

Designing next-next generation products and services: A design-led futures framework

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Abstract

Within the design industry there has been much promotion of how designers can engage with future oriented projects yet, there has been little investigation within academic design research of the methods employed. In some ways much of the discourse coming out of design practice is commercial propaganda - with the sole aim of generating new business. The design industry is good at communicating what future focussed services it is able to offer yet the methods employed are shrouded in a similar level of mystery (and scepticism) as those employed by a magician or shaman. Commercial sensitivities mean that the design industry is good at saying what they can do in terms of creating future oriented 'next-next generation' products and services yet they do not convey how this is achieved with the same level of enthusiasm. A design led futures framework is presented to support designers in the development of next-next generation products (and services) and provides a mechanism to underpin future oriented design projects. Based upon analysis of empirical evidence drawn from 40+ expert interviews, the study identifies the growing need for organisations to engage designers to consider the future within an increasingly complex and competitive product and service developmental landscape.

Keywords : design futures, design strategy, futures thinking, next-next generation products and services

The research problem

The research problem that this paper addresses is that we don't really understand how designers consider the future within the design process while creating next-next generation products and services, thus we are unable to explain this approach and take advantage of it. A core aspect of this problem requires designers to engage with the conceptualisation, research, design, development, and communication of future products and services. They need to link the future with the present, and the present with the future through the application of their creative and intellectual skills, and create tangible and believable visions of the future.

Context

The role of futures thinking in design

In its inaugural editorial in 1969, *The Journal of Future Studies* stated that 'It is nowadays much harder to forecast the future than at any time in history. Yet forecasting is essential if we are to seize the opportunities and reduce the insecurities that result from rapid change' (Futures, 1969). Forty years on, design has much to learn from the field of future studies if it is to rise to the complex challenges the world faces today.

In today's rapidly changing world, many people believe that it is becoming almost impossible to plan for the future. We read everywhere about rapid and constant change and, therefore, the increasing unpredictability of the future. The common feature is that the future is uncertain. This is something that there is agreement. This does not mean that we should not attempt to prepare for the future, on the contrary, we should engage fully with activities that allow us to prepare for the non-preparable. Through this engagement we may be able to identify and develop strategies that allow organisations to consider how they may be an integral element of such futures (Coughlan & Prokopoff, 2004; Lindgren & Bandhold, 2003).

Tomorrow's technology driven products and services are hard to market research as although asking potential users if they consider a certain approach to be a good idea is potentially useful, their answers are unlikely to be too revealing (Ireland & Johnson, 1995; Johansen, 2007; Willmott and Nelson, 2005; Margolin, 2007). People have very little experience of what they may encounter in the next few years and their answers are usually based upon what they understand today. Woudhuysen (2006) affirms that this is a continued problem in both design and futures research.

Design and the futures

Designers look into the future and attempt to envisage products and services that are required, desired and suitable for the needs of the user and the environment they occupy (Keinonen, 2005; Rodriguez Ramirez et al, 2005; Margolin, 2007). The predictions designers make about the future are an intrinsic part of the design process (Krippendorff, 2003). The ability of designers to envision and interpret possible social, cultural, technological and economic futures is crucial to the success of their design activities (Woudhuysen, 1990 & 2006; Marseille & Roos, 2005)

If we accept the position that designers consider the future as an intrinsic aspect of the design activity, we can conclude that designers are futurists; futurologists in the field. In doing so designers adopt a prospective role that is future focussed, intentionally creating the future for consumers. Designers are required to empathise with consumers, change

perceptions of what the future may be, and educate potential consumers regarding the possibilities that the future may hold.

‘The designer has a prescriptive rather than descriptive job. Unlike scientists who describe how the world is, designers suggest how it might be. Designers are therefore futurologists to some extent.’ (Lawson, 2006).

Seymour (2008) echoes Lawson’s position claiming that designers should be ‘leading the way by visualizing and articulating achievable futures’ (Seymour, 2008). He elaborates upon the role of designers as futurists:

‘Designers by the nature of their work are futurists. The least time it takes to produce a product and get it on the shelf is a couple of years. Sometimes it can be 10-15 years. So you’re already dealing with the future when you sit at your desk in the morning.’ (Seymour, 2010).

The value of consideration of future contexts by designers was persuasively stated over a third of a century ago by Cross, Elliot and Roy who claimed that:

‘Visions of the future are particularly important for designers, because designers have to imagine both the future conditions that will exist when their designs actually come into use and how those conditions will be changed by the creation of their new design.’ (Cross *et al*, 1975).

The above points underscore that designers are intrinsically concerned with the future. Their activities are future focussed and concerned with imagining and ultimately creating the world they envisage for consumers.

Poggenpohl (2009) reasons that design is of prime importance to the future, as designers envision the futures we all experience through the products, services, and environments we encounter in our everyday lives. Design stimulates the artifacts that we desire as solutions to various problems; ideas for how to use technology in more sympathetic ways; or how to provide pleasurable and stimulating information and much more.

