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UK design as a global industry: International trade and intellectual property

The Big Innovation Centre

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Executive summary

The importance of design to the UK economy is widely recognised. It is one of the key pillars of the knowledge economy, it plays an important role in the innovation process, and it is one of a number of specialisms that help to set the UK apart from global competition. But despite this importance, the nature of design-intensive industries – the businesses that practice and sell design – is remarkably hard to pin down. This uncertainty renders it hard to analyse, and makes it difficult to develop clear, consistent policies to support the designers. The Hargreaves Review recommended that more research was needed to develop a clear evidence base for improving the intellectual property system for design.

This report forms part of that evidence base. It examines how UK design figures in the global economy, and considers how the intellectual property system can best support its growth. The key findings of the report are set out below.

Design's international supply chain

Design-intensive industries are a diverse and nuanced sector. This report identifies six different industries in which design plays a major role, spanning both manufacturing and service sectors. Each of these different sub-sectors operates differently, and each derives value from design in its own way. The intellectual property system must reflect this diversity, and provide a framework for these differing parts of design-intensive industries to protect and make money from their intellectual property.

The six design-intensive sectors identified in this report are:

- **Design services** – a group of specialised design and technical activities, employing a high concentration of designers and trading on a business service basis;
 - **Architectural and engineering services** – a diverse group of services that provide design and technical support to a range of building and engineering projects;
 - **Computer and telecommunications services** – services that provide IT support to other companies, as well as those that provide telecommunications services to business and to consumers;
 - **Printing and publishing** – the physical printing and publishing of books, journals and other expressive material, spanning both manufacturing and services;
 - **Fashion and craft** – a variety of manufacturing sectors producing low or medium-tech goods with a significant design element, such as wearing apparel, furniture, as well as designers working in arts services; and
-

- **Advanced manufacturing** – a group of technologically advanced manufacturing activities that use design as a significant input.

Design-intensive industries are highly export-facing. Most design-intensive sectors export a large share of their output, and contribute significantly more to UK exports than would be expected given their size. Around 35% of UK exports come from industries that employ higher-than-average concentrations of designers – when weighted according to the pay of core designers, design accounts for around 2% of UK exports. This share of exports is far higher than design's share of either employment or output, suggesting that design is extremely export-facing. In particular, specialised design services stands out as a highly export-intensive sector.

Design appears to play a leading rather than supporting role in international supply chains. Data on the interactions between design-intensive sectors and the rest of the economy suggest that a relatively small share of design outputs is sold to other export-intensive industries. The majority of service-based design activities are sold to other parts of the service sector, which have a relatively low propensity to export. There is little evidence to suggest that design services are sold to UK manufacturers, who then use them to export. Instead, the design-intensive sectors export a large share of its output directly. Our conclusion is that design plays a leading rather than a supporting role in UK trade, although there are limitations on the data available to measure these international interactions.

Design exports are predominantly sold to advanced economies, although emerging markets are growing in importance. As for the economy as a whole, the majority of design exports are sold to established UK trade partners in Europe and America. There is relatively little evidence of large scale exports to countries associated with low-cost manufacturing, such as those in East Asia. However, there are signs that exports to emerging markets, such as Russia, China and India, are beginning to grow. These emerging economies tend to have weaker intellectual property regimes than the UK's more established trading partners, and this will be an important consideration as the UK seeks to diversify its export markets.

Design and intellectual property

The intellectual property system is vital to design businesses, because they are based on generating valuable intellectual property. For designers to be able to generate value from and trade their work, they need an intellectual property system that is flexible, reliable and easy to use. This is especially challenging in a global context, but it is vital given the international nature of the UK design industry.

Design businesses use a range of different business models. There is no standard approach to selling design, and design firms capture value from their work in different ways. The three main ways of selling designs can be summarised as:

- **Selling products** – turning designs into finished products, and selling those to customers. A large share of the value of such design products is embodied in their intellectual property, and companies using such a model face risks of copying by other firms, especially in some overseas markets;
-

- **Licensing designs** – developing designs, and allowing other firms to use them under licence. This model involves capturing value directly from the intellectual property, but requires a clear and easy-to-enforce intellectual property system to make it viable;
- **Design as a service** – many design companies offer design as a bespoke service, rather than a codifiable design. The bespoke nature of design services puts them at a lesser risk of copying, but such companies still rely heavily on the intellectual property system to provide a basis for commercial relationships.

