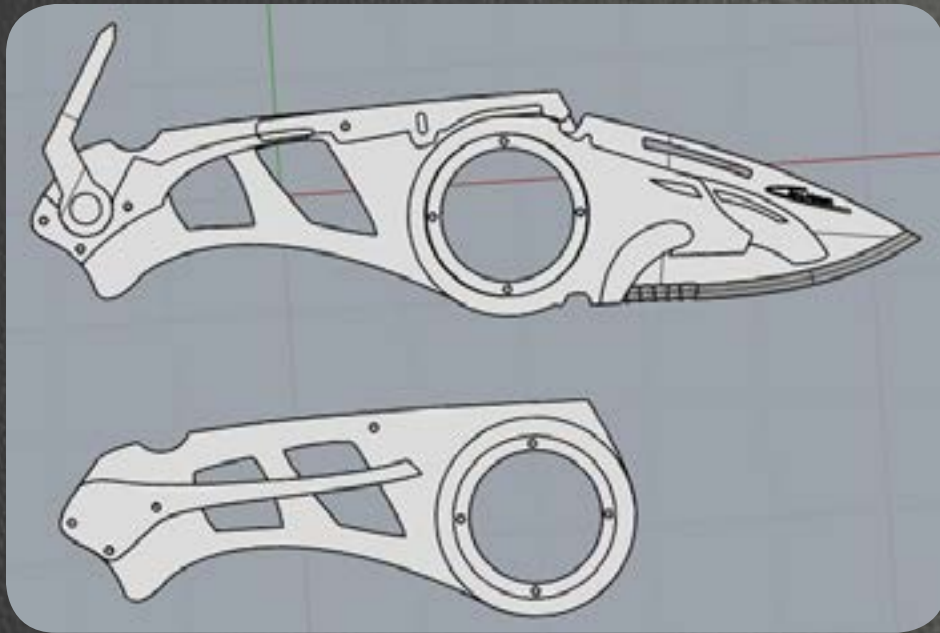


# DESIGN LOG:





# DESIGN LOG:





# DESIGN LOG:





# DESIGN LOG:



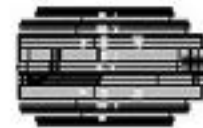


## IMPLICATIONS OF EACH SOLUTION:

THERE WAS SOME INITIAL PROBLEMS WITH THE LOCKING MECHANISM. THE FULCRUM HAD TO BE ADJUSTED FOR THE PROPER TENSION TO BE ACHIEVED. VARIATIONS OF THIS RANGED FROM ADDING A METAL PIN TO INCREASING THE SEVERITY OF THE ANGLE OF THE PART APPLYING THE TENSION. IT WAS DECIDED TO GO FORWARD WITH THE ANGLE METHOD, SO THERE WOULD BE CONTINUITY OF MATERIAL. THE CIRCULAR PIVOT NEEDED SMALL ADJUSTMENTS TO SECURE APPROPRIATE SPIN AND STABILITY. SIZE RESTRICTIONS WERE ALSO TAKEN INTO ACCOUNT.

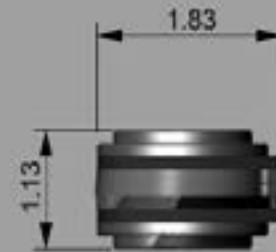
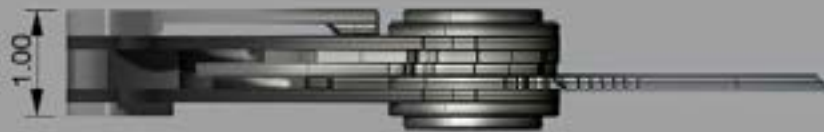
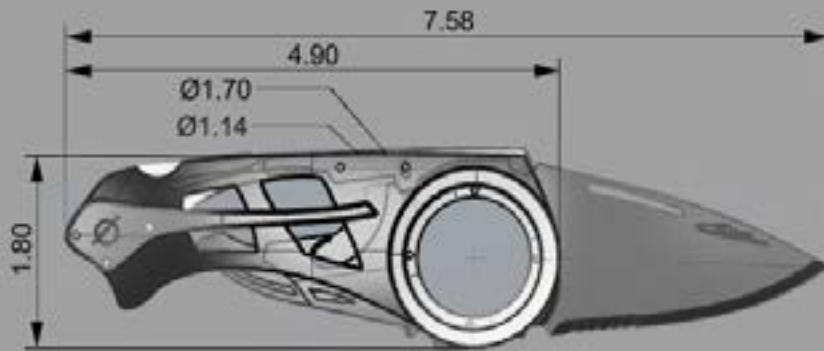


