

Gut Feeling in Small Design Consultancies

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Abstract

A participatory study of product design teams in six design consultancies in the North West of the UK is described. Prior research indicates that designers and new product developers often attribute the term 'Gut Feeling' (GF) to decision-making that is perceived as difficult to articulate and typically outside acknowledged causal models. From the use of participant-observation to elicit detailed hindsight narratives, the notion of GF appears to be systemic within the early stages of the design development process. GF use represented the synthesis of causal and effective knowledge. Its value impacted new product design and development.

Keywords

Gut Feeling, design consultancy, intuition, risk, innovation

Introduction

'Gut Feeling' (GF) is a familiar, social term. It has specifically been used by designers and new product developers when describing difficult to justify decisions and risks which do not readily conform to causal models of innovation and New Product Development (NPD) (Sadler-Smith and Shefy 2004; Jerrard et al 2008, 2009).

GF closely is linked to, and frequently conflated with, 'intuition' (Dane and Pratt 2007) and based on instinctive feelings, as opposed to demonstrable facts (Hayashi 2001). The term has a long history in the organisational sciences, but scholars have failed to agree on what constitutes GF, how it differs from intuition, if at all, and the precise nature of its role and value in innovation and the associated risks (Dane and Pratt 2007: 33).

Sadler-Smith and Shefy (2004) suggest that although consideration of intuition is widespread in psychology literature (Mayer 1999; Goddard 2009; Bowers, et al 1990, Shapiro and Spence 1997), and occasionally in design literature (Tovey 1997), the most important questions with respect to GF have yet to be answered; how can it be recognized and should it be trusted? Can it also contribute meaningfully to detailed design development in consultancies?

Background

Recent research by Behrens et al (2014) suggests that small company innovation differs significantly from the innovation of larger enterprises; in particular because it represents a blend of entrepreneurial (or 'effectual') and managerial (or 'causal') logics (Behrens et al 2014: 633).

As such, smaller companies, we suggest, may be less likely to implement the same formalized (causal) decision-making processes associated with larger, perpetually-innovating companies, and may thus be more likely to make decisions intuitively, that is, without apparent detailed management-based 'logical' knowledge.

However, and perhaps paradoxically, the risks associated with product innovation may be increased for small companies who are less able to sustain many failures (Kaufmann and Tödting 2002). Since intuitive processes are more often perceived as an aspect of effectual rather than causal decision-making (Koen, et al 2002) GF is sometimes considered more inherently risky (Jerrard et al. 2008).

Design

Small design consultancies are often characterized through effectual decisions in their flexibility and ability to make decisions quickly, capitalizing on strong relationships with customers and manufacturers via efficient and informal communication patterns. This enables them to respond rapidly to technical and market changes, producing fresh new products for niche markets.

Previous studies suggest that the appropriate management of desired and undesired risk is crucial for these consultancies (Jerrard et al. 2013). Formalized risk assessment may be viewed as an important way to safeguard decision-making and may help to prevent unnecessary misjudgements. However, risk-avoidance strategies are felt by some to limit the potential for innovation (Jerrard et al. 2009). After all, isn't there an aspect of many types of product

design and development, which is delightfully risky and intentionally unpredictable? Don't design teams embrace risk and look for uncertainty?

Individual judgments by designers and others within small firm product innovation, involves other people (Zirger and Maidique 1990; Dorst and Cross 2001) and many, largely hidden sources of inspiration (Gonçalves et al 2014). This may include designers who appear intuitive, by focusing on the 'common human knowledge' of consumers (McDonagh and Hekkert 2004, Jordan 2002). Small design consultancies appear less likely to engage in formal models of NPD, even though they constantly plan and develop completely new products around their designers' experience.

Management

Classical approaches to managing NPD emphasize a primarily causal model of large company product innovation (e.g., Wheelwright and Clark 1992; Cooper and Kleinschmidt 1986). Causation assumes that means are selected to attain goals, involving systematic progression through a series of predetermined stages, which may include setting objectives, planning activities, investment in resources and the eventual fulfilment of aims (Behrens et al. 2014). Behrens et al's event sequence research suggests that small company NPD involves a combination of both logics, predominantly exhibiting effectuation in the early stages of product development, before transitioning to a more causal approach as a project evolves.

