Papermaking guidebook for beginners.

Craft and recycling on a budget

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Hello, dear stranger!

Do you like how paper feels in your hands? Have you wandered how it is made and maybe wanted to try making it yourself? Then you are in the right place!

Are you an artist at heart and want to create something new and original, something that would transform useless things which would otherwise be burned or thrown away into something beautiful? That is very poetic and sustainable, best of both worlds!

Are you familiar with the framework of Reduce-Reuse-Recycle and trying to live by that motto, despite what capitalism and consumerism tells you? That's awesome, I'm proud of you!

Are you also perhaps slightly lacking in funds in order to afford such hobbies as collecting vintage cars or high-stakes poker and want to get into something that does not require that amount of resources but still brings you joy and fulfilment? Me too…

Are you struck by the sudden realization of horror that is human existence and would love to keep you mind occupied for a little while also doing something relaxing? Well, I can't help you with former, but the latter – no problem!

This guidebook is for people who are not very familiar with the papermaking craft but are interested in learning more about it and also are enthusiastic about using things that they already have at home in order to transform and bring them a new life.

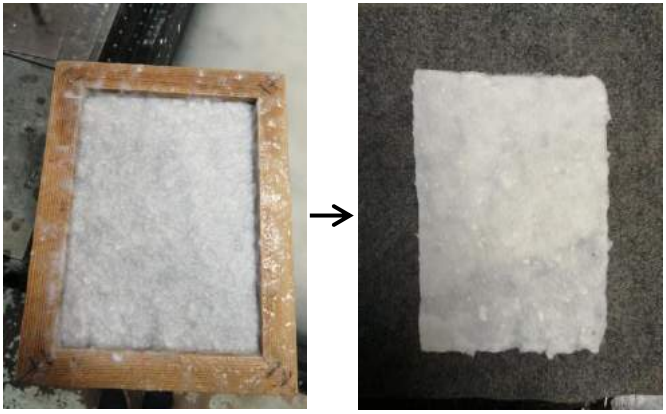
The process

The process of making paper has several steps. Some details may vary, based on what kind of material and equipment you have, but in general it includes:

1. Making pulp. You will need to turn the paper you have into a pasty substance:

2. Diluting the resulting pulp in a container filled with water:

3. Forming a sheet with the help of a mould and transferring it onto a piece of cloth:



4. Drying – pretty self-explanatory:

What you will need

There are several items that you will need to have to make paper:

- some base material – paper that will turn into pulp;

- something to make the pulp with: a blender, mortar and pestle, hands or a baseball bat – anything you are comfortable using;

- a frame (mould and deckle) to help you form the shape of your future sheet;

- a container with water, big enough to fit your mould inside;

- an ironed cloth and/or a piece of felt to soak up the excess water.

The good news is – you do not need everything when you just start with your craft, as I will show you later. Just the pulp, a bucket and a frame are enough.

It does not mean that the results will be perfect, but at least it will give you a feeling of what it is like working with paper. And if you like it, you can slowly start to accumulate the rest of the items.

How to make your first frame

Mould and deckle, also referred as a frame, is the one thing that you would actually need to have. And you can make the simplest version of it with items that you can likely find in your household.

For this you will need:

- four sticks of equal length (if you want a square shape). Two pairs of chopsticks or something similar is good enough;

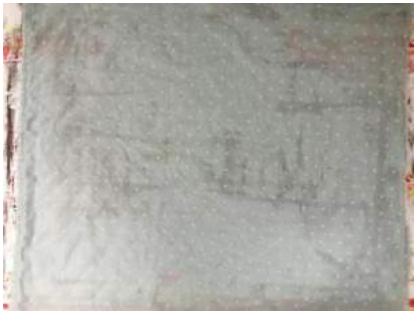
- a piece of thin cloth (you can use a gauze that's been folded several times), slightly wider in size than the form shaped by the sticks;

- scissors;

- a hot glue gun or some other water-resistant adhesive.

