

Giving New Life to Old Kimonos: A Design Method for Upcycling Kimonos into Marketable, Cost-Effective, Zero-Waste, Size-Adjustable Dresses

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Introduction / Concept / Context. The tradition of gifting a wardrobe of kimonos to Japanese daughters by their affluent parents was a significant cultural practice until the 1980s (Valk, 2018). This practice prepared them to be appropriately attired for occasions throughout their married life. However, the decline in kimono use has led to many high-quality cotton, wool, and silk kimonos being donated to second-hand shops (Valk, 2020).

Upcycling is a method that repurposes waste as source material, diverts it from landfills, and reduces carbon emissions and other negative environmental impacts (Han, Tyler, & Apeageyi, 2015). Eike et al. (2020) developed a four-level repurposing design process. The fourth level, Intentional Patternmaking, involves deconstructing garments and creating patterns for a new garment based on available fabric sizes and shapes. This aligns with Han, Tyler, and Apeageyi's (2015) finding that patternmaking techniques must consider the available fabric for effective upcycled fashion design. Han, Tyler, and Apeageyi (2015) also note that a consistent supply of source materials is necessary to achieve design consistency throughout production. Further, designers must overcome the high labor costs and unfeasible garment prices typically associated with apparel upcycling (Eike et al., 2020; Janigo, Wu, & DeLong, 2017; McCarthy, 2021). Kimonos offer an efficient and consistent source material as the hand-sewn seams can be easily removed, returning all panels to the kimono's original rectangular flat pieces (McCarthy, 2021). This abundance of high-quality, easily reusable materials is an unexplored sustainable fashion option.

Researchers have considered attitudes toward kimono upcycling (McCarthy & Hayashi, 2020; McCarthy, 2021). Creative scholars have investigated upcycling items such as t-shirts (Salusso & Ji, 2018), suits (Eike, 2019; Irick, Kumphai, & Eike, 2019), and sweaters (Orzada, 2017). Kimono upcycling texts (e.g., Tsukada, 2021) cut traditionally shaped pattern pieces out of the rectangles of a kimono, leaving pieces to waste. Yoshimi and McCarthy (2022) upcycled kimono *parts* as *components* of a menswear ensemble. However, this creative scholarship aimed to create a method for upcycling an *entire* kimono into a zero-waste, size-adjustable, mass-producible, marketable, price-competitive garment. Designers who upcycle may not plan how their designs could be upcycled again (Eike et al., 2020), so future reuse was a design consideration. While zero-waste patternmaking utilizes the entire fabric yardage (Carrico & Kim, 2014), the pattern only produces one garment size (McKinney et al., 2020). Therefore, size adjustability strategies (McKinney & Wei; Stanley & McKinney, 2016) were incorporated to ensure applicability and sustained garment use across body sizes of single or multiple users.

Aesthetic Properties and Visual Impact. The upcycled kimono's swirling fan print with red, yellow, and green design elements on a blue background provides movement and visual interest. The principle of repetition is seen in the repeated gathering of fabric with ruffles at the neck and armhole, a drawstring casing at the waist, and two tiers of ruffles at the hem. The width of the ruffles was varied to create good proportion and visual interest. Subtle visual interest was created by varying the direction of the print in the garment body and ruffles.

Methods. This creative scholarship followed the Repurposing Design Process for Level Four Repurposing—Intentional Patternmaking (Eike et al., 2020). To ensure a rigorous design

research process, all time spent, steps taken, and materials collected were documented in a sketchbook, including photocopies, notes, photos, and sketches. <https://youtu.be/DD92Cqp-R3I>

The designer used this information to analyze the creative scholarship outcomes (Bye, 2010).

Step 1: Research. The designer chose the dressy day dresses category and researched trends and competitive products on Nordstrom's website. Prices for silk dresses for daytime events were \$399 to \$2,990. Prevalent dress styles included medium-scale prints and gathers. The gathering included ruffles at the neckline and on sleeves, ruched waistlines, and tiered gathered skirts.

Step 2: Source Materials for Repurposing. A printed silk damask kimono was sourced from a secondhand shop in Japan for \$15.

Step 3: Deconstruction. The kimono was seam-ripped into its original rectangular pieces (1.5 hours) and pressed (0.5 hours).

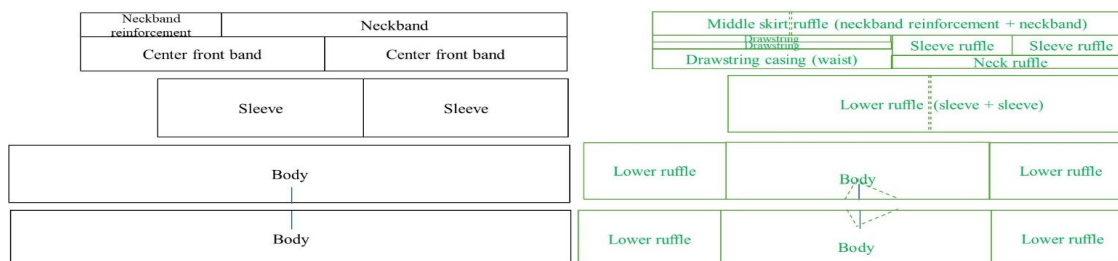
Step 4: Design Development. The pieces were measured (0.75 hours). Considering the design goals and research findings, a dress pattern was created through an iterative process. The fabric pieces were changed as little as possible to reduce labor costs and increase possibilities for future upcycling (Figure 1). The fabric's selvage was used as an edge on the neck ruffle and bottom of the dress to save labor costs in construction and possible future de-construction. The purpose of the kimono front and body pieces were retained in the dress. The cloth at the extant neck slits in the body fabric was folded inside to make the dress neckline before applying the neck ruffle. The circumference of the dress body is 54", allowing for size adjustability up to a size of 2X. The waistline size is controlled with a drawstring in a three-level casing (high, medium, low) to adjust the waist height. Shoulder width is controlled with multiple pleats, which allow size adjustment if let out.