Coupling design process experts with business content experts creates a capacity to envision and realise futures that are both desirable for people and viable for organisations (Coughlan & Prokopoff, 2004). Designers play a key role in providing firms with raw material for decision making. If they are performing their proper function they open ‘doors of opportunity’ thus helping decision makers to explore alternative futures. Their task is to invent, discover and communicate ways to advance the collective sense making of the about what to do next (Weick, 1995).

The rate of societal change presents design with a key challenge – how can it develop products and services that are not only required, but desired by future consumers? Empathising with stakeholders in near-term project horizons is challenging but extending this time horizon to the next-next generation of products and services, or beyond, requires a future-oriented mindset.

Research methodology

This research utilised a qualitative approach. Data was collected via semi-structured interviews in the UK and USA with 40+ designers, researchers, and design managers (Note: The identity of respondents have been removed to maintain confidentiality and to respect commercial sensitivity). Six research propositions provide a framework for qualitative data analysis. Utilising thematic analysis, and underpinned by a comprehensive state-of-the-art literature review, a conceptual framework of how design can meaningfully engage with the future is presented. The design-led futures framework

articulates the key considerations and approaches utilised by contemporary design practice in the exploration, development and communication of future oriented design proposals. Underpinned by key insights from leading design professionals, it synthesises empirical and secondary data. This framework was refined and validated via a series of Delphi-style reviews with leading exponents of design-led futures.

Research Findings - Engagement of designers with the future in the design process

The research focuses on the manner in which designers engage with the creation of next-next generation products and services. Designers use futures thinking approaches within the design process in a variety of ways. This section will discuss the characteristics of how industrial designers engage with the future within the design process. Semi-structured interviews consulted with design consultants in the UK and USA and were analysed to identify substantive factors coming out of the research. Empirically derived substantive factors were clustered into patterns utilising thematic analysis. These were then synthesised into six theoretical categories:

- Drawing information into the process
- User observation as design input
- Facilitating futures thinking
- Assist in strategic decision making process
- Timescales involved in design-led futures
- Creating visibility: visual and experiential communication

Drawing information into the process

Information that informs design-led futures is drawn from a wide variety of sources, is obtained in a variety of ways, and utilised at different points within the design process. This information is utilised to shape the manner in which designers engage with futures thinking in the design process. Information is also generated within the design process that underpins the development and communication of design-led future oriented projects.

The nature of future oriented information, in the form of written reports for example, may not be in a format that is easily digestible by designers, being data heavy and dense in nature. The volume of information available was cited as a barrier to everyone within design and development teams being able to engage in a meaningful way with this information. Organisation of information was a key challenge and criteria for the use of future oriented information within design activity.

Obviously there's all the kind of publications and reports that people here read. The information comes in thick and fast and, and we go to great lengths to try and organise that. (SB)

The breadth of information available within a particular market sector, and beyond this sector yet still pertinent to the sector, demands a structured approach to organising and understanding the implication for design. There is a need to make sense of this information for specific projects and mediate between the vast array of information available and the specific requirements of the project at hand. Hollins (1999) sees formal market research as vital yet it is 'hit and miss' and 'a pretty inexact science'. Topalian (1980) affirms the need for research stating 'managers and designers do go seriously

astray when they begin to believe that they can be effective arbiters of consumer needs without first researching such needs sensibly. It is necessary to investigate and understand markets’.

We basically analyse markets, we fly out and analyse markets, and analyse consumer behaviours, needs, shifting needs, shifting behaviours, shifting desires, like all those things, values, value sets that shift, like all those shifts, we identify those and make sense out of them for one particular client, on this single three month project. (PRC)

The use of tangential research approaches is clearly evident in design-led future oriented projects. Drucker (2005) claims that ‘there is no way to market research a genuinely new product or service’ and as such designers engage with research methods that enable access to tangential, analogous, lateral, and peripheral information in creative and innovative ways.

We do what we call analogous visits. That can be so many things. If I’m asked to design a hard drive, I might go to the library and just look at a lot of stored information, in a very, very analogous way. Think about what could be analogies that could inspire me or give me a different perspective on it. They can be very sensorial, it’s like if a hard drive is all about security, how does security feel? Maybe I go into a prison and really experience the emotions of security. (PRC)

As well as analogous research contexts, interviewees cited the use of extreme perspectives and lead-users as a valuable contribution to futures thinking within design. Kelly and Littman (2006) claim ‘we don’t think you learn that much from the usual suspects when you’re trying to develop something new-to-the-world’ and advocate the contribution of ‘extreme people passionate about the products and services we’re trying to develop’.

You look to sub-cultures, extreme users, people who live off the grid, or people who live like crazy connected or extreme grid, you know, like not the ‘average Joe couch potato’ but someone who’s doing something kind of radical and interesting and different. (JL)

The role of extreme users in design and development is to provide insight into the outer edges of behaviour and in turn this ‘extremefied’ approach will gradually be adopted by more consumers and become the norm. Extreme views or behaviours can then be used to trigger creative activity.

The views of experts, in the form of ‘expert opinion’, contribute valuable information to future oriented projects and is a well used technique for the elicitation of insight into the future. Pillkahn (2008) sees expert opinion as a central method of opinion formation and supporting decision making through analysis of the future stating that ‘our faith in experts is unshakable’.