1. Glue the sticks together so that it would form a square;

2. Prepare the cloth;



3. Put the glue along all the sticks, then quickly attach the construction to the cloth, wrapping the sides, so that the cloth would be stretched tightly:

4. Cut excess fabric;

5. Done!

I have to warn you that this construction is not very strong, it will bend under the weight of the pulp and water, so you will need to be careful. However, it is quite fast and easy to make.

First experiment – no equipment

Once you have the frame, you can start your adventures into the papermaking craft.

My own first experiment was not very easy.

For starters, for some reason I didn't think about separating the types of paper that I shredded by their density, so I ended up with a mix of regular printing paper, magazine pages and cardboard.

I did not have a blender or any other type of tool to help me turn those pieces into pulp, so I had to use my hands for it. If it was a mix of just regular office paper, it might have worked, but as I had a lot of much denser material, it was harder to make it uniform, despite soaking it in water for several days beforehand. As you can see on the sample (Sample 1), there are still a lot of whole pieces sticking out.

And finally, when I used the frame that I'd built, its delicate construction and the weight of the water and pulp made it quite difficult to transfer my results onto the drying cloth.

The result, even though not the prettiest, still serves the purpose of this guide, and hopefully your paper will turn out better.

Your steps would be:

1. Tear your paper into small pieces and soak for several days in order to soften them a bit;

2. Use your hands to grind them into some semblance of pulp;

3. Dump the pulp onto the frame and even up the surface, so that it would be uniform;

4. Carefully transfer it onto the cloth and let it dry.

Whatever the outcome, it certainly will look quite unique. And even if you mess it up, do not be discouraged, we all have to start somewhere!

Sample 1. First paper made from a mix of different types of paper, using my hands as a blender

Adding blender into the mix

If you want to make the process of making pulp easier, one of the options is to find somewhere a mixer or a blender. It does not have to be new or particularly fancy, however be sure not to use it for processing food. Yes, you can re-purpose the one that you already used in the kitchen before, but after you have ground your paper with it, you cannot go back into using it for cooking.

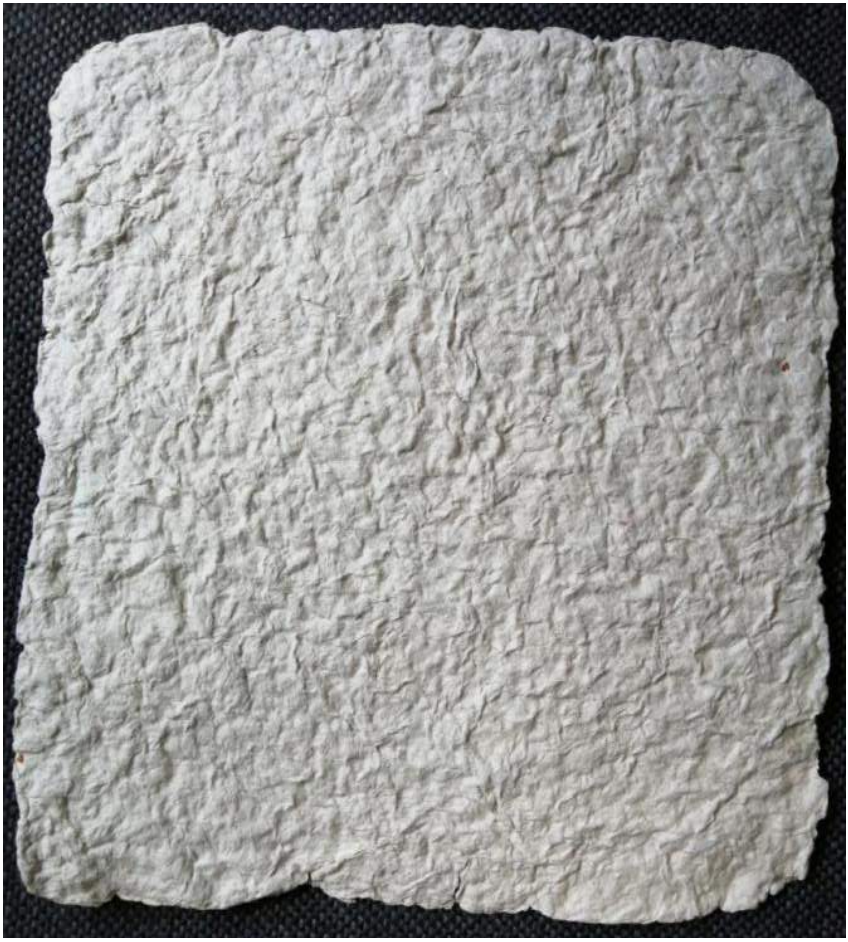
See, paper, especially one that has already been used, is full of ink, chemicals and simply a lot of bacteria that was gathered during its creation and previous usage. And it would not matter how strong of a washing liquid you have, you still won't be able to clean everything once it's on the surface of your blender. So, unless you want all those things to go inside your digestive system, I would advise you to have two separate tools.