In causal models, projects are understood to move between discrete, linear phases of development towards completion, such as Cooper and Kleinschmidt's

(1986) model of 'preliminary assessment, definition, development, validation and commercialisation'.

Effectuation theory proposes that, in addition to causal processes, a second, effectual logic is employed by skilled innovators. This assumes that goals are created (by designers?) based upon available means; effectual decision-making is research-driven, step-wise and open-ended (Sarasvathy 2007).

Andersen (2000) suggests that intuition, as a style of decision-making appears to represent the nature of the organisation that encourages it. Harvey and Novicevic (2002) assess the value of examining managers on both creative and intuitional intelligence contributing to the burgeoning of interest in design thinking as a transferrable business innovation tool.

The Scope and Intention of this Research

In exploring the perceived role and value of GF, this study considers the implications of small design consultancies' teamwork. Prompted hindsight narratives of NPD/design teams were elicited and analysed for evidence of entrepreneurial (effectual) and/or managerial (causal) decision-making processes through the use of specific terminology. These narratives were contrasted with the same participants' perceptions about the role of GF. In doing so, the contributions of this research are as follows. Firstly, it responds to calls for further investigation into small companies' NPD processes, in particular with reference to the substantive tensions between effectuation and causation logics (Sarasvathy 2007). Secondly, it considers the social usage of the term GF to build on recent conclusions from Behrens et al (2014) that small company' product

innovation is guided by a careful balance of entrepreneurial and design thinking. At the outset, four broad research questions were developed, based on: A) managerial tensions in NPD, B) designers taking risks, C) the role and D) future of GF, and are revisited in full, in Section 5.

Methodology

A purposive sample was developed, comprising 6 design consultancies, their owner-managers, individual designers and NPD teams, in order to provide rich narratives through shared characteristics (Cope 2011) with appropriate qualitative methods (Gioia et al. 2013) utilizing a specific approach typified by Julier and Moor (2009). Table 1 shows the company selection criteria within the UK 'Creative Industry' classifications which include design, currently in use (DCMS 2016). The consultancies selected were all deliberately identified as 'serial innovating small firms' (Hicks and Hegde 2005) and regionally representative (Sunley et al 2010) of the diversity of design consultancies currently working within the NW of the UK, employing less than 50 people to develop new 'products' in the form of designs for manufacture or application in specific locations; consumer, architectural, ceramic and interior product design. The use of the term NPD brings the study alongside the immense literature and experience of innovation research in large manufacturing companies. The development of a detailed case study file for each company indicated their experience, product ranges, employee background and the composition of their product development teams as represented in Table 1.

Insert Table 1 in here

To examine perceptions surrounding the role and value of GF in small companies, a qualitative, participant-observation approach was adopted, eliciting and analysing retrospective product innovation narratives from individual perspectives of 'those potentially important but sometimes faint signals that fuel imagination, creativity and innovation' (Sadler-Smith and Shefy 2004: 78). Participants, who were both designers and non-designers, comprised new product design teams.

The study aimed to establish an accurate understanding and description of the complexity of decision-making in product innovation without the confinement of indicative statistical measure of 'success'. By using a phenomenological approach, participant-observation emphasized interdisciplinary understanding and empathy through awareness of four elements: 1) time; the recording of the temporal aspects of the research; 2) physical environment as perceived by those being observed; 3) contrasting experiences and experiences as relative to the setting; and 4) social openings or barriers, transition from stranger to member to insider (Bruyn 1966). Participatory methods rely on sequential reflection and action within practical researching towards accurate contextual observation, rather than explanation, of behaviours.