Well a lot of the time it’s about using the best available sources of info out there. If we wanted to understand more about energy futures, don’t try and become experts yourself, go and speak to an expert on that. (SR)

Pillkahn (2008) raises a note of caution with regard to the role of experts in future oriented projects as ‘our faith in the expertise of the expert is based upon the misconception that knowledge about a special area will also entail knowledge about the future’. He advocates the careful selection of the right expert to any given situation. There is a tendency to elevate the opinions of experts to the status of facts or predetermined elements (Pillkahn, 2008).

User observation as design input

The user as a source of inspiration in design activity has been identified by numerous commentators as key to successful design and development (such as Ulrich & Eppinger, 2000; Merholz et al, 2008; Verganti, 2009; Brown, 2008 & 2009; Marzano, 2005a & 2005b; Krippendorff, 2006; Moggridge, 2007) and has grown in popularity amongst development teams over the last two decades (Zeisel, 2006, Esslinger, 2009; Best, 2006). Designers are able to analyse the behaviour of users in these natural contexts and translate this information into insight that is a powerful trigger in the development process. Designers ability to identify needs people didn't even know they had is a seen by many as a core and potent competency of design (Krippendorff, 2006; Norman, 2007; Keinonen & Takala, 2006; Brown, 2009; Kelly & Littman, 2004; Marzano, 2005b; for example).

We rely on observation, and I think what designers are innately good at doing is spotting discontinuities, innate issues, latent needs, emerging behaviours, new stuff. If you could use the metaphor of scanning a supermarket shelf, you don't process any single thing, you tend to see the outlines of things and where things don't compute to what you expect to be there, or they are different from whatever, they are the things that stick out. (SR)

The link of user observation to design-led futures is through the innate understanding of human behaviour and how this behaviour transcends time, i.e. people are the constants in these processes and do not change their behaviour overnight. One interviewee took the position that 'working the future is about understanding, really understanding profoundly the old cliché, the insight, but really profoundly understanding why people do certain things and knowing that's not fundamentally going to change' (SR).

I think vis à vis the future, understanding certain fundamental things about human nature and how people use things and why they use them, helps you predict and allows you to make fairly reliable predictions. It at least gets you in the right area and then you can recalibrate and fine tune. (SR)

Merholz et al (2008) claim that user observation and ethnography can 'provide a more realistic view of people, especially with regard to the emotional, contextual, and cultural aspects of their lives'. Rhea and Leckie (2006) cite the availability and ease of use of digital technologies such as digital cameras, video cameras and digital voice recorders as contributing to the increasing use of ethnomethodologies in design research activities. They have coined the phrase 'ethno-lite' to describe this strand of ethnography. Ethnography can provide user insights that can be used as creative triggers that can assist in the consideration of new and novel approaches to existing contexts.

We rely a lot on what we loosely term ethnography, but really we call it forensics. And it's just a way of picking apart things. We're looking at a very broad range of areas and we're looking for clues. Sometimes they're just creative leaping off points, sometimes ethnography, or forensics, is a very good creative can-opener, it gets people thinking in a certain way. (SR)

Rhea and Leckie (2006) claim that 'to innovate effectively, designers and researchers need to understand consumers and how they and their relationship to the world around them is evolving', and that the embedding of ethnography into their operation is relied upon to fuel companies' innovation pipelines. Designers are able to use an understanding of what the user is actually experiencing, rather than what they say they are experiencing, and use this to empathise with users needs, wants and desires as well as frustrations, work-arounds, and confusion.

I think designers empathise. It's not just about empathising with the end users, we empathise with different teams that are involved in getting a project from A to B, so I think empathy is a huge thing for designers. Successful designers have to understand and make sure that that's very, very clearly got across to the client, of the benefits of understanding the end user. (TT)

Once 'out in the field' designers are able to experience first-hand the types of challenges and contexts that users live through each day. This process provides designers with an understanding of human behaviour in the now, and through creative endeavour, develop future proposals that both harnesses the insight generated in today for benefit tomorrow. Although the current behaviour patterns 'in the now' is essential, this needs to be augmented by how people may behave in future contexts. Designers often rely upon an iterative process of exploration to identify worthwhile directions that meet future needs, wants, and desires.

So it's looking at these things but then applying, if you like, an understanding of the way that people might behave in those situations. Will they really do that? I don't know. So, it's getting insight into people and their behaviour as well as an understanding of the possible things that people can do. (LH)

Interviewees stated that designers are well placed to translate these user insights of the now, into solutions for the future, and 'understand how the things that are going on out there can be harnessed in terms of future products or experiences. (SB)

Facilitating futures thinking

To benefit fully from engaging with futures thinking, design needs to ensure that the innate value of considering the future is facilitated in an appropriate manner within the design process. This can involve the use of forward looking projects to develop creative competencies within the design team, to appropriate communication of future based knowledge to project stakeholders. Designers are often at the centre of the facilitation of activities and transfer of knowledge throughout future oriented projects. Their role is twofold: (i) to engage in future oriented projects to develop capabilities and competencies to be able to undertake such activities, and (ii) to engage wider stakeholders in design-led future oriented projects. A critical factor in this role is to draw upon their creative skills to ensure that proposals are both accessible to the proposed audience, and that the target audience can see the relevance and value in these activities.

