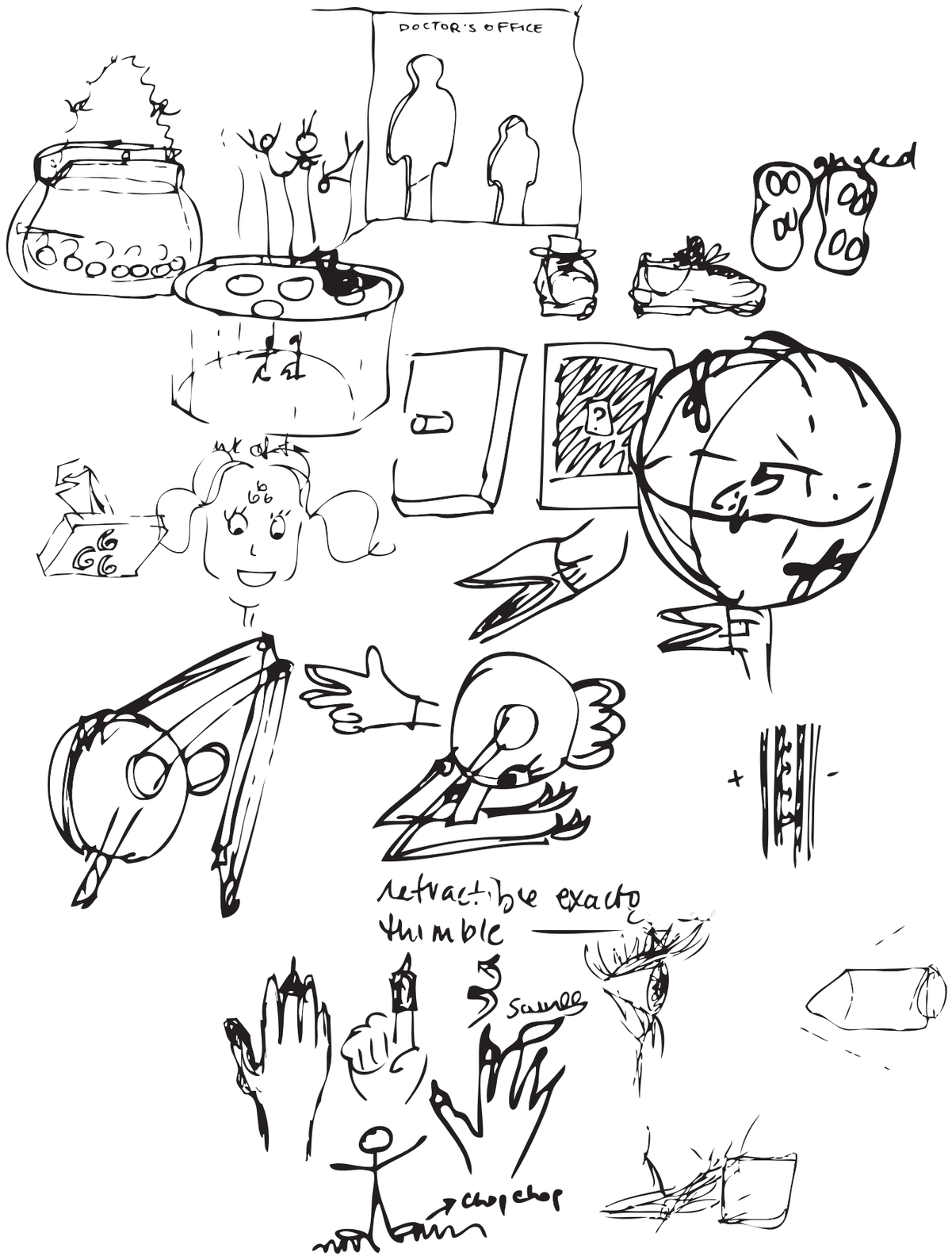
I began working on this piece with no goal in mind whatsoever. I had only the assigned words"mischievous rubber scissors" to guide me. Unexpectedly, it developed into an expression of an idea that I've been playing around with since I was a small child.



SKETCHES ABOUND

When I first began, I was a bit daunted by the task of creating an object based on these three such malaquainted words. However, I quickly made a few realizations which smoothed my efforts.