Participants were regularly interviewed over a 6-month period about current and recent product innovation cycles, and asked about their understanding of the term GF, whilst avoiding offering prescribed definitions of the term. In addition to semi-formal interviews and questionnaires, the research also

involved regular observation at the studios and workshops of participating companies. Decision-making and intuition may be described confidently in hindsight, providing reinforcement for historical decisions (Claxton 1998: 217-222), but this tendency is likely to differ, depending upon an individual and organisational attitude towards the value of GF. Simultaneously, conflation of 'the intuitive' and 'the innate' implies that it may not be straightforwardly possible to articulate the way that product developers make decisions. Donald Schön identifies a difficulty in using conventional qualitative research methods in the study of design: 'competent practitioners usually know more than they can say. They exhibit a kind of knowing-in-practice, most of which is tacit' (Schön 1983, p. viii - ix). This combination of hindsight narrative elicitation and 'real-time' observation by the researcher, therefore counters bias in event recollection or what Cross has referred to as 'the willingness or ability to articulate what are, after all, complex cognitive activities' (Cross 2011: 16).

Within each company critical details of the start, evolution journey, lifespan and geography of selected critical intuitive decisions were traced, generating a considerable quantity of rich, text-based narratives.

Narrative Building

In line with the overall four research questions, participants were asked to reflect regularly on their personal judgments in the development of new products. The sequence of engagement with each company involved:

- Initial detailed briefing seminar and planning within the company

- Identifying tracks or themes from individuals in early stage product design and development
- At least four participant interviews within each company over 4 months
- Daily participant communication
- Attendance at critical meetings and their audio recording
- Weekly structured communication with the company

Analysis

Semi-structured interviews and recorded narratives were thematically reviewed through un-prioritized analytical keys, including structures, attributed meaning and instinctive overlay. Responses were then analyzed for evidence of design/innovation (effectual) and/or managerial (causal) decision-making processes within common contextual themes (Table 2).

Insert Table 2 here

These narratives were then contrasted with the same participants' perceptions of the role of GF. In doing so, a clearer picture of decision-making emerged.

Results

Narratives were analysed in two sequential phases. In the first phase, product developers' (designers and managers) hindsight narratives of product

innovation cycles are presented below with reference to whether they exhibit a primarily causal logic of decision-making, an effectual logic of decision-making, or a combination of both. In the second phase, participants' perspectives of the role and value of GF are presented, providing clarifications of the social usage of the term. What follows is representative of significant amounts of recording from all companies.

Phase 1, Logics of decision-making

Participants were asked to narrate the process of a range of recent and current new product design/development cycles and responses were analysed for qualitative evidence of causal and effectual logics and contexts. In line with the results and methods of previous studies (Behrens et al. 2014, Julier and Moor (2009), of the six companies surveyed, only one, a consumer product design company, reported implementation of a formalized NPD process:

‘We try to start off with a project proposal or brief which encompasses what the objectives are that we're trying to achieve and what those objectives might be - who it's for, how much it should cost, how many we should be able to produce, where it's got to go, when?’ (Company 4)

However, in the remaining five companies who did not implement a formal, causal model of decision making, most emphasized the importance of applying a rigorous analytical process to ensure appropriate outcomes, reflecting the importance of causal logic during NPD:

‘Key to me to being a very good designer is considering every aspect and not leaving it to chance’ – (Product developer, Company 1)

At the same time, incidences of effectual logic were very commonly reported, particularly amongst product developers (rather than those with a purely managerial role) and those working in traditionally 'creative' sectors such as interiors or ceramics design. These included a belief in a process-led approach, during which the product developer is highly responsive to the requirements of the specific materials and brief, and sensitized to the potential decision-making cues contained within each successive stage:

'[The process] kind of guides itself... it's almost like the product is saying where I'm going next, because it's like, it doesn't work so I have to do this, I need to do this.' (Product developer and manager, Company 3)

For some, the ability to tune into this mode of decision-making was described as a pleasurable experience: 'you have little fireworks go off in your mind when you make a link between things' (Product developer and manager, Company 2). For others, the ability to achieve occasional distance from a formalized process helped to solve problems that were not reconciled through reference to a causal model alone 'sometimes you have to take that time to digest it, whether it's just thinking outside the office...it does just come to you' (Product developer and manager, Company 5). However, not all interviewees found reliance on effectual logics of decision making straightforwardly positive, some complaining that an increasingly restricted time allowance for research and development forces them into rapid decisions before all (causal) options had been considered:

