

Embodied textiles for expression and wellbeing

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Abstract

To date, experiences with technical textiles have largely been focused on performance related aspects of a fabric developed for specific applications such as sports, health or safety (Shishoo 2005), and methodological problems remain with the techniques employed to measure what is a complex of effect and affect (Bartels 2005, Jordan 2000). However, there has been little in the way of empirical research into personal human experience with technical fabrics in context, with the notable exception perhaps of Entwistle who examines in depth the kinesthetic properties of particular garments, resulting in heightened awareness of the body (Entwistle & Wilson 2001) and Candy, who analyses feelings of well being and the performance of socially meaningful demeanours (Candy 2007a, Candy 2007b). We wish to extend this embodied view of textiles in order to realise the potential of smart and technical fabrics and sensory environments as tools for wellbeing, mental health and personal expression. This paper describes the work of an interdisciplinary group of practitioners and researchers investigating the development and application of textile stretch sensors on the body (Breedon et al 2008), figures 1 and 2. Understanding that such tactile products and materials may offer beneficial contexts for in-the-moment and expressive therapeutic techniques (Jones 2010, Jones & Wallis 2005), we describe the early stages of our collaborative development of an evaluation framework based on person-centred principles and outline the future work planned.

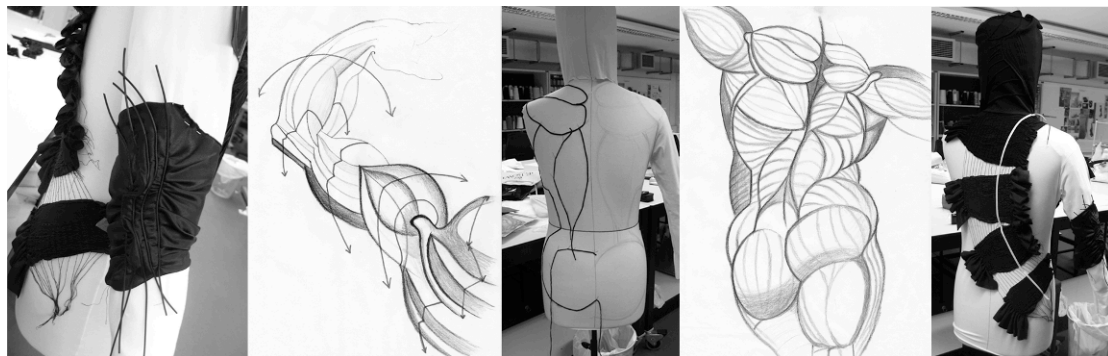


Figure 1

visual resources and samples in development

User Centred Design, textiles and tangible interaction design

Design recognizes the agency of users in appropriating products for their own purposes, and is aware of the ways in which the situated actions of users often transcend the intentions embedded in products (Suchmann 1987). User-centred approaches such as Participatory and Co-Design seek to bring products closer to user lifeworlds through addressing the unequal power relationship that can exist between the designer-as-expert and the user-as-passive-consumer (Sanders 2006, Lanier 2010). At the same time a growing emphasis on services means design is moving from user-centred to human-centred models (cf IDEO 2011, Sangiorgi 2011). In all of these models, the agency of the user or client is evident in the *process* of design. We propose that there may be a way to complement this by focusing on user meaning-making with the *products* of design. This approach means explicitly leaving space for users to define the expressive and even pragmatic functions of an object. In many cases this will challenge the central assumptions of seamlessness and fitness-for-purpose that characterize products intended to become a part of *productive* life. In contrast, in this model, the design process is not working towards a solution, but a context for exploration as part of an *expressive* life (Hallnäs & Redström 2002).

To inform the development of our ideas, we are looking at person-centred theory and practice and in particular, we are focusing on the non-directedness of Rogers' theory as a condition for therapeutic encounter as a way of designing for wellbeing (Levitt 2005). Person-centredness has not been entirely absent from UCD: Ann Light draws on Rogers practice to conduct 'explicitation interviews' with individual users in Human Computer Interaction research (HCI) (2006), while Wilde and Andersen's recent Owl Project has inverted the normative design process, creating 'design probes' to encourage 'magical thinking' (2009). As interest builds in the potential for tangible, as opposed to screen based interfaces, for designing for user experience, the goals, processes and evaluation methodologies of interaction design are also being re-examined through Craft's interest in material; for examples, the reader is directed to Wallace's work in McCarthy et al (2006), White's approaches to Interaction Design (2012), and Kettley's work in distributed computing (2011).

