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How to make a small chair out of cardboard

Robin Stubbert Invite a single chair, even one that differs from the rest of its decoration, to serve as a distinctive - and functional - focal point This lounge chair is made entirely of cardboard! No fasteners, no stuck joints, just friction and grooves. With two and a half sheets 4'X4' of heavy cardboard, paper templates and a box cutter, you can make this piece comfortable and robust in a few hours. It's in a book! This project has been included in Asa Christiana's new book, Handmade: A Hands-On Guide: Make the Things You Use Every Day available now on Amazon. went with the Barcelona Pavillion Chair's dimensions as a starting point. The design of the chair is such a dnout theme that I have been following with the posture and dimensions of this chair as a way to focus on material experimentation and structure. In addition, I find that the chair is very comfortable. When things work, you don't have to fix them! After deciding on the general parameters of the chair, I went on to think about the assembly. Since the cardboard is rigid and flexible, I saw no reason to use glue or joint fasteners. I designed the chair to be in press shape with slot joints, hoping that friction between the parts and the semi-rigidity of the planes would keep everything in place. After measuring the thickness of the cardboard, I go or next to a few iterations on the computer before deciding on one. The last iteration struck me as best for me for several reasons. I was inspired by Chairigami for this project, and it seemed to me that this was the way they were making their awesome furniture. With this design, none of the pieces are more than 47 inches when cut, which means I was able to work with 4X4 sheets instead of larger ones. It looked the stiffest since it had four joint slot locations instead of three. I liked it better from an aesthetic point of view: it seemed more balanced on the side profile. The Fusion 360 file is attached in this step in case you want to make your own design adjustments. It's free for students and amateurs, and there's a ton of educational support in it. If you want to learn to the 3D model the type of work I do, I think this is the best option on the market. Click on the links below to sign up: Student / EducatorHobbyist / StartupCardboard Chair.f3dFor a really robust result, I decided to make my own 3-ply sheets. When I came up with the project, I found out that you can only buy it that way! Here's a link to him in Uline. The PDF template file can be printed to scale and serve as a template that you can paste to the surface and follow with a box cutter. The DWG file is a CAD that can be used for the last trimming or any other CNC hack. I've used metabeam laser cutter for most of this project, but I'm demonstrating here how to do it by hand. It is totally feasible with a straight edge and a boxcutter with it just takes longer. Here are the steps to do it by hand: Cut the 5X10 sheets of cardboard to manageable sizes (no more than 48 in any dimension). Go Jackson Pollock with a glue tube on one side of a sheet. Press the next sheet. IMPORTANT: Corrugation should be oriented in the same direction on all laminating sheets. This allows you to wrinkle without many problems. Repeat step 3, then put something heavy and flat (such as a 3/4 sheet of 3/4 plywood) for a few hours. Print large-scale, 1:1 templates. The sheets are 4X4, which any professional printing press that does construction printing will be able to handle. You can get the prints on cheap bonus paper and use Super 45 spray glue to attach them for cutting, or you can print them on sticky back material, as I did here. Use a good straight edge and sharp box cutter, and cut the pieces. You will get straighter cuts with a fresh blade, so for better results replace the blade frequently. Coolteper asked for some more information about the crispy jig. I do not document doing so, but the drawing in this step should explain it quite clearly. There are two parts: the block hugging on the table and the arm pivoting on a bolt through the block. BLOCKThe block is made of three pieces of plywood of 3/4: a piece of 3/4 X 6 X 6 for the medium and two pieces of 3/4 X 6 X 12 that make the sides. The gap in the middle is that the arm is shortened. ARMThe arm is a piece of plywood 3/4 that is 6 deep by about 48 long. There is an angled cut at the pivoting end so you don't join the block and a 45º miter cut along the arm length. This cut gives you a sharp edge to make the crease. There is a bolt through holes drilled in the block and arm that the arm pivots. He used a 1/4Ø for it and a lock key to prevent it from unscreaing on its own. I used a pressure clamp to attach the block to the desktop and adjust it so that the edge is perfectly empty with the table. To get the creases even and clean, I lifted the crispy jig shown in the photos. They are only 3 pieces of plywood with a gap in the middle, and a bolt through a hole in the top that turns the arm into a lever. The arm has a 45º miter on the edge (which I cut on the saw table) which makes for a good sharp fold. I hugged him at the table so that the edge was flat at the top of the table, and I used it to make the creases. This part is very easy and goes very quickly. Assembly is the easy part! All you have to do is align the folded surfaces with the right slots and put them together. Each piece makes it more robust, and when the last one is inserted you end up with rock solid chair made of paper! The pieces only fit one way, and the creases (obviously) have to be edge out, so you can't get this in if everything was cut properly. Start the ring in the same way as half the sphere: First layer stapled, stapled, Inch templated cardboard pieces overlap each row until you reach the final height. Depending on the final depth of the chair you may want to go beyond half the initial sphere. I have door openings around 29 1/2 to 30 inches (depending on the fit), not counting the door itself that can be removed from the hinges. I built a ring portion in the middle of the dial, but had to stop at 5 inches to allow the finished chair to fit through my door. With a half-dial 24 inches high and 2 inch half-round pieces (for rounded edge) it had a 3-inch ring left to build. To make the inside of the chair feel as