First, I recognized that by my very nature, I did not need to worry about maintaining an element of mischief in my ideation—it would be there whether I liked it or not.

Next, I replaced "rubber" with the general idea of stretchiness, and I expanded "scissors" to "the act of dividing," which I might add is decidedly different from simply "being a divider."

With this concept of "stretchy dividing" in mind, my subsequent ideas seemed to funnel themselves into one of five categories:

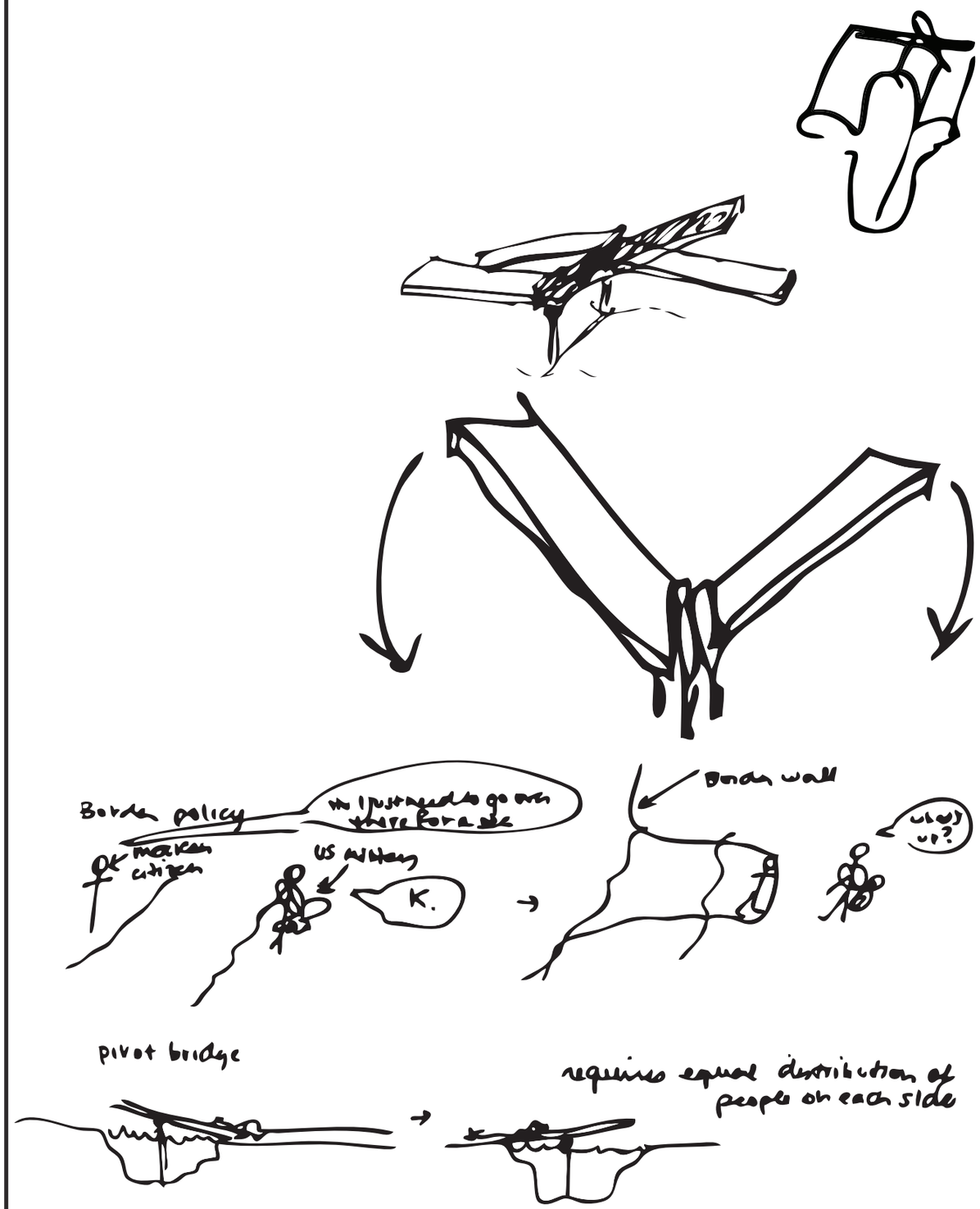
sieves
rubber stamping
more traditionally scissory things
just plain silly
walls

Sieves included ideas such as a purse that filtered out loose change, a wall that sorts people by shape into adults and children, a bathtub drain cover for children that illustrates the mouth of hell, and a contraption for a man-eating giant to easily locate the fattest, and thus tastiest meals.

