

Eleven lessons: managing design in eleven global companies

Desk research report

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02_ Introduction

The design process benchmarking study was undertaken by The Design Council to inform UK businesses' understanding of the design process and specifically the processes used in companies deemed to be leading users of design. The primary objective is to utilise the insights drawn from the research to inform the development of internal design process in other UK businesses.

The benchmarking study will uncover the key activities, information, dependencies, motivators and measures within the design process. It aims to understand and support planning practice in industry through a series of observational studies, interviews and structural analyses of process behaviour. The sample will include 11 companies seen as leading users of design from both the product and service sectors.

A discussion guide will help to retain a level of consistency across the interviews, although additional probing will occur in circumstances where specific activities are undertaken e.g. using external suppliers of design. One of the aims of the research will be to capture and, where possible, visualise design process models in industry, as well as investigating assumptions about a small number of process models through discussion.

To benchmark our own research activities, some investigation into the theory of the design process is necessary. Therefore, this desk research acts as a preface to the primary research with the 11 companies, providing a survey of the literature documenting the development of the design process.

The brief for this paper is to present an overview of past, present and future theories, referencing academic and practitioner perspectives of the nature and purpose of a design process, citing known examples and models as evidence.

Some of the questions asked in developing this paper are:

- _ How did design emerge as a process - what led to design being formalised?
- _ How did design processes develop over time?
- _ What models exist and what do they represent?

03_ The design process

'[The design process is] the specific series of events, actions or methods by which a procedure or set of procedures are followed, in order to achieve an intended purpose, goal or outcome.' Best (2006)ⁱ

The design process consists of a series of activities and methods which are pulled together in a way which meets the requirements of a problem or project. Though there are similarities which can be seen across various case studies referenced by academics and practitioners (Clarkson and Eckert (2004)ⁱⁱ), there are in fact many different design processes which vary depending on the size, scale and nature of the problem.

"Design processes are difficult to standardise, in part because of their iterative, non-linear nature, and also because the needs of clients and users are so different. In addition, real life, with its changing market conditions and customer preferences, is much more dynamic chaotic and fuzzy than any standard model can fully accommodate and often, stages of the design process overlap." (Best 2006)

Literature on the design process is vast, yet mostly inconclusive. Debate is typically based around the activity of defining, developing and monitoring a process for design and is largely concerned with its management and influence

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on business performance. Case studies are often used to illustrate the process, demonstrating its clear relevance to business practice. Clarkson and Eckert (2004) have written extensively on the topic of design process and have generated a comprehensive review of current practice and methodologies.

"Despite the extensive research undertaken since the 1950s, there is no single model which is agreed to provide a satisfactory description of the design process." Clarkson and Eckertⁱⁱⁱ

The next section of this paper will describe the development of the design process from a historical perspective.

04_ Historical perspectives

The history of design is one of constant evolution. Originally from craft roots, it developed through the division of labour created by mechanisation, which gave birth to the role of the industrial designer. Its development as a subject, process, activity and business tool has been heavily documented and debated in recent years, and case histories demonstrate the changing role of design in a business context.

This same process of change and evolution applies to the development of design process. To use just one example of how design process emerged, Adrian Forty cites Wedgwood in describing how the development of technology separated the designer from the production process. Production activities were stretched and divided into distinct areas, or processes.

"The operation of designing thus became not just separate but also geographically removed from the manufacture of the pots." Forty^{iv}

This shift, and division of tasks, naturally resulted in an increased level of productivity. But while speeding up the Wedgwood's development process created an opportunity to increase supply, it also brought to light the problems of ensuring quality, consistency and timely production. Furthermore, an excessive choice of products that could be produced, many of which used different manufacturing techniques, resulted in a considerable expense for Wedgwood. This resulted in an eventual downturn in profits. A decision was therefore made to limit consumer choice and a standard number of product types were produced with a selection of designs. From Wedgwood we learnt that it was coordinating the different aspects of the new process which arose as one of the greatest challenges of mass production.

This is just one of many examples of how design process emerged. This has clear connections to Bauhaus theories in which *form follows function*, which was adopted by industrial design. Also, Victor Papanek's powerful views about the value and importance of design endorsed the systematic approach of process.

'In this age of mass production when everything must be planned and designed, design has become the most powerful tool with which man shapes his tools and environments (and by extension, society and himself)'. Papanek^v

Papanek also references the Bauhaus hailing its success as *"...the first school to consider design a vital part of the production process."*

So, with its origin in crafts, the design process sprung from an early movement to define not just products, but also the way in which they were produced. Since then, the design process has been applied to a varied number of scenarios, such

