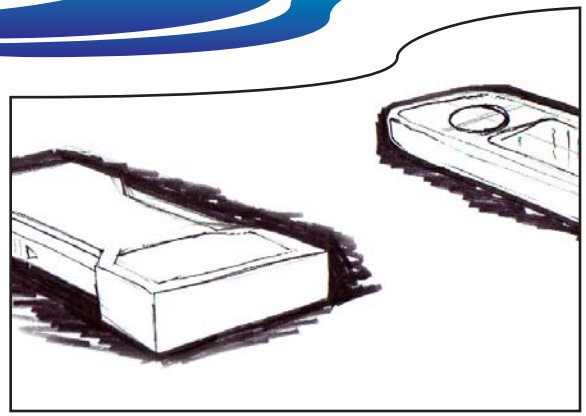
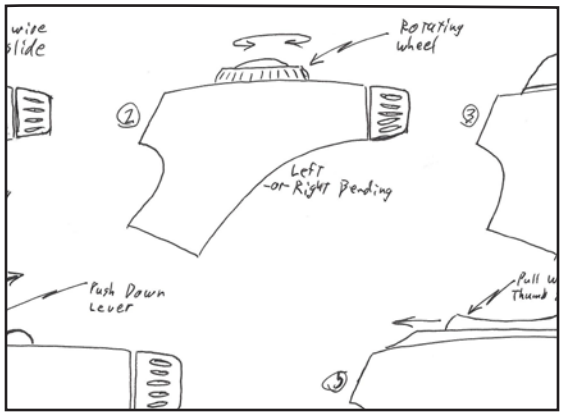
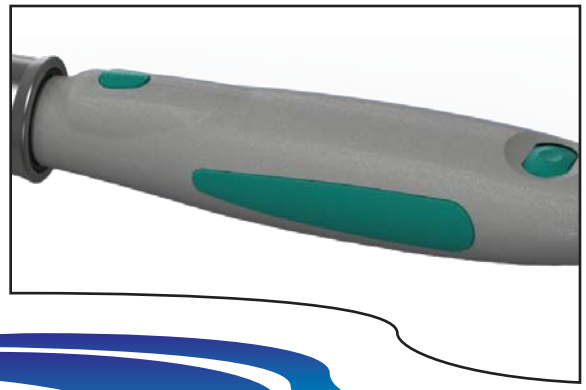
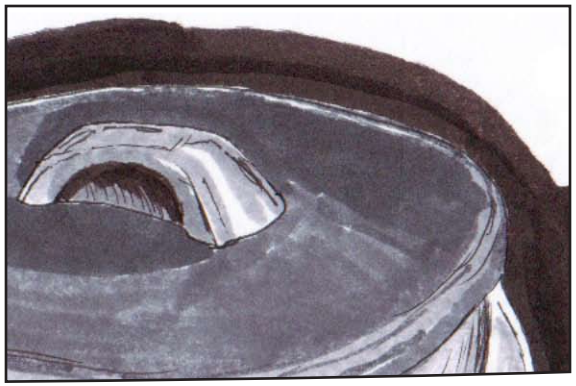
# Professional Portfolio







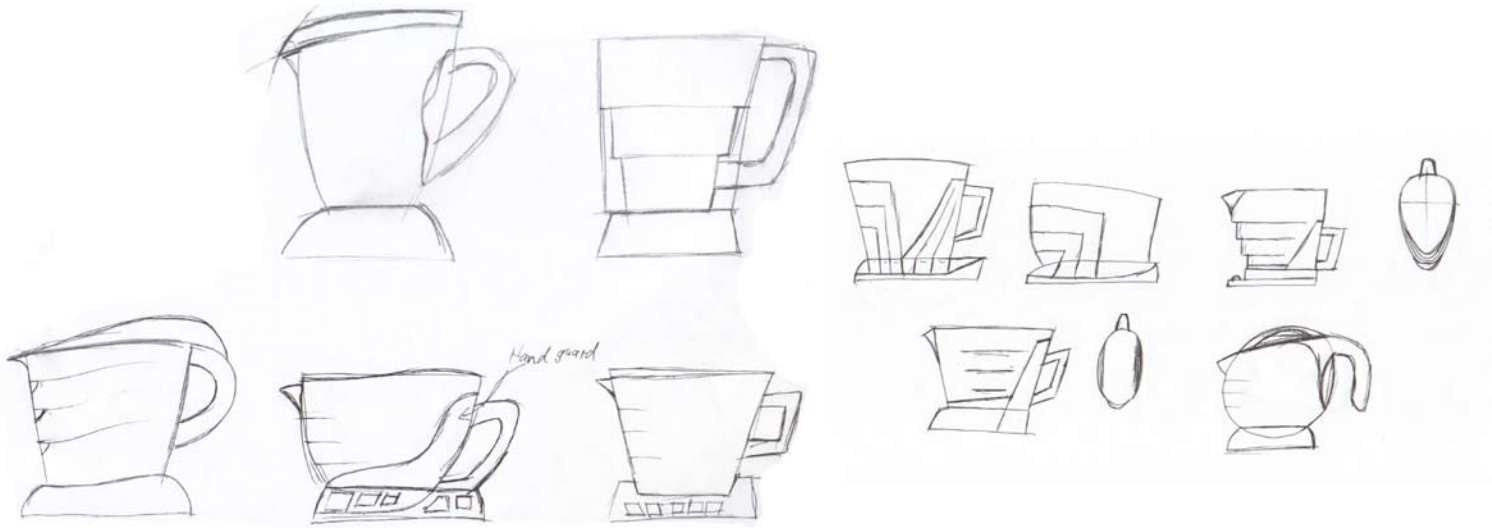
# Aaron Pitzer

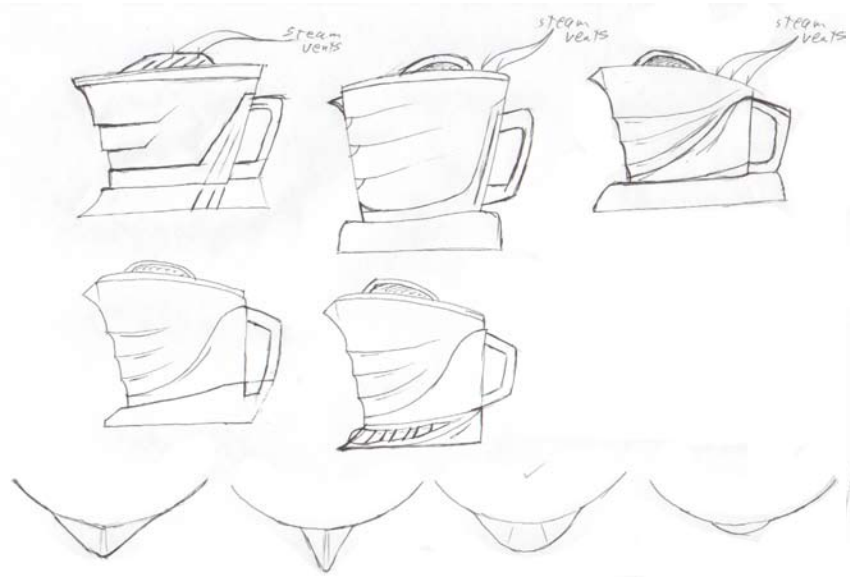
# Table Of Contents

## Project Name

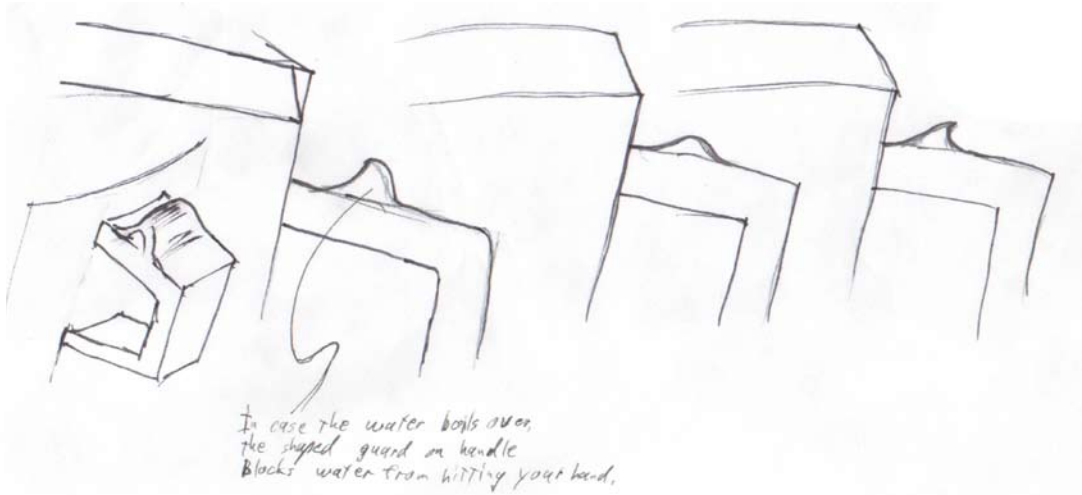
# Noodle Cooker

Problem: A new design was requested for a device to cook Ramen style noodle soups that would work in America. This meant the design would need to incorporate a different electrical system and be more user friendly than some of the models found in other markets around the world. When I was given the project, there were two models that had been imported from China. With these I was able to get an idea of what was needed to solve the problems of usability. Another aspect that made the project challenging was that I was given less than two weeks to get the project ready for a final presentation that included design and detail drawings as well as Freehand renderings.

