

A Year of Zero Waste Sewing

*A year of exploration, making and musings on
zero waste patterns and clothes*

January



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Compostable closures

..and fastenings from found objects

One of the considerations of sustainable clothing is its end-of-life. Even with diligent mending and the very best clothes care, all clothes will eventually reach the point where they are worn out. What will happen to it when it can no longer worn? Will it be thrown in the rubbish? Or recycled (either at home or a recycling facility)? Is it compostable?

A complication with recycling and composting is the garment's haberdashery. That is, the things other than fabric used to make it, such as labels, sewing thread, fastenings and embellishments. These are typically made of a different material and either won't compost at all or can't be separated easily for recycling.

A garment's fastenings are always an important design consideration and more so for sustainable clothing. Almost all of the ones we generally use aren't compostable, but have been in use for so long we don't even think about them.

Zips, alas, aren't compostable. Even if the tape is made of cotton, the teeth which are made of metal or plastic won't decompose.

Wait a minute - doesn't metal rust away? While metal doesn't rot or decompose like fabric, yes, eventually it will disappear over a long time. Because of this, metal fastenings such as **press studs**, **hooks**, **rivets**, **jeans buttons**, **eyelets** and **buckles** generally aren't considered suitable for a backyard compost bin.

Nylon and polyester are types of plastic and won't decompose—fastenings include **Velcro**, **no-sew snaps**, **nylon press studs** and **plastic buttons**.

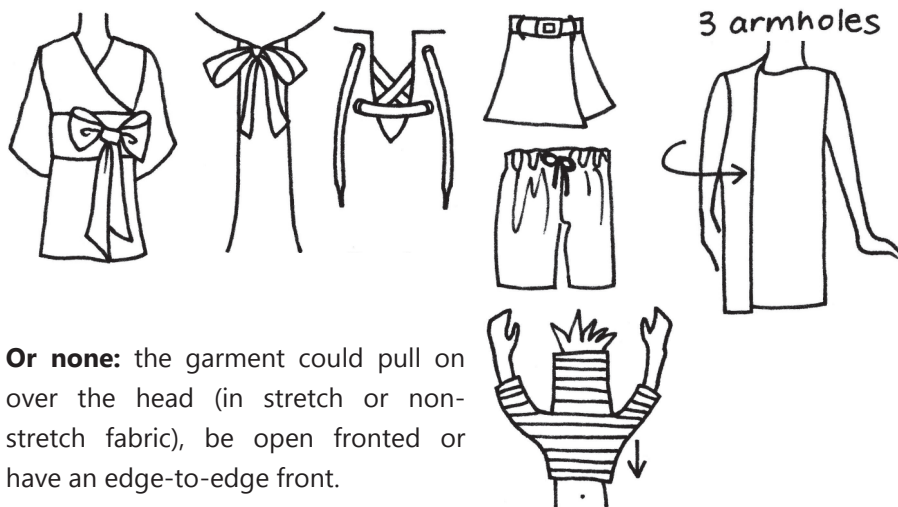
Polymer clay buttons contain plastic. Glass and porcelain buttons won't decompose.

For home sewn clothes, some of these things can be unpicked and reused on something else.

If you're designing for compostability, there are still plenty of things you *can* use. Often it's these limitations that bring out the best in our creativity and stretch us, in the same way zero waste pattern cutting does.

Historic fashion books might give you some inspiration.

You can design the closure to be **integral with the garment's design**, for example wrap-arounds, 3-armhole garments, lacing, belts, ties, or tabs and flaps. Often these use the same fabric as the garment.



Or none: the garment could pull on over the head (in stretch or non-stretch fabric), be open fronted or have an edge-to-edge front.

Fun fact: George Lucas's costume design brief for *Star Wars* stipulated no zips or buttons; apparently they didn't have them in a galaxy far, far away. Take a look at the costume designers solutions next time you watch it.

How about elastic? Natural rubber will compost, but currently it's hard to get elastic without synthetic covering over the rubber.

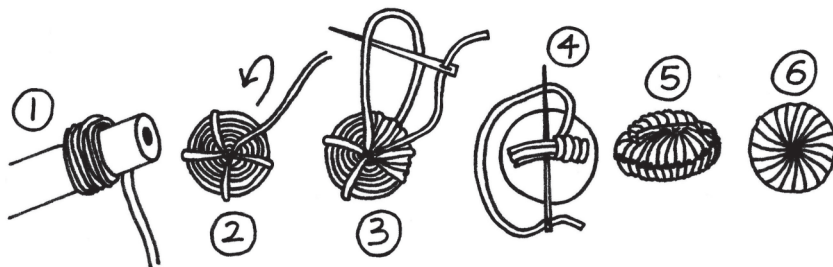
There are button materials which *do* decompose, for example wood, casein (milk), corozo (tagua seeds), coconut shell, horn, shell, bone, bamboo and rubber. They won't rot at the same rate as the rest of the garment but eventually they will break down.