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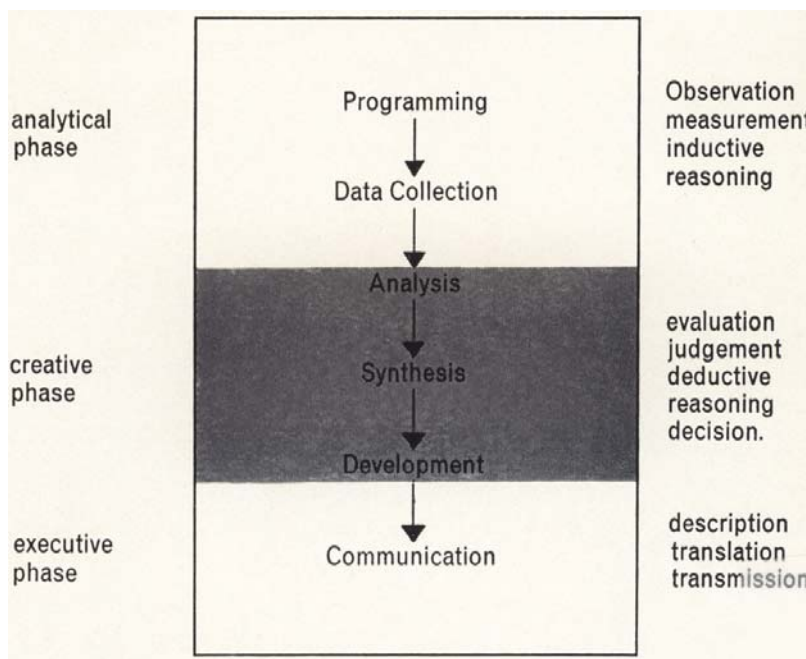
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as science, engineering and manufacturing. However, design itself has progressed and its scope has broadened to include disciplines such as interaction, experience and service design. Before developing our conclusions on how this affects the design process benchmarking study, some detailed examples of the design processes will follow.

05_ **Design process methods**

The exploration of the design process began to be taken seriously in the work of the Bauhaus in the early 20th century, where attitudes to design were radically changed, specifically in industrial design. The new approach revolutionised many successful companies and their products as they began to re-establish themselves on the basis of Bauhaus theories.

Figure 1: Bruce Archer



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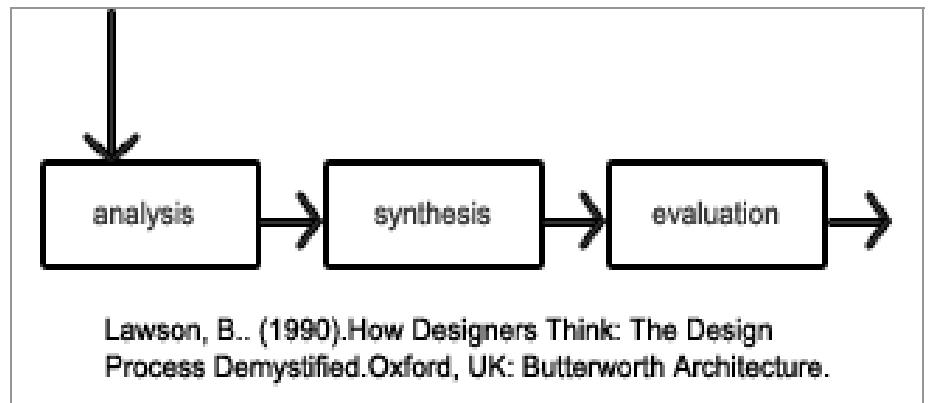
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Many academics and practitioners have in the past tried to find common paths for the design process. Bruce Archer played a key role in the design methods movement and was instrumental in developing the discipline of design research. Bruce Archer published his model of the design process in 1963 as part of a series of articles for *Design* magazine (Figure 1). Essentially, the model broke the design process down into key stages. It was recognised that the sometimes overwhelming weight of design considerations was taking a toll on the flow of creativity, and a design methods ‘movement’ attempted to make sense of the growing complexity of the situation (Archer). Archer wrote *Systematic method for designers* in the 1960s, compiled from the papers he had published.^{vi} Archer defined design as employing a combination of the *intuitive* and the *cognitive*, and therefore attempted to turn the design process into a science by formalising a creative process. Archer was thereby also trying to formalise the intuitiveness of design and the designer, and place their creativity into the context of the production process, including its external influencers.

With the emergence of design methods came the mapping of the design process, generating models, formulae and diagrams that aimed to illustrate best practice. In the early days of formalising the design process (the 1960s), it often took on a linear format and featured a series of arrows and boxes, such as the one below by Brian Lawson.^{vii} The design process began to take on a tangible format and standard phases such as analysis, evaluation and synthesis

were associated with the practice of design for the first time.

Figure 2: Brian Lawson



These models themselves tell us a great deal about the design process. They reflect a moment in time and exist to be lived by and improved upon. Design had stepped into the genre of science. Models of the design process took on their own form and the *linear* format of Archer and Lawson proved to be the most widely adopted. The linear format remained a consistent feature, with a number of different iterations shared among researchers.

However, over the last forty years, business has actively sought to adopt a methodology that acknowledges other competing factors within businesses. The linear format was criticised for suggesting that a problem could be solved in one go, so revised models that incorporated loops and iterative phases taking wider design and business activities into account were developed. These models allowed time to evaluate and test ideas, and also enabled the designer to consider a number of different ideas at one time.