# FINAL DRAWINGS:



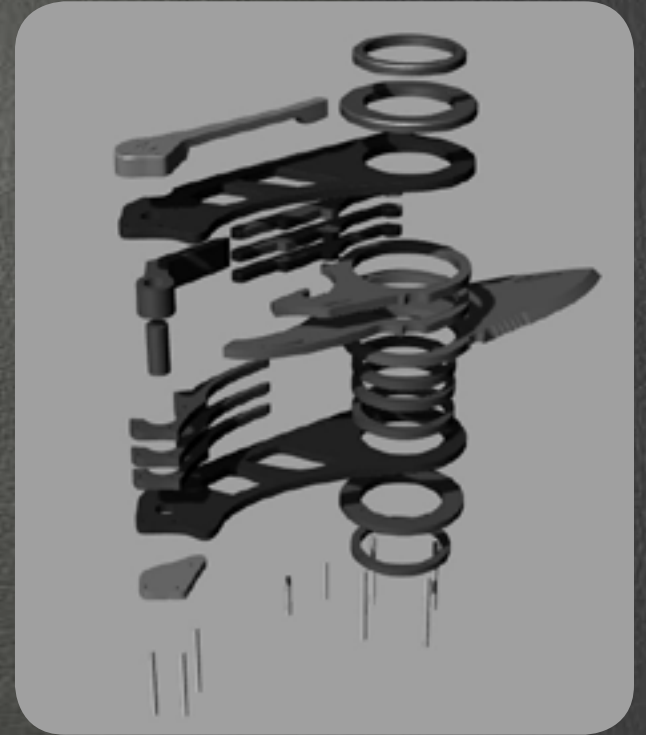
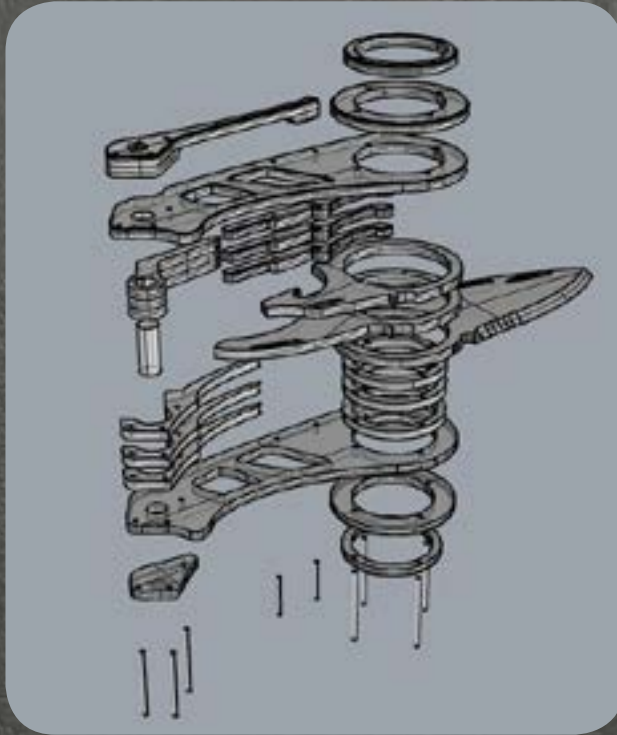
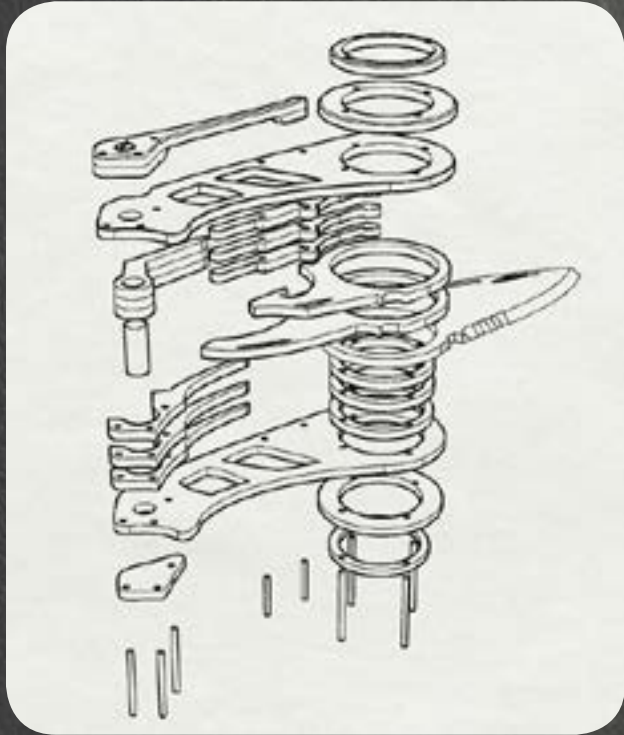