'We aren't allowed exploration in a way we used to be allowed it... Yes, you'll get to a great conclusion but you may look back at that and think

the product could have been any number of options we could have explored, but the time didn't allow us to do that' (Company 2)

This was perceived to unfairly advantage more experienced designers who were able to employ effectual logic more reliably, due to their increased familiarity with product innovation conventions, but might resort to formulaic ways of solving design and innovation problems. Others viewed the use of effectual logic as a sector-specific pressure, in product innovation cycles that left little room for failure:

'[Interior design] is probably the only industry where you're building the prototype of your design and finish it... You don't get Ford coming up with a concept for a car, making one and then moving on to something else, but that's what we do all the time' (Company 1)

Company 4, who exhibited greater adherence to a causal approach to NPD expressed some discomfort with an effectual logic of decision-making:

'You should try not to have a set picture of how something will look before you've started researching in order to avoid rigid loyalty to a singular (potentially inferior) solution.' (Company 4)

However, they also resisted the notion that formal models of NPD did not allow for creative progressions: 'if you just keep doing things the same way, you stagnate, you never progress anywhere' (Product developer and manager, Company 4).

Perhaps for these reasons, in most product innovation cycles, a combination of causal and effectual logics were witnessed and described. In some cases this was

perceived to follow a conventional model of effectuation early in the process, which later transitioned to a more causal approach in order to test and refine products before completion:

'I think we do the GF bit first. We each have our own ideas and possibly argue a bit about it, then we research to see if it's possible... I suppose there is an argument though, because your GF is based on your twenty years of experience in the industry.' (Product developer and manager, Company 2)

'I think you might have that instinct at the beginning - that GF - but there's a proving process.' (Company 6)

In most, however, the location of causal and effectual logics within the NPD cycle were less easily separated, employed in varied ways throughout the innovation process:

'You decide whether things are relevant or not relevant - you eliminate designs, you bin things, you pull things out of the rubbish bin, you play with them a bit longer...' (Company 6)

'[The beginning stage] draws on your skills and history base and the person you are...then collaboration confirms or consolidates what will and won't work. Along with that is the research and the testing, so it's kind of like a fluid process between all those points.' (Product developer and manager, Company 2)

Most product developers described product innovation as a continual questioning of the brief, which was understood to be both a formal and informal process:

‘There are a million different decisions that you might contemplate in a split second, trying to determine what is the best solution.’ (Product developer and manager, Company 2)

‘I think consultants who just take what the client says and don't interrogate it - they're not great consultants really...because part of what we do is question things. We're always learning.’ (Product developer and manager, Company 6)

For this reason, decision-making was felt to be highly dependent upon an individual's experience and ability to self-evaluate previous successes and failures:

‘A lot of it is trial and error...the more you do it, the more you understand what different materials will do’ (Product developer and manager, Company 2)

‘The more experience you've had...the more rapidly you get to the end result, because you pull into play all these background influences and all the experience you've had’ (Product developer and manager, Company 6)

As such, even in firms that reported routine usage of effectual logics, product developers perceived the ability to do so successfully as an aspect of a wider, causal process of personal development.

Phase 2: Perceptions of GF

Participants were asked about their perceptions of GF; what the term meant to them and their thoughts about its role within their specific company environment. The majority of participants had a relatively definitive initial response to GF, suggesting that it is readily comprehended by most, and in regular verbal use by many. GF was often aligned with unconscious, innate thought processes:

‘It's just whatever comes to you, whatever you decide...just naturally’
(Product developer, Company 2).

‘You walk in somewhere and you have a feeling about something and that feeling comes from the pit of your stomach, no logic applied.’ (Product developer and manager, Company 6)

However, as conversations progressed, participants tended to problematize GF, implying that the phenomenon is conceptually ‘slippery’, and resists easy definition. Later responses to the nature of GF linked it more closely to prior knowledge, reflecting a sense that GF is successfully utilized by experienced product innovators rather than untrained or novice designers:

‘My GF has got years of experience behind it, and knowledge, so the term GF is different depending on who you apply it to... Is GF the absence of logic and experience or does it include that?’ (Product developer and manager, Company 3)

Most companies agreed that GF was most associated with non-linear aspects of decision making that were otherwise difficult to articulate. For many, this

involved the bridging of some conceptual divide, a sense of increased clarity about the way in which a process should progress:

‘For me, it's the leap between... I mean, I usually have these moments in the shower; I can't do it at my desk. It's the “what do I need to do next?”’