These business models are not mutually exclusive, and many companies use all three within their operations. Each of these models requires a different type of support from the intellectual property system, since they involve trading design through different mechanisms.

Design businesses use many parts of the intellectual property system, not just design rights. Evidence from the case studies shows that design businesses use a wide range of intellectual property protection to support their business models. Registered design rights are one such mechanism, but unregistered design rights, copyright, trademarks and patents are also used by design businesses to protect and derive value from their design assets. Some companies deliberately eschew intellectual property, preferring to rely on the pace of their innovation and difficulty of copying products to keep ahead of competitors. The most appropriate form of intellectual property mechanism is context-specific, and depends on the business model used. Policy makers must consider how design relates to the whole intellectual property system, and avoid focusing exclusively on registered design rights.

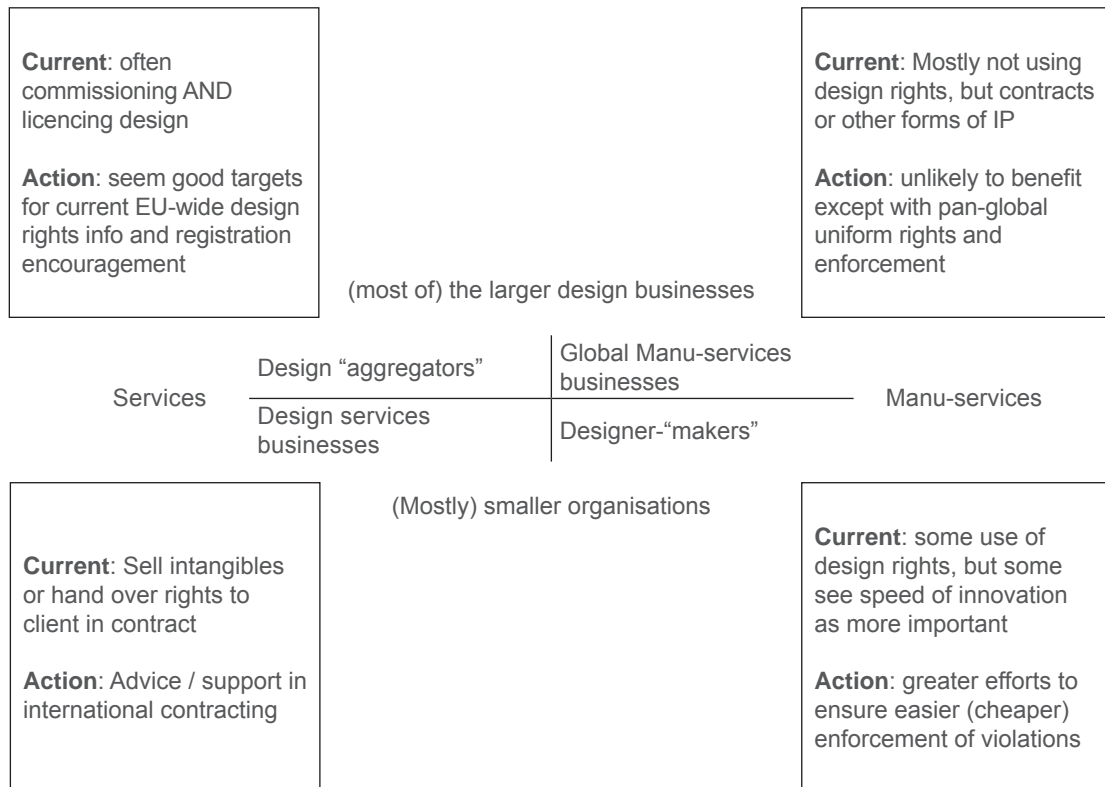
The design-intensive industries sector has a large share of small businesses, which need support in using and enforcing intellectual property rights. Developing service contracts, licensing designs and protecting design goods is a complex task for any business, and it is even harder to do in international markets. Small businesses often have limited resources to enforce their legal rights, and this may prevent them from exporting. It may also be hard for smaller businesses to select the right type of intellectual property protection, given the diversity of options available.

