

Situating textile design: Practice research in interdisciplinary material science projects

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Abstract: Textile design practice research (TDPR) has recently been used in the delivery of multiple largescale material science-based projects. This paper considers the role TDPR played in the EU-funded HERWEAR project and how has it contributed to theories of design practice research. The full range of textile experimentation - including engineering and design-led sampling - is mapped; then three TDPR interventions are explored using annotated portfolio approaches (Gaver & Bowers, 2012) framed by 'sited', 'situated' and 'situating' conditions (Kaszynska & Kimbell, 2024). The authors examine the results from the TDPR within the context of various communities of validation, presenting how TDPR can bring original insights to practice research theory. The findings include an expanded approach to the Triple 'S' (TS) model for reviewing practice research, intended for utilisation by funding and event strategists wishing to harness TDPR interventions to create impact benefiting diverse communities, including scientific, technological and social innovation stakeholders.

Keywords: Textiles design practice research; design research practice theory; textile design thinking

1. Introduction

How can textile design contribute to our understanding of the transformative value of practice research? How can unscripted textile design practice research (TDPR) bring new knowledge and insights to the audiences and communities of interdisciplinary consortia? The authors of this paper are both textile design practice researchers, with a drive to uncover new knowledge through the act of making. This individual conviction translated to collaborative activities, supporting and guiding others in their practice to produce their own insights. This paper takes textiles as starting points for methodological and critical investigation within a material science research programme (HERWEAR project¹). It seeks to demonstrate how TDPR interventions, created as *additional* - 'unscripted' - experiments and deliverables, informed

¹ HERWEAR project website, <https://herewear.eu/>



the final outcomes and impact of a large-scale project. The specific textile design practice that is described here is surface design through print making, but the findings apply to most textile techniques such as knit, weave, or embroidery.

The work took place inside a four-year project funded by the European Commission and involving a wide range of partners including material scientists, fashion businesses, network organisations, and design researchers. Together, and led by textile design researchers, the team explored the challenges of integrating novel biobased fibres to circular clothing systems operating at local scales. While the prototyping of textiles and products was written into the project's formal work package structure, the interventional making activities at the heart of this paper *extended* these boundaries and spread new thinking into a range of spontaneous collaborations and responses to parallel briefs or intuitions. These textile design activities emerged as a response to ongoing research developments; they were not initially written into the project proposal and workplans and so are described here as 'unscripted' experiments. The authors argue for the value of such responsive activities, which result from the design researchers' intuition that further insight can be gained by developing *exhibition samples or prototypes* to support the theoretical progress of a large innovation project.

This paper first sets out the context of the project work within the current research landscape and the conventional positioning of design research activities, before examining the current state-of-the-art of TDPR, and clarifying the intentions of this paper. The Methods section explores how TDPR functions in such projects. In the Results section the three interventional TDPR works are explored through mapping against the **Triple 'S'** (TS) model (Kaszynska & Kimbell 2024). In the Discussion section the work's impact is outlined - on the project partners, participants, and the practices of the authors. An argument is made for the case of TDPR significantly shifting the final results for the project, especially around the notion of 'local'. This paper concludes by highlighting the value of TDPR interventions for the way it involved different communities of validation and exhibition audiences, and the contribution this makes to design theory for practice research more broadly. These communities of validation are the sounding board, made up of professional designers, members of the public, or scientific experts, which interact with the TDPR outcomes to unearth research insights from the work.

2. Context

2.1 Design practice research and sited, situated and situating conditions

This research uses the framework developed by Kaszynska and Kimbell (2024) for the descriptive framing of practice research. As the work discusses textiles design within a large-scale research project, the identification of the parameters of this practice within and as research is essential. The description of textile design practice often highlights the 'tacit' skills and understandings which make its workings difficult to articulate (Igoe, 2010). As a practice rooted in craft, commentators have identified a difficulty in capturing the inner workings of the process (Adamson, 2007). However, as highlighted by Kaszynska and Kimbell, identifying and articulating the 'inexpressible' aspects of practice design research is key to its value being acknowledged (and ultimately funded).

The TS framework presents the **conditions** to be met by design practice activities to be identified as research. The framework is targeted to a broad understanding of design activities, spanning organisational and policy interventions as well as product related

practices. The authors have explored the applicability of this framing to TDPR exploring the themes and questions of the HEREWEAR project.

Each of the three 'S' words presented in Figure 1 below defines the physical or theoretical context and the ambition of a piece of practice research. As **sited** work, it is grounded in the material and social parameters that it aims to challenge, in being **situated** it is cognisant of previous explorations in this area and builds new knowledge from them. The resulting outputs are **situating**, in the sense that they provide the grounds for an ontological shift by challenging the practices and assumptions of the target groups. In this paper, these conditions are examined for their usefulness in framing the articulation of the **transformative** value of textile design research for a large-scale innovation research project.