The core-based model by Stuart Pugh (left image in Figure 3) suggests a process of iteration, testing and evaluation.^{viii} Pugh referred to a '*design core*' which consists of activities which he claimed were imperative for any design activity '*irrespective of domain*'. Figure 3 (right image) is an example of one of these iterative loops that could take place at each of the stages of the core-based model. Furthermore, around the core-based model, there would be a plethora of other impacting business and design activities present.

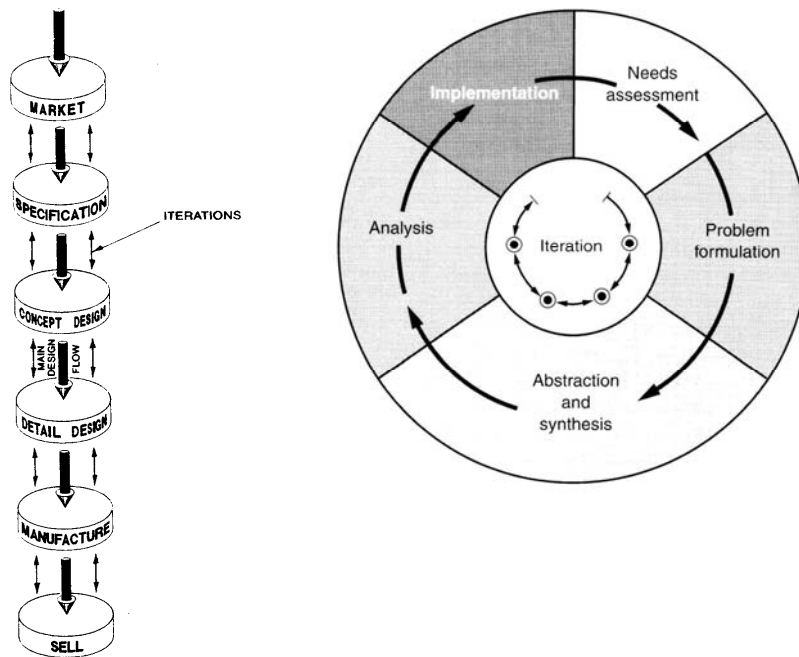
As such, the core-based model identified different aspects of the process and the stages involved. Models such as this one were used to understand situations, users and activities undertaken and proved very helpful with more complex problems, such as in engineering.

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Figure 3: Stuart Pugh. The design core – An iterative process with information flowing in all directions



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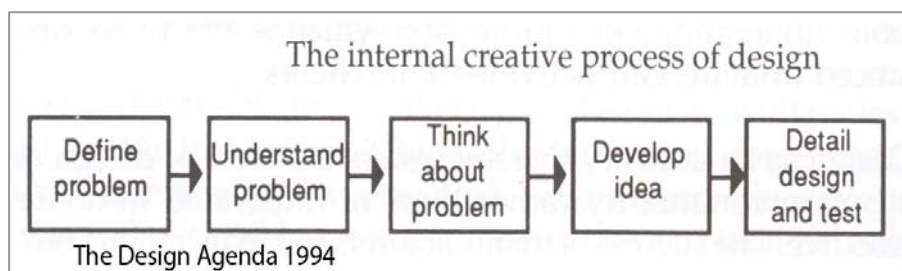
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Pugh focused on a concept called *total design* which he believes incorporates everything from the early identification of market and user need through to the selling of a product that meets that need.

One of the key outcomes of the development and formalising of the design process was the emergence of *user participation*. Given that the role of the designer had become more widely acknowledged, it grew and stretched, crossing boundaries of social science, marketing and branding. For example, Peter Dormer noted that *'design was seen to have two separate but related functions: it could be used strategically by corporations to help plan its manufacturing and shape its marketing, and it had a more obvious role in making individual products attractive to consumers.'*^{ix} One key result of this was the increased awareness of the user, and indeed *user participation*. How and when users are included in the design of products and services is one of the most critical lessons learned.

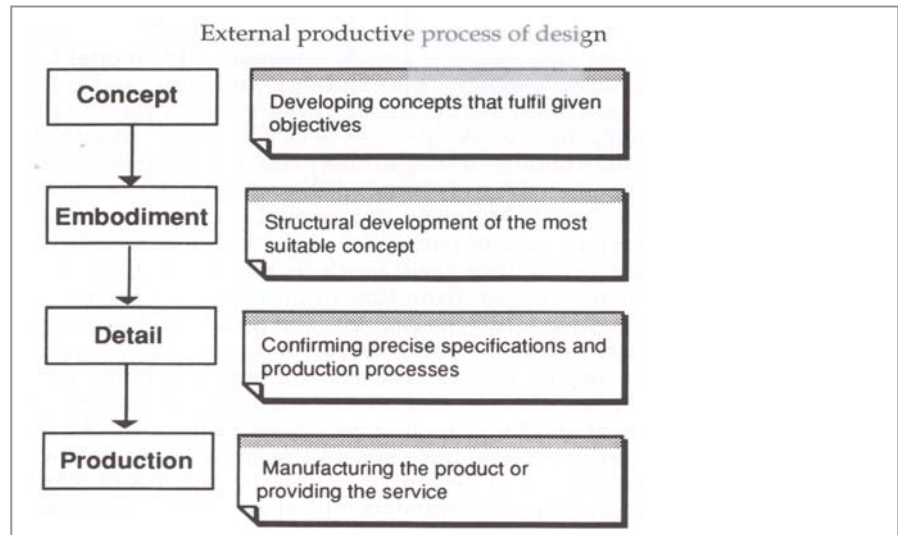
Equally, another development is the recognition of the specific role that the designer plays within the design process. Cooper and Press (1994) recognise the difference between the process used by the individual designer and the design skills they use to solve a problem, and the design process as the strategic planning of product development (Figure 4).^x Their model demonstrates the design process as it occurs from the individual's perspective, and describes their thought process as they address a problem. This is often personal and based on education and experience.