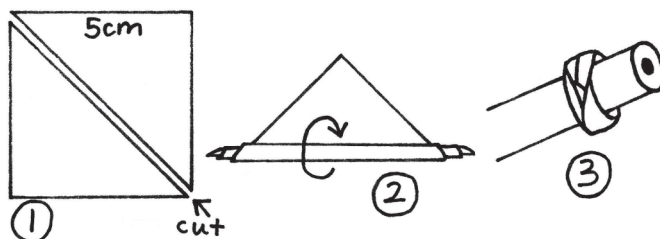
Some compostable buttons you can make

Thread buttons were used for men's shirts circa late 17th—early 18th century. They were also called Dorset birdseyes. The button is made entirely from heavy linen thread, thicker than sewing thread. If you don't have any handy, try perle cotton or sashiko thread. If you're recycling, the heavy thread from the top of flour bags or feed sacks is suitable. A button takes about 1 metre/yard of thread.

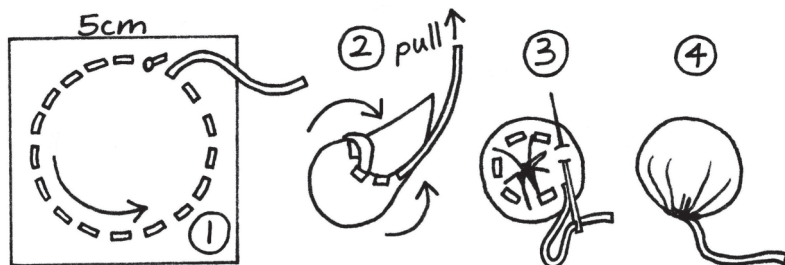
1. Wind the thread about 30 times around a stick. A 5mm knitting needle will make a button about 1cm/ $\frac{3}{8}$ " wide; the end of a pencil will make a slightly wider button. **2.** Remove the thread from the stick and thread a needle with the end. Optional: stitch through the centre and around the circle of thread several times to hold it. **3.** Work buttonhole stitches around the circle. **4.** On the back, stitch across several stitches and work buttonhole stitches over them to make a shank. **5.** Finished button back. **6.** Finished button front. It may or may not have a hole in the centre.



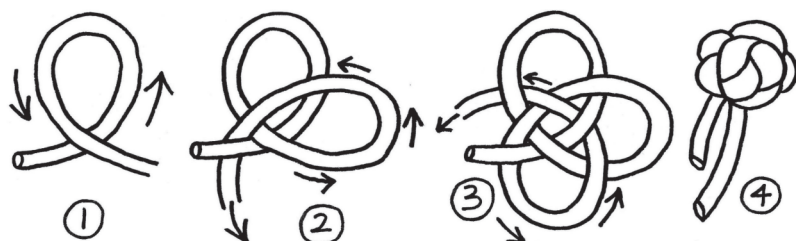
A firmer button has a **core of fabric** rather than thread. **1.** Take a 5cm/ $\frac{1}{2}$ " square of fabric and cut it in half diagonally. You only need one triangle. **2.** Roll it up finely, starting at the long edge. It helps to moisten your fingers. **3.** Wind the fabric tube around the end of the stick and proceed from Step 2, above.



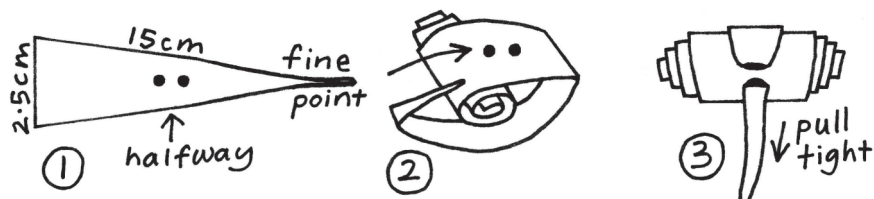
Medieval self-stuffed buttons are spherical. They're made using fabric and very strong thread. **1.** Cut a square of fabric about 5cm/2". Trace a circle on it and work running stitches on the circle. **2.** Pull up the thread, stuffing the corners inside. **3.** Work another circle of running stitches around the edge as shown and pull it very tight. **4.** The finished button.