I got my blender on a Christmas sale and tried to make pulp again. And this time I was smarter and used just one type of paper – my old lab reports. I would advise to start with paper that is the simplest and easiest to break and tear, especially if you do not have good equipment or a lot of experience.

This time, when using a blender, my own results were much better! (Sample 2) However there were still issues.

First, I again put all the pulp on the frame instead of mixing it with water and then putting the frame under it. That way I could utilize all the pulp without having waste, but the paper became very thick, rigid and brittle.

Second, the surface of paper is generally very malleable while it's still wet, and as I used a simple rough towel to put my piece to dry on, it took the towel's surface structure. Therefore, you could see that the paper is quite bumpy, and you cannot really write on it either.



Sample 2. Paper made with the help of a blender

Hollander beater

Another method of making pulp would require you to somehow acquire a Hollander Beater. This machine was invented in the 17th century for this very purpose and has been widely in use in Europe ever since.

There are a lot of advantages for using it. Firstly, unlike a blender, this beater doesn't cut the fibres from which paper is made of but rather splits them, which will result in stronger bonds between the fibres and therefore stronger paper. Secondly, with this machine you can make pulp out of stronger fibres like cotton that would be a torture to try making it with your hands. And thirdly, it is just a simple process: you tear your material into small pieces, pour in the water, turn the machine on, and let it do the rest of the work for you.

However, for an ordinary person, it would be a tough task to implement such a thing in their house. The types of the beater can vary but generally they are big, loud and expensive, meaning that unless you really want to and can find some place that would not incur the wrath of family and neighbours because of the noise, it would not be a viable option for your papermaking adventures.

But if you have the chance to get your hands on that device, then do it! Just be careful, and it would be good if someone knowledgeable assisted you.

As had my internship at the TYPA Centre, I also had access to better equipment than the one I had at home, which included, besides Hollander beater, mould and deckle.
Mould and deckle are the fancier version of the frame that I previously made, consisting of two parts: one of them is a frame with metal net fixed tightly, used to hold the pulp and form, and the other is also a frame of the same size but without the net, used to be put on top of the mould in order to get equal and smooth edges.

The steps of making paper are slightly different this time around:

1. Have your paper be of the same type (used office paper is the best!) and already torn to small pieces;

2. Soak them in water for a little bit;

3. Meanwhile, pour a lot of water into the Hollander beater. There is still a limit to the maximum level of water allowed, so be careful;

4. Put paper inside, turn the device on and run for about 5 minutes, or until the pulp is uniform;

5. Gather the pulp into a container.

Then, once it is done, and you cleaned the machine, it is time for actual papermaking to begin:

6. Have a separate container and fill it with water;

7. Put some amount of pulp into it and stir so that it would be equally distributed in the water;

8. Get you deckle (without the net) on top of the mould (with the net), hold them and carefully lower into the water;

9. Once enough pulp is formed on the net, get it out of water and then slowly remove the deckle;

10. Transfer the resulting paper onto a smooth-surfaced cloth by quickly turning the frame so that the paper would be facing down, then remove the mould (you will have to be careful);

11. If there is an option to use a press in order to drain the excess water, you can do it, otherwise you might just put the paper in between pieces of felt and sit on it;

12. Let it dry – and then it's done! (Sample 3)

Here you can see what the paper made with the help of Hollander beater looks like. Looking much better than before, isn't it?