Rubberstamping included several ideas that I would really like to go back and explore later. One was a bouncy ball with rubberstamp images on it that could be used to generate a random editing device. Another was a stamp which could be used to crop out excess image and focus in on a desired subject, guerrilla style.

More scissory things included an exacto knife which could be used with only one hand for the disabled. Several others were variations on gloves and thimbles which could essentially turn your own hands into cutting devices to give the user greater control. Thanks Tim Burton.

In the just plain silly category, I came up with a set of razors for children's ankles so that they could cut the grass as they play outside. Another idea was a pair of rollerskates with misaligned wheels so that the user's legs would split apart, of course tearing the individual in half.



While I didn't end up using any of these ideas, they were an important step. The mechanism they share later led to one iteration of my final product.

In the upper right, a marionette chair which can be used to pose the user. Next, a couple of variations on a seesaw which allows both participants to go up and down in unison, instead of opposite eachother.

Last, some more conceptual incarnation of these words. In one, there is a rubber border which in this case follows a Mexican citizen across the border, bringing Mexico essentially with him.

At the very bottom is something of a population distribution control device. The pivoting bridge carries the vehicle across the river and then rests on the other side. A second car cannot cross from the same side until one has returned from the other.

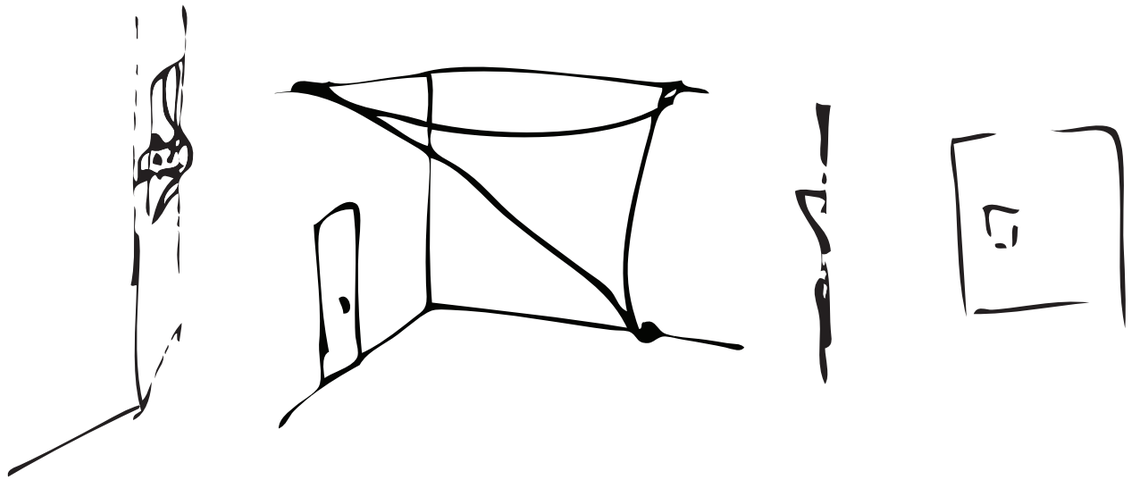
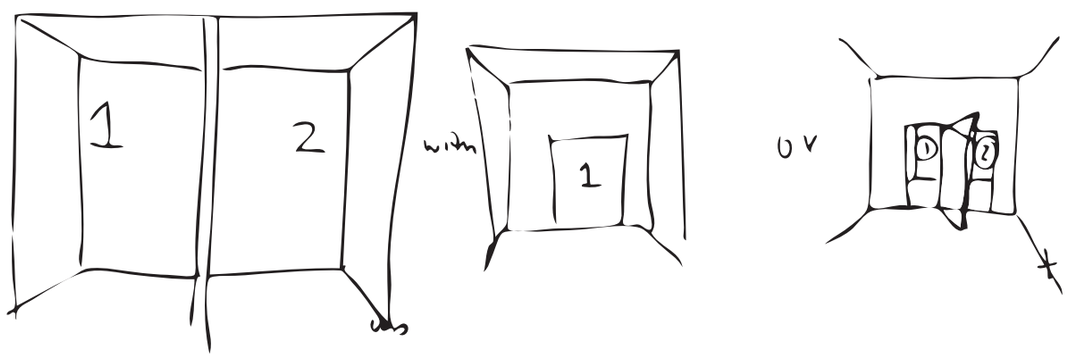