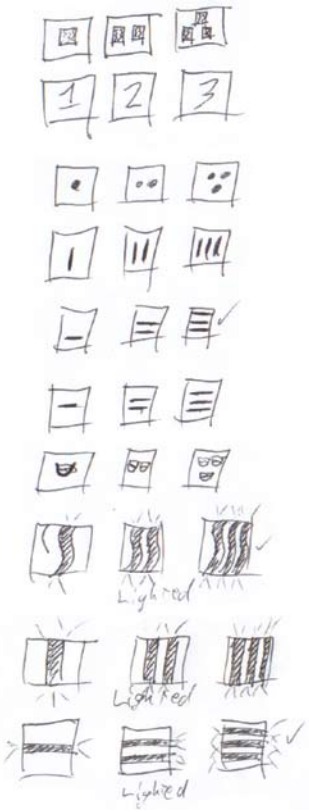


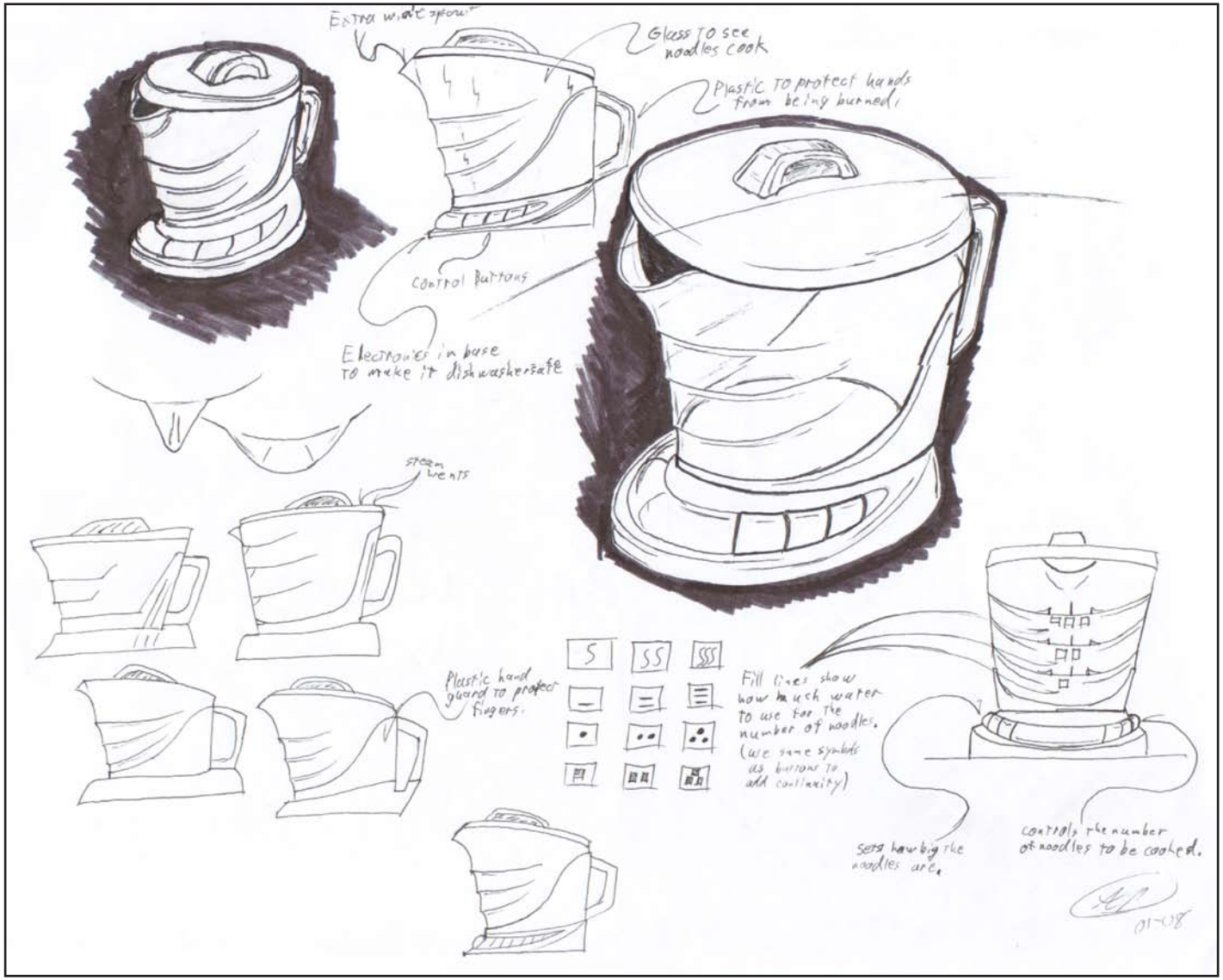

One specific requirement was that the cooker would have a setting for one, two, or three packages of noodles. Through the ideation process, I knew the solution would include markings on the product to measure how much water is needed for the given amount of noodles. When the markings are simply printed on the part, it is harder to determine exactly how much water is in the container. Wanting to make the user interface as simple and intuitive as possible, I knew the best solution would be to incorporate the measurement markings into the shape of the unit itself.



# Noodle Cooker

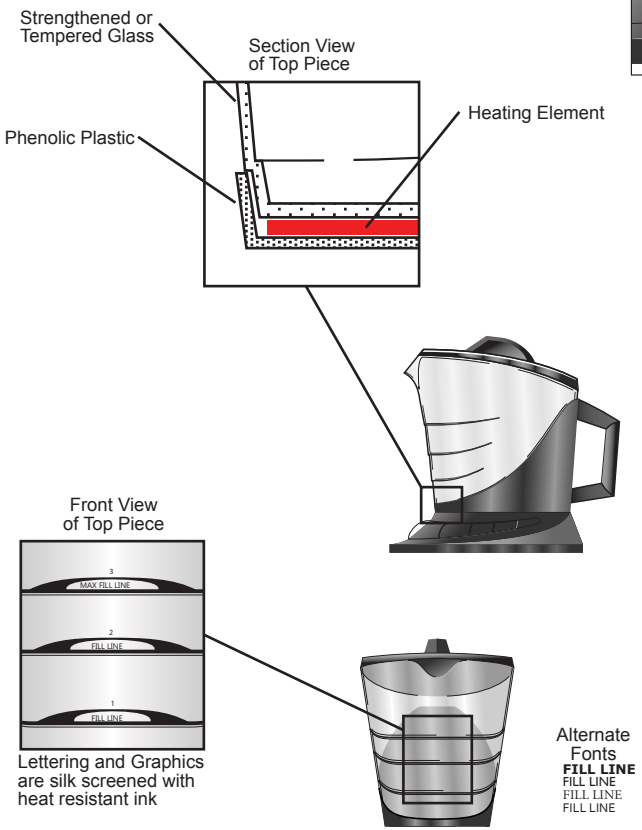


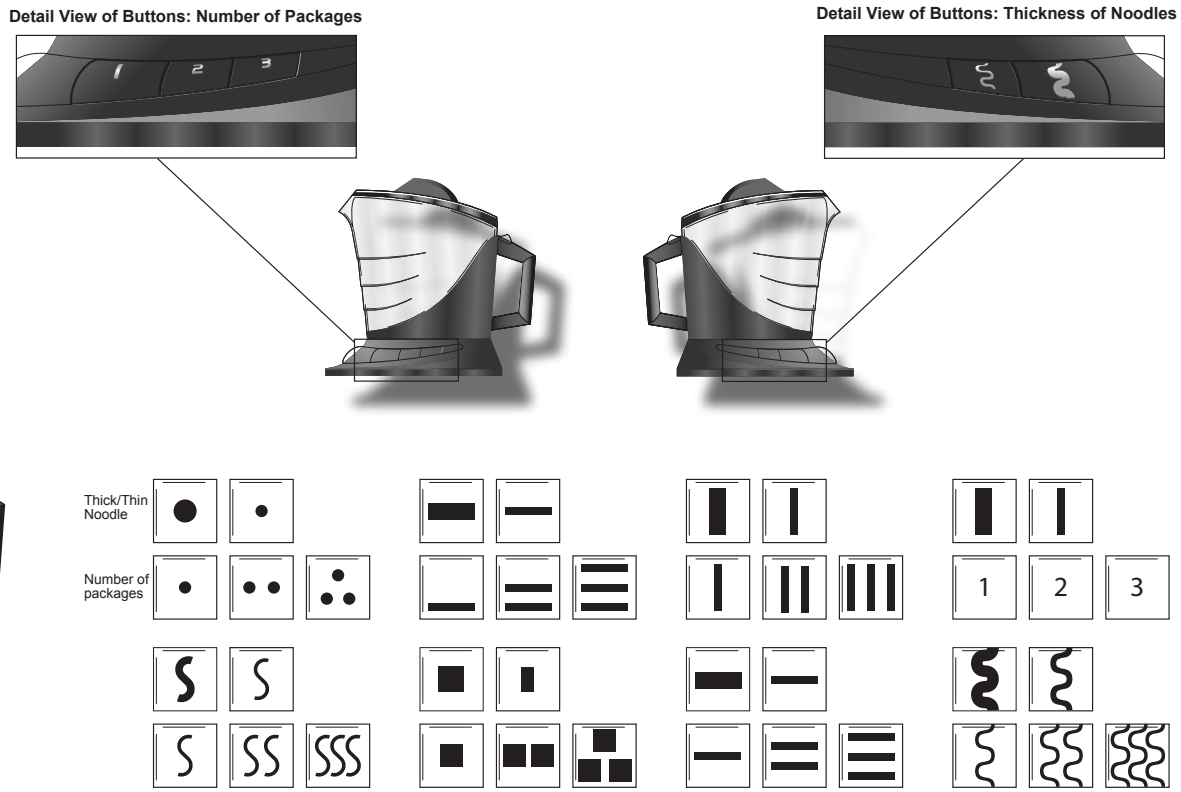

Button graphic possibilities




First page from final presentation

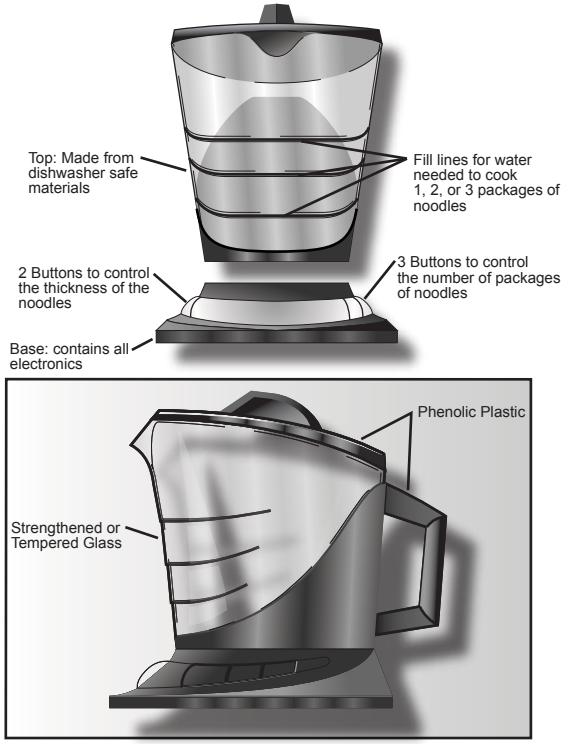
# Noodle Cooker




These images are excerpts from the final presentation. They were created with Freehand in order to show that the design project had progressed and been refined to the point that fine details were being considered. I wanted to display that important details had been considered and that these were some of the best options to solve the design issues.

