

The Future of Heuristic Fossils

DOWNS Simon T.^{a*} and LERPINIÈRE Claire A.^b

^a Loughborough University

^b DeMontfort University

* s.t.downs@lboro.ac.uk

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The authors propose that while many fields of design are involved in reflexive interactions with design research tools, others are strongly heuristic in both their application of historic knowledge bases and in the ways in which they allow themselves to move forward, to construct new knowledge as an extension of craft thinking with user-centred evidence. These historical frames become a limiting factor in both the ways that practice can develop but also, more worryingly, in the ways in which these fields can develop their own research tools.

Keywords: Graphics, Textiles, Research, Philosophy

1 Introduction

The subject of design methods / design thinking has become well established, through decades of careful debate and painstaking testing, a state of affairs that is welcome. However, these methods are more strongly located in certain design disciplines. For example, Krippendorff's 2003 book *The Semantic Turn* contains a mass of information about industrial design thought and about half a page that directly engages with 2D graphic design (p. 208). As such, design research is extensively focused on slow development, product-outcome design, particularly product and furniture, architecture and the built environment. Famously, Cross (2011), Norman (2008) and Lawson (2005) have developed methods and models through which to situate and formalize the design process within academic writing. This enables protocols and approaches to be tested by designers across disciplines, and to record the outcomes and abilities of different models so as to be sympathetically adapted for different design scenarios.

Unfortunately, this desirable state of epistemological rigor leaves large areas of the design family uncovered. Tacit areas of 'crafts' practice, which have historically required iterations which aren't typically reflected in a design thinking flow chart, don't readily fit within this large-scale and heavy industrial model of Discover > Define > Develop > Deliver. For example, the Design Council's Double Diamond as a schematized description of the whole design process may be regarded as self-evident



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in many fields, while being read as a very partial description of the actuality in others. The authors propose that this may well be read as a function of heuristics in the field.

Yilmaz and Daly note some of the following characteristics as defining design's relationship with heuristics:

Heuristics are described as 'mental shortcuts' that capture cognitive strategies that may lead to solutions... (Nisbett & Ross, 1980), and are ubiquitous in human reasoning (Goldstein et al., 2001). Heuristics capture important features of problem situations and solutions that tend to reoccur in experiences (Clancey, 1985).

...Riel (1996) has described the heuristic approach as 'specific experience-based guidelines' that help developers make good decisions.... Lawson (2005) concludes, 'An examination of protocols obtained from such closely observed design sessions reveal that most designers adopt strategies which are heuristic in nature. Heuristic strategies do not so much rely upon theoretical first principles as on experience and rules of thumb' (p. 132). When generating new concepts, designers appear at times to offer intuitive responses derived from 'large pools of experience' (Cross, 2011) to make a 'best guess' at a new design (Yilmaz & Daly, 2016).

Katsikopoulos also notes:

Psychological heuristics are models for making inferences that (1) rely heavily on core human capacities (such as recognition, recall, or imitation), (2) do not necessarily use all available information and process the information they use by simple computations (such as lexicographic rules or aspiration levels), and (3) are easy to understand, apply, and explain. (Katsikopoulos, 2010)

This is particularly true in those design domains where (see Fig. 1):

- The process of design requires historic and tacit experiential knowledge, encapsulated as heuristics (Katsikopoulos' 'simple computations')
- The final outcome is to achieve completion through the physical manipulation of materials, or in disciplines where an outcome of the design process is one part of a larger, fast-moving and ill-defined problem
- There is a very short time to production (and is especially problematic in design domains where both features are present).