Ball buttons, typically seen on Chinese qipao, are made from fabric rouleau or cord. They fasten with a loop which is often ornamental. **1.** Begin with a loop. **2.** Loop the cord over the first loop. If you're using rouleau, keep the seam facing down. **3.** Loop the cord again, weaving through the first two loops. **4.** Ease the loops into a tight ball shape.



Leather toggle buttons are also called chap knots. Is leather compostable? It's skin, so yes, but there's some question whether the tanning chemicals will affect the soil. You could also use boiled wool or rubber. **1.** Cut a triangle with a fine point. Halfway along, punch two holes. **2.** Roll up the triangle and weave the point through the holes. **3.** Pull tight.



Some other buttons to investigate...

Dorset buttons are made with thread worked over a metal ring.

Singleton buttons are a type of Dorset buttons made with fabric rather than thread. Dior used them on his white New Look jacket in 1947.

Macclesfield buttons are made by wrapping thread over a wooden button mould.

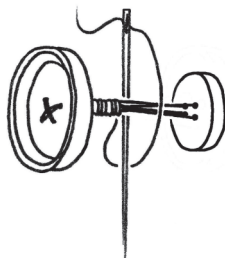
Fastenings from found objects or rubbish

Can you make buttons or other closures from found objects? Or things in the recycling bin or that are being thrown away?

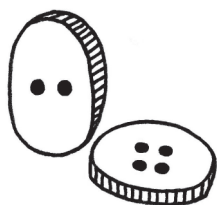
For example, placemats, rubber boots, rubber thongs, hot water bottles, old belts of any type, old camping gear, fan belts, bicycle inner tubes, lego bricks, computer hardware, basketballs or other broken sports equipment.

✂ If a shape is unsuitable to slip through a buttonhole, or if it would damage a buttonhole, use a loop to close it.

✂ If the button can't be washed in the same way as the garment, make it removable like a **cuff link**. →

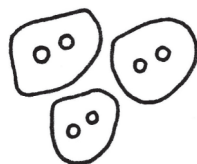


Used **beer bottle tops**. Hammer the washed bottle tops flat, hammering the crimped edge inwards. Make the holes with a nail. For larger buttons hammer the crimped edge outwards, but be aware the rough edge may damage the fabric. Helmut Lang featured these in his SS 2004 collection.



Make **wooden buttons** from a fallen tree branch or prunings. Cut the branch into 3mm thick rounds using a hacksaw. Drill 2 or 4 holes using a fine drill bit. Sand the button smooth. Finish the buttons using oil and beeswax. You could also make toggles.

Buttons from pebbles. Choose tiny smooth rounded pebbles. Drill holes using a Dremel with a diamond tip, submerging the pebble in water while you drill.



Designing a pocket matrix

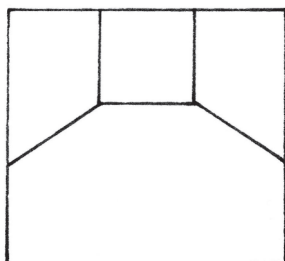
A **pocket matrix** is a modular shape containing all the pocket pieces nested together.

One approach to zero waste pattern cutting is to make modular pattern pieces, where all the pieces are squares and rectangles and can be moved around the fabric. It doesn't mean curves can't be incorporated, as long as the outside perimeters of each module are straight.

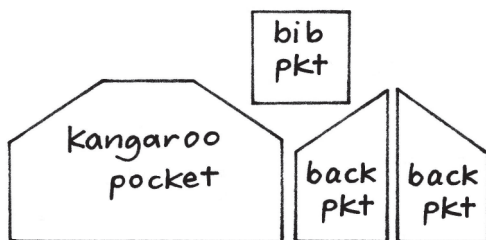
Pockets of any type are often cut from small areas in the cutting layout, around the big pieces, but they can also be designed as stand-alone, moveable modular pieces. This works well if you're going to cut the pockets in a different fabric.

The first pocket matrix I designed looked great on paper but didn't work in reality. It was for exterior pockets on a pinafore/overalls pattern I was making. Unfortunately, after much trying, I couldn't get the proportions right so I abandoned it.