# Noodle Cooker





Solution: The most important problems I needed to solve with this design were to create an intuitive user interface, and create a design that would work in the American markets. I spent most of my design time working on the user interface because it is the part that sets this design apart from all the other designs I could find. The goal was to make this user interface so intuitive the instruction manual could be left out of the packaging. Even though this product would only be sold in America, I intentionally wanted to make a user interface that did not need to employ any kind of text. While I did allow for the possibility of having text on the front of the piece to mark the desired volume of water, I do not believe it is necessary.

Using combinations of strengthened glass and phenolic plastics, the materials should allow for a much desired capability to be dishwasher safe.

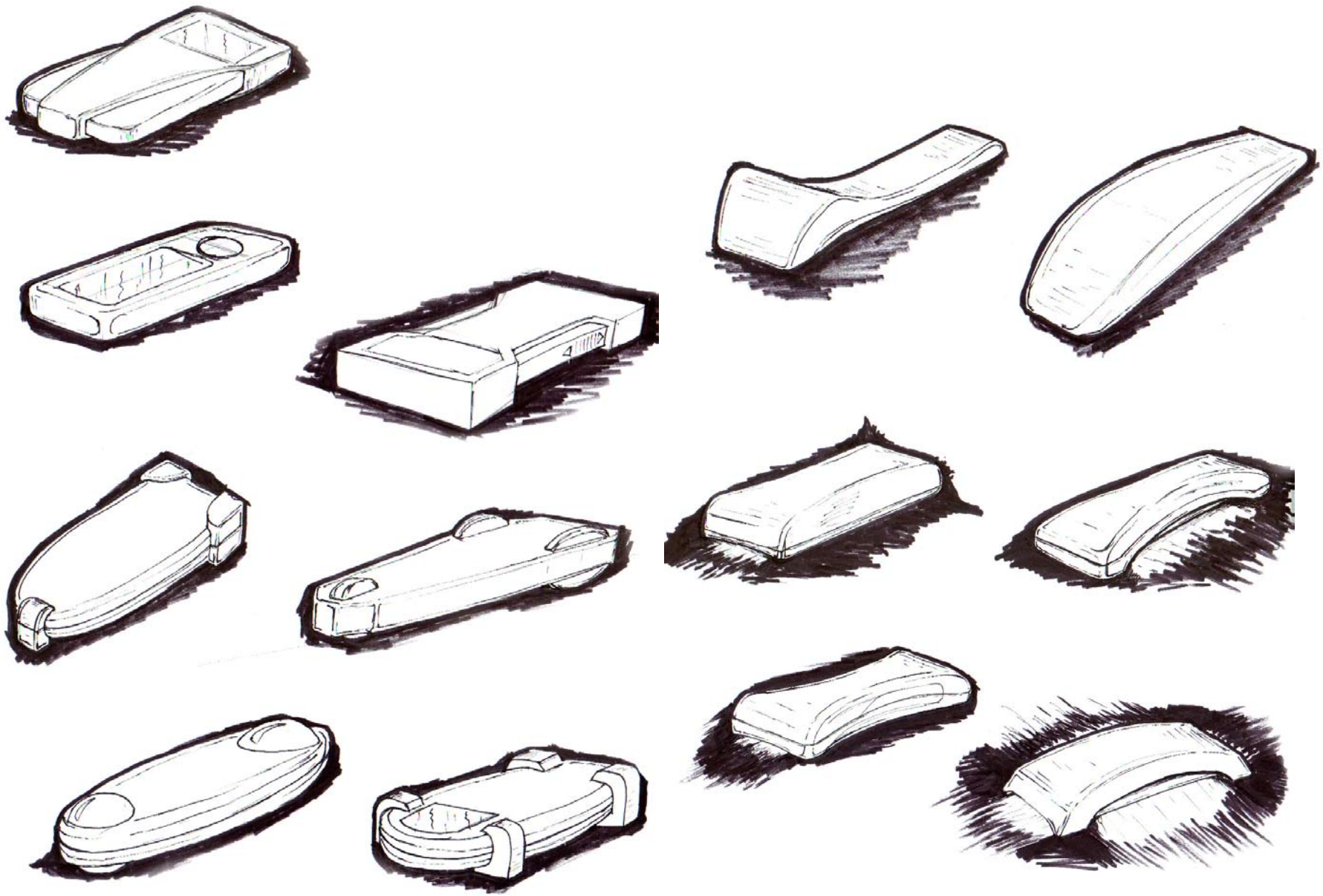
# Marker Renderings

These drawings are from a series of ideation marker renderings I created based on possibilities for new remote controlls. These concepts came from ideas about different technologies I could combine and work into a remote that would make them more user friendly and even just more cool.

Some of the concepts incorporate LCD touchscreens, some electro luminescent lighting, and some have combinations of the two. I was also particularly fond of the concept that the buttons or screen area would be facing down and therefore would be protected from things like dust and liquids being spilled on the remote.

These were simply a range of concepts that gave me a library of ideas to pull from and expand upon and also gave me more experience working with markers.

# Marker Renderings



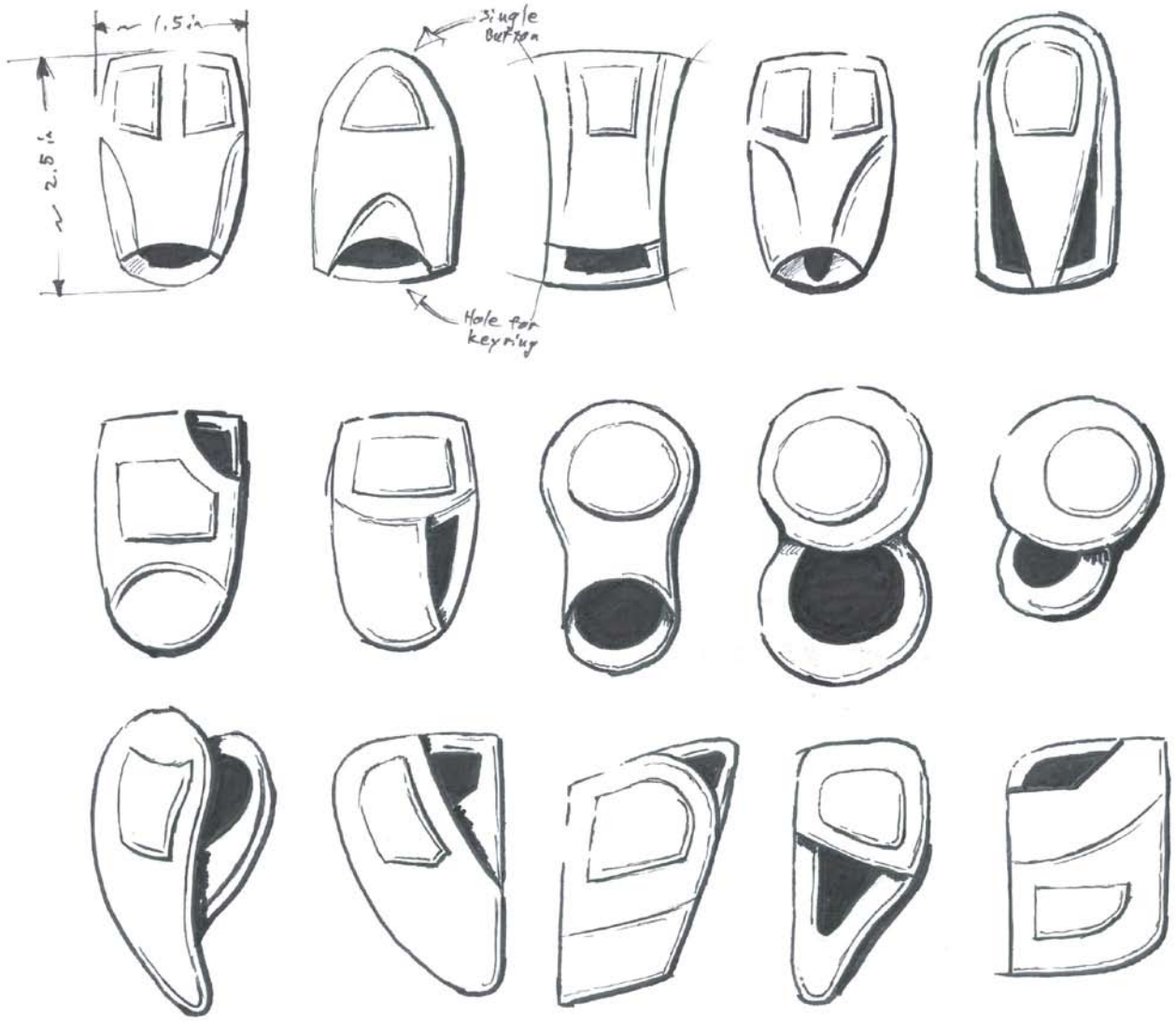
# One Button Remotes

Problem: For a prospective client, we were asked to design a remote that had only one or two buttons. Additionally, this remote would be used to operate a neon sign in a storefront. The client also wanted to be able to have the remote on a key chain or even posted on the wall to be sure it wouldn't be lost. This being the first time we had received a request for a one button remote with these specific requirements, we knew we would need to design a completely new case for this client.

I started with some quick renderings of concepts and than expanded on those ideas with more detailed and polished marker renderings.