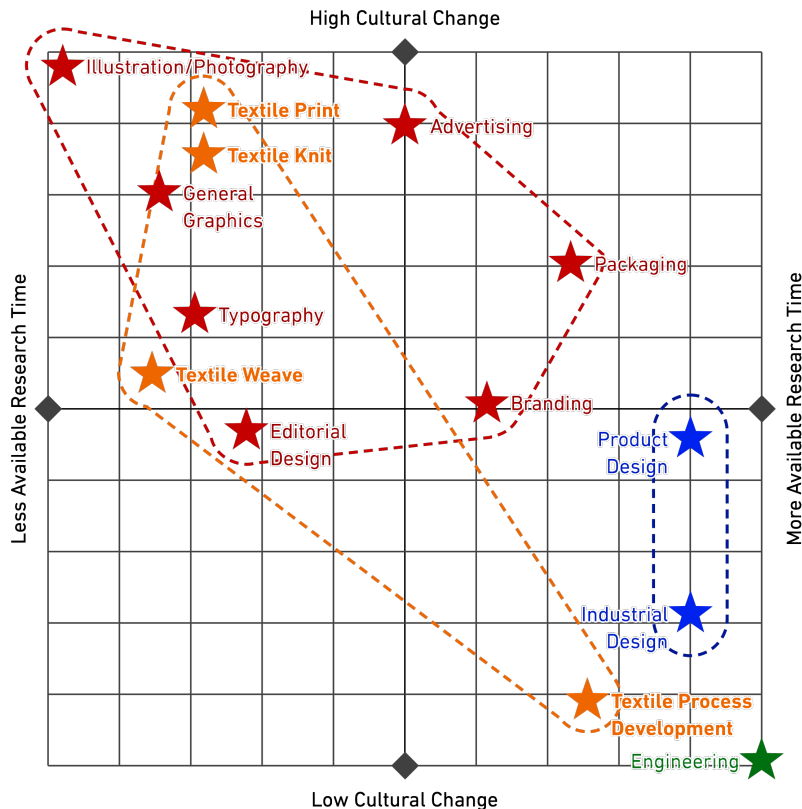


Figure 1. Time vs. Change across design disciplines

The two fields of Graphic Communication and Textile Design are representative of this class of disciplines, typically being enacted through bridging parts of a larger design process, in between one state of design problematics and another. For example, a completed textile design will typically be developed or extended via another, final stage, into a garment, vehicular or interior product. In this sense, the designer can be anonymous and tacit, not only on their design output, but on the processes which they employ, prior to the final stage of the design of a 'thing' or 'product'. Similarly, graphic design will frequently occur as process of mediation between the client and an outcome, such as for rendering for print media, web or mass production print. These fields of design which 'service' other fields rely heavily on tacit forms of knowledge; this process of mediation demands specific design thinking approaches that fit existing cultural and industrial frames.

In such circumstances, many otherwise excellent design research models have deep limitations for fields like communication design. As Yee describes:

It is often difficult for practising interaction designers to engage with real end-users because of the competing economic pressures on projects (Yee, 2007).

This situation leads to an exclusion from 'design thinking' fields in their application to design fields without a physically manifested and completed industrial or crafts 'product', as has been identified in the literature (Kane and Philpott, 2016; Igoe 2010, Hemmings, 2010, 2012a, 2012b, 2015; Harper, 2012a, 2012b). In particular, textile design research is typically characterized as 'underdeveloped' as an academic discipline, due to its focus on manufacturing, technique, and technical innovation, rather than development as an academic discipline (Hemmings, 2010, 2012a, 2012b, 2015; Harper, 2012a, 2012b).

2 Poorly Defined

In the face of a well described industrial design problem, for example the design of a pair of scissors for the elderly with low grip strength, the researcher has the time (the task has urgency for the user, but not for the industry servicing the user) to research and test in ways that will generate optimal solutions before the project is finished. In a pluralistic problem space, like communication design and textile design, the 'truth' of a problem is open to interpretation, and that interpretation is dependent not only on the context and time in which a 'truth' is formed, but the shifting cultural, social and geographic dynamics which are downwardly causal on the problem. As Foucault noted, even the framing the problem is socially defined:

... it is not a change of content (refutation of old errors, recovery of old truths). It is a question of what governs statements, and the way in which they govern each other so as to constitute a set of propositions which are scientifically acceptable, and hence capable of being verified or falsified by scientific procedures (Foucault, 1980).

And while Foucault is talking about the relationship of power (as a factor of a society) shaping viable methods in the sciences, the same can be observed in power (as a factor of a society) shaping viable methods in design. Ihde also discusses this effect, as instrumentality, or the problem of how an instrument is involved in creating knowledge within experience, in this case, technology and design (Ihde, 1979, 2005, 2008). Goldman discusses this constructivist effect in the epistemological creation of 'knowledge' in culture (Goldman, 1999). The very 'semantic turn', that Krippendorff encouraged, in which the meaning and affect a designed artefact engender is key to consider as a factor for design research and practice (Krippendorff, 2003) becomes less of a factor and more of the whole point at issue in fields like graphics and textile design.

This leaves a pair of confounding issues at play for researchers in communication and textile design: time and cultural context. Together these bedevil the application of existing design theory or thinking methods or paradigms in these fields. In communication design fields the combination of technical context and cultural change means that the field possesses a profile typified by low available time for research (compared with industrial design disciplines) and a high rate of change in the problem set's main variable (user culture). In textile design the time for formal research may be there, but the nature of the economy of the field means that it is rarely cost-effective to engage in long research processes (many sets of textile designs must be produced for a given selling point, all on spec, none with a guarantee of sales), against the needs of a fiercely dynamic market culture (fashion, lifestyle and trend).

3 Flexible, adaptive and contextually utilitarian

The authors of this paper have previously proposed that this uncertainty requires the formation of methods which are not intended to stand as universally valid design research principles, but which are flexible, adaptive and contextually utilitarian (Downs, 2009). Contextually utilitarian is given as a measure of fitness with the working lives of the designer practitioner. The advantages that these fields have in engendering innovation are in their very speed and mercurial flexibility, to embrace and develop the new, as new technologies emerge. The need to identify and develop relevant applications of design thinking research which could be embedded in these subjects, informed by and informed through practice, is imperative.

To borrow a term from linguistics, we don't need access to the universal structures of language, just access to the pragmatic utterances of our users.

The pragmatist or instrumentalist theory tries to bring truth down to earth by linking it to the results of action. An important feature of true beliefs is that they usually lead to desirable outcomes.... Instrumentalism elevates this feature into a definition, saying that a proposition is true just in case it would prove useful to those who believe it (Goldman, 2003).