Design organisations undertake internal future oriented projects to develop capabilities and competencies within the design function. These internal projects serve to develop designers but also as a counter to the more near-time-horizon activities. 'I think a lot of the more creative design projects that we run internally are more just to flex designers muscles a little bit and just keep their brains a little bit looser than the day to day projects that are a bit more grounded' (MK). In adopting this approach, organisations break away from ordinary design routines and to motivate employees to do something different (Sääskilähti & Takala, 2006). These activities can assist organisation in the development of knowledge for future activities with clients. Keinonen (2006) contends that 'design organisations undertake in-house future orientated design projects to generate background material for forthcoming external projects'. Projects allow free thinking that can then be translated into more concrete, near-time-horizon actionable proposals.

We encourage designers to leave the conventionally understood field of design and become comfortable and au fait in research skills and language and become comfortable in how to analyse and harness trends. (SB)

It's those things where the boundaries just become a little bit freer and we can explore some more conceptual ideas and we can think a little bit more about the future and explore conceptual ideas. (MK)

Organisations often use future oriented projects to demonstrate their abilities in considering the future. Marzano (2005b) elaborates on the approach adopted at Philips, 'We develop realistic product concepts and scenarios in which they could be used. We don't keep these in a drawer, but present them to the public and the media in exhibitions. This way, we get people's feedback on our interpretation. In fact by doing this, we're able to validate our interpretations to confirm we're on the right track'.

Presenting clients with information in a form that they not only are able to understand, but are stimulated by is an important consideration for designers when facilitating future oriented activities. This aspect of the facilitation process is described by (Schneider, 2005) as enabling possibilities to be made concrete such that a committed team of people can then make happen.

When facilitating development projects, design often assumes an organisation role where the various stakeholders are being coordinated by design. The ability to facilitate futures thinking within the design process requires both organisational and creative skills and not all designers are suited to this activity. Some teams are built up of designers who understand future oriented activities, but are also made up from specialists in complementary areas of activity including: from the social sciences, such as ethnographers, anthropologists, psychologists, and sociologists; and from management, such as strategists, project managers, business planners, and human resource experts.

The right personalities are all important on trends-driven projects, creative projects, absolutely. This is why we've got fewer trend specialists than designers. It's not just to do with the kind of company that we are, it's much more to do with the fact that we're trying to find the right balance in the team between trend specialists who aren't designers, they're reporters really, and designers who can actually understand and harness trends. (SB)

Assist in strategic decision making process

Designers are centrally involved in the translation of future oriented information into tangible elements that can be engaged with and provide feedback with regards to the efficacy of proposed direction of projects, they are equally involved at the very front end of projects where the potential trajectories are explored and identified. In this early stage engagement, designers provide strategic direction and enable the focussing of effort into moving projects forward. Interviewees stated that engagement with strategic decision making was becoming more evident in their day to day activities and had potential for increased activity in the future.

We're doing a lot of strategic projects like these phase zero we call it, where the end outcome might be a few ideas, but it's more to do with scoping out a strategic path for companies to take. So I see a pretty big opportunity there because... ..I think probably where we would make a lot of money is coming in as this external company and bringing a new kind of spin on a more strategic level. (MK)

The ability of designers to step back from the now and think about the big picture was noted by several interviewees as important in the development of 'the strategic path'. The identification of an opportunity area may involve the creation of 'place holders' that assist organisations in the understanding of how these opportunities may be addressed and also how this opportunity may become manifest within both their organisation and the marketplace.

The classic kind of project that I've been involved with is what we call phase zero where there's blue sky, lots of research. A client will come to us and say, Look, what's the future of blah blah blah. So a typical zero project might result in three or four opportunity areas that we give a client and we give them some kind of tangible, version of that opportunity area. (JO)

The increasing complexity of markets has resulted in the apparent need to be able to validate decisions even before they have been acted upon. This need for validation of decisions has meant that designers are now, more than ever, required to communicate the rationale for their decisions and provide clear evidence of the steps they envisage taking. This evolutionary rather than revolutionary mindset was particularly evident in consultancy organisations.

It's increasingly important to be able to map it out better in terms of timelines or in terms of steps that show the gradual shift. It's what we call the sort of mum to mud to mad to dad transition process. It's basically how you go through from one thing, something completely contrary in steps, so it's mum to mud to mad to dad. (SR)

There is a balance to be struck between the needs of both clients and designers in terms of strategic decision making. By being overly subservient to clients, designers run the risk of not challenging the scope of the project, while designers need to be aware of commercial imperatives of projects and resist the temptation not to be self-serving. The former head of design at Philips Knut Yran elaborates, 'The role of the designer is certainly not limited to the subservient function of stretching the safety net under the commercial acrobatics on the high wire above the market place. On the other hand, I also don't accept the idea of the prima donna designer, who has gracefully withdrawn into an ivory tower of aesthetic isolation. One must not forget that today's profit is tomorrow's work!' (Yran, cited in Marzano, 2005b).