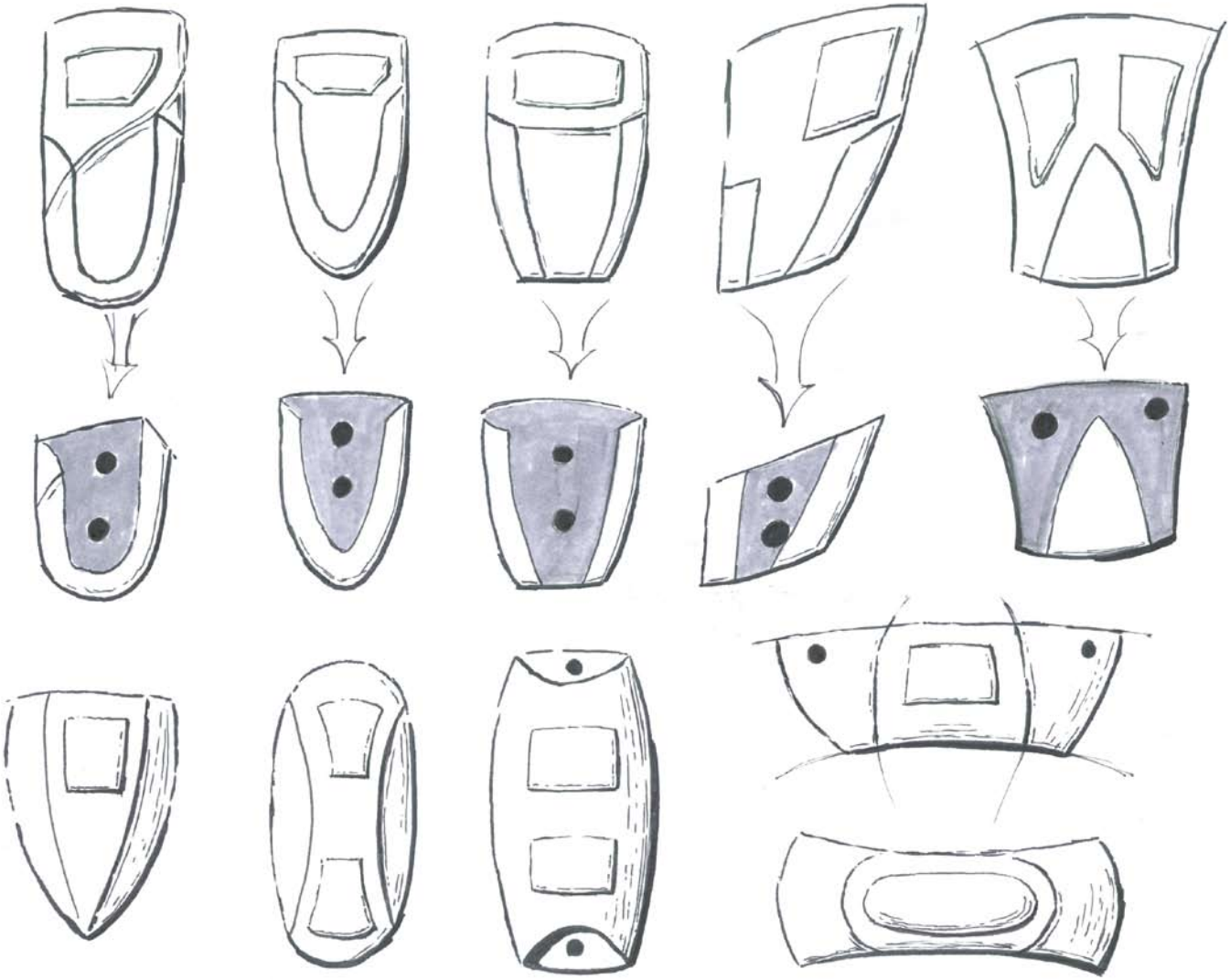
# One Button Remotes

The first concept I worked with involved making the remote to fit on a key chain. I started brainstorming different shapes and configurations. After I had a collection of concepts I chose some of the best and turned them into more refined marker drawings that gave a better idea of the contour and overall form.



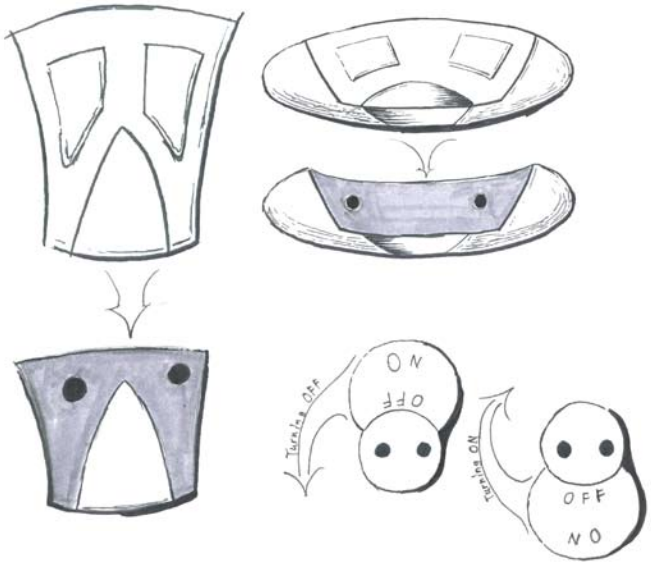
# One Button Remotes

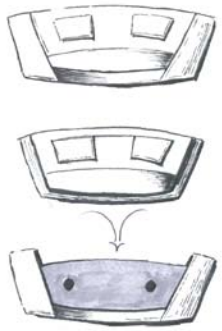
One concept would allow for a back plate to be attached to the wall permanently while the remote unit itself would be removable. This would allow for great flexibility in where the unit could be mounted.

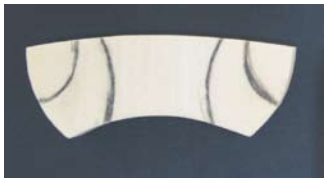


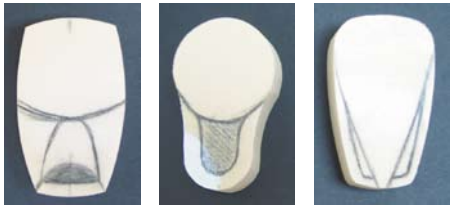
There was also a concern from the client that the remote might be easily lost due to its small size. The key chain and wall mounted back piece could not completely eliminate the possibility of being lost so I also designed some concepts with the idea that the whole unit would be permanently mounted to the wall. In the final analysis however, this concept removed too many of the benefits of the other concepts so this line was not developed beyond form models.

# One Button Remotes

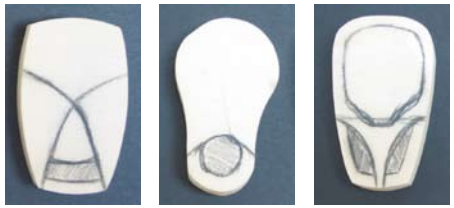






Form Models: Right



3 Finished Concept Models: Below

Solution: For the problems I was given, there were multiple ways to solve each one. Each different solution had strong points and weak points as with any project. When I started on this project I wanted to be sure I could present the client with multiple solutions to the same problem as well as multiple forms of each solution. This would allow the client to chose the solution that best fit him from a wide range of designs. One design was chosen to be produced in SolidWorks, however the project was never completed due to a lack of funding.

Wall Mounted concept

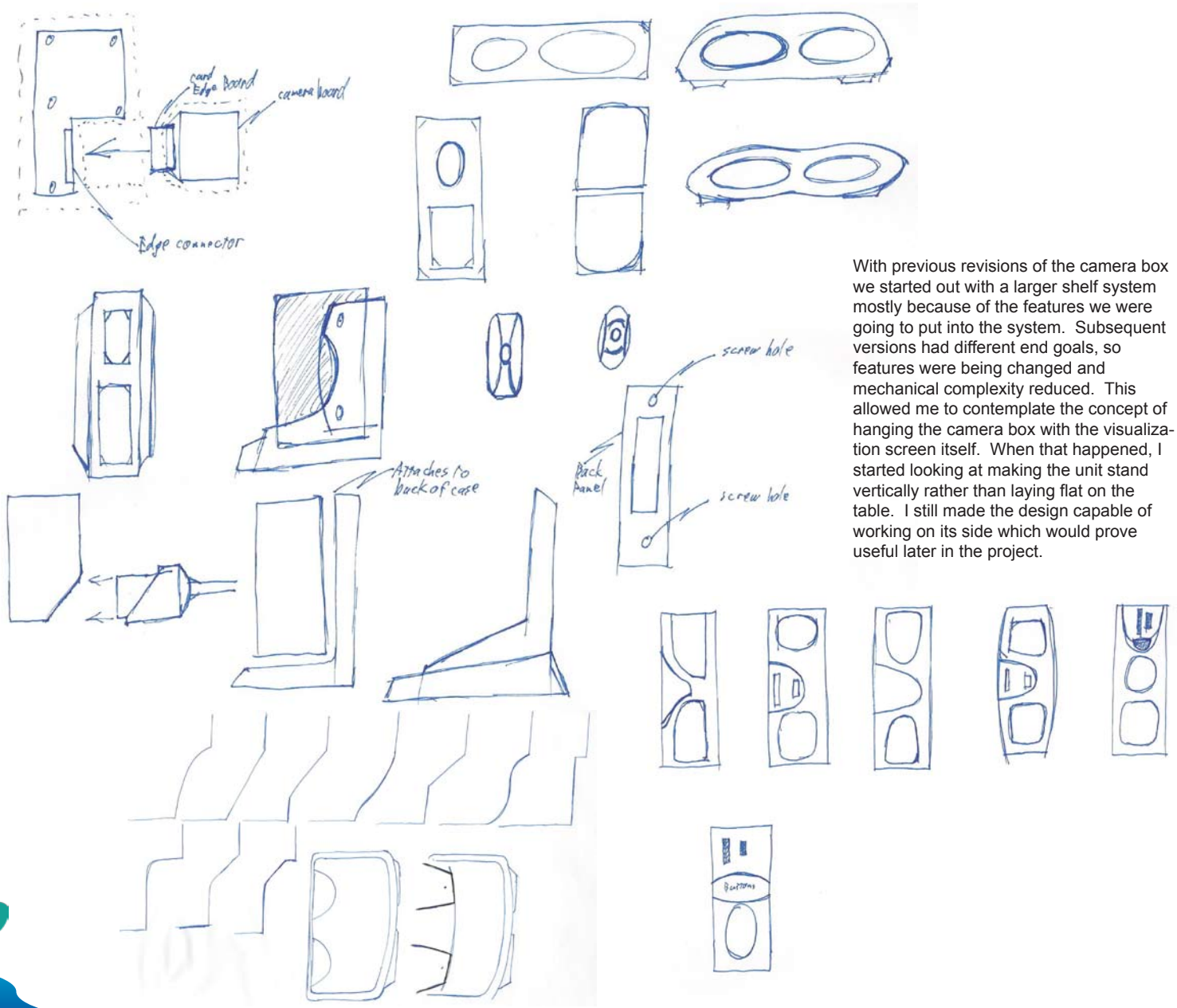
Key chain concept

This concept was chosen for production
Semi-Wall Mounted concept

# NeedleCam HD Image Capture

The problem for this project consisted of the fact that the current camera system was becoming outdated and needed to be replaced. This does mean that there is a predicate device that has similar functions and design details that needed to be taken into account. Many ideas were disgussed and there were a couple false starts. Each false start however brought us further down the road to where we actually wanted to be and the result of that process is a truly remarkable system. It combines not only a true high deffinition camera system, but an LED lighting system, and an integrated image capture firmware system that allows the user to save images and video taken from the camera hand piece instantly to a USB flash drive.