Goldman characterises this 'down to earth' truth as W-Knowledge (Goldman, 2003), Mansell and Silverstone characterise its application in social and political communication as 'Middle Range Theories' with specific connections to heuristics of practice (Mansell and Silverstone, 1996), while Simon applies the idea to design as 'Satisficing' (Simon, 1972).

This is not to say that there are no methods available to the fields in question; auto-ethnography, photo/video elicitation, culture probes, drawing experiences, brainstorming (and many, many, more variants on the same theme); it is just that even when the method is intentionally resource light and moderately quick to deploy (e.g. Yee's *Explorer Cards*; Yee, 2007) the demands of the method put it out of consideration for many design tasks.

To use a textile metaphor, the theoretical structure of a design method can act as the warp, or basis for a cloth, with the weft, or interlinking yarn, being selected on a case-by-case basis, adapted and changed as necessary. Design methods which investigate a design approach within a specific context will not stand as overarching truths and certainties, but which can be selected and adapted for each case as it arises, are tested within this specific context.

Unfortunately, both domains hold onto identities that are sustained by traditional craft heuristics accumulating the status of statements of faith.

4 Becoming fossil disciplines

Historically, both textiles and communication design practice have focused on the development of innovative technical outcomes. Both forms of design are common and exist across cultures, and both are heavily based on the substitution of heuristically refined hand processes, developed across centuries and passed down master-worker to apprentice, in place of formal research processes. Traditionally, graphic layouts were produced on drawing tables using hand-drawing, hand-cutting and hand-setting processes, which depended on learned physical ability applied as finesse. A failure of craft physicality would halt a production process, no matter how intelligent the intentions of the designer were. A textile designer lacking the ability to interpret imagery or structure across a range of technical processes was impaired from the first design.

These circumstances created a self-reinforcing feedback loop in the field which, without positive research inputs, lock current designers and design researchers in these fields into historically informed iteration. Creating patterns of practice which are consequently self-limiting of responsiveness to external change, resistant to testing, and developments of the vast majority of design methods research tools. Tools often possess characteristics which are demonstrable (and desirable) in the academic domain: while making no sense at all in the field.

Crafts fossilise when viable models of practice that address the condition of satisfying in one technical or cultural frame, become a heuristically enforced fossil when the technical or cultural frames change. Content creation tools like Adobe Photoshop, AIA or InDesign are built around existing domain relevant concepts derived from historic processes that have become lived heuristics in the field. The icons, and digital effect, of the Dodge and Burn tools in Photoshop are both indexical to and referencing wet darkroom techniques that have similar functionality but different process. The typography of InDesign references strips of lead (leading) and kern pairs (a digital analogue of the physical overhangs on lead type – kerns – used in setting adjacent letters) is a deliberate digital recreation of an analogue practice letterpress process (Zapf, 1993). At this point the practice ceases to be 'crafty' and becomes a craft, which is to say a set of non-negotiable terms that define the boundaries of the practice. The truths of the historic craft are engineered into the code. Innovation is possible, but only within the frame allowed by the heuristics.

In the second half of the paper research findings from one such research method, of academic origin, that was designed from the ground up to be a resource light tool that is accessible to textile designers (as opposed to textile researchers), but which shows potential in many small to medium communication design projects is discussed.

5 Time for research

As the authors have argued in previous papers (Downs, 2016. Lerpiniere, 2013) design methods needs to do two things:

1. incorporate the knowledge that our domains are culturally framed aggregations of industrial practice, historic heuristics and socio-cultural inputs
2. develop methods that are flexible enough to address floating cultural values which are downwardly casual on both the practitioners and the cultures they inhabit
3. through methods that are nimble enough to catch the fleeting changes in these values.

Which leads to the conclusion that design fields need both a philosophic frame that acknowledges the limits inherent in working from historical evidence, and the necessity for nimble research methods to inject knowledge and rigour into the heuristic applications of craft – and rapidly.

The comparative timescales of different design fields limit or on occasion remove entirely the possibility of conventional design research (see Table 1). An editorial illustrator is likely to be working to a 3 to 5 day deadline, with initial ideation typically being done on the day of commissioning, and with research being consequently abbreviated. Even a short-duration elicitation study, for example Yee's *Explorer Cards* (2007), carried with a limited set of participants is going delay the job to an unacceptable degree.

Table 1: Comparative Timings for Design Stages

Domain	Research	Development	Refinement	Modelling	Testing/Revision	Production	Deployment	User Testing
Industrial (sample)*- After Core77	1 to 1.5 months	2 months	2 weeks	1 month	2 weeks	1 month	Ongoing	Ongoing/ Iterative
Graphic (independent)-	0 to 12 hours	6 days	2 days	-	-	1.5 weeks	One time	3 hours
Graphic (agency)	3 hours	1 day to 2 weeks	2 days	-	-	2 weeks	One time	None
Editorial Illustration -	3 to 6 hours	1 day	1 day	-	-	1 day	One time	One time
Branding - A nominal middle-sized job	5 weeks	1 month	4 weeks	-	1 month	2 weeks	-	-
Advertising -	2 months	1 month	2 weeks	2 weeks	1 month	2 weeks	One time	Ongoing / Iterative
Textile (print freelance)	1-3 hours	2 hours to 2 weeks	1 hour – 1 day	-	1 hour – 3 days	1 hour – 10 days	One time	Ongoing / Iterative
Textile (print studio)	1-3 hours	2 hours to 2 weeks	1 hour – 1 day	-	1 hour – 3 days	1 hour – 10 days	One time	Ongoing / Iterative
Textile (woven freelance)	1-3 hours	2 hours to 2 weeks	1 hour – 1 day	-	1 hour – 3 days	1 hour – 10 days	One time	Ongoing / Iterative
Textile (woven studio)	1-3 hours	2 hours to 2 weeks	1 hour – 1 day	-	1 hour – 3 days	1 hour – 10 days	One time	Ongoing / Iterative