Sample 3. Paper made with Hollander Beater

Mortar and pestle

If you do not have access to the Hollander beater or a blender, or as in my case, you want to be as sustainable as possible and find a way to make pulp without using electricity, there is a way! And this way is again to re-purpose kitchen utensils, namely mortar and pestle. It will grind paper into pulp the same way that it can grind pepper! However again, for health reasons, be sure not to use the same set for making paper and pepper.

The technique is extremely simple: put previously soaked pieces of paper into the mortar, add a little bit more water and - grind-grind-grind!

There are several advantages to this method:

- As I said before, it does not use any electricity, just raw physical force of your hands;

- You can do it in the comfort of your own seat, while listening or watching anything you want;

- Much like the Hollander beater, mortar and pestle does not cut the fibers from which paper is made of but splits them with the hitting and grinding movement, thus preserving their size and the longevity of your future paper.

However, there are also disadvantages to it:

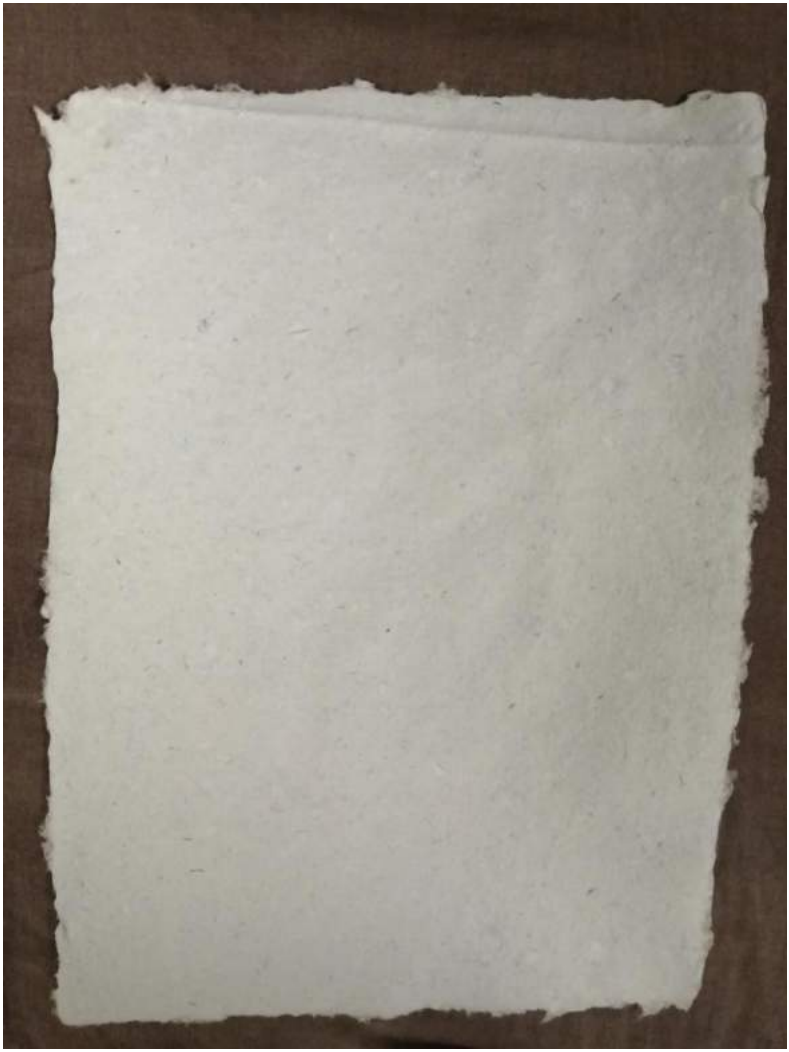
- It depends on the size of your mortar, but generally it is quite small, therefore you can only make small amounts of pulp at a time;

- You are still using your hands to grind the paper, so at some point you might feel tired and your hands will hurt;

- Because of the previous reason, it is also better to try to grind only soft, thin paper, like office paper. I tried to make pulp out of egg cartons using this method, and it was not good;

- When you hit this wet substance with a stick, there is a very specific squelching sound that it produces. It is fine if you are alone in the room and wearing headphones, but if you have someone else in your proximity, it is better to warn them, unless you want to receive very suspicious looks.