The lack of international harmonisation of intellectual property regimes hampers some international trade by design firms. There is some evidence from the case studies that firms operating particular business models are constrained by different intellectual property regimes in different parts of the world. While some firms may be able to find a way around such problems (such as using EU-wide design rights to protect against copied imports), this may hold back international trade in design.

Recommendations

Bringing together this report’s findings on UK design’s international trading patterns, the shifting business models deployed by UK design organisations, and their design rights and IP strategies, the diagram below organises design-intensive industries on a scale between services and ‘manu-services’, and in terms of organisation size.

The four broad categories of design organisation that can be mapped onto this structure – and tallied with our industry analysis – are: global manu-services (primarily SIC codes 25-30), designer-maker organisations (from SIC codes 13-15, 31, 32 and 90), design services (most of SIC codes 61, 62, 71 and 74) , and design ‘aggregators’ who tend to license and commission designs (a broader SIC group possibly drawn from other but including codes 18 and 58). Some design aggregators also sell directly. Clearly some UK design organisations operate multiple models that would stretch across these categories.



From these categories we can derive four recommendations for the Intellectual Property Office, and the broader UK government.

Focus for *global manu-services organisations*:**1. International harmonisation: There may be value in focusing on the creation of a global system for the registration and protection of designs.**

This research has provided some evidence to suggest that there would be benefits to extending the global reach of the design rights registration system. Having a design rights system that is legally enforceable in more countries would make it easier for a variety of design companies to do business, even though relatively few design firms would use the right directly. There is also some evidence that the EU-wide OHIM design registration system offers benefits over the UK-based system. There is little evidence that strengthening the UK design rights system would provide significant benefits to international design businesses.

Of course, there are many obstacles to extending the global reach of design rights, and this is not something that the IPO alone can take forward. However, there is a stronger case for putting effort into extending the international reach of existing design rights than for extending the scope of design rights within the UK. This recommendation also implies a long-term strategy – but this is appropriate as the level of competition from competitor nations in aspects like design aggregation and services is likely to intensify over a 10-15 year timeframe. First steps might be greater engagement with international efforts to harmonise the measurement of design industries and activities.

Focus for *smaller design services organisations*:**2. Providing clearer guidance to Small and Medium Enterprises (SMEs) on the range of intellectual property protection methods available.**

The range of intellectual property protection used by design firms may make it hard for SMEs to assess which approach to managing their designs is most appropriate. The IPO could provide further guidance to SMEs, explaining the full range of different options that can be used by designers, rather than focusing solely on registered design rights.

The alternative options highlighted should include unregistered design rights, copyrights, trademarks and patents. As well as listing out the different options, it would be helpful to provide guidance on different strategies for using these rights (such as using copyright to protect technical reports).

Focus for *smaller designer-makers*:**3. Making enforcement of unregistered designs and contract agreement easier for small companies.**

As well as providing clearer guidance to small businesses, there is also a case for expanding support for small, internationally-facing design businesses in writing contracts and enforcing intellectual property. There is a case for the IPO to work with UK Trade and Investment and other relevant bodies to provide better export support to small design firms.

This support might include access to legal support or advice on how to agree contracts with international clients. It may also involve improving the enforcement of unregistered design rights for small design businesses.

Focus for *design-aggregators*:

4. Focusing efforts to encourage design rights registration at UK and EU levels at those licensing organisations / design aggregators whose business models are most reliant on direct design IP – and most likely to need to enforce design rights in their main EU markets.

Existing efforts by the IPO to inform design businesses regarding design rights and other IP protections could be focused on design aggregating businesses. This might result in these organisations deploying other kinds of protection, for example patents, but the focus would be driven by the centrality of licensing and commissioning to the organisation's business model. As the case studies make clear, the majority of enforcement problems for what are often high-value items are not directly in international supply chains, but in enforcing design rights in other 'home' markets like the EU. Support for these organisations might include alternative design deposit systems such as those provided by ACID or others.