While an ideal design process should incorporate research, the scale of existing design research methodologies themselves deny their own utility in these circumstances. Consequently, the practitioners in these fields are forced to fall back on heuristics, histories and myths of craft. New design research methods should be constructed for addressing these missions because, while craft heuristics serve as an excellent guide to process, they offer us very little guidance to the effective application of the process. Future tools need the following characteristics:

1. Light resource requirements. Research tells us that clients (even large design clients) are reluctant to add significant costs to their existing processes.

2. Actionable over short timescales. The tools must scale to the available time. Industry cannot brook additional delay in their schedules.
3. Requiring brief analysis periods, even at the cost of more universal truths.

Many existing research methods possess one or two of these characteristics. Few possess all three.

6 Truth (or close enough for jazz)

In most practical ways the named fields don't require the level of rigour that design research methods tools bring to bear. Such tools are simply overkill. For example, a month-long research program for a five-day long editorial illustration job is unviable. The nature of the illustration field is one where high levels of cultural change erode the value of initial research in subsequent design jobs. The dominant variables in the success of the illustration will be the fitness of its address to the brief, and its comprehensibility to the users. Both conditions are external to the illustrator, both are variables that change rapidly. A research conclusion from one iteration of a design cycle is likely to be sub-optimal in the next. An effect noted by Rittel in his work on wicked problems in design:

Every solution to a wicked problem is a "one-shot operation"; because there is no opportunity to learn by trial and error, every attempt counts significantly.

(Rittel & Webber, 1973)

The timescale of a product design process is long enough to allow for iterations supported by research between jobs. This duration is appropriate for a task where an error is likely to delay or derail a project. A rebranding of a company, as described in Yee (2006), is the kind of once-a-decade communication design task where existing methodologies are fruitful. The timescales here are generous and the existing tools here are plentiful and useful.

The ephemeral nature of a graphic design 'spread' or a fashion print design is such that a minor flaw in otherwise useful research have low levels of consequences in practice. There is still a clear need for tools, but insufficient available time for a full deployment of existing tools. The authors are suggesting the creation of intentionally time or resource limited tools that give 'good enough' results within the three parameters above: we are looking at satisficing research tools.

This dichotomy of approaches was pointed at in Frayling's 1993 paper Research in Art and Design, where he notes the division between:

'Research with a little r - meaning 'the act of searching, closely or carefully, for or after a specified thing or person' (Frayling, 1993) and,

Research with a big R - often used in partnership with the word 'development' - means, according to the OED, 'work directed towards the innovation, introduction, and improvement of products and processes'. And nearly all the listed usages, from 1900 onwards, are from the worlds of chemistry, architecture, physics, heavy industry, and the social sciences. Research as professional practice, which earns it the big R. (ibid)

The above definition is a good one for the last 50 years of design methods research. He goes on to suggest that large design research might usefully be characterised as "Research through art and design..." (ibid.) and that

...Research for art and design, research with a small 'r' in the dictionary.... Research where the end product is an artefact - where the thinking is, so to speak, embodied in the artefact, where the goal is not primarily communicable knowledge in the sense of verbal communication, but in the sense of visual or iconic or imagistic communication. (ibid)

Which is a useful description of the kind of phenomenological or experiential relationship, not only between a textile design, their users and the artefact, but also between many communication designers on small scale projects and their audiences.

At this point it is useful to return to Rittel and Webber's wicked problem theory as a guide to the kind of fluid problems that communication and textile design face.

Both fields should be characterised as end points of complex layers of problems that are defined as being addressed through pre-determined technical means. The application is craft, but the problem is addressing a social need. A line of furnishing fabrics will be produced by the means the client has pre-determined, with the problem being answered through a complex mash of cultural and production variables being framed as style and trend. A fashion photo-spread in a magazine will respond to exactly the same variables (fashion and trend), while being pre-defined as fit for print publication. Each of the problems is, in Rittel's terms, a one-shot operation, with no room for error (e.g. technically fit), and symptomatic of deeper problems:

- *Every wicked problem is essentially unique.*
- *Every wicked problem can be considered to be a symptom of another problem.*
- *The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution (Rittel and Webber, 1973).*

A correct response to the problem that characterises the user's need is an emergent function of a complex adaptive system (Downs, 2016).

In such circumstances a research tool only has to satisfy a 'w-knowledge' definition of truth. One where knowing the correct variables, within limited values of correct, for the current state of fashion is required; not past, not far future, and not universal; is the requirement for satisficing the job in hand.