Timescales involved in design-led futures

The time horizon that future oriented projects engage with varies between organisation, client, sector and project. Interviewees noted that 5-7 years was a 'sweet-spot' but no consensus upon the most appropriate or effective time horizon was evident. The further into the future, the more abstract and conceptual projects tended to become. This is line with much of the thinking in future studies noting that as time horizons extend, exacting information is harder to generate in a reliable and valid form (such as Rescher, 1997; Coates, 1999; Cornish 2004; and Schwartz, 1999 for example). Where time horizons extend, the ability to assess the success of meeting specific criteria is lessened.

Designers engage with future oriented projects as this provides a creative licence to explore opportunity areas in a conceptual and blue-sky manner. This is in contrast to near time horizons that require a clearer connection to commercial imperatives.

I think the common perception is that it's easier to address trends that are short term, not that far off, than it is long term. I think designers love the long term stuff because there's so much more freedom and what if? And there's much less constraint and much more flexibility in thinking. The here and now or the short term is far more connected to commercial trends and understanding of markets as well. (SB)

Extended time horizons require the use of communication skills that are more experiential and narrative than explicit and closely defined. Kelly and Littman (2004) identify three approaches that assist in the communication of future oriented projects, namely: (i) make concept cars, i.e. undertake conceptual projects that are never intended to hit the shelf but help organisations and consumers prepare for and shape the future, (ii) make movie trailers, i.e. make a movie trailer for the future concepts that your developing as 'a visual

prototype' that can be used to 'tease the audience' and, (iii) read all about it, i.e. look at how science fiction writings have conceptualised the future and how our cultural worldviews have been influenced by these writings. Painting with a broad brushstroke may be required to engage the audience with your future proposals without providing too much detail such that they become overly focussed upon the practicality and 'implementability' of proposals.

Well as you move further out you need to get into much more experiential type storytelling to engage the consumer and get feedback. You're moving very much into more narrative I think, so you're designing scenarios where you're trying to put the consumer in this future place or future environment that you're creating to have them imagine what it would be like interacting or being within that environment. The way you set it up starts to dramatically differ, so it gets into much more richer storytelling and more use of storytelling tools like edited video or illustrated scenarios. (LW)

The presentation of future oriented projects in a positive manner to ensure buy-in from stakeholders is also a communication approach that is employed when time horizons extend. By creating and communicating a positive image of these proposals, designers are engaging essentially in foresight driven approach where, as Dahle (1996) identifies, foresight is not the ability to predict the future, but to make a contribution to desirable changes.

At their best designers tend to be optimistic and humanistic about the future so they do present generally, a more attractive vision of it. In visualising it, in presenting it in the best way, even though it may not be the best solution, by its own sexiness, it will draw people to it, so I think more proactive This is what we want it to be, use all your powers to make it so (SR).

In foresight activities, experts offer opinions that are aggregated to form a view of possible futures, which can be used as a guide into the future. Based on knowledge on how things will be, not on how they are now, foresight can more reliable and informative than a simple extrapolation (DFFN, 2003). By providing a desirable image of future situations, design is engaging in normative foresight approaches. They draw people to the future they have envisioned and use all their powers to make it so.

Creating visibility: visual and experiential communication

The vast amount of research information generated within future oriented projects provides a challenge to design organisation to effectively communicate to all stakeholders of the development team. Increasingly organisations are utilising a combination of technological and traditional mechanisms to support knowledge sharing across projects.

We've got a Wiki so we publish on that. We're doing more and more by way of posting work up within public areas in the studio so people can see what's going on. (SB)

The demands of the 'day job' was cited by a number of interviewees as a barrier to being able to effectively share knowledge gained within projects to the benefit of all project stakeholders. Communication with clients is also a key challenge yet is often given higher priority than communication within the design organisation. Visual communication was noted by many interviewees as being the key criteria for communication at all levels and designers were deemed both competent and capable in this. The translation of data gained from research activities was given a high level of importance within the overall design and development process, and designers held this responsibility throughout the process.

Visually, that's the best way for us to kind of communicate that kind of information. It doesn't make sense for us to try and do it in a kind of statistical table. The other kind of classic way to do it is to do the minutes of the board meeting from 2010. What do they look like? The headlines for the newspaper, what do they also look like? (RI)

By utilising such techniques, designers translate future oriented information into a form that is readily understood by the general public. Again concept cars were mentioned to explain the approach organisations take in the creation of proposals for future oriented projects.

The value in communication approaches such as 'concept cars' is twofold. Firstly, the physicality of tangible objects enables interaction on an experiential level that facilitates sensorial engagement, and secondly this sensorial engagement can be used to provide feedback to the development team in response to the perception of the proposals. An extension of this approach is what one interviewee termed thought pieces where organisations deliberately create larger than life proposals that stretch their thinking beyond conventional boundaries. 'I think designers will always pitch something further than it needs to go because it will inevitably get watered down or reined in. I mean, we do go out to just thought pieces as well, as I say, they might be deliberately antagonistic or thought provoking' (SR).

Kelly and Littman (2004) endorse futures thinking in design as a means to develop and enhance their capability to undertake such projects even though they 'know they won't all come true, and even those that do may not arrive on schedule'. The value of future oriented information (in the form of trends in this case) was identified by one interviewee as being both powerful stimulus and creative trigger.