Figure 4: Cooper and Press



In contrast, on a corporate level the process has a much broader scope and incorporates external factors such as finance, marketing and tangible measurable aspects of business. Walker's model (Figure 5) refers to the *external productive process of design* because it reflects two key activities, namely planning and production.^{xi} Consequently, this model succeeds in reflecting a combination of the corporate design process, and the individual designer's process. This more structured methodology and process to design activities can help to anticipate problems and manage risk.

Figure 5: Walker



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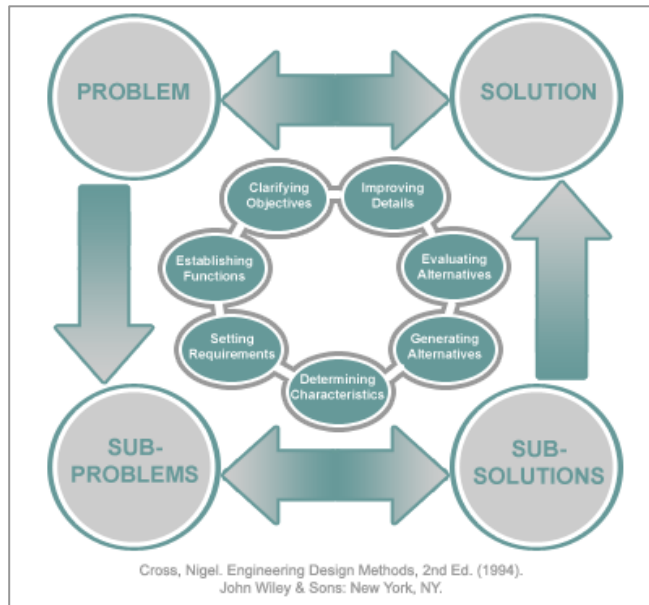
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06_ The design process of today

As research has progressed our awareness of design as a process has increased. The level of complexity that occurs within the process is accentuated by factors such as technology, sustainability, social responsibility, legislation and so on. It would seem that as social and cultural boundaries continue to blur so too do the borders of design as a discipline. The boxes have become permeable and the parameters pushed.

The design process of today is less scientific. It is adapted to meet changing business requirements. Our world is evolving so quickly that there may never be an *ideal* methodology or process. What matters therefore is that a flexible infrastructure is in place with the foresight and intelligence to respond quickly and appropriately to creative change. An example of this is Nigel Cross's model below (Figure 6). In *Engineering Design Methods*, Cross investigated and presented theories of how design and engineering could work in partnership.^{xii}

Figure 6: Nigel Cross



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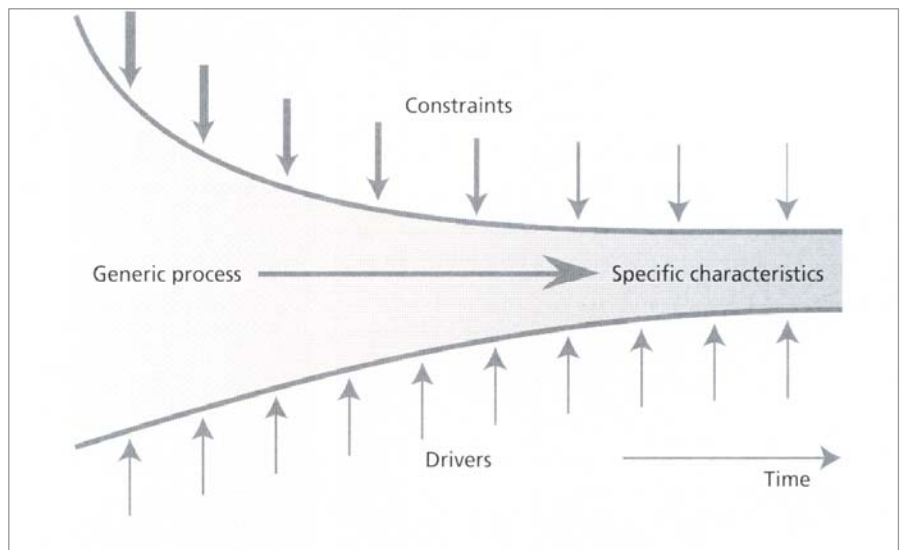
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07_ Design process as best practice?