(Product developer and manager, Company 5)

In a similar way, some quite explicitly associated GF with risk taking; ‘Sometimes it's a leap of faith’ (Product development manager, Company 1), while others felt that it was more often experienced as a reaction against taking unnecessary risks; ‘You just know, don't you? You just look and it's not quite right’ (Product developer, Company 1).

However, companies had sharply differing views on the role of GF within their own unique innovation environment, significantly predicated on whether the NPD team considered their role as ‘creative’ or not. In more traditionally creative sectors, product developers typically expressed greater comfort with the concept of GF, often identifying it as a source of pride:

‘GF is like the essence of the company because that's how we approach it - although we don't cost it. [But] we are becoming more and more aware.’

(Product developer and manager, Company 2)

‘That's the added value, your GF...I think that GF is what distinguishes you from the competition isn't it?’ (Product developer and manager, Company

2)

However, for Company 4, an industrial design firm, GF was perceived to be non-rigorous and therefore risky, to be avoided at all costs.

'[The product] tends to be quite complex and you know with the development it's going to take about a year; it's a big budget thing. It's very important to the client so we have to eliminate as much GF as possible and anticipate every interaction that anyone might have with that product and the implications of those interactions' (Company 4).

'I don't think GF comes into it - primarily because I think in our work we have to be able to scientifically justify the reasoning for doing what we do. So if you say, 'I'm doing it because I feel like it,' it doesn't usually wash' (Company 4)

In companies that acknowledged a possible role for GF, its use was considered to be contextual. This applied to the nature of the commission, whether the product developer worked alone or as part of a team:

'The larger the project, the less [GF] would apply...because there are too many opinions... If you're only dealing with a small group of people, you can then exert a level of influence based on your knowledge and your ability.' (Product developer, Company 6)

In this way, GF was closely linked to influence, as well as a sense of self-reliance and confidence in one's ability to make good decisions:

'Do you ask people all the time and do you look for people who are slightly more qualified or more experienced in the field, or do you go with your GF? That's what I've decided to do now; just go with [my] GF.' (Product developer and manager, Company 3)

'I think confidence and belief in your own ability...allows you to have gut instincts and go [with them].' (Product developer, Company 1)

Precise evidence of GF associated with NPD in the numbered companies can be detailed (Table 3)

Insert Table 3 in here

Discussion and conclusions

Revisiting the research questions:

A) How is effectual and managerial tension reconciled in the NPD processes of small creative companies?

Although most product design teams (designers and non designers) described a comparatively unstructured initial phase in a product innovation cycle, the majority acknowledged that even during this period, causal processing played an important role, ideas were not simply plucked from the air, while in later stages of testing and refining, the team continued to pay attention to subtle cues and signals arising from the progression of the work. Even in Company 4, in which the notion of GF was strongly rejected, evidence of effectual processing was identified at various stages throughout a formalized product innovation cycle and these were valued highly. However, rather than representing discrete project stages, e.g., early design innovation followed by its management, the prevalence of GF implies that product design teams including designers frequently synthesize the two logics, throughout the NPD cycle. Within the NPD process, later working descriptions of GF placed greater emphasis on the cumulative causal processing that led to one's ability to reliably and successfully

use effectual logic. Participants stressed that GF was a skilled practice, employed primarily by experienced (rather than novice) team members. Both openness and experience were key to operating GF, despite GF being recognized by many as a highly personal form of experiential learning that resisted formulaic reduction. GF involved synthesizing knowledge and skills from multiple prior experiences of comparable product innovation cycles, and the self-awareness to evaluate and improve upon previous solutions.

B) Are designers always expected to embrace risk and uncertainty, because of the future aspect of their role?