fig. a



Finally, walls. I have saved this line of reasoning for last because it is the one I ultimately chose, but they started appearing in my sketchbook as early as the third or fourth concept.

My first step in this direction, seen in the upper left, was a stretchy window screen which allowed a cat to sit comfortably instead of being smashed behind the blinds.

Next was a system for room dividing which include hooks on the walls and stretchy fabrics with loops.

The sketch in figure a arose when I really started looking back in to the essential behavior of a pair of scissors. When the scissors are open, there are two distinct pieces, and the object to be cut is one. When the scissors are closed, they are one, but the object being cut is now two. Here, I used this one-twoness in a revolving panel with which you can either have one room and two doors, or two rooms and one door. I may or may not have seriously ripped off Allan Wexler with this, accidentally, of course.

At the top is a system to hide or store objects within walls.

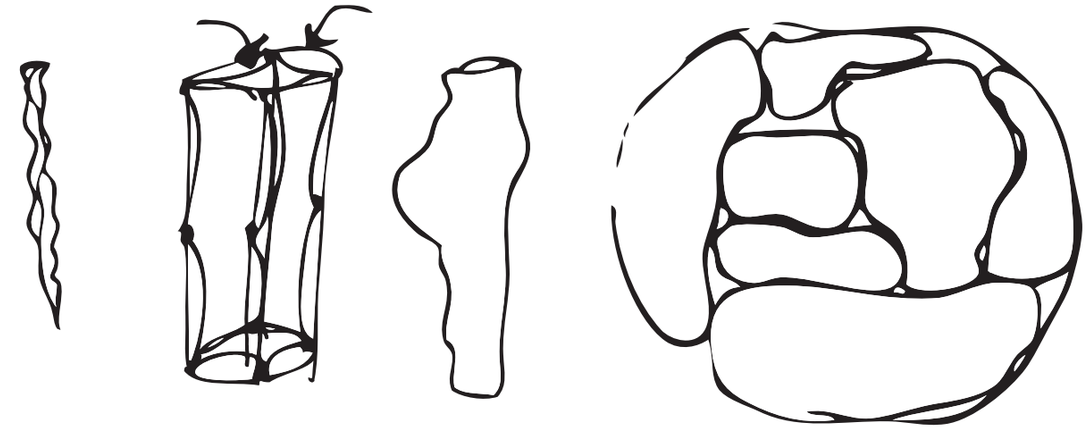
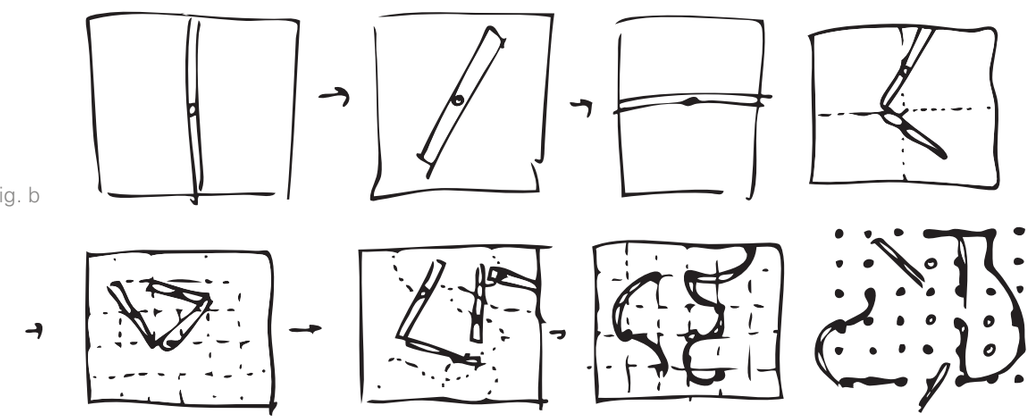
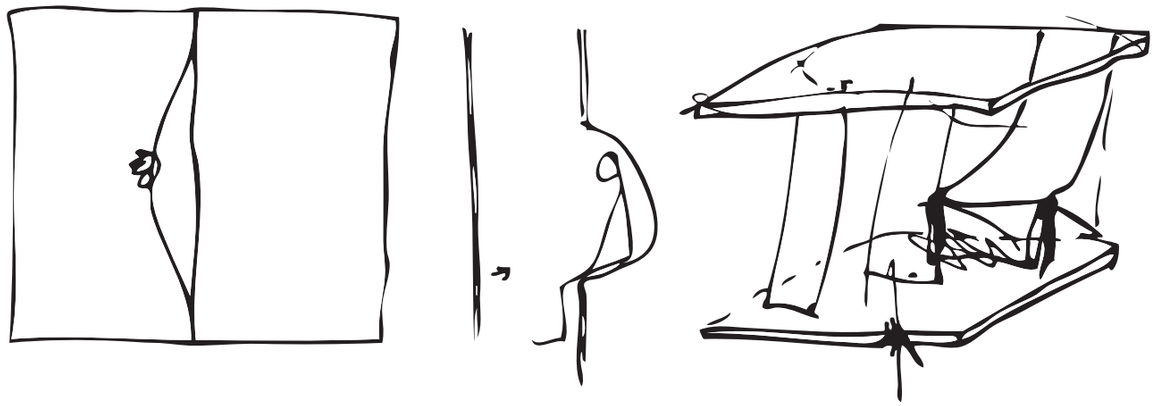