# FADE AWAY ILLUSTRATIONS:

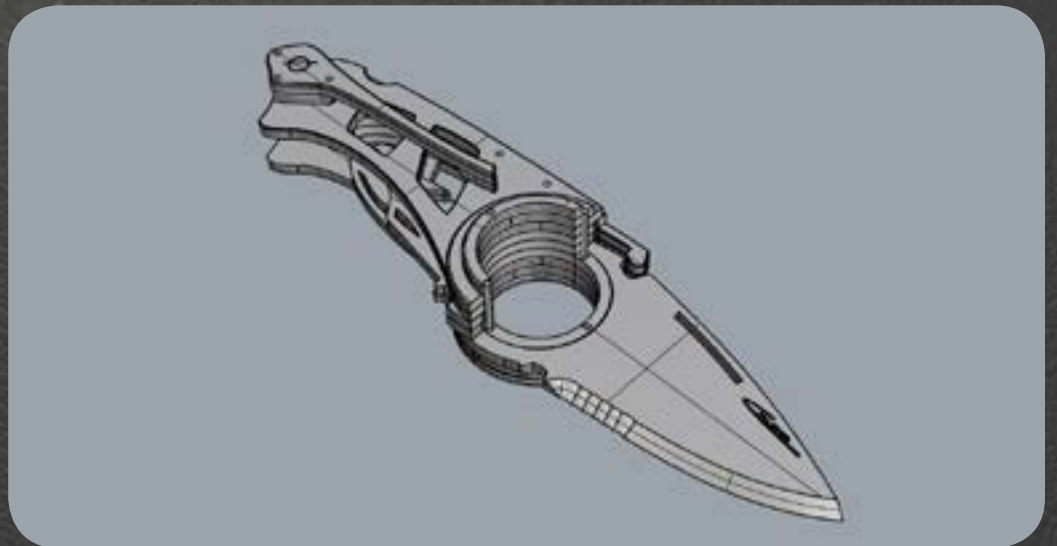




## EXPLODED VIEWS:



## CROSS SECTION VIEW:





# MOTION DISPLAY:





# RENDERINGS OF PROPOSED COLOR SCHEMES:





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# RENDERINGS OF PROPOSED COLOR SCHEMES:





## CONSTRUCTION LOG:

1. CONSTRUCTION BEGAN WITH A PAPERBOARD MODEL
2. KNIFE WAS THEN LASER CUT FROM CLEAR ACRYLIC
3. ANOTHER MODEL WAS CUT FROM CLEAR ACRYLIC TO MORE EXACT MEASUREMENTS
4. HIGH DENSITY FOAM MODEL WAS THEN CUT
5. MODEL SANDED AND PAINTED
6. MODEL PARTS WERE INSPECTED AND REPAINTED
7. PARTS ASSEMBLED FOR DRY FIT
8. PARTS ASSEMBLED AND METAL PINS SECURED IN PLACE
9. FINAL MODEL CHECKED FOR OPERATIONAL ABILITY AND GRAPHITE ADDED TO INCREASE MOBILITY



## REFLECTION:

- THE LOCKING MECHANISM WAS A TASK IN ITSELF. THERE IS A PRECISION BALANCE NEEDED FOR TENSION TO LOCK THE BLADE AND STILL BE ABLE TO OPEN AND CLOSE IT.
- CIRCULAR PIVOT POINT REQUIRED ATTENTION DURING ASSEMBLY TO ALIGN CORRECTLY
- SPECIAL ATTENTION WAS TAKEN IN THE FLOW BETWEEN BLADES BOTH WHEN OPEN AND CLOSED.
- COLOR CHOICE DIRECTLY DETERMINES HOW THE KNIFE IS PERCEIVED.
- BRANDING IDENTITY TAKES TIME.
- KEYSHOT RENDERINGS TURNED OUT EXCEPTIONALLY WELL.
- I WOULD LIKE TO TAKE THIS PRODUCT FURTHER TO HAVE THEM PRODUCED AND SOLD



REFLECTION:

TOTAL TIME INVOLVED:

I FEEL THAT IT WOULD BE CONSERVATIVE TO SAY NEARLY 80 TOTAL HOURS HAVE BEEN INVOLVED WITH THE ENTIRE CONSTRUCTION AND MODELING PROCESS.

ANIMATION LINK:

[WWW.YOUTUBE.COM/WATCH?V=DWFXGLO3QSU](http://WWW.YOUTUBE.COM/WATCH?V=DWFXGLO3QSU)



## RESOURCES:

EMERSON, ERNEST. "10 THINGS THAT MAKE A TACTICAL KNIFE." *DAILY CALLER, THE*. PATEL, NEIL. 2012. WEB. 02 APRIL 2013.

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"MECHANISMS." *BENCHMADE*. BENCHMADE KNIFE COMPANY, 2013. WEB. 02 APR. 2013.

"REMIX TACTICAL." *GERBER*. U.S. FISHERS OUTDOOR, N.D. WEB. 02 APR. 2013.