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1. Introduction

Design plays an important role in the UK economy. It is a key part of the knowledge economy, with UK businesses investing up to £35 billion a year on design (Haskel and Pesole, 2011). It is also a major driver of innovation, enabling firms to develop more valuable products and services, and streamline their business processes. Design-intensive industries employ up to 350,000 people (Haskel and Pesole, 2011), with many more workers in design-related roles.

This report adds another factor to that list: design makes a significant positive contribution to the UK's international trade performance. High-quality design is one of the UK's main selling points in the global economy, and helps to sustain a range of export activities in the UK. The research detailed in this report shows that design-intensive industries are extremely export-facing, generating a higher-than-expected share of revenue from overseas. Export-facing industries such as design are vital to the UK's economic recovery as the UK struggles with sluggish domestic demand, and seeks to eliminate its long-standing trade gap. As the UK rebalances its economy, design will make a major contribution.

As a knowledge-based industry, design generates a significant amount of intellectual property, and interacts heavily with the intellectual property system. Design has its own separate provision within the intellectual property system, which allows companies to register design rights as a form of protected intellectual property. The 2011 government-commissioned review of IP and growth, known as the 'Hargreaves Review', concluded that design has been neglected by the intellectual property system, and that there was a pressing need for evidence on the role, effectiveness and requirement for reform of the design rights system. This report forms part of that evidence base.

The evidence presented in this report provides a nuanced, multi-faceted picture of the inter-relationship of design-intensive industries, its international trade, and the design rights system. Design-intensive industries cannot easily be defined or categorised, and it is important that design rights policy does not adopt a blanket approach to the industry. The different parts of the industry do business in different ways, and the intellectual property system must reflect the varying needs of these design companies. This means that any sweeping reform of the design rights system is unlikely to be effective; instead, it seems likely that measures to make the system easier to use, cheaper and quicker to enforce, and more flexible to the needs of international businesses are required.

This remainder of this report is structured in five sections:

- **Section 3** sets out the methodology and approach taken in the research;
 - **Section 4** discusses issues around defining design-intensive industries, and sets out the definition used in this report;
-

- **Section 5** examines how UK design firms trade internationally, and provides an outline of design's international supply chain;
- **Section 6** uses qualitative evidence to examine how well the intellectual property system supports UK designers that trade internationally;
- **Section 7** concludes by drawing together lessons about UK design, and setting out recommendations for improving the intellectual property system for design.

2. Methodology and approach

This report aims to examine the international supply chain of UK design, and to consider how the intellectual property system could best support it. This has involved looking at the trade patterns of UK design firms – how much is exported and imported, by which types of companies, and to which countries – as well as examining the interactions between design-intensive industries and the rest of the economy. At the same time, this report considers how the intellectual property system supports design firms, and in particular how well it supports UK design firms that trade overseas.

The research has drawn on both quantitative and qualitative sources of evidence. The quantitative data have been drawn largely from the Office of National Statistics (ONS) data, which cover the whole economy and enable us to look at design-intensive industries in aggregate. This quantitative analysis has identified particular sectors of the economy that are heavily involved in design, and examined their trade patterns and economic interactions. Meanwhile, the qualitative analysis has built on these insights, and focused on how companies use the design rights system, and how it affects their ability to export.

There are two significant methodological challenges involved in this research project. The first is that there is no such thing as the “design industry” in official datasets. Design and designers are spread across different industries and occupations, and the role they play can vary widely. For this reason, we cannot make definitive statements about design-intensive industries as a whole. Instead, we identify the industries in which designers play an important role, and analyse the performance of these industries. The challenge of defining design-intensive industries is discussed in **Section 4** of this paper.

The second methodological challenge is that there is very little large-scale data on supply chains, especially international supply chains. For the most part, we can only analyse supply chains on a case-by-case basis, rather than an economy-wide basis. However, the recent update to the ONS Supply and Use Tables (which are broken down according to 2-digit Standard Industry Codes, rather than by product type), enables us to look at the interactions between different industries. For any given industry, we have data on where businesses sell things to (such as other industries, consumers, government etc.), as well as imports and exports. These data do not capture the full complexity of a supply chain, but they give us a strong understanding of how different industries interact with one another.