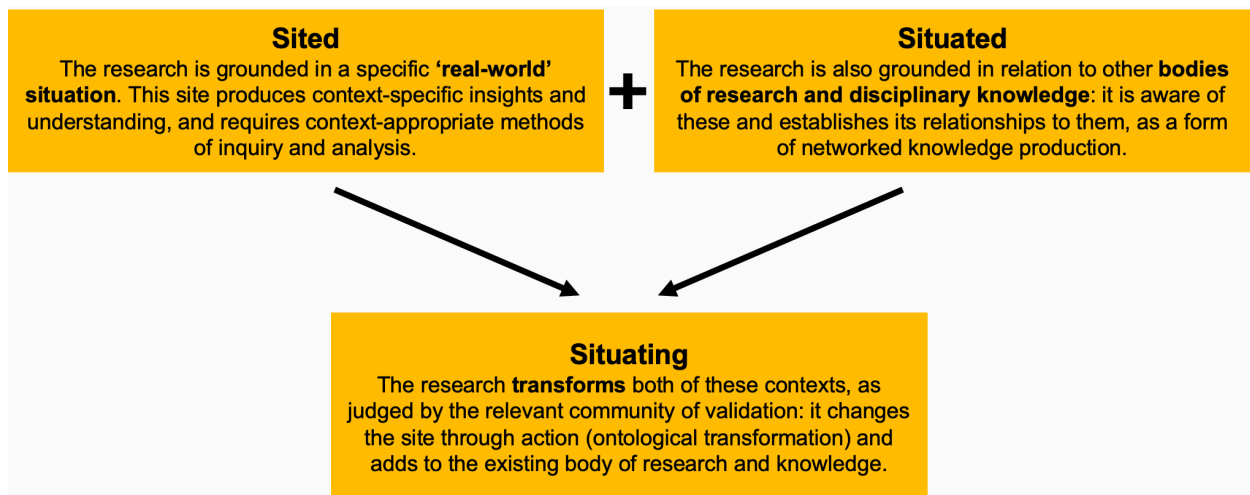


Figure 1 The Triple 'S' model (Kaszynska and Kimbell 2024).

2.2 The HEREWEAR Project

The HEREWEAR project was funded under the European Commission's Horizon2020 programme. It brought together a consortium of 15 partners, from 13 different countries. The project's key ambition was to foster innovation for bio-based, local and circular textiles and fashion. In response to the persistent challenges of globalised, extractive and unfair fashion systems, the work aimed to provide a blueprint for regional textile hubs, using abundant natural resources such as agricultural by-products, for low-impact production in distributed manufacturing systems. It included approaches such as supply chain transparency enabled through digital tools and the identification and reduction of microfibre shedding.

Figure 2, below, was developed for the project proposal to illustrate a biobased, local and circular supply chain as envisioned by the consortium. It starts with biobased waste which moves through processing, use and recovery for new products. It is supported by community networks and transparency. The dotted lines represent areas that weren't directly investigated in the HEREWEAR project. *Design was not included* in this supply chain vision diagram by the material science-based co-ordinators.

2.3 The Discipline of Textile Design Practice Research

Textile design thinking has been set apart from more general design thinking by a range of textile practitioners who have articulated the specific skill set and ambitions of the discipline (Igoe, 2021; Philpott, 2013). Textile designers work at an inherently translational scale

between raw materials and finished product, placing them in a natural position to facilitate collaboration across complex supply chains (Moreira et al. 2022). Textile and material designers have recently been integrated in large scale research and innovation projects for their ability to convert scientific discovery at the micro scale to applicable innovation at the macro scale (Ribul et al., 2021).