Overall, use mortar and pestle to grind very soft and thin materials, like the aforementioned office paper, do it in small batches and preferably while you are alone, and you'll be good to go!



Sample 4. Paper made from pulp from mortar and pestle

A new method of paper-forming with sponge

Previously, after the pulp was completed, I would just pour it into the container with water, and then continue from there. This kind of method is simple, but can cause some problems.

You see, once you have poured into the container, say, one jar worth of pulp diluted in three jars of water, at first when you dip your frame into this mixture, there will be a lot of pulp on the net, resulting in a thick piece of paper. And after some more dipping, if you do not add any pulp, there will be less and less of it left in the water, making the paper very thin, which also can result in a difficult transfer of the piece from the mould to the drying cloth without tearing it. With that technique, you have very little control over the thickness of your paper.

However, there is one method that I learned from a paper artist on YouTube, NevermindPaper. This trick helps with not only having pieces of universal quality, but also with easier transfer of paper from the frame to the cloth.

For this method, you would only need two more items apart from the usual ones, mentioned before:

- a sponge;

- an ironed piece of cloth (you can cut and re-purpose your old bedsheets for this).

1. After you have your paper pulp and a container with water ready, do not drop all the pulp into the container at once. Instead, just use

3-4 handfuls of pulp and then stir, so that the particles could be distributed more evenly.

2. Dip the frame into the mix and shake it a little bit before lifting it up. Depending on the size of the container and the amount of water and pulp, the paper sheet may be too thin. But do not worry, if you are not satisfied with the quality, you can just dump the pulp back into the container and add either more pulp (if the piece is too thin), or more water (in case it's too thick).

3. After the resulting piece is up to your liking, you can turn the frame upside down and put it onto the ironed cloth. However, do not lift the frame just yet. Instead, take a sponge, and carefully go over the net with it, soaking up the excess water. This will not only help to ease the paper go off the net more smoothly, but also you will not have to get rid of the water with a press, and it can dry much faster.

4. Slowly lift up the frame. If the piece of paper is stuck properly to the cloth, you can hang it on to a drying rack if you have one.

5. Done!

I have made my paper using this method, and the resulting pieces are much softer and flexible, and overall, I like them a lot. The only thing that you will need to remember, however, is that because of the pressure that you apply to paper with the sponge, the side of the piece that faces the net will take the shape of it, so you will have those little squares printed on one side. If you like texture of it, you can leave it like that. And if you don't, you can just press that side of paper with something solid and smooth while it's still wet and those squares will disappear.

The sample that is shown is made out of old magazines (Sample 5). I used a blender, as it was very hard to make pulp with my mortar and pestle, and I didn't have enough of it to utilize the Hollander beater.

Sample 5. Paper made out of old magazines, using blender and the sponge method for paper-forming

Other materials you can make paper out of

There are many other things that you can experiment with in terms of turning them into functional but still unique pieces of paper!

1. Old shopping receipts (Sample 6).

If you find yourself in possession of many shopping receipts and don't know what to do with them – well, you can make paper.

Surprisingly, it was not hard at all. I used the blender to make pulp, but there was one small detail that I didn't consider. Receipt paper is made of thermal paper with bisphenol A/BPA, which is what makes the surface of your receipts so shiny. So, when you turn this kind of paper into pulp, there will be a thin shiny film on top of it, and the feeling that you have once you touch it with your hands is a little bit unusual. It's not dangerous (my skin is still on me), however, if you are very sensitive to any kind of chemicals, I would advise you to be careful and wear gloves, just in case.

There was also one unexpected side effect. Many if not most receipts have a coloured logo at the back, so when I made the pulp, I thought those colours would just dissolve. But they didn't! I was left with paper that is much whiter than hand-made paper normally would be, and among this whiteness there were those bright specks of colours sprinkled everywhere, like little fireworks. It was a very pleasant discovery.