fig. b



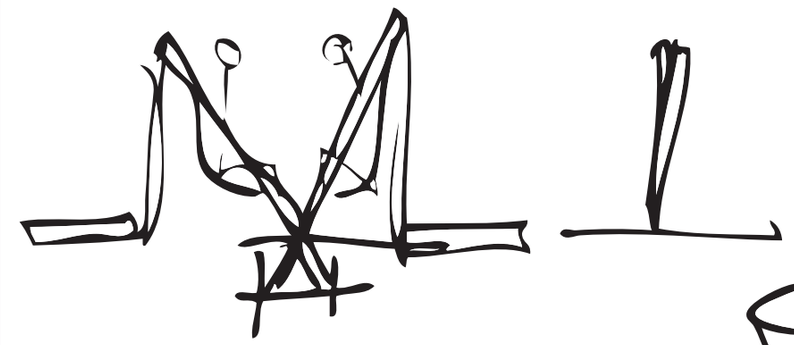
Following from that idea, at the top of this page is a sketch of a storage system which occupies no more space than the objects being contained. It also allows objects to interact without touching, and provides an outward expression of inward contents.

Figure b shows an important exploration I performed to see if I could define space with a more fluid system of moving and bendable walls. All of these eight sketches is from a plan view. The first few are walls positioned on poles which allow them to rotate. The fifth sketch examines what it would be like if the walls had to be positioned on some randomly determined track, allowing some other event or object to edit the space.



These are sketches of what I envisioned to be part of a system of many different kinds of walls with many different functions. You wouldn't understand or be able to intuit them without physically interacting with them to see what they would do. On the left, a stretchy wall has an invisible slit. It belongs in a room with no doors. The other is a stretchy wall which unexpectedly functions as furniture,

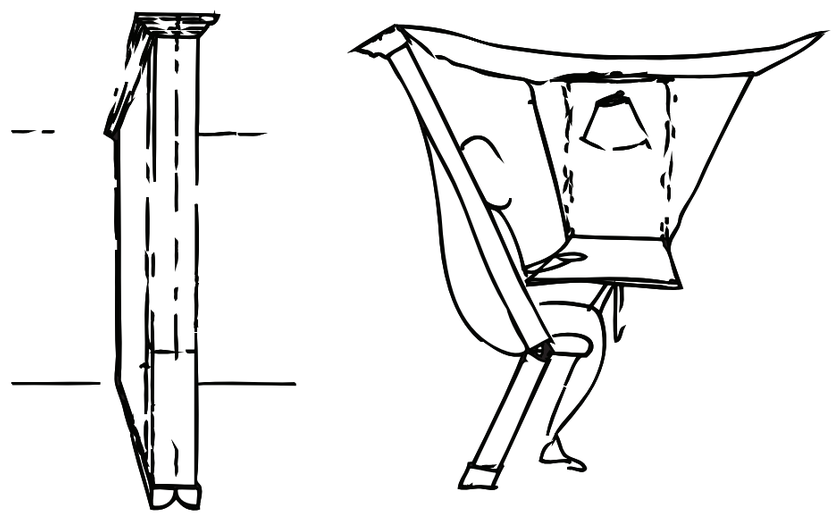
Above is a rendering of a room walled with stretchy fabric in a continuous piece such that interaction in one part of the room alters the function or appearance of another.