Textile Design offers a natural opportunity for contributing to this paradigm shift, although until recently, much development with smart fabrics and technical textiles have been focused on the performance related aspects of fabrics developed for specific applications such as sports, health or safety (Shishoo 2005). In the Textile Design literature there is research into the complex of effect and affect that textiles afford (Bartels 2005, Jordan 2000), which would benefit the development of novel interactive textile systems. In the sociology of clothing, Entwistle examines the kinesthetic properties of particular garments, and the resulting

awareness of the body (Entwistle & Wilson 2001), while Candy analyses feelings of wellbeing and the performance of socially meaningful demeanours (2007a, 2007b).

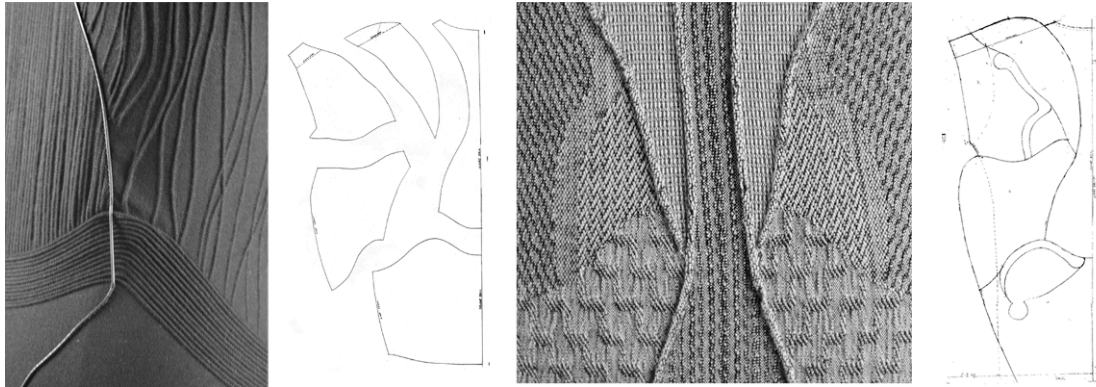


Figure 2
details of the embroidered (l) and woven (r) backs
with pattern cutting approaches to the spaces between segments

Our work with stretch sensing on the body

Over the past two years, textile designers in knit, weave and embroidery have been collaborating with an interaction designer and pattern cutter at Nottingham Trent University to investigate how methodological knowledge informs interdisciplinary practice (Glazzard & Kettley 2010, Kettley et al 2011). Deliberately working from a Craft perspective, applications and functions were left undefined while fabrics incorporating novel stretch sensing fibres were developed, allowing the textile designers to approach the new material according to their own aesthetic concerns (including weight, handle, texture and pattern for example). The common visual reference used was the musculature of the male back, selected in response to our association of the stretch sensor with ligaments in the body, figure 1. The outcomes of this work included a series of garments referred to as ‘the backs’ as shown in figure 3.

The backs have demonstrated the potential for professional craft and design practice to add value to the development of interactive systems (Kettley et al 2011), although they do not currently incorporate a full circuit and there is no output as yet. This reveals the inversion of the design process, as the normal concerns of what design is for and what it does give way to the value of materiality and the body.



Figure 3
the 'backs'

l to r: embroidered, knitted, woven garments with stretch sensors

To continue the work now means to bring it to users (dance therapists, learning disabled artists, and disabled dancers) and to use it as a starting point for further requirements generation (to use the language of interaction design). The key methodological point to stress here is that we wish to generate rather than define requirements, and to put in place a methodology that values emergent and hard to articulate benefits as well as instrumental, pre-defined goals. These concerns have come out of the first author's interest in craft as a design methodology, and find resonance in the evaluative framework developed by Jones (2010, Bayliss et al 2007, Wallis et al 2010). The next section describes Jones' work with participatory arts charity Salamanda Tandem and the changing landscape of service provision in care.