much range as possible I decided to make the height of the sides perpendicular (90 degrees from the side of 3 inches) 6 inches higher. In hindsight I should have done the height of the ring the same on all sides, or made the high sides even higher. A ring of the same height would have been easier to finish and the wrapping feel would have been the same. A ring with a much higher high side, like 12 or 15 inches, would have made for a very cozy and enveloping space inside the chair, but I could have made the chair impossible to pass through my doors. I had only 1/4 inches to get through the final door. Making these sides higher could have been bad. The high-low design I chose required a smooth sine wave-shaped border. That was more work than I expected. To cut the edge I designed a full-size quarter circle pattern in InkScape and printed it on several sheets of paper engraved together. I recorded the pattern on my model, drew the line, moved it to the next quarter section, did it again, and again to get the smooth line to cut the edge. Cutting the unfinished edge of the ring was difficult to do smoothly. The biggest challenge was the need to have it at a right angle on the surface of the sphere. The layers of cardboard are parallel to the surface of the rotating table. If left uncut the disks of half circle would not stay correctly on this surface. If you only want a half-sphere chair, no cut would be needed to apply the medium discs. The flat surface of the half-sphere (where it sat at the turntable) is already at a right angle. This surface would also be good for gluing and would not need a paper-mache layer. However, a chair like this wouldn't have as enveloping a feeling. It would be more like a solid papsan. Then again, a half-sphere chair could be larger and still fit through the doors. Decisions, decisions... For days I contemplated making this cut using a power tool as a router RotoZip. The 4-inch cutting depth was a problem though. I wanted to make a jig but in the end I decided to save time releasing the cut with a hand saw, looking at the right angle. I was left with a very dented cut. I wrapped the carved surface with 2 layers of newspaper and paper-mache to create a flat paper surface to glue. Since writing this instructive I have discovered a way Use the inner cutter arm to cut a flat surface (not sine wave). Embrace a fairly rigid blade on instead of the bedroom furniture currently available. In addition, we will introduce sustainable practices by reusing waste cardboard to build this furniture (instead of recycling it, saving energy needed to do so). Our first prototype is based on the Frank Gehrys Wiggle chair, popularized in the 1970s. Gehry discovered that layered cardboard often builds enough the flat surface of the inner cutter arm, with the tip beyond the end a small amount, about a half inch. The blade is pushed to the cardboard in the cut line when configuring. Pull the inner cutter arm so that the blade hugged is cut into the line. Another piece of wood could be mounted on the bottom of the arm to maintain the exact height. Multiple cuts should be made. The blade moves forward even further and the cut is done again. The blade used should be at least 8 inches to allow the final depth of 4 inches of cutting and provide a wide clamping surface. A low-cost kitchen knife from a store with the handle cut could work fine for it. QUICK INTRODUCTION: (OF COURSE, you can only jump to images :-D)This strength to make it suitable for everyday use. He created a series of furniture objects, such as the Easy Edges Wiggle side chair, which take advantage of the versatility of cardboard as a medium. We'll do the same with our chair. MAKE THIS PROJECT AT YOUR OWN RISK, THERE ARE POWER TOOLS INVOLVED. BE AWARE OF SECURITY. this - Cardboard - We got all the cardboard we needed in the cardboard recycling container of the municipality. Look for large pieces, but beware of double ply and triple ply as they are difficult to work with (with our system). FREE!- Plywood -Two large sheets for the profile of the chair. Find the hardest wood you can find. You have to defend yourself against a lot of wear and strength! About $40. - Router -Yes we need power tools! The price varies.- Banded saw blades (2 or 3) -Thin leaves, look for flat teeth, and about 1 inches tall. About 25 each. - Design! Be creative! THIS WOULD HELP- Projector -This will help with the design.- Design -You will need a design! We chose the wiggle chair. So we took drawing an image in MS Paint, then used a projector to project the image onto a plywood board. Then we trace it! Now we have our design perfectly on the board! Chances are you can do it freehand... Okay, here we're building the cutter to make the cuts! Steps:1. Groove route for the profile of the chair! We entered around .5 in. (Plywood is 1in thick) You will have to do this on two boards, one will have the blade (male), and one will have the matching notch (female).2. Banded saw blade! Be careful when collecting the banded saw blade, you want the thinnest you can get! Get the blades 1 inch tall. Carefully open the package! The banded saw leaves for spring open from the packaging! 3. Cut banding blade! The banded saw blades come in closed loops. You're going to have to cut it. We used a mill to cut it open. BE CAREFUL.4. Install the blade! Wear gloves! You can place the blade in the solc (you will need help!). We fitted ours with small slices of wood and lots, and a lot, and lots of hot glue. I know it sounds silly, because it is. But it worked! AND LET'S CUT IT! How it works! Note: I made a word in the video. Unveal, a strange mixture of the word 'reveal' and 'unravel' both meanings to make visible. Now you need to do this about... 70 times. Yes, it will take time. But this will prove better than other methods, and this will give you the best cardboard chair of all time! Now that you have all the slices: Let's put it together! We used two methods, hot glue and wood glue. We found that hot glue was quick and easy, but wood glue made the product more solid. We give you the difference again! You can speed things up by alternating a slice with small square inserts (See image). This seat is really very comfortable! You can improve this whole project by finishing the chair with fabric and beating. It would be very simple to do it with this design. Enjoy! yes, it's me. Me.