The rest of these are further explorations of how this furniture/wall hybridity object might manifest. The possibilities are truly endless.

EXPERIENCE THE WALL

DISASTER STRIKES



When it came time to move into the third dimension, I had a bit of trouble at every turn. I had so many different ideas that fit into the same system that I wasn't sure where to begin. I chose my idea for a space within a folding wall.

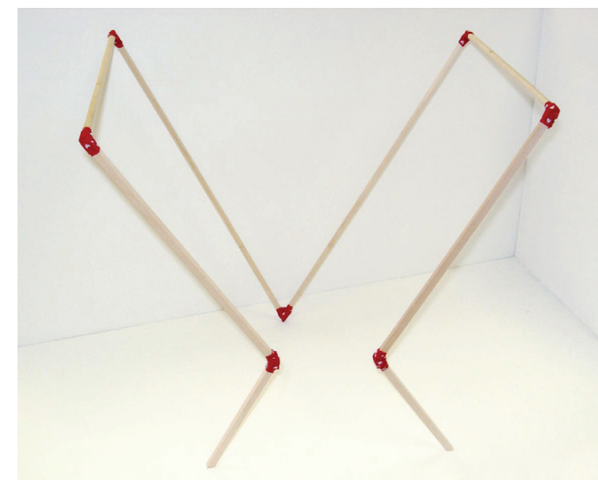
Then, I ran into the problem of not being able to create the full-scale wall due to time and safety constraints.

Then, when I was working on my model, I spent hours trying to get the tiny pieces to fit together into their proper mechanical order, complete with tiny fabric hinges and the like.

Then, Michelle suggested that I could do a model of each stage independently to remove the need for mechanical parts, and I got pretty far along before I finally stepped back in despair and said, "I hate this object." (To the right, you can see for yourself what a wretched existence it led.)

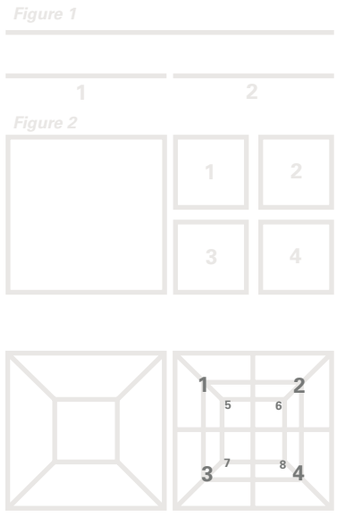
The idea had lost everything I had once found so exciting, and unfortunately I hadn't been sleeping enough to think my way through the problem. I was desperately stuck.

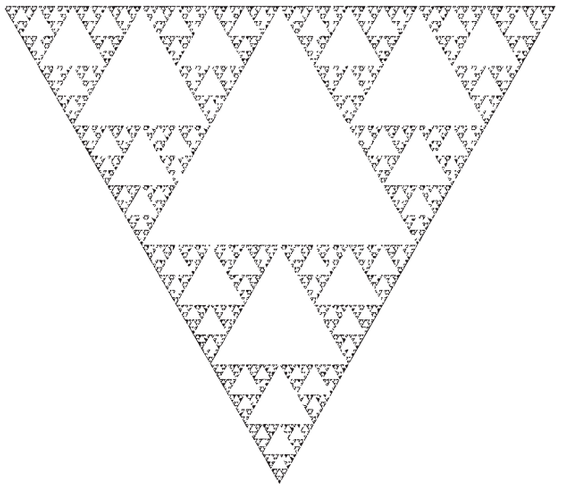
Michelle allowed me to go home to sleep and think.