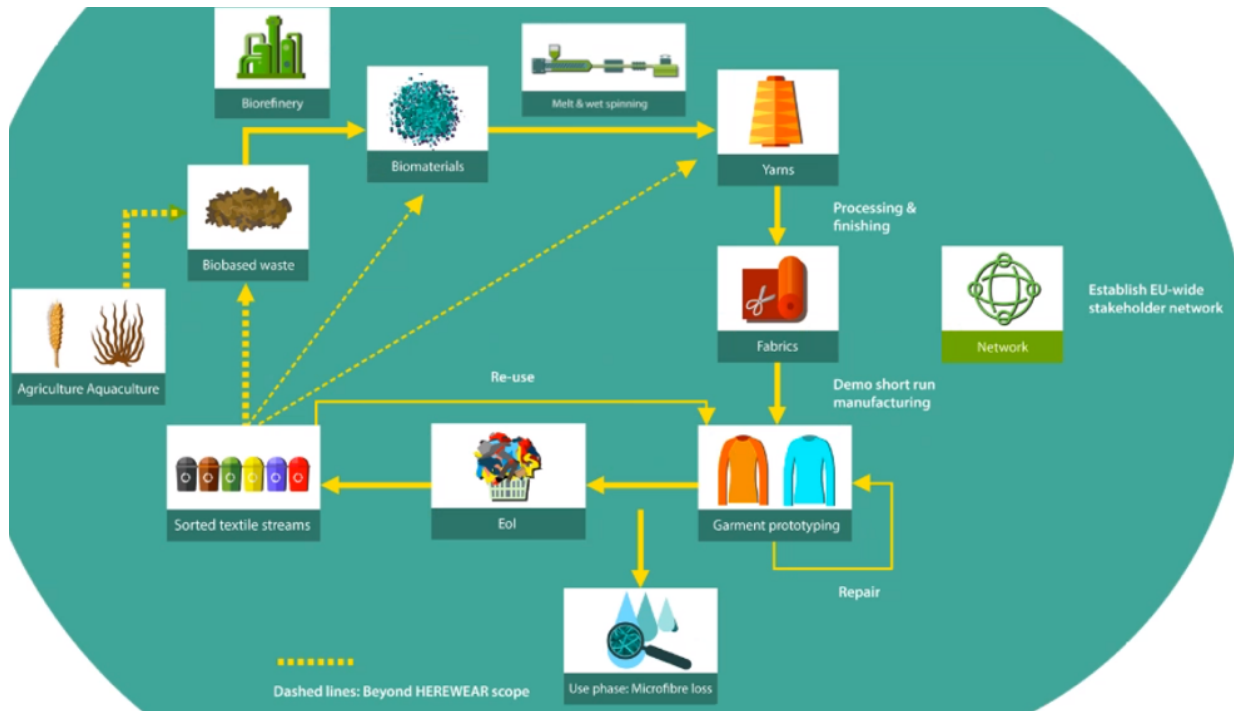


Figure 2 The supply chain diagram used in the HEREWEAR project, illustrates a biobased, circular, local system. It shows the flow of resources and actions from 'Biobased waste' right through to the end-of-life sorted textile streams. It also shows the supporting knowledge areas included in the project which sat alongside of this proposed supply chain.

The space of textile design within this type of collaboration can still be contested, with practitioners sometimes limited to the production of demonstration prototypes without full implication within the development process (Tubito et al. 2018). Yet the versatility of textile design practice as a vector for multi-disciplinary innovation is making itself known. The ability of textile designers to critically and carefully affect the context in which they operate is essential to navigating the complexities of today's polycrisis (Grew et al. 2024). In the context of a drive for green skills development (Design Council UK, 2025; Sumter et al. 2021) the combination of empathy and technicality represented by textile designers shows great promise for change. As put forward by Andersen *et al.* (2025) they show specific 'design-ability' to implement solutions for climate challenges at the core of materials and processes. The authors of this paper have engaged both together and separately in work that challenges the usual parameters of TDPR, moving beyond the conversion of innovative fibres to yarns and fabrics, and questioning the systemic impact of circular and sustainable textiles. By reflecting on a longitudinal practice research project, Earley concludes that textile designers should be 'disobedient' and even embrace activist principles (2024). When working in a large collaborative project, Forst used the opportunity of prototype development to embed surface design as an enabler for multiple lifecycles of garments (Earley & Forst 2019). In a smaller

practice project, Forst represented the constraints of current and future recycling systems in the development of textiles that champion 'next-gen' fibres (Forst et al. 2025). In all these projects the production of textiles does not only convince the audience of the potential of a new fibre, it loops back through the entire circular textile value chain to question core assumptions about processes, use habits and recovery systems, as well as the discipline itself.

3. Methods

3.1 Textile Design Practice Research Methods

Textile design practice as a research method is growing in recognition. Most noticeably in the field of sustainability, the issues and opportunities offered by the sector of fashion and textiles are attracting deeper enquiry. The work in this paper builds on previous experiments with bringing the tactile and emotional qualities of textiles to the fore, and enabling better communication processes, as well as meaningful, desirable outputs for technical innovation (Mistra Future Fashion, 2015; Tubito et al., 2018).