There is already extensive material published on the best practice of design process. One of the most recent and comprehensive reviews of design process improvement is by Clarkson and Eckert.^{xiii} Clarkson and Eckert believe that there is a central core of generic stages that constitute a commonality between design processes. However, these commonalities are modified and adapted to reflect the problem or user need. These *constraints* and *drivers* that influence the direction of the design process give the process its project-specific characteristics (Figure 7).

Figure 7: Clarkson and Eckert



Clarkson and Eckert acknowledge that although companies are confronted by similar challenges and constraints they often deal with them differently. The product has a major impact on the process as does the type, nature and position of design within the company.

Best (2006) agrees that although there is no single best practice design process, there are core activities which can be adapted to fit a particular project or situation. Best contends that while there may be standardised processes that are adopted to solve design problems, this standardised process is necessarily adapted to the situation or problem at hand. She describes this as:

- _ **‘Standardised processes** that have a defined set of project steps, a timeframe and a known or expected outcome.
- _ **Customised processes** that are more detailed processes adapted from standardised models to suit a particular problem or project^{xiv}

In order for a company to make amendments and improvements it needs to understand its own context and define what influences its methods of approach and design process. To understand a design process well, the business also needs to understand its constraints. The external or internal pressures, challenges and connections on each stage of the design process (such as budget, technology, legislation, etc.) should be understood. Clarifying the influence each has on the other will also help to create a concise picture.

The general consensus is that there is no set best practice in design process. However, there is agreement that there are some commonalities across processes used, and that these typically consist of four or five distinct phases.

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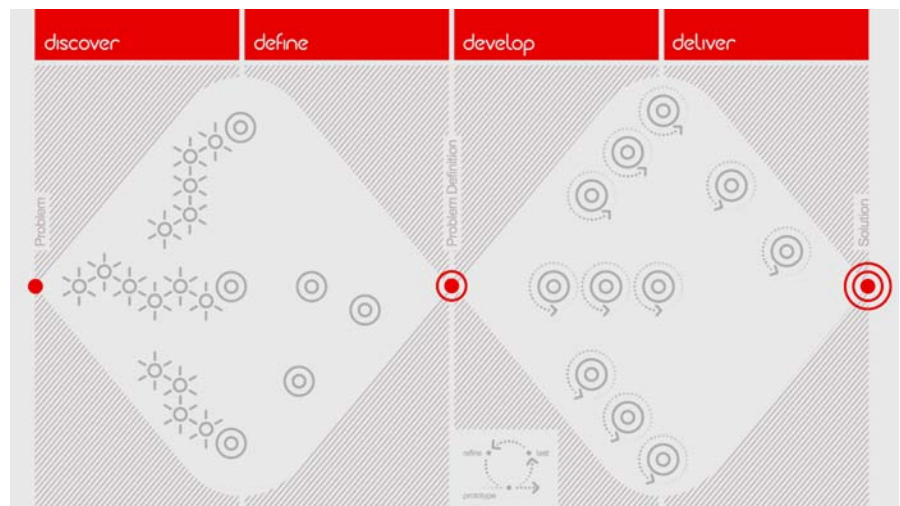
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Design Council research echoes this understanding. The double diamond (Figure 8) is formed from four distinct phases. These are Discover, Define, Develop and Deliver. The shape is generic throughout projects but stretched and morphed depending on the project’s characteristics such as the type of product or service, whether there are external suppliers involved, or if it is a completely new product or the development of an existing one. Each of the phases consists of a series of iterative loops where exploration and testing of ideas can happen.

Unlike some of the other models presented in this desk research, it places emphasis on the Discover phase as one of the most critical, and the one which makes best use of the designer’s knowledge and skills. This stage is not present in the processes outlined so far. This early phase has been referred to as the *fuzzy front end* (FFE) and it is critical to defining the nature of the problem that is being addressed through design (Rhea 2003).^{xv} The term FFE is increasingly being used to describe the early stages of the innovation process where ideas form. There is a level of ambiguity at this phase of the new product development process, and the process is largely unstructured.

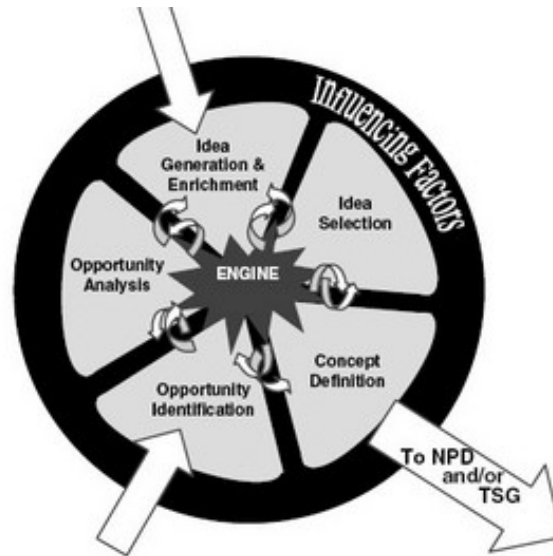
Figure 8: Design Council – Double Diamond



Some have attempted to map what the Discover phase on its own consists of.

Koen et al. have considered tools and methods that are used in the FFE of the Discover phase.^{xvi} Their key point is that the lack of evidence of best practice in design process means that uncovering what happens in the FFE is the most promising way in which to improve the innovation process. Figure 9 shows the attempt by Koen et al. at providing a terminology or language for what happens at the FFE.