At its most basic form for designers, trends are an incredibly powerful stimulus and designers are absolutely invigorated by that type of stuff, providing it is put in front of them in a digestible way. It tends to both inform awareness, broad awareness, but also directly stimulate certain ways of thinking. (SB)

Esslinger (2009) places visualising the future within an innovation process that requires organisations to 'inspire, mentor, and shepherd new ideas, and be willing to pay the price of bold, up-front shifts that will help to avoid the ever-escalating price of incrementalism'. Esslinger details a process of projection in which 'all parties in the process envision how the innovation would change the company, the consumer, and the world' (Esslinger, 2009).

Conceptual framework for design-led futures

The design futures framework proposed within this paper enables designers to empathise with our future lives and utilise this insight to underpin the development of next-next generation products and services. A series of Delphi-style interviews with leading industry exponents of design-led futures informed the development of the design futures framework. It articulates the key considerations and approaches utilised by contemporary design practice in the exploration, development, and communication of next-next generation design proposals. Underpinned by insights from leading design professionals, it synthesises empirical and secondary data. The author proposes that this approach enables designers to develop an empathy with future consumers beyond current time-horizons.

The design futures framework comprises of four interrelated elements:

- Contextual factors
- Design futures research process

- Synthesis and Transformation
- Communication

Contextual factors

Futures thinking approaches increasingly being employed in design alongside the upstreaming of design (strategic engagement). It recognises that traditional market research unreliable as consumers' perspective restricted by own understanding and horizons so range of inputs needed to drive project forward. When engaged with next-next generation products and services, there is a need to create not only what is desirable, but what is feasible and viable. Designers draw upon technological and business factors to assist in exploring these issues. If a wholly desirable product or service is developed without any regard for its technological feasibility or business viability, to a greater or lesser extent, it may be just a creative exploration. By considering all these design dimensions to an appropriate level and manner for each project, designers can create desirable, feasible, and viable proposals. It is within this sweet spot that the majority of organisations wish to operate.

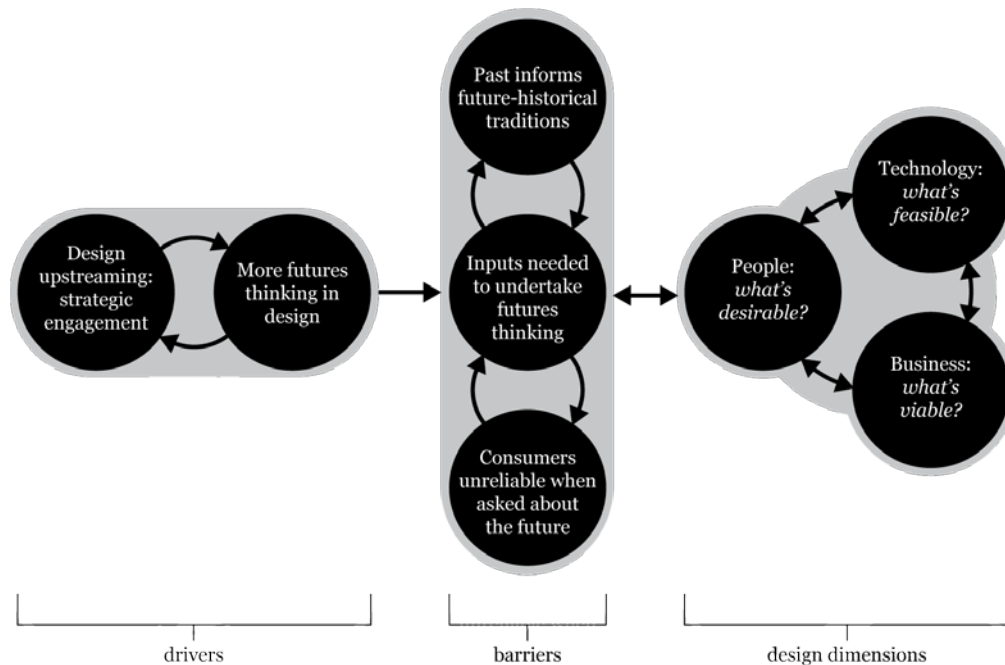


Fig.1 Contextual factors component of the conceptual framework for design-led futures

Design futures research process

The design futures research process component of the framework combines to create a research process appropriate to design-led futures. No single approach prevalent but a set of interrelated activities that assist in the consideration of research within the development of next-next generation products and services. This process comprises five critical research factors: i) understanding socio-cultural context, ii) tracking of trends and movements in behaviour, iii) utilisation of non-design research techniques, iv) designers use of intuition and insight, and v) gathering expert opinion. The design futures research process consists of a number of interrelated research activities that are undertaken throughout next-next generation projects. The requirements of specific projects may result in certain aspects of the process being focussed upon or omitted. As presented the design futures research process may be interpreted as being self contained, but it feeds, and is fed by, the other elements of the framework.