The HERWEAR project tasks follow the trajectory of a garment across the circular supply chain from resource to end-of-life. While textile development input was allocated to the *manufacturing* work packages, targeted to the production of demonstrator prototypes, textile design was nested in the overarching 'design' work package. This enabled a strategic role in the implementation of biobased, local and circular *principles* throughout the project. Textiles permeated all project activities, with a particular focus afforded to material literacy using the material lifecycle map (Forst et al., 2023). However, the practice of designing *finished* textiles was omitted from the design process behind the creation of clothing prototypes in the project. The production of samples was confined to *technical fibre developments* in wet and melt spinning processes.

In support of core project themes such as reflections on the *meaning of locality*, or challenges around *lifecycle extension* for innovative biobased materials, the authors developed experiments that had not initially been written into the project plan. These constitute a parallel *textile design strand* to the clothing prototype development. The role of *making as an enabler* for sense making and the creation of new knowledge, widely accepted in the craft-research community (Adamson, 2007; Harrison, 1978), was leveraged here to create new insights. The resulting artifacts acted as boundary objects, artefacts that can support dialogue between stakeholders or disciplines (Wilkes et al., 2016; Zurlo & Nunes, 2016) and were valued as support for collaboration mechanisms in the project. To understand the textile design work more thoroughly, the approach taken for the Results part of this paper builds on a method developed earlier through research (Earley & Forst, 2019), based on an annotated portfolio approach by Gaver & Bowers (2012).

3.2 Showcase Events and Exhibitions as Method

Research *impact* relies on the effective sharing of insights to challenge and change the target communities. Whilst traditionally research publishing is expected in written form, in design research the use of artefacts made for exhibitions is increasingly seen as valuable (Rust & Robertson, 2003). The creation of physical, material research outputs produce a particular kind of new understanding; with the technical and functional elements of the items being made visible to the viewers – the community. Making *ongoing* research available to broader audiences has recently been championed by the Design Museum London's Future Observatory programme, with an agenda to further practice research with emphasis on exhibiting new

visuals and artifacts as outputs (The Design Museum, 2025). In this work, showcasing opportunities were drivers both to *produce* artifacts that translate emerging research insights, as well as for discussion with *communities of validation* (experts and public). The authors honed future material developments by gathering feedback directly from *exhibition audiences*. These opportunities to exhibit included internal project meetings where technical or creative developments were laid out for the consortium members to handle and discuss, as well as formal public-facing exhibitions in trade shows or design week events. In line with the Future Observatory's approach, the presentation of work reaches beyond dissemination targets to involve audiences with the research. These communities of validation came together through talks and workshops organised at the fringe of public exhibitions, through direct involvement in the creation of exhibition pieces, or through discussion with the researchers directly next to the pieces on display.

The exhibitions that acted as catalysts for the TDPR involved in the HEREWEAR project are listed below. In **bold** below are the **three exhibition events** used in the results part of the paper. The authors have selected these three examples to draw parallels between the TDPR represented in each case and their value to the community of validation through the 3S model. Rather than a focus on a singular occurrence, this approach highlights the transversal learnings beyond site and audience specifics.

- a. **Textiles Matter, Heimtextil, Frankfurt** (9-13 January 2023)
- b. **From Waste to Experimental Couture, Romanian Creative Week, Iași** (19-27 May 2023)
- c. PLATE conference, Aalto University, Helsinki, Finland (31 May – 2 June 2023)
- d. Eureka, London Design Biennale, Somerset House, London (1-25 June 2023)
- e. Avantex, Paris, France (3-5 July 2023)
- f. Cellulosic Fibre Conference, Cologne, Germany (13-14 March 2024)
- g. Bikini, Berlin, Germany (13 June 2024)
- h. Avantex, Paris, France (1-3 July 2024)
- i. Material Matters, London Design Festival (18-21 Sept 2024)
- j. **EcoSystex conference, Milan**, Italy (15-16 October 2024)
- k. Avantex, Paris, France (15 – 17 September 2025)

The practice that shaped the research on biobased, local and circular textile innovation in the HEREWEAR project is mapped out in Figure 4, below. Whilst only a selection of pieces are detailed in this paper (framed in yellow), the full body of textile design work collectively contributed to new understandings.

Figure 4 represents the *interconnections* between the planned project prototyping activities and the unscripted TDPR. The planned activities follow three streams with three briefs (the polo shirt, the day shirt, and the material-first flexi-dress), the development moves through a phase of concept and sample experiments and concludes with three prototypes. The diagram shows how *textile design experimentation (on the right, on a darker grey background)* occurred *in parallel* to the official product prototyping work, which was scripted in the project proposal. These creative explorations then feedback conceptually *and aesthetically* to the technical material development work, led by the material-science and engineering-based partners. The outputs are labelled with the letters a-k, referring to the places of exhibition from the list above.