Figure 9: Fuzzy Front End: Effective Methods, Tools and Techniques (2006)



The new concept development (NCD) construct is a relationship model,

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Equally significant to considering best practice in design process are activities that are carried out by non-designers and outside a formal design process. An interesting argument was presented by Gorb and Dumas (1987) when they published a paper discussing the concept of *Silent Design*.^{xvii} They acknowledge the significant amount of design activity that goes on within an organisation which is not actively acknowledged as being design.

More than anything, the examples of FFE and Silent Design point to how design process just continues to expand as people search for answers to how the best outcomes of design can be achieved. Businesses need to think about implementing a design process that takes into account and accommodates all of the activities which occur around and beyond the core design work. Indeed, the research by Gorb and Dumas challenges the concept of best practice suggesting that '*[design process best practice] may be relevant only to the organisation concerned and indeed may only be temporary*'. Instead their research focused on 'general' practice and aimed at understanding how companies make best use of design.

08_ Managing the design process

There is a plethora of research and information on managing the design process. One of the main conclusions drawn from research into the value and impact of a formalised design process has been that the management of the process is key to its effectiveness. There are, of course, a number of factors that influence the management of the design process. This section identifies the main ones.

- **Design leadership.** Dumas and Mintzberg define five ways in which to manage the design process, one of which is to have a design champion and a clear design policy.^{xviii}

- **Reliance on external suppliers.** According to Bruce and Morris, the management of the design process will also differ according to the level of involvement from external and third party suppliers (1994).^{xix} When the process is managed entirely internally it draws upon the knowledge and expertise of in-house people. When this process involves external teams research shows that the management becomes more complex. There has been much debate about how to manage the outsourcing of expertise in the design process. Bruce and Morris weigh up the benefits and drawbacks and suggest that the main issues relating to outsourcing are *accessibility*, *familiarity* and *control*. The key benefit of using external suppliers is considered to be the insights that they and designers can bring, as well as the reduced cost factor.

- **Presence of a design manager.** Dumas and Whitfield (1989) have pointed to the difficulties of managing design, and surveyed attitudes and practices within major UK companies.^{xx} They conclude that there are four different company types, each with their own approach to design, and note that the presence of a design manager makes the design process easier to manage. They also suggested that there is a clear difference between the management of design in a manufacturing company and the approach taken by the service sector.
 - Manufacturing/Design Manager
 - Manufacturing/No Design Manager
 - Service/Design Manager
 - Service/No Design Manager

- **Scale and complexity of the design process.** In complex industries such as the automotive sector, specific tailor-made models are used to map business functions and processes, often using Gantt charts and Stage-Gate™. Robert Cooper suggests that companies that use a Stage-Gate™ process fare much better and use it as a road-map to plan the multiple parallel activities involved in a complex product development process.^{xxi} It is also critical that a company understands its process in order to identify where and when improvements can be made. Indeed, an effective design policy and process allows the knowledge captured and lessons learned to be re-integrated into the process and improve it.

- **Accounting for change.** Speed of change, advances in technology, new laws or regulations and differing levels of project management will influence the strategy and leadership of design within a company (R G Cooper 2001).^{xxii}

Each of these influencing factors will have an impact on the design process. They will be considered in more detail during the primary research with the 11 companies.

09_ Changing scope of design

As we have seen, in historical terms, the design of processes has moved from craft roots and been applied to science, engineering and manufacturing. However, design itself has moved on and its scope has broadened to include disciplines such as interaction, experience and service design. Design also encompasses the organisational structure, marketing, branding, workplace and culture (Nadler and Tushman 1997).^{xxiii} Often in product development, design is the uniting factor that brings function such as marketing, engineering, manufacturing and sales together. Today design is integrated into many business functions that can unite different activities to form both product and service offerings which meet the needs of the customer.

Another overarching influence design has brought to business functions is its

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ability to inspire innovation through its knowledge of and interaction with markets and customers. Design brings *people* into the new product development process. Research by leading academics clearly demonstrates how creating a fit between knowledge and design within an organisation and designing with markets in mind can be a key driver for innovation (Reinmoeller 2003).^{xxiv}

The design of services is one area where a design process can and increasingly must have a significant impact. Nevertheless, according to recent research (Hollins, Blackman and Shinkins, University of Westminster, 2002 onwards) only one in five service sector companies has a written process for developing services. This suggests that many businesses are vulnerable because of a lack of effective management procedures. These problems are accentuated by the failure of 48 per cent of companies to do research before developing services.^{xxv}

Hollins believes that because businesses put customer convenience and satisfaction at the forefront of the design process, designers naturally think about the service from the perspective of the user. In perfecting the process of service development, the approach and customer touch points are mapped in the form of a blueprint. Blueprinting is rapidly emerging as a popular method of designing services, experiences and user journeys. Its success in fine-tuning the end solution means it is also increasingly being adopted by other areas of design as a method of making improvements and detailing the end user experience of product, service and brand.