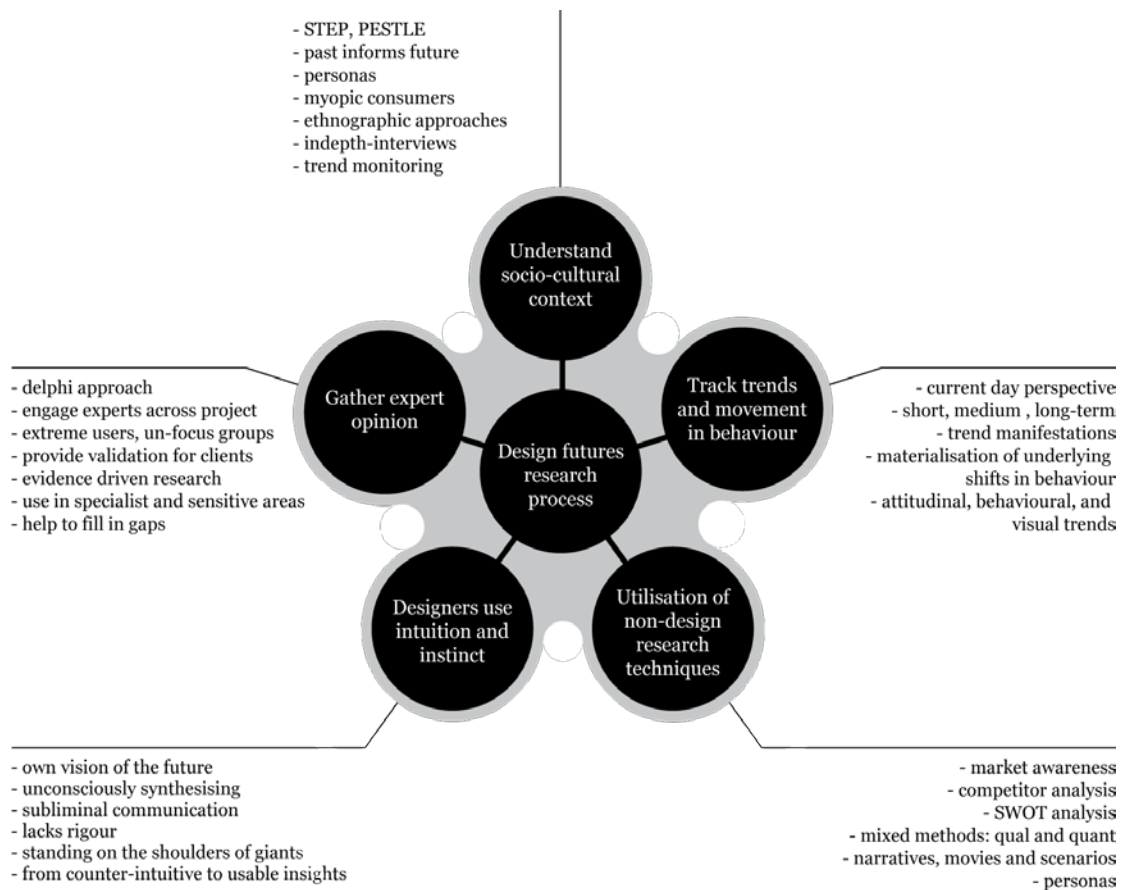


Fig.2 Design futures research process component of the conceptual framework for design-led futures

Synthesis and Transformation

The third element of the framework is concerned with the synthesis and transformation – of data to information, and information to insight. The synthesis and transformation element of the overall framework is constituted of two aspects and is denoted in Figure 3.

- Synthesis where data is drawn together from a variety of sources in a number of forms, externalised, organised, framed, and synthesised into a usable information resource, and,
- Transformation where data is moved from its raw state, reshaped, visualised, reorganised and consequently transformed into knowledge which is made available to the stakeholders in the development process.

This process involves numerous stakeholders and results in the translation and transformation of abstract and counter-intuitive information into concrete, actionable and useful knowledge. It relies on both structured and intuitive engagement. The key aim is to provide strategic roadmap and implementable action plan. The synthesis and transformation element of the overall framework are clearly linked yet this process was not clearly articulated by respondents due to the inherent complexity and ambiguity of these activities.

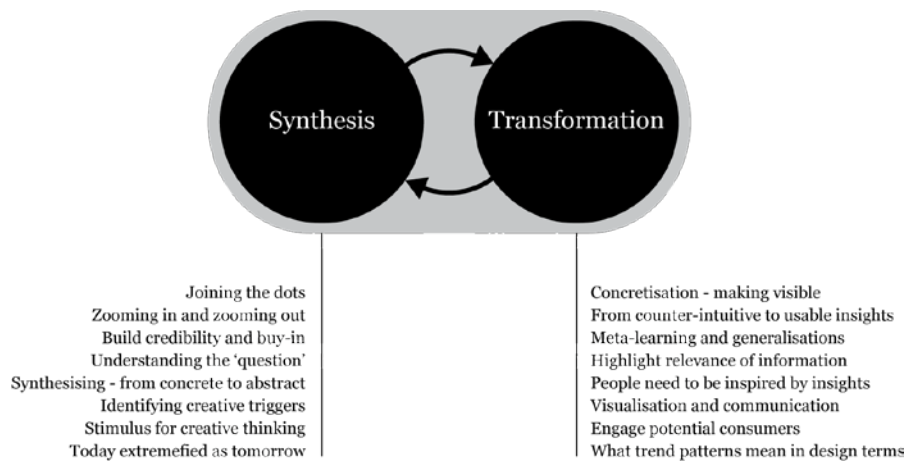


Fig.3 Synthesis and transformation component of the conceptual framework for design-led futures