Therapeutic expressive practices – Salamanda Tandem and the changing context of care

Salamanda Tandem is a group of artists and producers, who have been working for over twenty years in the Nottinghamshire area in participatory performance arts. The remit of the organization is to develop socially engaged participation methods and sensory performance “in order to inspire and help people, from all areas of society, to harness their creativity in order to improve their quality of life and that of people around them” (East Midlands Participatory Arts Forum 2012). Led by Creative Director Isabel Jones, the group includes artists, musicians, composers, architects and academics, and is funded by Arts Council England and Nottinghamshire County Council Arts Team. Until recently, organisations like Salamanda Tandem would typically deliver workshops and services through day care provision in fixed locations. However, funding structures have been radically changed through the personal budget system, and day care centres are no longer the cornerstone of this type

of activity. Instead the disabled person and their care staff and family become responsible for choosing therapeutic interventions which may be delivered in a range of environments including the home (Dilnot Commission 2011). *Valuing People*, a policy for services to learning disabled people (Department of Health 2001) and *The National Framework for Older People* (2001) appeared to point to a philosophy of person-centredness underpinning all health care provision in the UK. However, over the last decade progress has been slow and relevant research, for example *Valuing People Now* (2009), has shown that person-centredness is not easy to achieve. More than this, although the term has come to mean different things in different care practices, and misunderstanding across disciplines is a significant issue (Freeth 2007).

A person-centred approach based on Rogers' theories (1990, Freeth 2007) requires wholesale attitudinal change in a social care and health system founded upon a deficit model of disability, and upon illness being the root of a 'problem', rather than individuals holding the source for a 'solution' (Patterson & Joseph 2007), just as the design process introduced above requires a conceptual shift from its own deficit model based on the identification of user 'needs'.

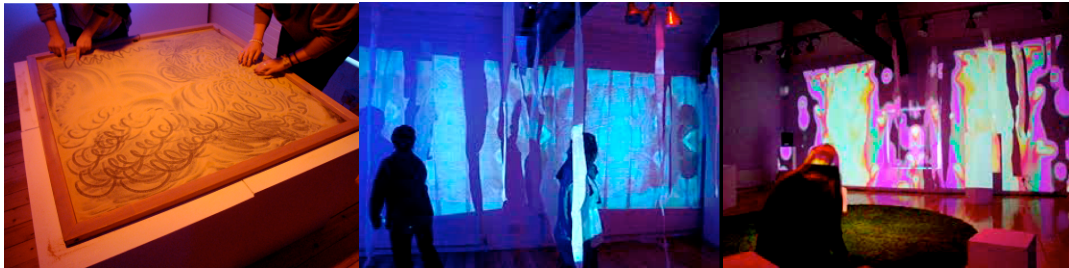


figure 4

Living Room, Rufford, January 2011

Amongst practitioners there are concerns about how some of our most vulnerable people might 'be offered a personalized care plan' (Department of Health 2008, p. 47). The non-directive emphasis of person-centred practices depends on listening and empathy, which need to be sensitively employed to help service users make informed choices in tandem with their care networks. Jones' specialism is in this kind of listening, which may also be non-verbal. As part of the work at Salamanda Tandem, a set of principles and values have been established, driving the development of facilitative methods and structures to support the practices of individual development and wellbeing (Jones 1993). One of these structures is 'moment by moment evaluation', which has been shared through the Foundation for Community Dance (Jones, 2010). Here the arts practitioner deploys a high level of reflexivity, and through establishing mutual exchange and non-verbal dialogue s/he can enable each

individual to expand their potential and become an active partner in expressive production. Such an approach to evaluation seeks to remain true to the ethics of person centredness while introducing rigour to the evaluative process (Patterson & Joseph 2007).

As an example of Salamanda Tandem's practice, *Living Room* provides a context for expression and performance co-created by profoundly disabled or vulnerable people. Here the team of artists attempts to create a flexible and sensory interface that is dynamic and sufficiently two way to deal with the multiplicity of human interaction (Hodgetts & Jones 2007), figure 4. The following section describes the coming together of the new team of movement specialist (Jones), interaction designer (Kettley) and textile designer (Downes) and the early insights these moments have provided.