'The blueprint can almost be considered as a production process. A service blueprint is really a demonstration of service process design'. Hollins^{xxvi}

In sum, the models of design process discussed in this paper will continue to evolve and develop into methods such as blueprinting. Research into the design process and its relationship to business performance continues. There are a number of current research initiatives running in the UK, referenced below:

- _ Knowledge and Information Management (KIM), a three year project jointly funded by the Engineering and Physical Sciences Research Council (EPSRC) and the Economic and Social Research Council (ESRC). The project brings together 70 academics and researchers from 11 universities to look at the challenge that knowledge management presents in the move towards through-life product support. The research is being led by Chris McMahon, Professor of Engineering Design and Director of Engineering Innovative Manufacturing Research Centre at University of Bath (<http://www-edc.eng.cam.ac.uk/kim/>). This study asks how the output of design processes should be recorded to enable the information created and the process followed to be accessed so the information and rationale behind design decisions can be revisited reliably over the lifetime of the product and beyond. We believe this question is highly relevant to the design process benchmarking study commissioned.
- _ Cambridge Engineering Design Centre is running a series of research projects based on process modelling and the relationship these have between product and people (<http://www-edc.eng.cam.ac.uk/research/processmanagement/>). The core aims of the research are to:
 - _ Understand the nature and demands of complex design process
 - _ Challenge current industrial practice of planning and managing risk in design processes
 - _ Develop acceptable and novel design process improvement tools.

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10_ Benefits to business

We believe that there is a correlation between business success and the presence of a formalised design process. Design Council's Design Atlas argues that there are a number of distinct activities related to design process that lead to business success, including:^{xxvii}

- _ Recognising business and design activities as process
- _ Understanding where design fits within their process
- _ Understanding how design activity can be managed
- _ Using structured thinking within the design process

By modelling the design process, it is possible for businesses and investors to identify possible areas for improvement more clearly. By facilitating a better understanding of the underlying business process and behaviour of those involved in them, the business can influence the development of a more robust process which is capable of delivering expected results. A more comprehensive awareness of the process taking place can allow for unexpected challenges to be accommodated.

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Having a design process that allows for and accommodates change also means that design can take place on both a tactical and operational level. So for example, structured planning can in some larger companies help to generate new ideas, yet allow the operational work to continue while dedicated teams can work on generating new insights in parallel.

A good example or case study of this is a new approach to design created at Philips Design in the early 1990s when Stefano Marzano, Managing Director of Philips Design, created the High Design Process. High Design is a holistic approach to design, allowing Philips Design to accomplish its mission to create value for its customers, shareholders and society as a whole by delivering a people-focused design capable of improving the relationship between people and objects and people and the environment.

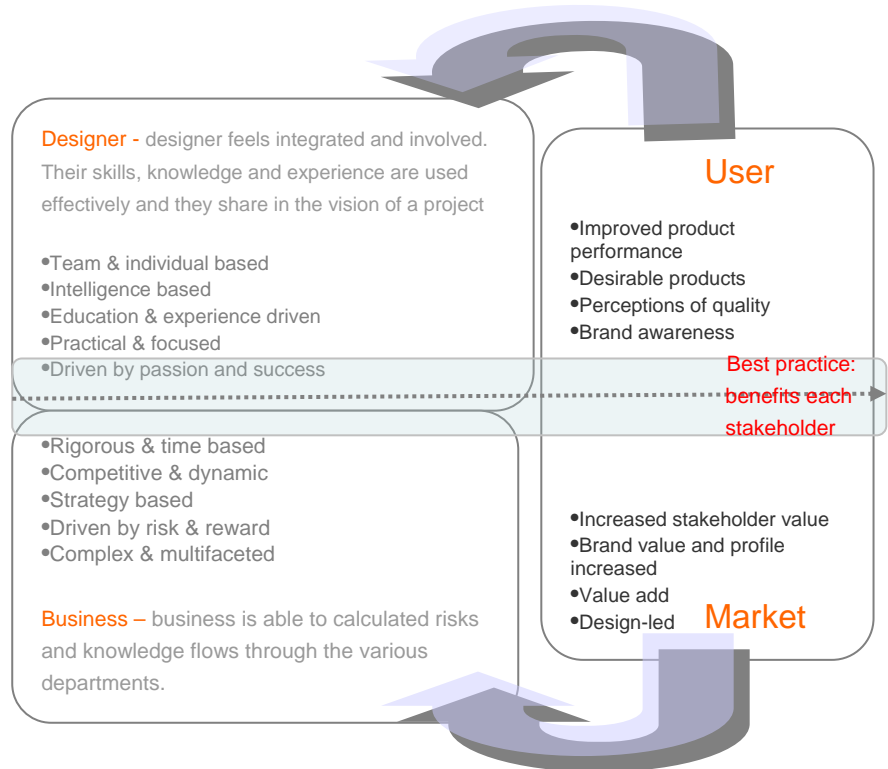
Philips's approach is human-focused and the High Design Process is multidisciplinary, and involves a wide range of skills and knowledge. The High Design Process is integrated into the Business Creation Process, and the design team work very closely with the Marketing and Development experts clients' organisations. The High Design Process is embedded in each phase of Philips projects. It features five key phases:

- _ **Initiation phase** - deliverable: shared understanding amongst the project team and the client of the objectives and scope of the project objectives
- _ **Analysis phase** - research and optimisation of the objectives of the project within the marketing, technology and planning constraints
- _ **Concept phase** - ideas development and delivery of a design proposal
- _ **Finalisation phase** - delivery of design specifications
- _ **Evaluation phase** - evaluation of the project deliverable, process and communication (carried out with the client) to be used as input for future projects.