This system also promotes the use of BioVision Technologies' surgical endoscopes in an office/outpatient setting. The main box will sell for a fraction of the cost of other traditional systems and is able to output the video to a standard high deffinition monitor available from any electronics store. One goal of BioVision is to drive the cost of medical procedures as low as possible and this unit will help keep the overhead much lower than a standard endoscopic visualization system.

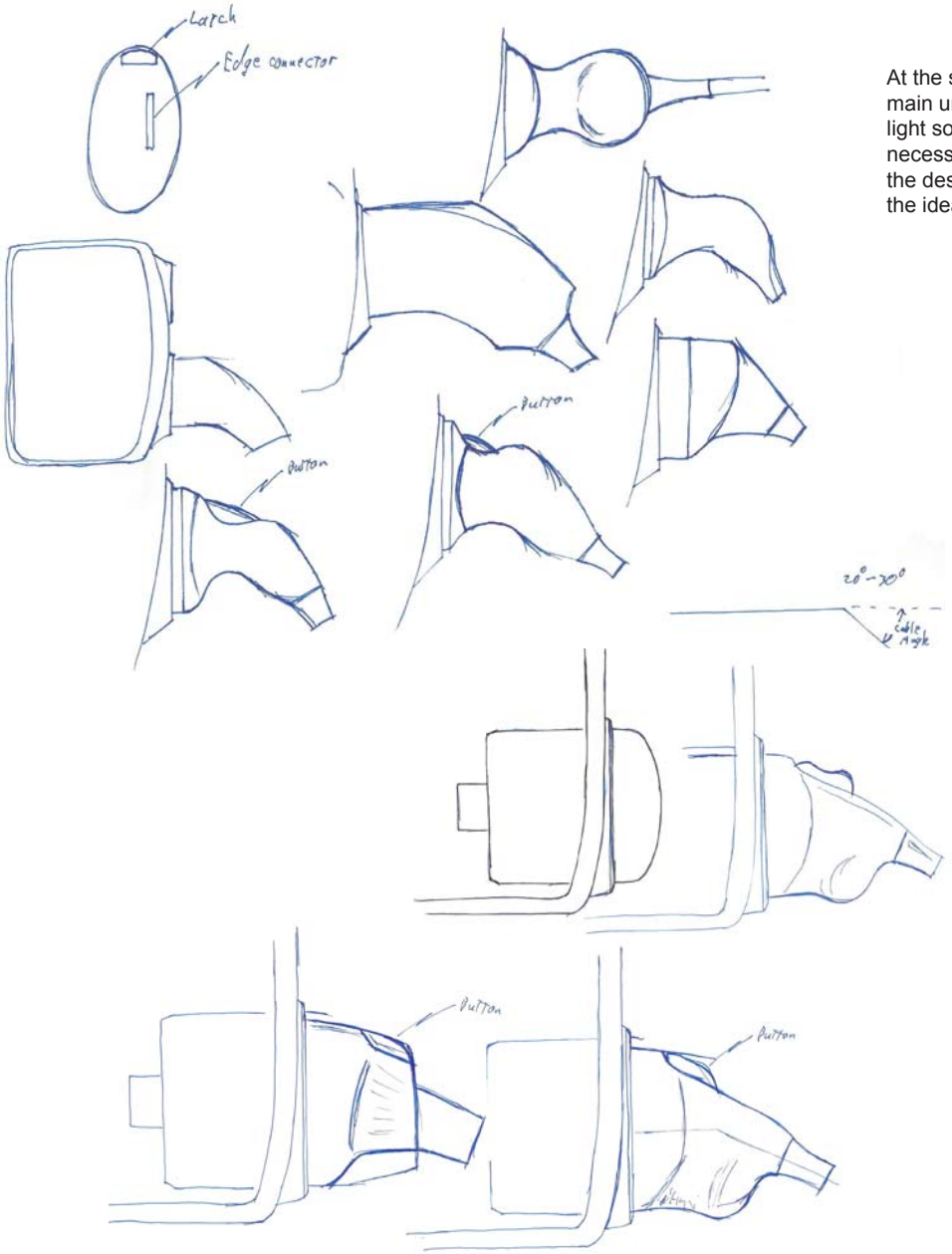



With previous revisions of the camera box we started out with a larger shelf system mostly because of the features we were going to put into the system. Subsequent versions had different end goals, so features were being changed and mechanical complexity reduced. This allowed me to contemplate the concept of hanging the camera box with the visualization screen itself. When that happened, I started looking at making the unit stand vertically rather than laying flat on the table. I still made the design capable of working on its side which would prove useful later in the project.