Sharing practice and informing future research

The theoretical and evaluation framework is being developed through a series of framed discussions, forums and a theoretical literature review. Methods to date have included a shared *Living Room* workshop at Rufford in January 2011, the *12 Provocations* debates facilitated by Salamanda Tandem (*12 Provocations* 2010), and recorded handling sessions with the backs and textile samples at Nottingham Trent University in July 2011. In addition, Jones conducted a sensory design seminar with masters students on the Smart Design framework at Nottingham Trent University in the autumn of 2011, which Kettley recorded towards this research. While such discussion may not normally be considered a research method, we find it referred to in the person-centred literature as important to the development of learning and new knowledge (Kelly 2008 p15), and consider it similar in approach to the conversational conference as a powerful means to facilitate real interdisciplinarity (Callaos 2009).

Living Room

In January 2011, Sarah Kettley and Tina Downes contributed to one of Salamanda Tandem's invited practitioner workshops held at Rufford in Nottinghamshire. The purpose of this was in part to experience the space, its physicality and mixed media and opportunities for interaction, but more importantly, to experience first hand Jones' approach to facilitating expression – her practice. Using movement, voice and gesture, she works to include participants without dictating. The option not to take part is always given, with clear and simple actions made available – for example, sit outside the grass circle to indicate your non-participation. This personal experience of non-directivity was important for beginning to understand the potential it might have in design, and how it might be explained to others in the textile design team.

12 Provocations

In October 2010 Salamanda Tandem launched the *12 Provocations* on line (12 Provocations 2010). Each Provocation starts with one of the organisation's working principles and a text that acts as a stimulus for dialogue (Jones 1993, 2010). Joining the debate are a group of experienced practitioners and researchers from the fields of health care, education and the arts, who have been exploring the ethical values and aesthetics necessary to enable creative expression for a wide spectrum of people. Kettley attended the Provocation on authenticity on 30th March 2011; the session was organized around Boal's principles of the Theatre of the Oppressed (2002) in which two participants enact a discussion around a provocation, and others are invited to comment on the action, and respond with new directions. One of the themes to emerge was the ways in which an evaluation thought process sited within the practitioner may move quickly outwards and back through collaboration, acting rather like a feedback loop, embedding meaningful change in the design and actualization of participatory experiences. One insight to emerge from this was that authenticity may be seen in the generation of an embodied dialogue between the original idea and what is emerging – the 'warp and weft' of the old and new.

Handling session, July 2011

Isabel Jones visited the University to discuss how the textile work undertaken so far might be developed in line with the sensory environments facilitated by Salamanda Tandem. Although this had been planned as a 'handling session', it quickly became more involved, with Jones putting the garments on in turn and moving around the space in response to them. The videos captured were ad hoc (figures 6-8), but have been important in informing our discussions around embodied interaction with textiles on the body, particularly at the point where expression and wellbeing intersect.



figure 6
embodied responses to the embroidered back

Isabel's clearly articulated bodily responses to the three garments demonstrated the importance of the quality of the space between textile and body for kinaesthetic awareness

and subsequent action. One of the outcomes of the early research had been to illustrate how textile knowledge differs across processes, and how these differences become embedded in the final outcomes (Kettley et al 2011). The three backs were made to the same pattern, but different processes produce different material properties, and each garment thus has its own character – each is a distinct *actant* in the anthropological and Actor Network sense of the word (Molotch 2011 p102). Isabel described in words and movement the embodied reaction she had to these qualities; in the captured video footage it is easy to see how the embroidered piece is looser on the body and leaves gaps between the skin and the fabric, the knitted garment is very forgiving but touches the skin almost constantly, while the woven piece is very strong and fits closely to the body at all times. In response to these different presences, the human actor feels and moves differently.



figure 7
embodied responses to the knitted back

In addition to the interaction with the physical pieces, Isabel shared videos of her practice with a severely learning disabled child in a standard soft play space as provided by a day centre. In this we were able to see in action the non-verbal communication of dancer and child, as well as the one-dimensional treatment of texture in the room. This is not unusual; textiles have been under represented in this field, with vinyl being preferred for ease of manufacture and wipe clean capabilities (Gaudion 2010). However, early outcomes of research in Scandinavia (Cappelen & Andersson 2011) suggest that a wider range of formal qualities such as texture and flexibility may be beneficial for what Caldwell has termed *intensive interaction*, the close mirroring of client action or sound which brings the actor, carer or therapist into the child's world, as in Isabel's practice and theory (Caldwell 2008, Jones 2010 pp70-73)