This paper argues for the *catalytic role of these unscripted explorations* of the project key themes through textile design practice research. Some of the conceptual parameters of the project, such as the idea of ‘local’, were found difficult to articulate in their full complexity (Gheorghica et al., 2024). With the production of samples directly addressing this theme, not only was it made tactile and visual, it was also presented to the community to inspire deeper conversation.

4 Results

For this paper, the Triple ‘S’ framework (Kaszynska & Kimbell, 2024:12) is used to examine three of the TDPR interventions from the HEREWEAR project. The conditions (Figure 1) are used as prompts to select and place visual evidence from each TDPR output. The outcomes table from Kaszynska and Kimbell (2024:13) was then extracted and adapted by Earley to create descriptors against each of the three ‘S’s, which were used to help the authors consider what their TDPR *specifically produced* in terms of new textile *designs and knowledge* within each of the three interventions.

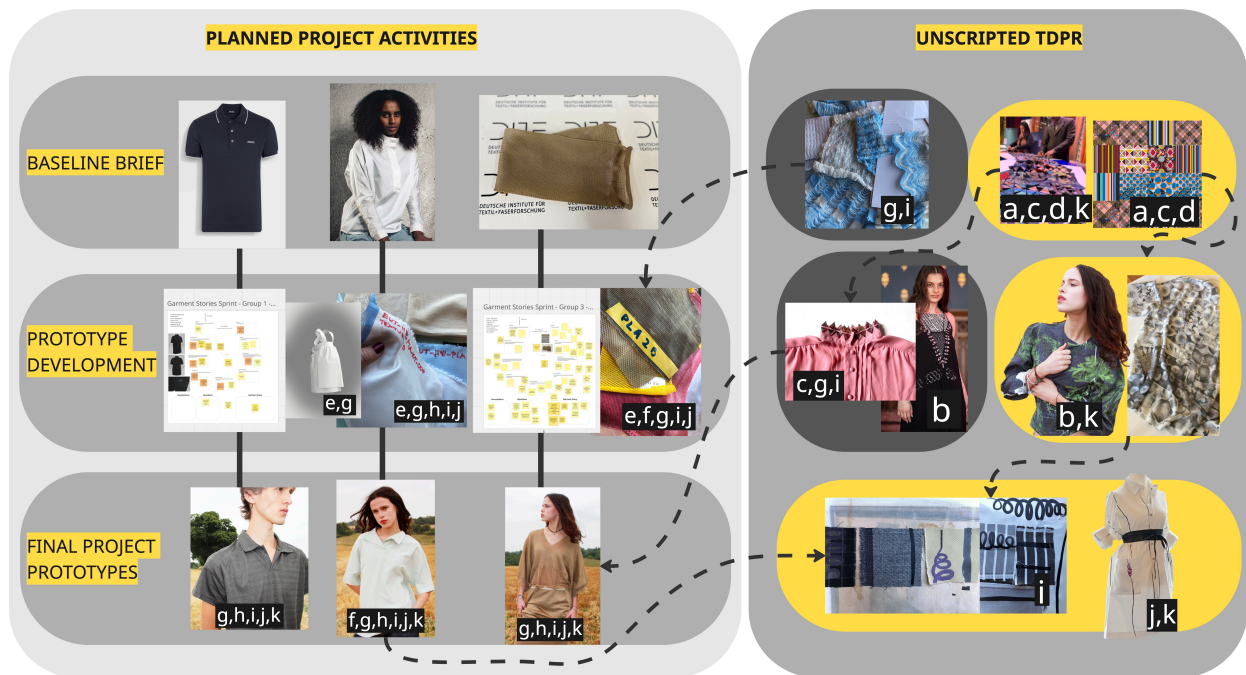


Figure 4 Visual mapping of the outputs of textile and fashion design research practice and locations exhibited which helped shape the understanding of biobased, local, and circular innovation in the HEREWEAR project.

The descriptors created were:

- **Sited.** The *real-world situation* of a community is explored using *appropriate methods*; new understanding is created in relation to a *body of knowledge and an academic community of validation*.
- **Situated.** The *practice brief* is created which uses *networked knowledge production*. This brief and the initial sampling/making stage will bring about *new methods and understandings for design-as-practice*, in relation to extant academic work.

- **Situating.** Final innovations, solutions, inventions or artefacts are created which *transforms* both contexts; the sited research is *changed through action*, and the situated research insights *add to an existing body of knowledge*.