Complex Adaptive Systems (CAS) are sets of systems where the inputs, processes and outputs are so complex that they produce non-linear outcomes. The weather on the West Coast of Ireland is one such effect. The Gulf Stream, the North Atlantic Conveyor, carbon emissions, geology, human factors and more all combine to make yesterday's weather a fact that has little to contribute to the prediction of the state of tomorrow's.

These systems are acknowledged as fundamental in considering many parts of biology, economics, physics and some parts of the social sciences. As noted in a previous paper by Downs (2016), CAS connect on a fundamental level with wicked problem theory; through users, social and physical environments; creating a wicked mess of feedback loops that create affective problems with no intention behind them. We can see this in the upward march of the U.K. house price at a time when real wages are falling. No one set out to create this particular economic environment, but many parties are unintentionally contributing to the situation.

These effects are characterised in system's theory as Emergence. Emergent effects are: Radically novel – showing new features not present in the system, Coherent – wholes in the emergence maintain themselves over some time, Global or Macro – there is a property of wholeness, Dynamic – the emergence evolves, Ostensive – it can be perceived, and lastly Supervenience – it is downwardly causal on the elements of the parent system (Goldstein, 1999)

In such an environment there is no utility in or expectation of the research tools or the product of these tools as having long-term validity, only that they should meet the terms of W-Knowledge / Satisficing / Middle Range theory correctness.

Which in turn highlights the absolute necessity for reflexive and responsive research methods that define application beyond the designer's brief. A method analogous to Kane and Phillpot's 'textile thinking' (2016) or Igoe's (2010) 'textile concepts'.

7 The IPA method as applied in the field

As discussed, overarching theories of design thinking can be too generic to address all design practices, in all fields. Design thinking investigates and articulates the processes of design as problem solving applications. Design knowledge requires skills which enable the conceptualisation of artefacts for use within particular social environments, by designers as interpreters of concept and materials. As Chon notes,

The epistemological dimension of this knowledge shifts from tacit to explicit forms, moving and transforming thought into action, to question what designers know and how they come about knowing (Chon, 2015).

As noted, design problem solving in fields which rely on the taking of thought (concept) into action (crafted outcome), can depend on the adaptive tools which account for the experiential and tacit knowledge of the researcher to emerge.

The fields of textile design and graphic communication frequently operate over very short time spans, and within the time frame of a larger, longer design and production process, such as the production of printed or online media or development of a fabric into a garment or medical application. In this way, due to the 'hidden' or 'embedded' nature of these parts of the design process, the 'design thinking' in these fields is tacit, and often embodied in nature, dealing with complex layers of practice, including material knowledge, understanding how materials adapt and perform, and the subtleties of embodied ways of being and knowing (Kane & Philpott (2016), Nimkulrat (2012), Igoe (2010), Author 2). Prior research studies by the Author (Author 2) demonstrates that phenomenological research methods are grounded in the understanding that the individual is the expert on their own experience, and that this tacit experience requires drawing out.

It is proposed that phenomenological research methods can draw out such tacit expertise in other fields, and have potential to do the same for these 'linked' forms of design. An indicative example of an academic design method demonstrating specific benefits for a design practice (for textiles but communication design practice), is Interpretive Phenomenological Analysis (IPA). (Author 2)

An applied research method developed from the field, IPA is positioned here as a framework with the potential for developing an original take on the method, in order to develop a research approach drawing on the strength and potential of IPA research, whilst accounting for the specific requirements of the field of textile design research. IPA research focuses on areas of practice-based research, particularly in nursing, education and psychology, but is increasingly being used as a tool within design research to uncover tacit experience, through the analysis of first-hand interviews and identification of key themes integral to a user's experience mediated through textiles (Sadkowska, Wilde, & Fisher, 2015; Author 2, 2013) It maintains links with and is informed by the central three lines of enquiry of phenomenological philosophy: ontological, existential and methodological (Macann, 1993).

Interpretive phenomenological analysis is an idiographic research method, whereby each case is a piece of a wider puzzle, indicating wider concepts or themes which emerge through the investigation of a particular experience (Smith, Larkin, & Flowers, 2009). Tacit experience is an area which IPA is particularly adept at uncovering, so adopting this analytical approach has the potential to unlock this implicit knowledge.

IPA has been developed by psychologists to explore the hidden, and perhaps unconscious, nature of an individual's experience. In this way, it is tested for its potential for examining an embodied user experience of the design process. The method has the specific benefits of low material inputs (it is

semi-structured interview based), no requirement for specific facilities (it can be done in a user's home or working environment), and with a low number of participants to get viable results (as a qualitative method it works on sample sizes of 5-10 participants). It has the disadvantage of requiring a significant input of time to carry out the interpretation, in order to enter the 'lifeworld' of the individual. While this renders the tool unsuitable for many communication design tasks (e.g. editorial illustration), the overall timescale combined with the lightness of required inputs makes it a viable tool for a freelance textile designer doing a post-facto review of a collection of designs.

A brief summary of the recommended process for conducting a study using IPA, and based on a semi-structured interview, is below.