figure 8
embodied responses to the woven back

Towards a collaborative framework

These responses to the physicality of the stretch garments and the qualities of the fabrics were a promising start, but several questions remain: who will be wearing the garments? How can they become part of expressive and therapeutic practices? How can such fabrics become part of a sensory environment such as *Living Room*, and what is the relationship with the body then? In addition, Isabel is exceptional in her ability to articulate what for most people would remain implicit responses to formal environments. How can this work contribute to the development of a framework for evaluation when the majority of users' responses will be non-verbal? Many learning disabled people are exceptional in their ability to be in-the-moment, but more standard evaluation procedures rely on prediction, in setting criteria, and post-evaluation. Dominant cultures of evaluation in health and wellbeing, and in craft and design, are often based on the object that results from the activity: craft in its modernist guise is concerned with quality and craftsmanship; design likes to closely define a problem and a user group with a shared demographic or lifestyle in order to fit a product to its purpose; the National Health Service finds Cognitive Behaviour Therapy (CBT) useful because of its approach to diagnosis and its finite timescales and demonstrable outcomes (although whether it is effective in the long term is questionable, and it is certainly not a fix-all solution (Durham et al 2005)). But as the Provocations and others have shown (12 Provocations 2010, Hollingsworth 2011), this type of practice, in which the client is as much the artist as the facilitator, there is a blurring of the art form, making predefined criteria difficult to pin down, and ownership is radically redistributed, challenging modernist ideals of the individual artist as the genesis of a work. Further, psychotherapy and CBT are concerned with different scales of 'improvement' in a client, relying on the interpretation of 'an expert', and clear changes in client behaviour respectively. We find the processual focus of person-centred theory and practice more suited to our emphasis on the quality of in-the-moment experience of the client, and to our concerns for equality of power in the relationship between all performers (Walshaw 2008). Here we discuss briefly four themes which are emerging from and informing the

framework of our collaborative practice, these being: *the relational artform*, *security in performance*, *modalities of communication*, and *reflection*. Further themes are expected to emerge, and need to be examined, in future work.

A relational framework in understanding the artform

Steve Hollingsworth refers to a framework of relational aesthetics in his sensory environments for Artlink (2011). This allows him to conceptualise the work as 'art' at the same time as shifting focus from the object to the facilitation of relationships. While the objects within the space, and the space itself, are key to what happens and what is experienced, they are not where value lies in this process. Rather, the aim is to provide the necessary scaffold for a shift in perception. As in Salamanda Tandem's practice, the artist becomes a catalyst, supporting others' creation of their own narratives and identities.

Security in performance: providing the context and reading the signs

In providing a regular Tuesday group of "strange sounds and other worlds", Hollingsworth is careful to offer both routine (in the repeated weekly format) and change, in the media of the sensory space, which may often be determined by chance and low budgets (2011). Routine and repetition at different scales is useful in both providing security and acting as an expression empathy: "In a world of scrambled sensory information *when he used a repetitive behavior he knew what he was doing.*" (Caldwell, in McIntosh & Whittacker 2000, p21). However, sometimes it is not movement but stillness which can indicate or give peace; in Isabel's accounts of themed practice in a school (in this case the theme was the second world war), it was the listening to and reciprocity towards body language that allowed one disturbed child to find his place. According to Kelly (2008 p18), talking and not talking during therapy sessions is equally important, and the cues should be taken from the (child) client.

Modality of communication, supporting bodily interaction beyond sight alone

We are in danger of becoming "lazy lookers" in the way that we perceive the world, and that in the West in particular we have become over accustomed and over reliant on sight as the dominant sense (Hollingsworth 2011). This is supported by other artists working in hybrid practices involving robotics and artificial intelligence, who question what perception is. Anna Dumitriu takes the famous provocation, '*What is it like to be a bat?*' (Nagel 1974) and asks scientists '*What is it like to be a robot?*' In challenging creators of autonomous systems to experience the world through the standard 'senses' they build into their machines, she asks them to rethink consciousness. In her own exploratory performances, she removes and restricts her own senses, binding her limbs, masking her eyes and anesthetizing areas of her skin. In this way she becomes highly conscious of her own moment-to-moment assessment of the space around her.