In this section we visually present the three TDPR interventions as Exhibitions (*a*, part 4.1), (*b*, part 4.2) and (*j*, part 4.3). Figures 5-7 have been created using images arranged to align with the TS conditions that are used to define practice research. Each intervention is shown with two rows of images, to be read from left to right. The top row for the *sited and situated* images; the bottom row for the *situating*. In the presentation of these results, there are several constant factors to note. The broadest view of the *sited work* is located within the field of research into textile design strategies reducing clothing waste through lifecycle extension. This appears as the image of textile waste in the top left, labelled (i). The partners for the work, constituting part of its community of validation are represented with their logos at the top of each figure. For each project the concepts/designs and knowledge created are then represented through a collage of visuals (created in Miro²). The *situating element* is the specific TDPR brief that the authors (co)developed, through a network of knowledge production and in relation to the exhibition and intended audience. The consistent '*situating*' *transformation* that occurred is represented in the bottom row. Left and middle, in the form of the final practice works created; in the far right an image (vii) representing the biobased, circular and local *guidelines* symbolises the input the TDPR made to circular and local businesses in Europe.

4.1 Exhibition (*a*): Textiles Matter, Heimtextil, Frankfurt (2022)

Figure 5 below shows the TDPR intervention commissioned by HEREWEAR agency, for the Heimtextil show, which was delivered by the authors.

Sited. The aim of the *Make and Remake Activation Brief* (ii) was to create an interactive installation using textile waste that would engage the *Heimtextil industry visitors* in a stimulating and practical conversations on how they might tackle waste through new textile design and production approaches.

Situated. The authors negotiated the brief with Franklin Till (commissioning/curatorial agency), to ensure it contributed to the project's impact deliverables. This broader collaboration fostered new ways of designing for longer lifecycles. The Triangle of Tradition Overprints (example, iii) focused on local, historic visual imagery to create approaches that connect users to place. This used a triangulation of visual elements which connected local/traditional textile patterns through printed textile design; and a textile design for disassembly approach through laser cutting of waste textiles pieces using a textile lock system. Earley asked HEREWEAR project partners to send images of cultural heritage from their local areas. Earley then created mood boards for each location and briefed a graduate (Amelia Graham) to design prints that merged three elements to create new patterns – a Triangle of Tradition.

Situating. These Triangle of Tradition European 'local' prints were then printed onto dye sublimation papers, so that show visitors could select a place, an overprint design, and match it themselves with a fabric offcut (showroom waste fabric from Camira, a UK-based textile company). Using a small heat press, the visitors to the stand (iv) did the overprint themselves

² Miro is an online AI-powered visual workspace and collaborative whiteboard platform.

(a 20-second task). These printed pieces (v) were then contributed to Forst's MultiLocal Sampler Hanging (vi). This co-created hanging used a modular laser cut textile system, whereby the printed pieces could be inserted into a base canvas. Each visitors' piece became part of a collective roll of fabric that resounded with the colours/patterns of the local prints. The large-scale slit-and-lock technique allowed visitors to attach their piece to the canvas in a few minutes, sufficient time for the authors to collect verbal notes on the work, as they physically engaged with it.

The **transformation** occurred in multiple contexts through the design, print and make activities in which trade show visitors were challenged on their understanding of reuse and remanufacturing challenges and opportunities. The resulting insights around local and durability approaches strengthened the final project guidelines for a localised European circular economy (vii) (EU research project community).



Figure 5 Top row: (ii) HeimTextil brief; (iii) example of a 'Triangle of Tradition' design. Bottom row: (iv) the Heimtextil show stand; (v) designs printed on to waste textiles; (vi) 'MultiLocal Sampler Hanging', participatory making process.

4.2 Exhibition (b): From Waste 2 Experimental Couture, Romanian Creative Week, Iasi (2023)

Figure 6 below shows the TDPR intervention commissioned for Romanian Creative Week and delivered by the authors.



Figure 6 Top row: (ii) The curator's brief; (iii) ancient pot from the museum and examples of Cucuteni design development work using local craft references and Gen-AI. Bottom row: (iv) Image of the Romanian Creative week show in Iasi; (v) Cucuteni designs printed on to waste fashion products during the interactive public workshops at the show; (vi) the final shirt on a model.

Sited. (ii) The curatorial team behind this exhibition and the accompanying workshops at the Cultural Palace in Iași, formed the *real-world situation* for this TDPR intervention. The exhibition showcased how discarded materials could be transformed into high-value, artistic and wearable fashion pieces (*experimental couture*) (iv). The show aimed to draw professional and general public's attention to the significant problem of textile waste in the fast fashion industry and advocate for conscious consumption habits.