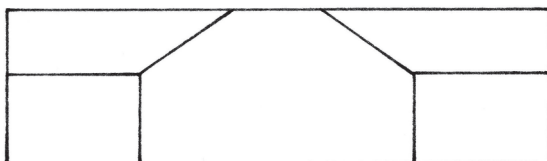
It looked like this:



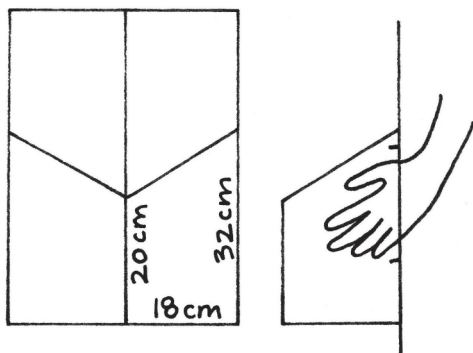
The pieces separated to make these:



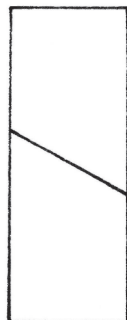
Another unworkable version was this:



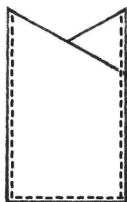
However, I really liked the idea, and eventually made **in-seam pockets** that looked like this:



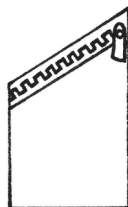
Note that this shape on its own won't give you a pair of pocket bags - it needs to be mirrored. You need to commit to two pockets!



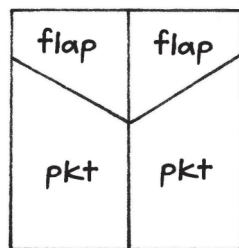
I've since used this pocket idea for other types of pockets too:



lapped patch pockets

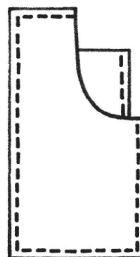


zippered

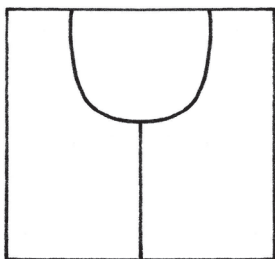


pockets with flaps

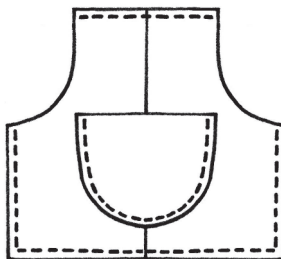
Here's another example, for a **cutaway patch pocket** with a little coin pocket. The whole piece could be cut twice (as a pair) to make a strong, self-lined pocket. Or, it could be cut as a single layer pocket with the curved opening bound or faced with bias binding.



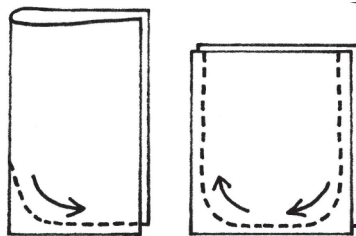
Alternatively, the pieces could be cut like this....



...to make a pocket like this:

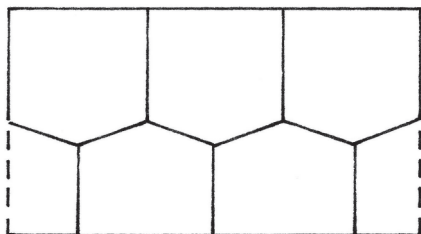


Of course, many pockets are square shaped anyway. The pocket bags for the welt/jet/flap pocket family are all rectangles and therefore easy to cut zero waste. If you want rounded corners to avoid pocket lint, cut them square but stitch them curved.

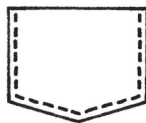


If you're making a zero waste pattern for a garment that will be cut in multiples, rather than singly, consider a **tessellating pocket shape**. A tessellating shape will perfectly interlock with itself.

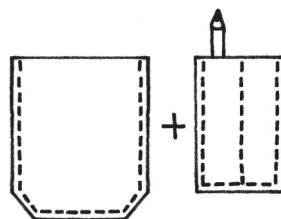
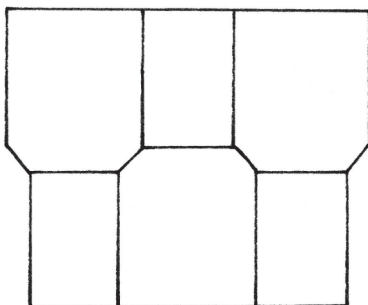
At each end you'll have half-shapes - what to do with these? You may decide to make some pockets with a seam through the middle.



A jeans back pocket shape.



A chiselled edge patch pocket and pen pocket.



A gusset can be added to any patch pocket to give it a new shape. and...