8 Interviews

The interview stages of the study are in the form of semi-structured interviews, using the same question set as part of the SOP. The questions (in this case) are derived from Ashworth's Fractions of the Lifeworld (2003a, 2003b), and the interviewee is asked to supply a focus for elicitation, which the questions then prompt a response about. In this case, a textile was the prompt.



Figure 2 Subject's mother's signature tablecloth – as a prompt for an elicitation

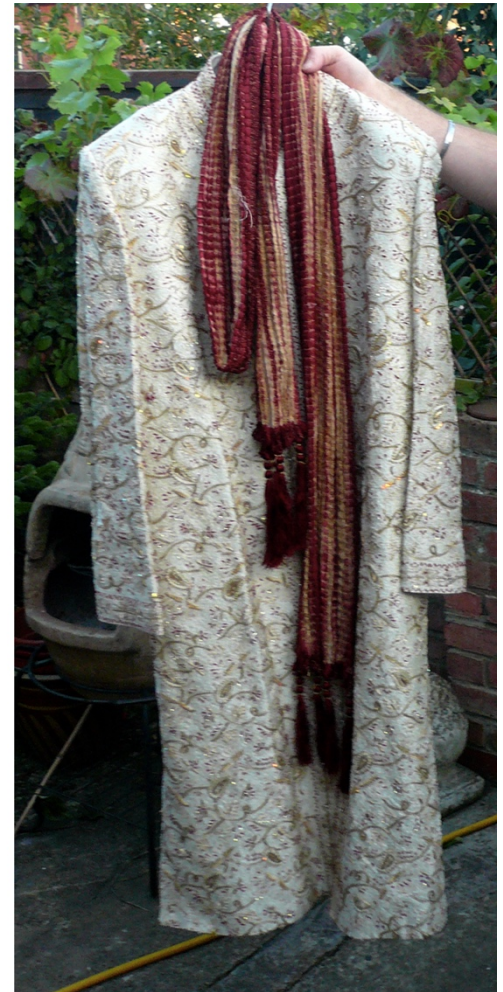


Figure 3 Two subjects' Punjabi wedding costumes as elicitation prompts

9 Transcription and reading

The intention is that the researcher and allows the authentic voice of the interviewee to emerge. The first step in this process is to recursively listen to the interview recording, for familiarity, before a completing a full transcription of the entire interview. Upon completion, the transcribed interview is once again read through several times, for familiarity.

10 Initial noting

The transcription is produced as a table, to create space for recording 'exploratory comments', which comment on the textual data as it arises. The table for the initial noting is detailed below. This 'initial noting' is to produce comments which explore and question the experience the interviewee is communicating, as the first step towards analysis. The focus is on noting the multi-faceted aspects of the lived experience of the interviewee, particularly their social contexts and other aspects of their lifeworld as expressed through their interview (Smith et al., 2009).

Table 2: Transcript Analysis

Emergent Themes	Original Transcript	Exploratory comments
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11 Developing Emergent Themes

In essence, the IPA approach searches for emergent patterns and themes that constitute an experience, particularly those which the individual may not be conscious of, which can be explored through analysis. For example, an IPA study will ask questions around,

What is the person trying to achieve here? Is anything meaningful being said here, which was not intended? Do I have a sense of something going on here that the person himself or herself is perhaps less aware of?' (Pietkiewicz & Smith, 2014)

Themes are identified and explored within each individual interview, before comparing different interviews to see where themes converge and diverge across the body of research (Smith et al. 2009). From this basis, the researcher makes a further exploration of the emergent themes and develops links to the local cultural context, in order to situate this lived experience in wider theory and understandings. Such concepts may include metaphors and narratives, which can be considered as a means to bring depth and clarity to the themes (Langdrige, 2007, 2008).

	Parminder	Paul	Norma	Judith	Eve
Archiving: being an archivist through valuing and caring for the personal textile archive					
Acquisition of artefacts	x	x	x	x	x
Location of artefact	x		x	x	x
Frequency of viewing	x	x	x	x	x
Preservation	x			x	x
Material condition		x	x	x	x
Monetary value	x	x	x	x	x
Dynamic archive	x	x	x	x	x
Photographs	x		x	x	x
Sentiment			x	x	x
Embodiment: how experiential and emotional domains relate to the personal textile archive					
Physical interaction	x	x	x	x	x
Emotions	x	x		x	x
Transformation		x			
Design and craft: the role of craft skills and design in relation to the personal textile archive					
Colour	x	x			
Design elements	x	x	x	x	x
Craft skills			x	x	x

Table 3: Material domains: how the individual's textiles relate to themes of embodiment, archiving, and design and craft

12 Chronological list of themes / Super-ordinate themes

The next stage is to produce a chronological list of the themes within the transcript (Smith & Osborn 2007, Smith et al., 2009). This list of themes is developed further into super-ordinate themes, either manually (cutting and pasting onto paper and moving around) or via software.