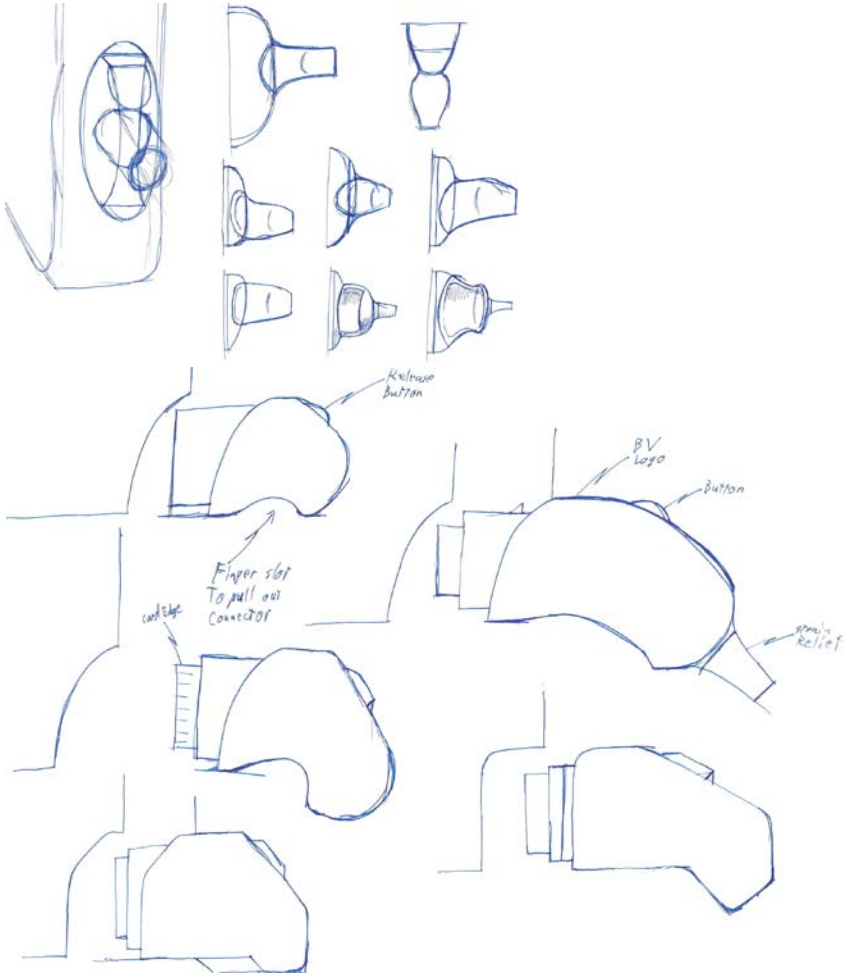
BIO VISION Technologies, LLC

NEEDLECAM HD

# NeedleCam HD Image Capture

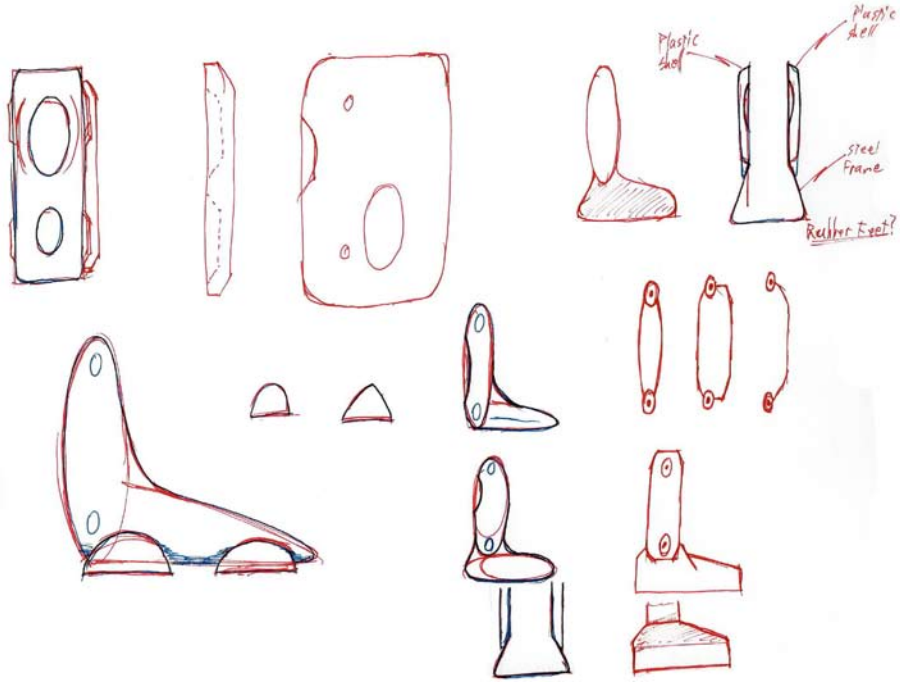


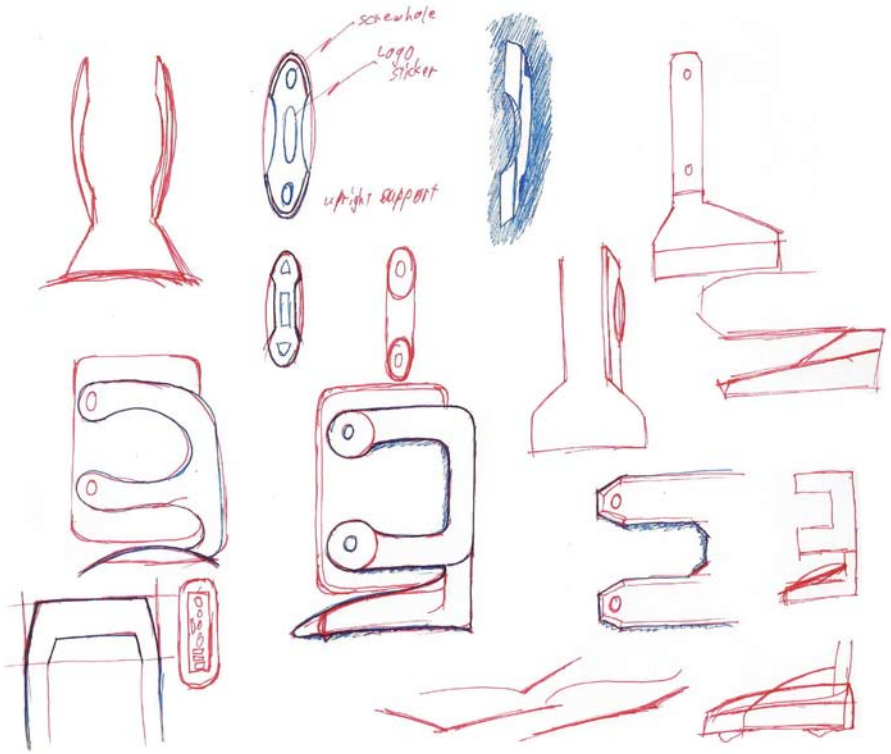

At the same time I was designing the camera plug-in that would connect the camera hand piece to the main unit. All of the image information, various programing signals and power connections for both the light source and camera would flow through this connector. This connector we going to be bulky by necessity of the electrical components that were going to be placed inside, but I also needed to make the design fit with tthe rest of the box.These drawings were ideas for the shape of the connector. All the ideas were coming when I was focused on the unit being in the vertical orientation.

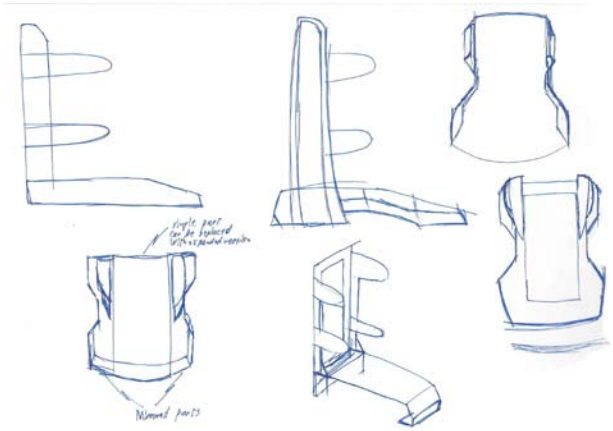


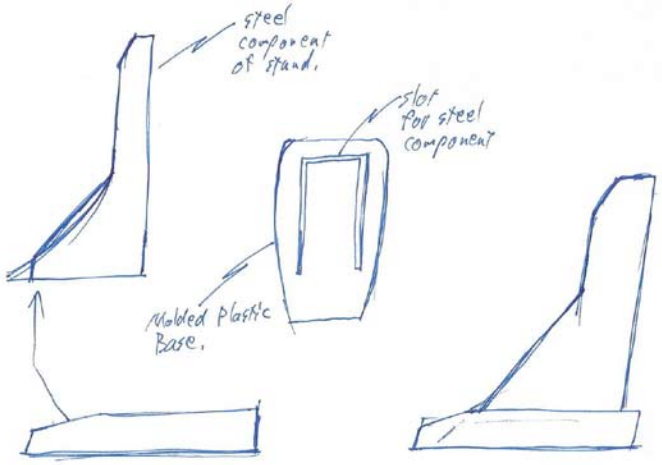
# NeedleCam HD Image Capture

With the focus on keeping the unit in the vertical position, I started designing a system that would allow the main unit to sit on a shelf or table, rather than being held. These are some of the concepts that came out of this track.



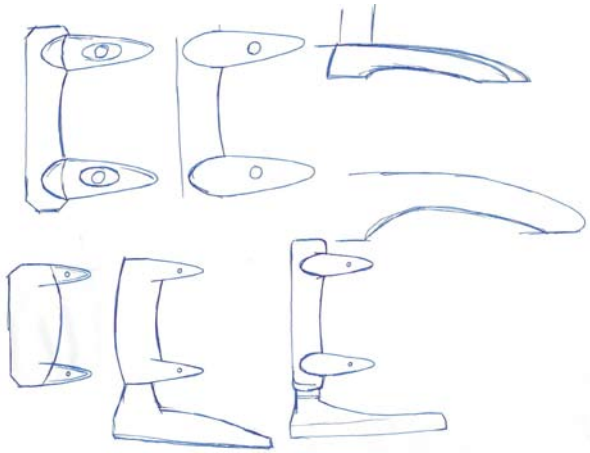



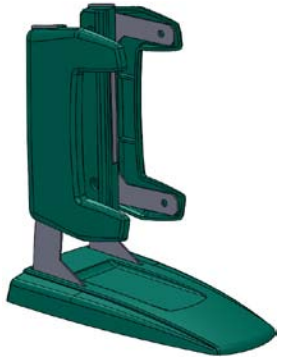



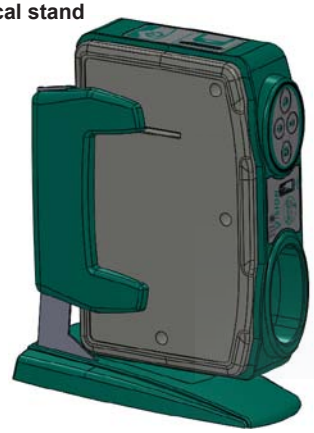
# NeedleCam HD Image Capture

Here are some of the refined versions of the main unit holder for and the method that said holder would connect with the main unit itself. I wanted to use the same system and connections for holding the unit whether it was going to be attached to the monitor or sit on the table.





**SolidWorks assembly of main box unit and vertical stand**




**NeedleCam HD Attached to Monitor Showing User Interface**

# NeedleCam HD Image Capture

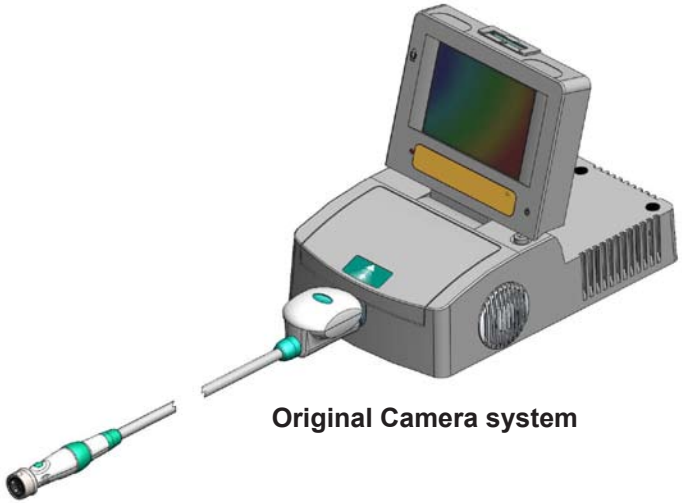
As a result of much discussion about the intended and probable uses of this system, it was decided that while the primary use may eventually become in the vertical position and held with the monitor as I had envisioned, the most common and more versatile use in the beginning would be a horrizontal format placed on a base for support.

This concept was carried forward through into production.

Features that were added because of this change were mainly the hooks or provisions that will allow us to add many different features in the future. Some of these features are a small video screen and the capability to be battery opperated which will make the whole unit portable and operable without the use of external power.

When compared to the predicate device, the NeedleCam HD is about half the size and less than a third the weight. We have also made the unit much more user friendly in both user interface and g

**Exploded Assembly of Box, Base, and Hand Piece Cradle**



**Original Camera system**

# NeedleCam HD Image Capture


When all of the iterations are added up, the total time spent on this project getting it to production took about two years.

This project also included the camera hand piece that is detail more the next section of this portfolio.

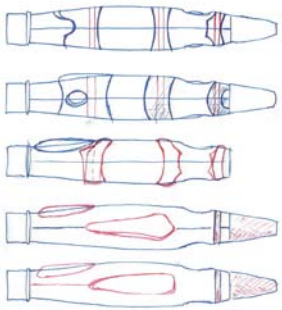
In terms of production for this project, we reduced complexity, greatly reduced the costs of production both in materials and in time, and performed a much needed update to a system that was on the verge of becoming obsolete. The owner of BioVision has been quoted as saying “I would rather make his ouwn products obsolete that wait for someone else to do it for me.” This is a philosophy that is lived everyday at BioVision and I will carry it with me wherever I go.