Situated. The *networked knowledge production* for this TDPR intervention drew on emotionally durable design (Chapman, 2005; Connor-Crabb et al., 2016) within new printed textile approaches, building on a large body of prior practice by author1. A practice-based

workshop was organised as part of the event. The workshop brief (iii) explored how cultural relevance could be designed into products by using references to important archaeological artifacts from the region (iii). The piece produced for the exhibition explored how Gen-AI³ might be used to support a more economic approach to the design process involved in creating remade clothing which is intended to appeal to a specific local user (iii). It explored the concept of bespoke garments increasing the value of clothing – emotional and economic – and whether Gen-AI could create novel print imagery that would appeal to local users.

Situating. The final garment prototypes included the Cucuteni Shirt (vi) which was an overprinted recycled polyester shirt that explored how local print patterns could be pieced together in participatory workshop scenarios with emerging fashion designers from the region (v). Additional pieces were made which further explored ideas about local connections and Gen-Ai tools. (Bittersweet Shirt was the main exhibit selected by the curators, seen in the middle of image (iv)). This work also resulted in a conference poster in which the testing of the design guidelines was further examined (Earley, 2024) (vii).

The **transformation** occurred in multiple contexts: through the exhibited work public and professional audiences were prompted to question their understanding of cultural relevance in their clothing choices; the action with the exhibition community workshop participants expanded skills towards remanufacturing and culturally relevant surface design; the published academic insights involved the conference community to translate the findings to their own local contexts; and the resulting insights around local/durability approaches strengthened the final project guidelines for a localised European circular economy (EU research project community) (vii).

4.3 Exhibition (j): EcoSystex, Milan (2024)

Figure 7 below shows the TDPR intervention for EcoSystex, which resulted from collaboration between a brand (VRETENA) and the authors.

Sited. The challenge of creating a circular print design for deadstock fabric that could become an identifiable ‘signature’ style for a micro brand, formed the *real-world situation* for this TDPR intervention. The brief was to further develop a prototype (ii) from the HEREWEAR project so it could represent the brand identity.

Situated. The *networked knowledge production* for this TDPR intervention focused on circular clothing longevity through a ‘signature’ print design, which could become part of an ongoing, ‘timeless’ offer. For this novel ‘print-first’ approach (Earley and Forst, 2025), Earley used an archive of print design research (iii) to educate and inspire the untrained designer at VRETENA (the designer at VRETENA had studied fashion, but not textile design). The guidelines for designing and making local, biobased and circular fashion textiles, being developed in HEREWEAR project, were used in this project to structure the process (Earley and Forst, 2023). Other partners from the HEREWEAR project supported the refining of this design and the production phase, to complete the networked knowledge offer.

Situating. Textile design sampling was conducted by Earley using a few small pieces of the latest HEREWEAR project fabrics, to support VRETENA in the design phase (v). This refined VRETENA’s design approach, as it not only gave them skills and techniques to create print designs, but it also highlighted likely barriers to making the final prototype. Other knowledge inputs, like the 5% limit to print coverage to be recyclable at end of life, informed and steered

³ The Gen-AI tool used to develop the Cucuteni Shirt design work was Dall-E.

the design (WRAP, 2023). The final garment prototype was produced with support from HEREWEAR project partners (vi), and the Spinning Shirdress was subsequently presented and discussed with the EU project community at the event in Milan (iv).

The **transformation** occurred in multiple contexts: through the demonstration of the application of HEREWEAR guidelines into viable products and circular print design in the context of brands and disseminated with conference communities, this reaches beyond the industry's current understanding of the limits created by print for recycling; the insights around local and durability approaches for the final guidelines strengthened the project's knowledge offer for a localised European circular economy (EU research project community and final knowledge stakeholders) (vii).



Figure 7 Top row: The original VRETENA shirts (ii). Print design inspiration from the archive of author 1 (iii). Bottom row: 'Spindle Prints' sampling and digital design development by VRETENA (v) and the final prototype produced with support by the partners (vi).

5 Discussion

Here we reflect on the observations made from the mapping of the TDPR interventions. We discuss how the work was received by the different communities of validation; what we drew from the analysis of the practice contributes to textiles theory; how the Triple 'S' supports this reflective process; and the limitations to this study.

5.1 Communities of Validation

Communities of validation played an important role in this TDPR work, confirming that it was relevant and credible. Presenting in public events drove the authors to refine their proposals in discussion with event curators. While the exhibitions that structured the development of practice also made it *vulnerable* in its presentation as a work-in-progress, the interactions with academic and industrial communities were important to gaining structured feedback on the ongoing work. But equally important, since the work involved future potentials for clothing and people, the participation of the public at the midway stages was felt to be vital for feedback. This needed new, more accessible ways, to engage.