Table 4 Social Domains: how the individual's textiles represent a sense of identity, culture, family and friendships

	Parminder	Paul	Norma	Judith	Eve
Social domains: how a sense of identity, culture, family and friendships are represented by the symbolic personal textile archival domain					
Friendships	x	x	x		x
Husbands and wives	x	x	x	x	x
Family	x	x	x	x	x
Culture	x	x			
Playing a role	x	x			
Identity	x	x	x	x	x
Temporality: how time, eras and events are represented by the symbolic personal textile archive					
Time	x	x	x	x	x
Era	x	x	x	x	x
Location: how real and imagined locations are symbolised by the personal textile archive					
Real places	x	x	x	x	x
Imagined places	x	x			

13 Master table of themes from the group

In IPA studies, narratives to describe an experience are produced from the themes at the end of the process of: transcription, commentary, theme compilation and super-ordinate theme completion. A master table of themes from the entire group of interviews aggregates the themes from each individual interview (Hefferon & Gil-Rodriguez, 2011; Smith et al., 2009; Smith and Osborn, 2007).

As a research tool it bridges the personal, to the local, to an actionable narrative that can feed a design practice. This tool presents no global results, but it defines a meaningful local narrative, where each iteration is subtly different. 1

As a designer, the author found that while one aspect of the meaning could be contained within a short part of the interview, the theme continues to be developed further later on in the text. (Author 2, 2013) In this way, narrative elements, such as fragments of a longer experience, are drawn out and put together, to form more complete stories for interpretation, from each individual case.

Drawing out such accounts requires careful questioning which references all the domains in which a design is created for being experienced. For textiles, this would include the visual elements, including colour, pattern and design, and the haptic, including touch, drape, softness, weight and handle.

While similar research could be investigated through a broader quantitative survey, to broader global levels of epistemological viability, this method allows for small data sets to work to the shorter schedules imposed by real-world design time-scales – for the specific set of problems local to freelance textile designers, while giving pertinent data. In this case IPA presents a suitable tool for a specific task.

14 Conclusion

The tension between an academic desire for best-of-class tools for producing global knowledge, and the communication and textile practitioner's need for tools to access the user's world defines a real need. This paper lays out an argument for the needs of a field specific position in design methods that works for these designer, moving beyond the fossil heuristics of these domains.

The example offered by IPA offers a possible address, and one that is only suitable for certain ranges of project timescales but not others, but it represents a class of nimble tools that move the debate on. Others have previously noted the need for an initial research process that defines problem space, in design fields existing outside of the *Industrial* domain (e.g. Van Der Waarde, 2014). The authors contest that the existing industrial design tools are not suited to address the issues of fields where the semantic 'truth' of a design is not just the 'plus part' applied to an existing product (Dwiggins, 1941), but a core factor in its functionality. Equipped with this knowledge these fields can move their practice beyond fossil hunting and do meaningful design research.

15 References

- Ashworth, P. (2003a) The Phenomenology of the Lifeworld and Social Psychology. *Social Psychological Review*, 4(1), 18-34.
- Ashworth, P. (2003b) An Approach of Phenomenological Psychology: The Contingencies of the Lifeworld, *Journal of Phenomenological Psychology*, 34(2). 145-154.
- Chon, H. (2015). Exploring research space in fashion: the fluidity of knowledge between designers, individuals and society. P. Rodgers and J. Yee (Eds.) *The Routledge Companion to Design Research*. Oxon, Oxfordshire: Routledge.
- Cross, N. (2011) *Design Thinking: Understanding How Designers Think and Work*. Oxford: Berg.
- The Design Process: What is the Double Diamond?* (n.d.). Retrieved November 14, 2017, from <http://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond>
- Downs, S. (2009) The Truth? Working towards an epistemology of Visual Communications Design., *IASDR 2009 Conference Proceedings*. (pp. 3339-3350). Osaka, JP: International Association of Societies for Design Research.
- Downs, S. (2016) Downs, S. T. (2016). I know this one, but the answer is complex...., *DRS 2016 Conference Proceedings* (<http://www.drs2016.org/239>). London, UK: Design Research Society.
- Dwiggins, W. A. (1941). A technique for dealing with artists. M. Bierut, J. Helfand, et. al. (Eds.) *Looking Closer Three*. New York. Allworth Press.
- Foucault, M. (1980). *Power/knowledge. a selected interviews and other writings 1972-77*. New York: Pantheon Books.
- Frayling, C. (1993). *Research in art and design*.
- Goldstein, J. (1999). Emergence as a construct: History and issues. *Emergence*, 1(1), 49-72.
- Goldman, A. I. (2003). *Knowledge in a social world*. Oxford: Clarendon Press.
- Harper, C. (2012a) Introduction: Patch One. C. Harper, (Ed.) *Textiles: Critical and Primary Sources: Volume 1 History / Curation*. London: Berg, pp.xiii-xxvi.
- Harper, C. (2012b) Introduction: Patch Four. C. Harper, (Ed.) *Textiles: Critical and Primary Sources: Volume 4 Identity*. London: Berg, pp.ix-xxiii.
- Hefferon, K. and Gil-Rodriguez, E. (2011) Methods: Interpretative Phenomenological Analysis. *The Psychologist*. 24 (10), 756-759.
- Hemmings, J. (2010) Material Meaning. *Wasafiri*. 25 (3), 38-46.
- Hemmings, J. (2012a) Introduction. J. Hemmings,. (Ed.) *The Textile Reader*, London: Berg.
- Hemmings, J. (2012b) Part Introduction: Touch. J. Hemmings, (Ed.) *The Textile Reader*, London: Berg.
- Hemmings, J. (2015) Introduction. J. Hemmings, (Ed.) *Cultural Threads: Transnational Textiles Today*, London: Bloomsbury.