2. Old paper bags (Sample 7).

Paper bags are great. And they are probably better to use than plastic ones, at least in terms of their recyclability. But they also can't withstand moisture, break under a lot of weight, and wear and tear very fast. My point is: if you often carry something heavy and wet or get under the rain, you just as often can find yourself with paper bags with busted handles and ruptured base. But - they are great for making paper! Who would have thought.

I again tried to make pulp with my trusty mortar and pestle, but even after soaking the pieces in water for several days, the material was still too dense for me to do it without hurting my hands. Therefore, I again used the blender.

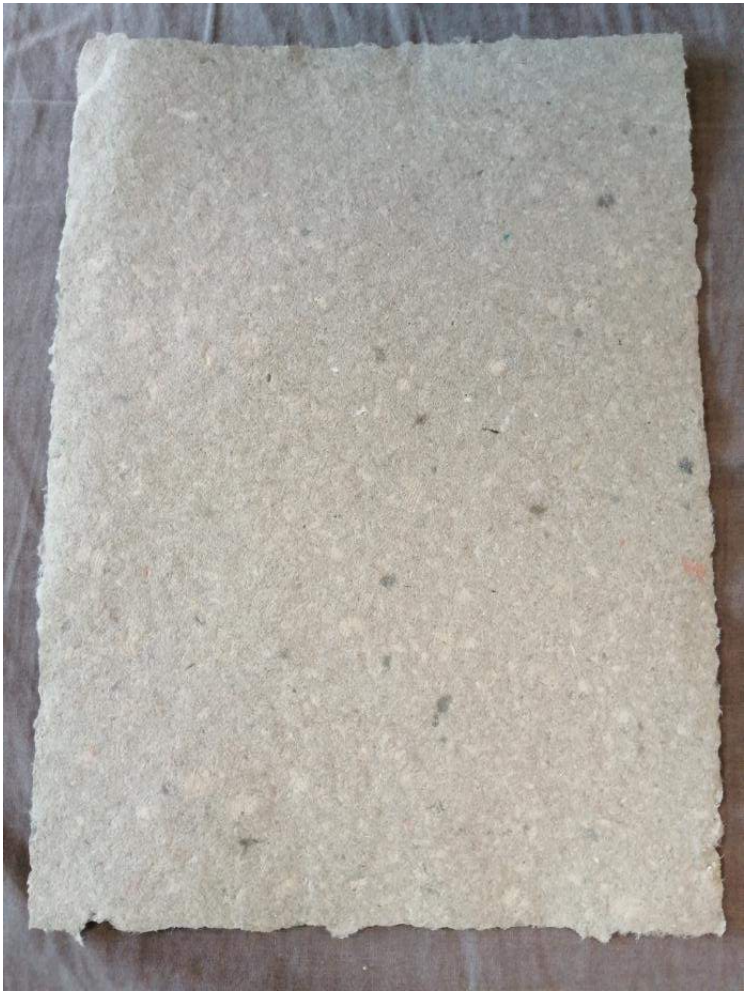
3. Egg cartons (Sample 8)

As I have learned recently, egg cartons are great for making fire. But if you don't feel the need to burn the whole world down just yet, you can make paper! It's also quite fun.

To make pulp I tried one more time to use my mortar and pestle, and even soaked the pieces for around a week in water. And one more time, I was unsuccessful because it was still too hard for me to grind the pieces into proper pulp. My hands hurt from the pressure I was applying and the result wasn't even that great – there were unbroken pieces that didn't want to turn into a mush no matter how much I struggled. This kind of cardboard is very think, consisting of many layers, and I think it would have been better if I had split those layers more when I was first preparing the pieces. Now, however, I was again thankful to be living in the 21st century with working electricity, and used my blender.

Sample 6. Paper made out of old shopping receipts, using blender and the old method of paper-forming

Sample 7. Paper made out of old paper bags, using blender and a new sponge method



Sample 8. Paper made out of paper egg cartons, using blender and the sponge method for paper-forming

In conclusion

Good luck and have fun!