Through the TDPR outcomes, discussions with HEREWEAR project partners – particularly small brands⁴ - became deeper. It inspired: creativity; playfulness; new questions; sustained interest; greater confidence in material explorations; and a broader sense of inclusiveness. By engaging first-hand with the print development process, VRETENA moved from viewing circular print design as an abstract concept to recognising its concrete implications in design choices and business strategy. The work pushed VRETENA to become more skilled and flexible in design, prioritising *adaptation based on available materials* and *circularity constraints*. Developing the Spinning Shirdress highlighted gaps in their *local supply chain network* when it came to printing capability and flagged the need for them to create new strategic partnerships.

5.2 Reflection on the Practice of TDPR

The role of textile designers in tackling the climate emergency is often unrecognised compared to other disciplines like fashion. The training of textile designers all too often focuses on material design *details*, at the expense of the systems they inhabit, and how these can be changed through design decisions.

Previous writing by author1 (Earley et al., 2016) describes sustainable textile designers' knowledge as 'T' shaped (and ultimately 'I' shaped). The horizontal bar of the 'T' shows general context knowledge, and the vertical is the deep technical material skills. Working towards more resilient future systems requires textile designers to become better at collaborating – and building skillsets to strengthen the horizontal part of the 'T'. It is essential that the authentic value of their contribution is articulated and understood. By using the TS framework, the value of TDPR to connect material (vertical) and systemic (horizontal) design approaches is visualised. The mapping of practices against the TS has shown the value of making together and of sharing experiences of viewing and handling materials can contribute to collaboration in large, funded projects and within their target communities.

⁴ Interview: Earley & VRETENA, 16 August 2024 (unpublished)

5.3 Beyond the Triple 'S' Framework

Earley was part of the development phase of the Triple 'S' framework, during which critical observations were made in an internal workshop⁵ about some of the limitations it presents, around the social and personal impacts that are created through TDPR. This paper has provided a further opportunity to explore the way that TDPR can be transformative to different audiences, yet the TS framework also reveals limitations to the elements which are 'ultimately inexpressible' about design research (Kaszynska & Kimbell, 2024:1). Adapting the outputs table to create *written descriptors* for each condition of the TS gave the authors prompts to draw out, articulate and structure the new understanding created through their TDPR. By mapping images around the TS structure – (labelled above as (i) – (vii) in figures 5-7) – the authors were able to understand which images from their portfolio did not align with the TS conditions. The authors thus found that *experiential insights* stemming from TDPR are not captured in the framework. For example, textile designers working in large, material science-based funded projects might use TDPR to have more agency; have more direct connection to the technical research; and form collaborations between partners. TDPR can also enable forms of *non-verbal communication*. It is here that the greatest potential may lie, as the research community begins to understand more about diversity issues in audiences as well as within the project partnerships themselves. In the context of large-scale collaboration, which is recognised as essential to achieving climate targets, it is essential to find deeper ways of connecting between stakeholders with different backgrounds, needs and agendas.

5.4 Material Limitations to the Study

As is common with material innovation projects, the quantity of materials available was very limited. This led the researchers to find other suitable available fabrics to work with. Guided by their own skills and previous practice, recovered polyester was selected for community-based interventions such as sublimation printing or laser cutting. This was effective to engage participants with lifecycle extension strategies but failed to explore the biobased angle of the project. Future work could harness technological progress with biobased materials to access them in sufficient quantities to experiment with.

6 Conclusion

In this paper the authors have examined a theoretical framework for defining practice research by mapping three examples of textile design from the unscripted actions within an interdisciplinary materials science project. The aim was to better understand the specific transformative effects of TDPR in how it contributes to current design practice research theory.

- The paper has made recommendations for the TS to include specific *writing prompts* and room for greater *diversity* through more *experiential* reflection that broadens the scope of what the TS framework currently encompasses.
- The paper locates *specific transformations* that took place through the three TDPR interventions within different communities of validation. The TDPR work itself

⁵ Earley, R. (2022) Critique of the Triple 'S'. 2 November (Social Design Institute, Central Saint Martins, UAL) PPT.

contributes to our understanding of *designing for sustainable and circular systems* more broadly.

- The paper highlights the active role of audiences brought into the work to help *shape the research* through their engagement with the textile pieces.
- In terms of the field of sustainable and circular textile design, the paper articulates the value of TDPR in *bridging the gap* between scientific innovation and practical, real-world application.

The paper has shown that there is great potential for textile design research to contribute to theories of practice research. As more new spaces open which showcase design research, these will need planning and evaluation frameworks. The authors intend that designers, educators, curators and event organisers will find the insights in this paper useful when planning future events which aim to engage broad groups of visitors with complex research findings. Funders may also consider future thematic calls that include using textile practice to increase audience engagement through tactile making experiences.

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7. References

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