We believe that textiles may offer a new palette of sensory focal points beyond the inclusion of textiles in a long list of ‘crafty’ materials a practitioner may take along with them (eg Walshaw 2008). One classic sensory approach we may look to in therapy is sandplay (Woodhouse 2008), although this is not covered in great depth in the person-centred literature (it has instead been historically informed by Jungian practices, e.g. Soble 2011). Although she does not use the term evaluation, Woodhouse talks of the need to ‘listen with the whole of herself’, using all her senses and intuition to work effectively for and with the client (2008, p31). This description of empathic moment-to-moment evaluation echoes the framework developed by Jones (2010).

Reflection

The cornerstone of Jones’ evaluative practice is that of reflexivity. Often thought of as learning from a previous experience in order to take learning forward into new projects, Jones is careful to show how reflection happens in three phases: *before* an activity, drawing on all previous experience; *during* an activity in moment-by-moment evaluation; and in summative evaluation *after* the event. Her model of evaluation takes into account the various stakeholders in the process, including the practitioner and client of course, but also the network of carers, staff, peers and external bodies (2010 pp59-73), figure 9.

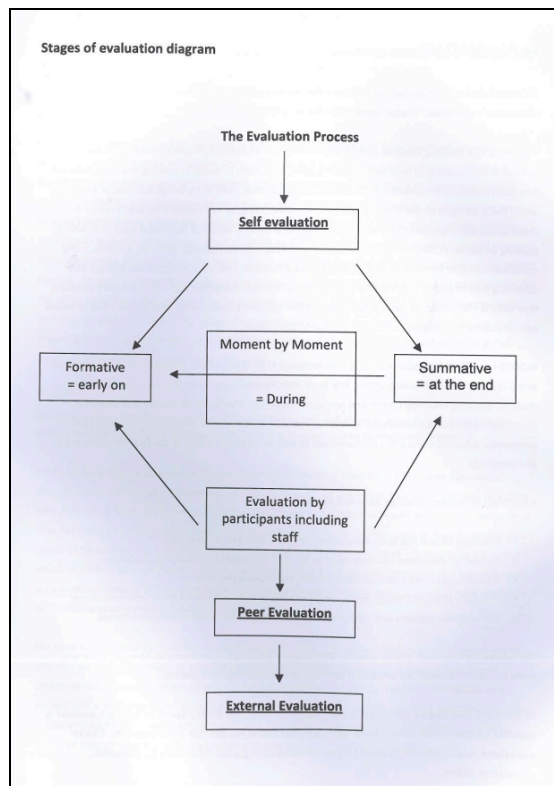


figure 9
Jones’ stages of evaluation

In our evaluations we want to avoid reifying gestural meaning or processes (whether ours or participants'). We are so used to meaning apparently belonging to the past, being dependent on it and defined by our received ideas of styles of movement and disciplinary expression that we find ourselves challenged by our participants to rediscover real meaning as it is, in Peter Brooks' words, "checked in each man's own present experience" (1968, p15). Perhaps the ultimate test of our sensory environments will instead be evidence of a "true unspectacular intimacy" that emerges from quiet, security and confidence (Brooks 1968, p22).

Conclusion and future work

Through our discussions we have begun to build a common language and have been able to recognize shared concerns despite working in different creative disciplines. The theoretical framework for evaluating textiles and wearables for therapeutic interventions will continue to develop throughout 2011 and 2012, including through new instantiations of *Living Room*, sensory dance performances, and sensory space exhibitions. We are developing research questions based on the framework and will look at how participants work with or experience the textile objects and environments: for example, do they become communicated with or through, and what makes the difference? We wish to further our understanding of how such textured objects may be both 'designed' and 'open', acting as scaffolds for expression. Lastly, we are interested to know how such open objects might then be used by care professionals to build training in empathic and intensive interaction techniques, increasing skills in recognizing, sharing and developing individuals' sensory language. It is patent that many, even simple, objects, are useful to the skilled and empathic practitioner (Jones 2007), and that the key ingredient of the therapeutic encounter is not so much the 'toys' but what the facilitator or counselor brings to the interaction (Kelly 2008, p14). Further, we expect to be able to continue to discuss this non-directive way of working in interaction design as part of the interdisciplinary nature of the project.

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