**NeedleCam HD Monitor User Interface**

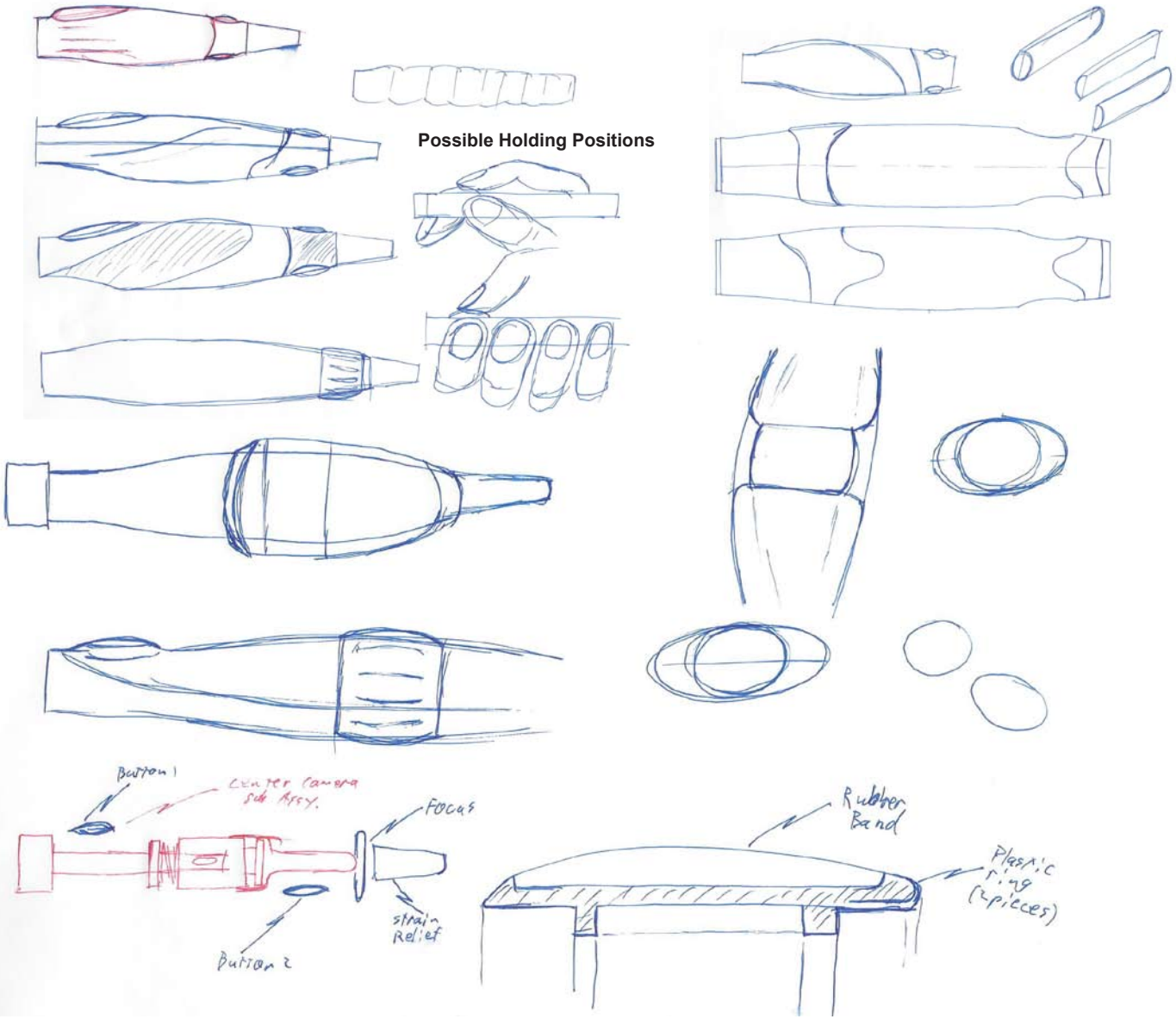
# NeedleCam HD Hand Piece

This project is very closely connected to the NeedleCam HD Image Capture box design because they are two different pieces of the same system. I have chosen to show them as two separate projects because they were designed at different times and used two different philosophies for generating concepts.

When designing this portion of the project, the Image Capture Box design had been completed and was in the process of being implemented in molded plastic. The electrical system was done as well. This left me with the task of making the hand piece conform to the design that was already in process. This design had even less latitude because the mechanical system for the camera and optics needed to be designed and certain aspects of the optical system required the length and diameter of the hand piece to be greater than I had desired. I was still able to find a solution that met both the mechanical and aesthetic criteria.



**Ring Clamp Designs**




BIO VISION Technologies, LLC

# NeedleCam HD Hand Piece

As with the Image Capture Box, one of the major design intentions was to reduce the time required to physically make one of these hand pieces. We far exceded expectations in this area, taking a unit that took a couple days to produce and shaving the process down to a couple hours.

We also succeeded at making this unit compatible with all our past and future scope designs.

Complete Unit with Hand Piece

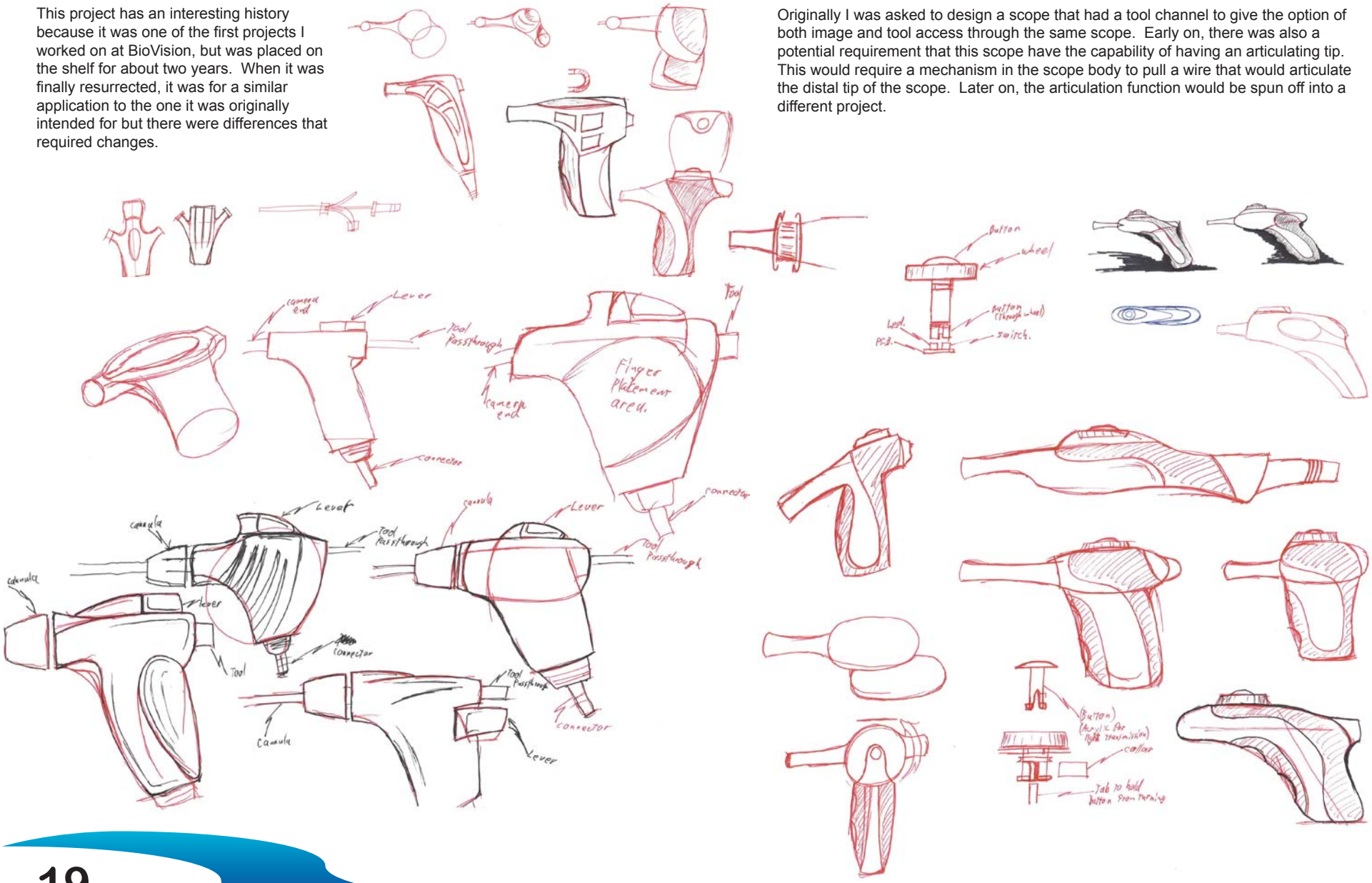
NeedleCam HD Hand Piece

Original NeedleView Hand Piece

# NeedleView CH

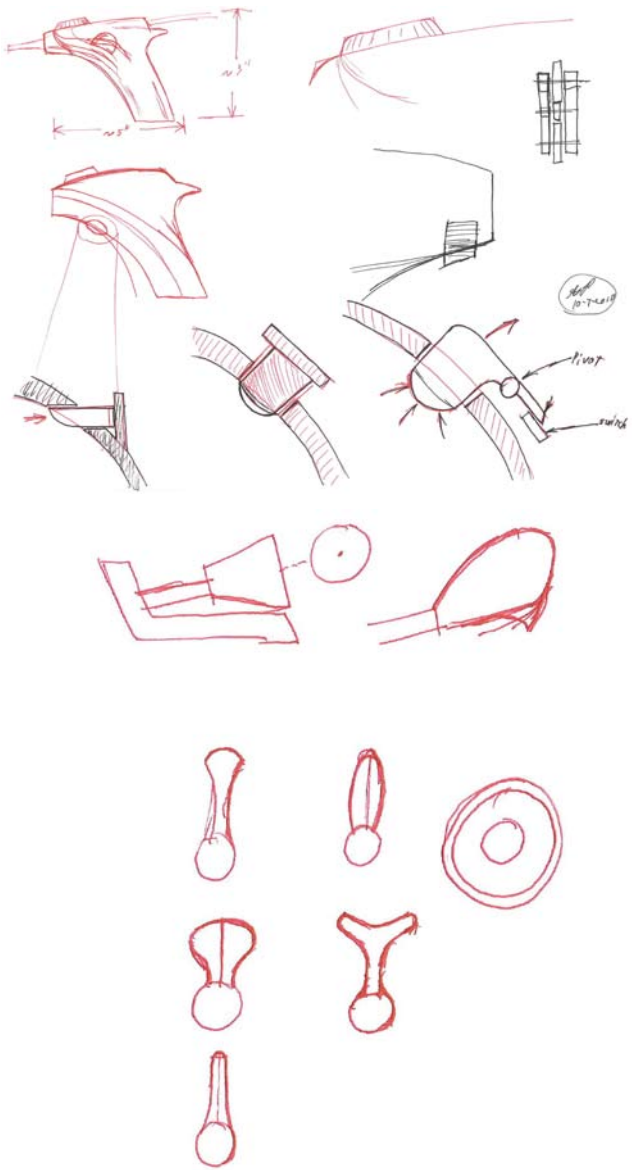
This project has an interesting history because it was one of the first projects I worked on at BioVision, but was placed on the shelf for about two years. When it was finally resurrected, it was for a similar application to the one it was originally intended for but there were differences that required changes.