Communication

Communication is key factor that designers can bring to future oriented projects - this may be design's differentiator. Visually driven communication strategies lead to a point of inspiration, often employing sensory and pithy presentations - movies, online, visualisations, and prototypes. Communication enables user and consumer views to be assessed as well as preparing and testing the market for future products and services. The communication component of the framework involves three main elements: i) communicating the future, ii) prototyping and visualisation, and iii) self-fulfilling prophesy. These factors are interrelated and provide a platform for communicating future design opportunities in both abstract and concrete forms. A key driver of the communication element of the framework is to prepare (and then evaluate) the market for potential future products and services. Without communicating what next-next generation products and services may be, consumers do not know that they exist and thus cannot engage with them.

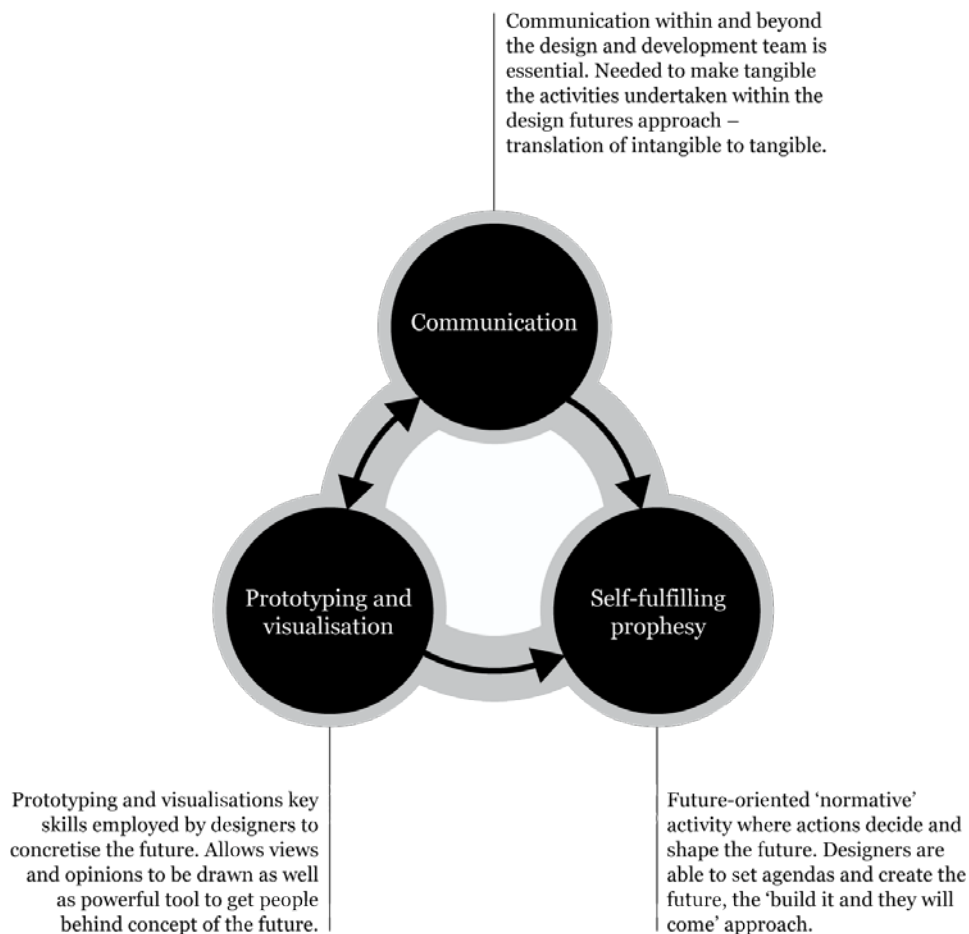


Fig.4 Communication component of the conceptual framework for design-led futures

Discussion

The study identifies the growing need for organisations to engage designers to consider the future within an increasingly complex and competitive product and service developmental landscape. A design led futures framework is presented to support designers in the development of next-next generation products (and services) and provides a mechanism to underpin future oriented design projects.

The framework for design-led futures synthesises the key stages within the design process which specifically look at projects beyond the normal time-horizon for design and development projects within industrial design. The normal time-horizon is up to three years depending upon the specific sector that organisations are operating in.

The framework is not presented as a single integrated process as this is not how design organisations engage with such activities. Rather, the framework details the key nodes of activity which occur across a temporal landscape – often taking place concurrently. As with all models, there is a level of abstraction to provide a generalisation rather than bespoke model appropriate to specific organisations.

Further work is in progress that seeks to enhance the understanding and instances of the role of futures thinking in design – both in terms of understanding the process as well as exemplars of design-led futures projects. Design organisations are engaging with this process via workshops and case studies.

This paper concludes with a seemingly apt perspective upon the future. As one interviewee (a senior design strategist) stated, 'I know if someone stopped me in the street and asked me about what I wanted in the future, I don't know. I do this for a bloody living so I don't see how Joe Public is going to have a fucking clue'.

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