- Igoe, E. (2010) The Tacit-turn. *Duck Journal for Research in Textiles and Textile Design*. 1 (1). Retrieved from: <http://www.lboro.ac.uk/microsites/sota/duck/volume1.htm>
- Ihde, D. (1979) *Technics and Praxis*. Dordrecht, Holland: Springer Netherlands. DOI 10.1007/978-94-009-9900-8
- Ihde, D. (2005) More Material Hermeneutics. *Yearbook of the institute for advanced studies on science, technology and society*. Munich/Vienna: Profil Verlag, 341-350.
- Ihde, D. (2008). *Ironic technics*. Copenhagen: Automatic Press/VIP
- Kane, F and Philpott, R (2016). Textile Thinking: a Flexible, Connective Strategy for Concept Generation and Problem Solving in Inter-disciplinary Contexts. *Craft Work as Problem Solving - Ethnographic Studies of Design and Making*, T. Marchand (Ed.) Farnham, Surrey: Ashgate.
- Langdridge D. (2007) *Phenomenological Psychology: theory, research and method*. Harlow: Prentice Hall.
- Lerpiniere, C. (2013). One Wedding, Two Cultures, Four Outfits: The Phenomenological Exploration of Fashion and Textiles. *Journal of Textile Design Research and Practice*, 1(1), (pp. 27-41). London, UK: Taylor and Francis.
- Katsikopoulos, K. V. (2011). Psychological heuristics for making inferences: Definition, performance, and the emerging theory and practice. *Decision Analysis*, 8(1), 10-29.
- Krippendorff, K. (2006). *The semantic turn: a new foundation for design*. Boca Raton: CRC/Taylor & Francis.
- Langdridge, D. (2008) Phenomenology and Critical Social Psychology: Directions and Debates in Theory and Research. *Social and Personality Psychology Compass*. 2(3).
- Lawson, B. (2005) *How Designers Think: The Design Process Demystified* (4th ed.). London: Routledge.
- Macann, C. (1993) *Four Phenomenological Philosophers: Husserl, Heidegger, Sartre, Merleau-Ponty*. London: Routledge.
- Mansell, R., & Silverstone, R. (2001). *Communication by design: the politics of information and communication technologies*. Oxford: Oxford Univ. Press.
- Nimkulrat, N. (2012) Hand-on Intellect: Integrating Craft Practice into Design Research. *International Journal of Design*, 6(3) 14pp.
- Norman, D. (2008) *The Design of Everyday Things*. London: MIT Press.
- Rittel. H., & Webber. M., (1973) Dilemmas in a General Theory of Planning. *Policy Sciences*, 4(2), 155-169.
- Sadkowska, A., Wilde D., & Fisher, T. (2015) Third Age Men's Experience of Fashion and Clothing: An Interpretative Phenomenological Analysis. *Age, Culture, Humanities: An Interdisciplinary Journal*. 1(2), 35-70.
- Simon, H. A. (1972). Theories of bounded rationality. *Decision and organization*, 1(1), 161-176.
- Smith, J. and Osborn, M. (2008) Interpretative Phenomenological Analysis. J. Smith, (Ed.) *Qualitative Psychology: A Practical Guide to Research Methods*. London: Sage.
- Smith, J.; Flowers, P. & Larkin, M. (2009) *Interpretative Phenomenological Analysis: Theory, Method and Research*. London: Sage.
- van der Waarde, K., (2014) Graphic design: focus on nine professional reflections. *Proceedings of DRS 2014: Design's Big Debates*, 1, 401-410.
- Yee, J. (2007). "Are you a Delia or a Chantelle?" Engaging Stakeholders in Branding Exercises. *3rd DeSForM Conference*. Retrieved November 3, 2017, from https://www.academia.edu/284606/Are_You_a_Delia_or_a_Chantelle_Engaging_Stakeholders_In_Branding_Exercises.
- Yilmaz, S., Daly, S. R., Seifert, C. M., & Gonzalez, R. (2016). Evidence-based design heuristics for idea generation. *Design Studies*, 46, 95-124.
- Zapf, H. (1993). About micro-typography and the hz -program. *ELECTRONIC PUBLISHING*, 6(3), 283-288. Retrieved November 2, 2017, from <https://pdfs.semanticscholar.org/3afd/309f8313b70a7e5734c38c4d00d48co855c3.pdf>

About the Authors

Simon Downs teaches Graphic Communications and is an author, practitioner and researcher into communications design. He wrote *The Graphic Communication Handbook* and researches in systems models of communication design.

Claire Lerpiniere teaches Textile Design and did her Ph.D in design research methods. She teaches printed textile design and pioneered the application of Interpretative Phenomenological Analysis as a design research tool.