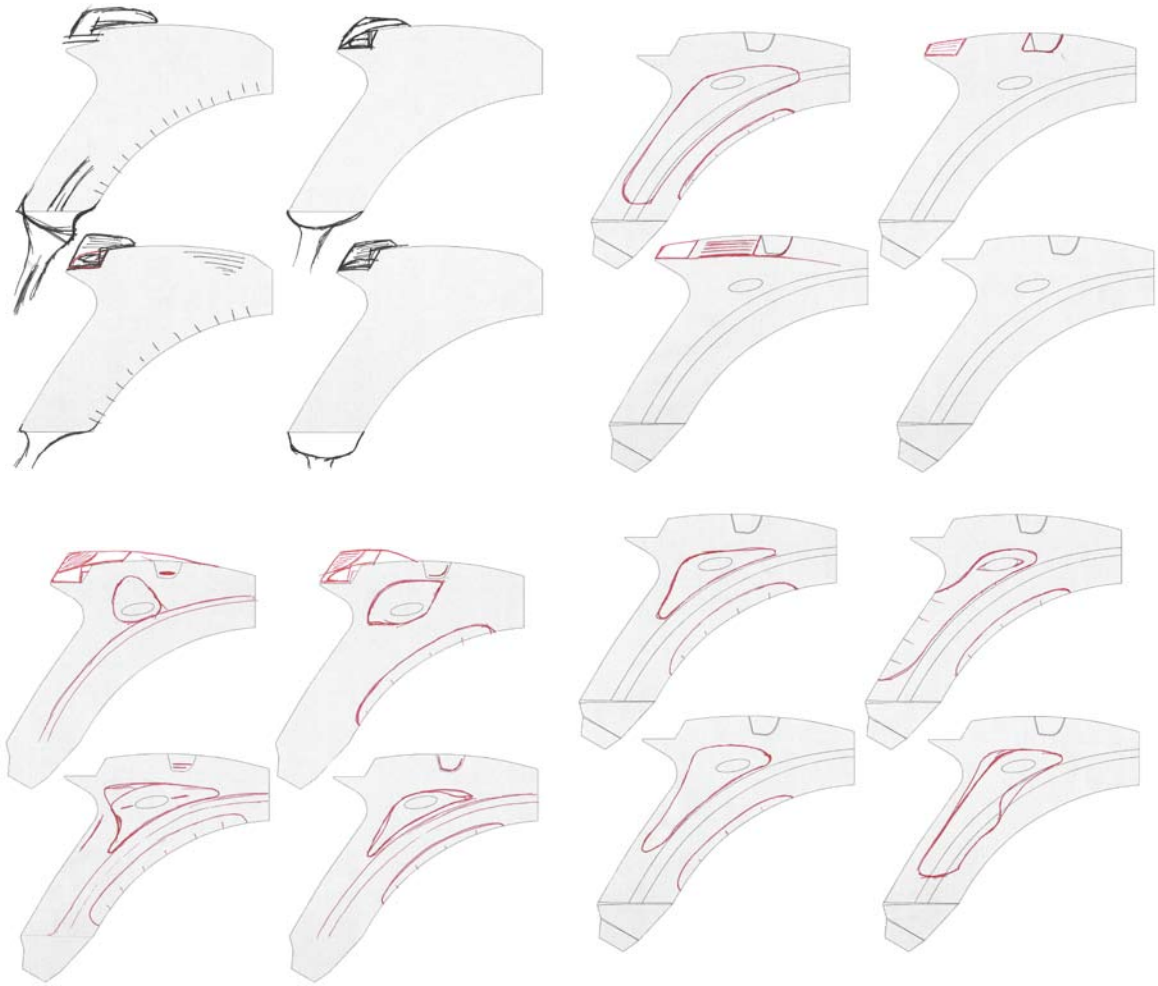
Originally I was asked to design a scope that had a tool channel to give the option of both image and tool access through the same scope. Early on, there was also a potential requirement that this scope have the capability of having an articulating tip. This would require a mechanism in the scope body to pull a wire that would articulate the distal tip of the scope. Later on, the articulation function would be spun off into a different project.



# NeedleView CH

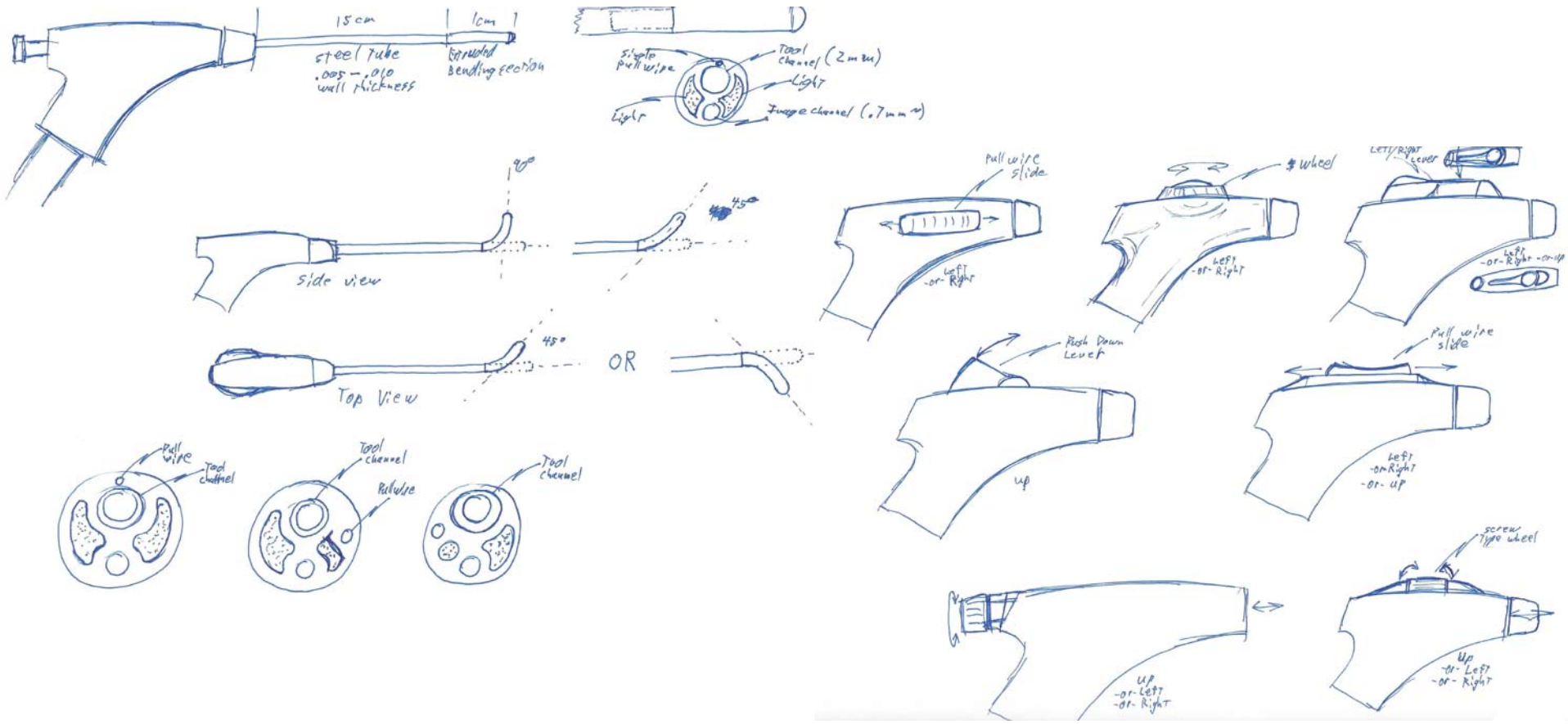
These were intended to flesh out different ideas regarding the rotating aspect of the scope that was briefly attempted. It was determined that the technology required to make the articulation work would not be cost effective for the end product.





# NeedleView CH

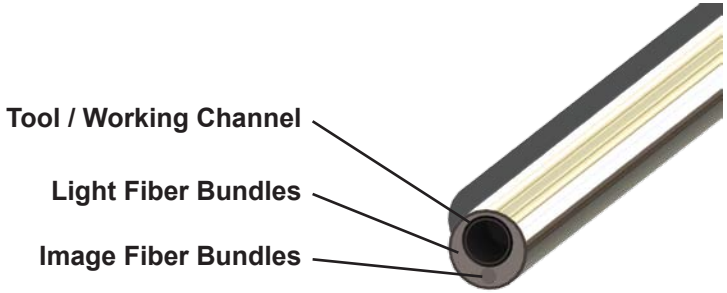
These drawings were for fleshing out the idea of the articulating tip aspect of the scope.



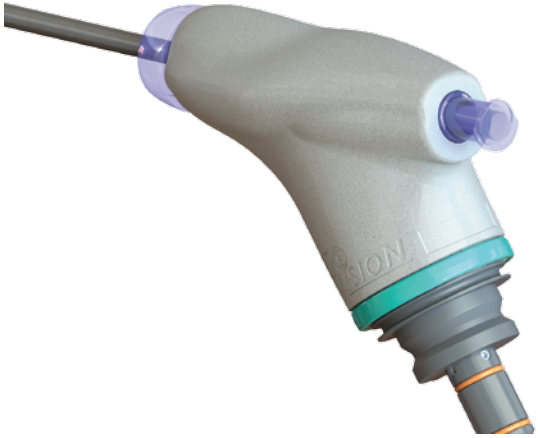
# NeedleView CH

Even though this project took much more time than normal and had several major changes to the features, this is one of the projects I am greatly proud of because it is a classic design that will last and be a great asset to BioVision.

The list of basic functionality makes it useful for many different types of surgical procedures and it can be modified to fit many different types of functions depending on what is needed.




Distal Tip



Luer Lock Detail

NeedleVIEW™ CH