When experienced product design teams referred to the use of GF, they were actually referring to the ability to rapidly undertake aspects of causal processing in order to come to a seemingly effectual decision. In redefining GF as a skilled practice, rather than the 'unconscious' or even 'innate' process that it is sometimes considered to be, the combined value of causal and effectual knowledge was re-evaluated. An ideal scenario was described in which designers were given enough autonomy to invest themselves fully in a project, but not so much as to feel directionless and unsupported. The term GF was understood as an explanation of, or a justification for, incidences of swift decision-making that were otherwise difficult to articulate; perhaps a key aspect of creativity and an authentic experience of innovative product development.

C) Might GF be helpfully understood, as the strategic integration of effectuation and causal decision-making processes, by small companies?

In the beginning, when product design teams talked about GF, they were usually referring to incidences of non-formalized decision-making that appeared not to

follow straightforward cause-and-effect reasoning. It was perceived as rapid, unpredictable and sometimes mysterious. The term was readily associated with visualisation: the ability to envisage a solution in the mind's eye instantly and compensate for evidence-based NPD. Experiences of this nature were more commonly acknowledged at the very early stages of NPD, prior to evaluation, testing and validation, and GF was thus sometimes viewed as an aspect of 'brainstorming'. GF was considered to be an aspect of individual preference and idiosyncrasy. However, several participants reported that clients and occasionally colleagues also utilized and shared GFs; product design and development teams often attempted to tap into or predict the GFs of real or imagined end-users when developing their own.

D) Could GF be a commonly evidenced hidden resource surrounding design decisions allowing small companies to confidently progress and innovate without formal risk assessment?

Although attitudes towards GF's role and value differed between companies, results suggest that the notion of GF contributed to every company's design and development.

Participants initially expressed comparatively firm opinions about the meaning of the term GF, however preliminary definitions were invariably problematized as the research progressed and further hindsight narratives were considered, suggesting that GF is a frequently misunderstood, even slippery, social term. Surprisingly, GF was openly fostered and stimulated through meetings and the possibility of immediate feedback and input from peers. GF also appeared to thrive on the right balance of constraints; no product design team longed for

absolute creative freedom, preferring to be given sub-problems to solve, but constant interventions and the need to justify decision-making in real time ('design-by-committee') were highly unpopular and universally felt to stifle innovation.

GF, Designing and risk

NPD risks are usually shared across a small company. When skilled designers made decisions based on deep product knowledge, adroit readings of the market and a balance between form and function developed. Very surprisingly GF was acknowledged to be a strategic aspect of desired or undesired risk. Sometimes this was associated with an ill-defined physiological phenomenon in the professional context of NPD, usually oriented towards preventing a perceived negative outcome and was explained with reference to experiences outside of product innovation, i.e., in everyday life. This reinforces GF as part of the human condition, not limited to designing. It was seen to play an important role in a sense of adventurous professional risk-taking, expanded possibility, personal enjoyment and ownership. GF permitted designers working in teams to be personally invested in a project, to make decisions and find solutions. Paradoxically, where personal accountability was high, GF was less commonly reported, sometimes resulting in compensatory adjustment by other company employees.

Managers working with designers typically reported fewer incidences of GF, although in many cases such participants in senior positions had previously worked as designers themselves, and were able to identify times when GF informed their current and previous roles. It is clear that GF was more likely to

be reported by designers where a personal risk style was perceived as a fundamental asset within the team. In such companies, GF was considered to be an experiential attribute within NPD across the company, external to any prior risk assessment process. More structured design processes (as found in Company 6) evidenced less confidence in referring to GF and common themes were identified through individuals' characteristics rather than their consultancy sector. Designers with proven track records in making good decisions were more likely to be comfortable with using their stated GF to solve a problem, while less experienced designers were often more concerned with 'not making mistakes'. However, although it is perceived to be more risky, most reported incidences of GF were later subjected to rigorous feasibility and evaluation processes, and may even be considered an aspect of 'best practice' for product design and development teams in small companies. Importantly, GF was identified not merely as a justification of an unsubstantiated decision but a positive, experiential influence on the actual appearance, shape and quality of products.