Step 5: Production. The eight straight-line cuts were done with a rotary cutter (1.0 hours); however, in mass production, they could be cut in layers with a computer-programmed knife or laser, given the consistent dimensions of kimonos. Industrial sewing techniques such as a lockstitch (seams), narrow-rolled hem foot (sleeve ruffle), binding folder (drawstring), serging (seam finishes), and differential feed (gathering) were used (7.0 hours).

Step 6: Cost Evaluation. The selling price was calculated with a spreadsheet that included piece goods, trim, findings, materials, direct labor, manufacturing overhead, administrative expenses, selling expenses, and a 40% net profit. The calculated price of \$289 was slightly below the prices of similar items currently on the market.

Step 7: Consumption and Disposal. The garment is ready to be sold and used by the final consumer. It could be unsewn into rectangular pieces for re-upcycling.

Figure 1. Kimono pattern (black) and dress pattern (green). Solid = cut lines. Dashed = fold. Double-dashed = seam.



Cohesion. The fabric hand, colors, and pattern matched well with the trends and styles identified in the Research step, contributing to the goal of a marketable dress. The gathered style selected matched the design goal of using all the fabric in a kimono. Cohesion is also seen in multiple aspects of sustainability, including upcycling, zero-waste pattern-making, size adaptability, and design for easy deconstruction and future reuse of materials.

Design Contribution. A zero-waste, mass-producible, cost-effective method for upcycling the abundant supply of second-hand kimonos into a marketable, size-adjustable dress has been created and tested. Designers may use the developed pattern and construction methods to upcycle kimonos in a mass-production setting. Because each garment's color and pattern will be unique to the kimono fabric, future work may investigate the challenges of selling one-of-a-kind items.

References

- Bye, E. (2010). A direction for clothing and textile design research. *Clothing And Textiles Research Journal*, 28(3), 205-217. <https://doi.org/10.1177/0887302X10371505>
- Carrico, M., & Kim, V. (2014). Expanding zero-waste design practices: A discussion paper. *International Journal of Fashion Design, Technology and Education*, 7(1), 58-64.
- Eike, R. (2019, December). Suit of the youth: 'Intentional pattern-making' proof of concept for repurposing apparel. In *International Textile and Apparel Association Annual Conference Proceedings*, 76(1). Iowa State University Digital Press.
- Eike, R., Irick, E., McKinney, E., Zhang, L., & Sanders, E. (2020). Repurposing design process. In S. Muthu & M. Gardetti (Eds.), *Sustainability in the textile and apparel industries* (pp. 189-239). Springer.
- Han, S., Tyler, D., & Apeageyi, P. (2015). Upcycling as a design strategy for product lifetime optimisation and societal change. In *PLATE Conference Proceedings*.
- Irick, E. M., Kumphai, P., & Eike, R. (2019). Intentional pattern-making: development of repeatable designs for repurposing apparel. In *International Textile and Apparel Association Annual Conference Proceedings*, 76(1). Iowa State University Digital Press.
- Janigo, K. A., Wu, J., & DeLong, M. (2017). Redesigning fashion: An analysis and categorization of women's clothing upcycling behavior. *Fashion Practice*, 9(2), 254-279.
- McCarthy, M. (2021). Does an upcycling kimono practice support recycle-oriented cultural sustainability? Japanese college students' perspectives. *IAFOR Journal of Cultural Studies*, 6(1) 45-66.
- McCarthy, M., & Hayashi, T. (2020). Slow fashion concept upcycled kimonos as recycle-oriented cultural sustainability. In *Sustainability in Fashion Conference Proceedings*, 1(1).
- McKinney, E., Cho, S., Zhang, L., Eike, R., & Sanders, E. (2020) Analysis of zero waste patternmaking approaches for application to apparel. In S. Muthu & M. Gardetti (Eds.), *Sustainability in the textile and apparel industries* (pp 31-51). Springer.
- McKinney, E., & Wei B. (2019) Patternmaking methods for creating size-adjustable garments. In J.G. Moore (Ed.), *Patternmaking history and theory*, (pp127-147). Bloomsbury.
- Orzada, B. T. (2017). Upcycle and zero waste ensemble. In *International Textile and Apparel Association Annual Conference Proceedings*, 74(1). Iowa State University Digital Press.
- Salusso, C. J., & Ji, Y. (2018). Upcycling approach to designing to highlight traditional weaving and knitting techniques. In *International Textile and Apparel Association Annual Conference Proceedings*, 75(1). Iowa State University Digital Press.

- Stanley, A. E., & McKinney, E. (2016). Wee Bonnie Garden: Design Strategies for a Multi-Generational Christening Gown. In *International Textiles and Apparel Association Annual Conference Proceedings*, 75(1). Iowa State University Digital Press.
- Tsukada, N. (2021). *Kimono remake sewing*. Bunka Gakuen Publishing Bureau.
- Valk, J. (2018). From duty to fashion: The changing role of the kimono in the twenty-first century. *Fashion Theory*, 22(3), 309-340.
- Valk, J. (2020). The smell of Shōwa: Time, materiality, and regimes of value in Japan's second-hand kimono industry. *Journal of Material Culture*, 25(2), 240-256.
- Yoshimi, C., & McCarthy, M. (2022). Re. Doll Haus XY. In *International Textile and Apparel Association Annual Conference Proceedings*, 79(1). Iowa State University Digital Press