High Design completely transformed the way in which Philips Design worked and won them a Red Dot 'Design Team of the Year 1998' award for its unique approach to design management.

In summary, best practice exists on many levels, and can benefit multiple stakeholders. Figure 10 shows the flow of benefit from a design process that flows from the user and the market place back to the business and designer.^{xxviii} The model presents the idea that best practice in design process meets the benefits of everyone involved, including the designer, the business itself, and the user / market perceive the benefits to be. We suggest that the benefits of the design process are felt throughout and beyond the company.

Figure 10: Design Council working model on the benefits of a best practice design process



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11_ Conclusions and discussion points

'Product development and design activities are a firm's most powerful competitive weapon.'^{xxix}

This paper has presented a collection of design process examples published over the last forty years. We have aimed to illustrate the development of design process over time, and have also tackled issues such as the existence of best practice, and how to best manage the design process. We've seen that there is no consensus on a best practice design process model, but that a design process, taking whatever form that works for the given company at a given time, is thought to deliver business benefits.

This paper does demonstrate that design itself can consist of a generic core of activities and can appear similar across disciplines (Pugh 1990). However, no one would say that there is only one way to approach design (Clarkson and Eckert 2004). One of the overarching messages is about adaptability – taking core generic stages and customising them to fit a particular problem or project (Best 2006).

Next, we have provided details of how this paper and the desk research will influence our thinking for the primary research going forward. We have identified three key areas that will help us carry out our primary research with the 11 companies. These have been clustered through this desk research, and include:

Corporate

- _ Scope of design - strategic or operational
- _ Influencers and motivators - people, leadership and relationships
- _ Skills and resources

Knowledge

- _ External influencers
 - _ Information flows and dependencies
 - _ Evaluation - testing and iterating the design process
-

Market

- _ Touch points
- _ Value and impact of design on brand
- _ Research – people & users

These three areas picks up on the questions that we have already identified in the discussion guide for the primary research, and potentially forms the basis of a method of analysis for the findings. The following section gives more detail to each area, and provides some examples of what might be considered as part of our enquiry:

Corporate

Scope of design - strategic or operational - Examples of the design process discussed during the primary research will fall into one of two categories: *operational* or *strategic*. We will have to be aware if that the design process used to create products or services in these two categories is different. To generate a completely new product or service from scratch involves different stages and people than those used for an extension or development of an existing product. There are increased levels of uncertainty in the development of new platform technology, for example, and lower risk and uncertainty in incremental extensions of an existing platform (Koen 2006).^{xxx} It will be interesting to compare the up-front strategic process to the operational one within one company.

Influencers and motivators - people, leadership and relationships – The research will encounter a number of ways to manage design. The design process is partly a visual representation of activities but it is the management and leadership of those activities that will differ from company to company (Dumas & Mintzberg 1989). Therefore, some of the questions we will be asking include: Who takes the leadership role within the design process? How is it achieved? What are the benefits? What are the drivers for design, where do ideas and projects come from? What are the business motivators?

Skills and resources – The selection, interrelation and location of skills within a company will affect the flow of information and influence the results of a project. Team structure, key collaborations and the mapping of skills ensure that people are involved effectively and gaps in skill sets identified.

Knowledge

Existing research into the design process has not yet addressed the complexity that surrounds the information flow within a design process. Design can be found throughout an organisation and crosses many different corporate activities (Dumas and Gorb 1987), and the design process may not depict all of these areas.

External influencers – Shifts in legislation, regulations, new materials, technology and global trends influence the direction and flow of a design process. How is this data gathered and fed into the process?

Information flows and dependencies - large organisations involve many stakeholders both internally and externally. In complex markets and sectors such as technology external suppliers and commercial collaborations create complex information flows in and out of the design process. How is this knowledge captured and shared among individuals, teams and departments?

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Testing and iterating – the design process is a series of stages where the testing of ideas occurs. Lessons learned, new evidence and challenges impact on the process direction. How does this level of insight influence the dynamic of a process? How are key changes communicated to those involved?

Market

Touch points – Where do those involved in the process come into contact directly or indirectly with the market?

Impact on brand – There appears to be a lack of research carried out into the correlation between good design process and success factors such as sales, profit, brand value, etc. The impact of having a visible design process in itself can be demonstrated through the Philips example. The company builds its ethos and image on its creative processes and regularly presents to peer groups at conferences sharing their *best practice*, which includes its design process. Philips has a distinct confidence in its methods which strengthens its design-led brand values and profile.

Research - involving the user in the process has been defined as one of the key triggers for creativity. How are the needs of end users identified and fed through the process?

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Footnotes

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