A MIRACLE NAP

I took a glorious nap, and miraculously, I awoke thinking about fractals, suddenly realizing why my current model was so unsuccessful at representing the concepts presented so effortlessly by my very simple and gestural sketches.





A fractal is a shape that is recursively constructed or self-similar, which means that at any magnification it looks much the same. Because of this, they are referred to as "infinitely complex."

What I find truly fascinating about fractals is their property of non-integer dimension.

This concept is much easier to understand than it sounds, so please follow me for a moment.

To find the dimension of a shape, we say that the number [N] of self-similar objects (pieces that are proportionally the same as the original) is equal to a magnification factor [M] between the piece and the whole, raised to the power [D] of the object's dimension. So,

$$N=M^{D}$$

We can check to see if this is really true by testing it on objects of easily determined dimension, such as a line, a square, and a cube. [A line has one dimension, meaning we can get anywhere on that line by moving along a single axis. For a square, we need to axes; for a cube, 3].

Take a line segment (figure 1). Divide it into say... two pieces. Pretty obviously, we can say that one of the pieces can be magnified by a factor of two to equal the original. So, we have N=2 and M=2. Therefore, with the equation, $2=2^{D}$. Then, D=1.

Now take a square (figure 2) and divide into four similar squares [so N=4]. We must multiply any of these small squares by 2 to equal the original square, so M=2. Using the equation, $4=2^{D}$, so D=2.

Finally, take a cube (figure 3) and divide it into eight similar cubes [N=8]. If we multiply a small cube by two, the result will be the original cube, so M=2. With the equation, $8=2^{D}$, so D=3. All of these results are just as we would have expected.

The same principle applies here, with the Koch curve. As the fractal is propagated, it becomes increasingly complex, infinite in length. Here, we constantly replace one line segment with 4 shorter ones, making the new segment 4/3 the original length. To find the dimension, we again say that $4=3^{D}$. This is easily solved with logarithms:

$$D=\log(4)/\log(3)$$

$$D=1.26$$

The Koch curve, then, is more than a line but less than a plane. For another example, the Sierpinski triangle, which simply takes one equilateral triangle and surrounds it with three identical equilateral triangles exactly one third the size of the original, for each triangle.

This means that as the sum of the length of the lines that define this shape approaches infinity, the surface area approaches zero. We come to find that in this case, D=1.585.

This notion of non-integer fractal dimensionality is the missing link. My first model was focussed on taking two fully realized and independent states, "wall," and "space," and finding a way for them to exist next to each other, or even to hide within one another. I think there is a superficiality in that idea that was not a part of my simpler, more fluid, and more exciting sketches.

Out of making a model that failed, I came to understand my own concept in a way that I never could have otherwise, and what really amuses me is how I was the last to discover how in-character this whole concept is for me.
I now know that these walls demand unity. They are the same object at all times, no matter its current use.

They are seemingly planar but can be easily stretched to take on form without the slightest preparation. This means that they are not sometimes two dimensional and sometimes three; they are *always* in between.

Just as they begin to take on form, their fabric stretches toward transparency, gaining and losing presence in the same moment. The doorway is always closed, but also never really closed; it is always in a non-integer state.

My first model can be summed up by "sometimes, all the way" and my final by "always in between."

This object is what I consider to be a three dimensional, still gestural sketch of a concept I've only just begun thinking about. These walls are very tactile and so the panels are intended to give the viewer an opportunity to interact with the behavior these walls might possess.

Where this object lives, at moment, is still just inside my head. I don't think one would just have one of these walls in a living room or office, but rather, they seem to be a part of a much larger system that has yet to be developed. I would like to carry these ideas of in-betweenedness, inhabiting, stretching, dividing, in as many directions as I can.

OBJECT AND PLACEHOLDER

Fractal dimensionality is not limited to these nice mathematical models. Nothing in the physical world is perfect or straight, so it is my own inference that every line, every curve, every surface possesses infinite complexity and thus fractal dimension. It seems to me that in reality, integer dimensionality is the abstract concept, yet it is always assumed true. I like the idea of approaching projects with this assumption of in-betweenedness instead and seeing what emerges.