Limitations, contribution and future research

A contribution to an understanding of the role and value of GF as an aspect of intuitive risk-taking was intended where such terms are used regularly with little objective knowledge. Such a formal ontology (Kitamura et al 2004) may be considered but not perhaps fully realised, given the practical differences between management and design cultures. However, support for this appears in relation to the fundamental notions of professional identity in NPD, where individuals apply their skills to a common problem and where designers express 'knowingness' (Cross 2006) which might, from this research apply across

professional roles. Recognizing and sharing a common understanding of the principles of GF, across 6 diverse product design teams will hopefully stimulate discussion about the nature of innovation and the aspirations of small innovating companies. Whilst this may suggest the unification of ideas and the development of generic styles of thinking, products need differentiated 'personality'. It is envisaged that recognizing cultural and creative difference in teams can only enhance the quality of innovative thinking in its specific concentrated locations.

This study's limits invite further research. The length of the study enabled a greater depth of responses; GF was revealed as a combination of causal and effectual logics over time, rather than just as a prompted response to initial questioning. However, the small sample size precluded the possibility for the quantitative, longitudinal work needed to extrapolate more widely.

Overall, the observation of specialist decision-making processes, in small companies, in new associations with behavioral and management theories, has helped to portray the designing of products as it is actually practiced.

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Biographies

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Table 1. Participating Companies			
Selection Criteria			
Described as design consultancies. Employing less than 50 people. Representative of the diversity of design consultancies currently working within the NW of the UK. Within the revised UK use of Creative Industry classification for Design (DCMS 2016) Identified as ‘serial innovating small firms’ (Hicks and Hegde 2005) Known to develop new products as designs for manufacture or application to specific locations.			
	Area of business	No. of individuals interviewed	Years with Serial Innovator Status
1	Interior and Architectural Design	2	6
2	Consumer Product and Graphic Design	2	3
3	Ceramic Product Design	3	2
4	Consumer Product Design	5	10+
5	Interior and Architectural	5	5

	Design		
6	Architectural and Product Design	2	5

Table 2. Thematic review: Analytical keys, contextual themes and elicited sources of designer's cultural influence ('concepts as precursors to constructs', Gioia et al 2013)

Gut feeling analytical keys (developed diagnostic factors)	Contextual themes in designing (the form and nature of what exists)	Sources of cultural influence and collaboration elicited
<p>The location of the term amongst other decisions.</p> <p>The role of the term in group decisions.</p> <p>The proximity of the use of the term to important decisions.</p> <p>The proximity of the term in relation to ambiguity or indecision.</p> <p>The reaction of team members to the use of the term.</p> <p>The perceived authority of the term in relation to its use by others.</p> <p>The belief in the term by its user.</p> <p>The frequency of use.</p>	<p>The nature of the design task.</p> <p>Conceptualisation of R&D</p> <p>Time allowed for R&D</p> <p>Ideas around play and 'reverie'.</p> <p>Prior experience.</p> <p>Stage of career and experience.</p> <p>Collaborator range and number.</p> <p>Client influence and involvement.</p> <p>Perceived and actual constraints.</p> <p>Evidence of entrepreneurship</p> <p>Terminology.</p>	<p>Entrepreneurial and serial innovation based team culture within the company.</p> <p>The industrial design professional culture</p> <p>Received culture of consumption through participation with clients.</p> <p>Regional culture and reinvigoration through NPD, manufacturing and employment.</p> <p>Social need within NPD beyond the commercial brief.</p>

Table 3. Gut feeling identified

Important linked themes	Evidence by Company#	Main locations
Important compensation actions following gut feeling decisions	1,2,3,6	Designers' tasks
Strategic use of gut feeling in NPD	1,2,3,6	Designers' tasks Team meetings
Operational agreement on terminology of gut feeling	1,2,3,5,6	Designers' tasks
Disputed use of gut feeling in designing products	4	Team meetings
Noted growth or decline of use of gut feeling	2,4,5	Designers' tasks Client meetings
Companies: 1. Interiors and Architecture, 2. Consumer Product and Graphics, 3. Ceramic Products, 4. Consumer and Consumer Products, 5. Interior and Architectural Design, 6.		