Graph paper is excellent for designing tessellating pocket shapes.



Zero Waste Design Collective (ZWDC) is dedicated to providing online alternative educational resources on zero waste design and building an international community of designers, teachers, industry stakeholders, home sewers, students and enthusiasts.

The seeds of ZWDC were sown through Cassandra Belanger's challenging experience studying a Masters in Fashion + Textiles in Glasgow. She was interested in studying zero waste fashion design but there weren't any teachers that could help her. She had previously worked on a zero waste design project with Holly McQuillan and decided to ask if Holly would be available to share her expertise. At the time Holly was working on her PhD at the Swedish School of Textiles in Sweden. So Cassandra applied for funding and managed to organise a trip for Holly to visit Scotland and teach a week of zero waste fashion design workshops to Cassandra and her fellow students. During this time, in 2018, Cassandra and Holly became friends and spent the week geeking out over zero waste fashion. When the week was over Cassandra realised the issue around lack of access to education and resources about zero waste fashion design. Holly expressed the desire to stop travelling for workshops as she had been concerned about the environmental impact and the time away from her family. Cassandra pitched the idea to Holly to develop some online classes and resources to respond to the needs mentioned. Leading up to 2020, and when the pandemic hit, their ideas were put into focus.

Accessing quality education in zero waste design was a recognizable gap in the fashion education system. Many people wanted to learn about zero waste design but didn't know where to start or how to find resources. Our initial vision was to produce accessible, quality education to those who desired to learn more about zero waste fashion design. Early on we realised we needed to expand the team to ensure a range of skills and to increase capacity. We asked the two best zero waste designers we knew of to join us - Danielle Elsener and Mylène L'Orgilloux. Together we formed the international Zero Waste Design Collective, and began to formulate a clearer vision for the future of zero waste design education.

Over time we recognised that as well as resources and education, there was a need for a community around zero waste design in order to bring our vision to fruition. We believe a partnership of community and education is vital to the success of creating a waste-free fashion industry. We all need support and encouragement on our journey to a better fashion future and we desire to fill that need through our global online community. We help people connect through our online Community Directory. We are so excited to see the global zero waste fashion design community flourish and grow as people find one another and connect on their journeys.

Danielle Elsener is a zero waste system designer who works to dispel industry problems through design, education, and manufacturing. She is the founder of DECODE MFG in Brooklyn NY, the world's first ZW manufacturing facility. @decodecodecode

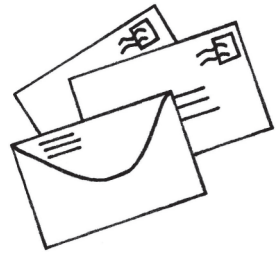
Cassandra Belanger is a maker, designer and community educator with an emphasis on zero waste and sustainable making practices. Originally from Canada, she lives in Glasgow, Scotland. @stitcherystudio

Holly McQuillan is a researcher, designer and educator in her role as an Assistant Professor in Multimorphic Textile Systems at TU Delft, Netherlands. @holly_mcquillan

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Ask Lizzy



Q: Is the grainline important with zero waste patterns?

A: Yes, absolutely, the grainline is always important with any pattern, including zero waste. The grainline affects how the fabric hangs when it's worn, because the grainline is aligned with the threads in the cloth.

It can be tempting to rotate a pattern 5%-7% off grain to fit it in the layout better, *but don't do it!* Sure, sure, in some circles it's considered totally legit, but start messing with the grainline and there's no telling where you'll end up. Some say disrespecting the grainline is a downhill slide to ruination and could ultimately end your patternmaking career.

There are many mistakes in sewing which can be fixed, but a garment that's cut off-grain can never be corrected. The garment will twist around the body, seams won't hang straight and you risk people crossing to the other side of the street rather than walk past you wearing it.

Q: Is it harder to do alterations on zero waste patterns?

A: Yes. With zero waste patterns, the cutting layout IS the pattern. If you change one piece, the pieces around it will be affected. Because of this, it's hard to merge sizes - for example, if you wanted to cut a size 14 dress with size 16 hips.

But there are ways that designers can help with this. Bigger seam allowances, if only at the side seams, can allow clothes to be altered. (hypocritically, I write this with almost all my patterns having measly 1cm seams, but I vow to change from now on). Ditto deep hem allowances.

If the zero waste pattern is for home sewing, guidance on choosing a size and fitting advice is always welcome, because size inclusivity is not just about size/measurements, it's about shape as well. Anticipating fitting needs for *various shaped* bodies embraces more users.