2.1 Quantitative analysis

The quantitative analysis underpinning this report has been conducted in four steps:

- 1. Identifying different parts of the economy that draw heavily on design** – to understand the role design plays in different parts of the UK economy, we have combined occupations (i.e., people who work as designers) with the industries they work in. This enables us to see which parts of the economy are more *design-intensive*, and enables us to focus our analysis on these areas. We have used data from the Annual Survey of Hours and Earnings (ASHE) for employees and the Labour Force Survey (LFS) for the self-employed to assess which industries designers work in;
 - 2. Analysing output from design-intensive sectors** – having identified design employment in different parts of the economy, we have used a range of national data to analyse their economic output. Data from the Supply and Use Tables (SUTs) have been used to measure Gross Value Added (GVA), imports, exports and sources of income for every industry with a significant design element. The SUTs have also enabled us to explore the interactions between design-intensive sectors and other parts of the economy, by looking at how much different sectors buy from and sell to one another. In addition, we have looked at a number of other indicators, including firm size (from the Annual Business Inquiry) and pay levels for designers (from ASHE);
 - 3. Mapping trade patterns** – we have used our analysis of design-intensive sectors in the previous steps to analyse which parts of the world UK design sectors are exporting to. Data is drawn from HM Revenue and Customs (HMRC) trade statistics for design goods, and the International Trade in Services (ITIS) survey for design services;
 - 4. Secondary analysis of firm-level data** – to complement this aggregate analysis, we have also used existing surveys of individual businesses to assess how they use design rights and other intellectual property. This analysis has focused on whether companies that use design rights are more likely to export. Datasets used include the Community Innovation Survey (CIS) and the IPO's data on registered design rights in the UK.
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2.2 Qualitative analysis

The qualitative work for this report was conducted in the following steps:

- 1. Approach and instrument design:** The approach chosen was a range of light-touch case studies that would support the quantitative analysis by providing detail and insight into the interaction between UK design businesses, exports, and the intellectual property system. The case data primarily consisted of single respondent, semi-structured interviews with a key knowledgeable individual within the organisation. The data collection instrument was a broad set of key questions relating to the organisation's activities, its engagement in exporting design, and its use of the intellectual property system. It was designed to elicit a mix of descriptive and opinion-based responses. The unit of analysis for all cases was the organisation.
- 2. Case selection:** The cases were selected for maximum variety, not representativeness. We looked to have cases ranged across key distinctions in the diversity of design companies: designer-manufacturers, manufacturers, service organisations, etc. We also positively selected for those that held, or had considered holding, UK or European registered design rights. Finally we selected for a larger number of small businesses in the case mix, to match the very small-business dominant structure of UK design.
- 3. Collection:** Data collection was undertaken by members of the research team in February and March 2012. A mix of face-to-face and telephone interviews was used (6 face to face, 4 telephone interviews). Some were recorded and fully transcribed (2), others used extensive notes taken by the researcher at the time (8).
- 4. Analysis:** The first pass of the case analysis was undertaken by the researcher responsible for that case's data collection, in a broadly consistent format across the cases. These were then reviewed and further standardised by another research team member for consistency. Cross-case conclusions were drawn through discussion and reflection on the original individual case study write-ups by the core research team.

In addition to this quantitative and qualitative evidence, the research also included a comprehensive review of the design literature. There are a number of different strands of literature that are relevant to design's international supply chain, and this work has aimed to draw them together. Rather than present the literature as a separate part of the report, we have fitted the relevant findings from the literature into each of the three main sections of this report – **Sections 3, 4, and 5**.

3. Conceptualising design and the UK design industry

Design's importance to the UK economy is now widely recognised, but design-intensive industries are remarkably hard to define. Design is a discipline that spans numerous different industries and occupations, and this makes it hard to measure its size, nature and contribution to the UK economy. Without an understanding of what constitutes design-intensive industries, it is hard to develop coherent and useful policies to support UK design.

This section of the report looks at how best to define and measure design as a group of industries. It also presents evidence on how big a role design plays in the UK economy, and how it fits within the context of the economy as a whole. Ultimately, this report takes the view that the most appropriate way to define design-intensive industries is to build on previous work for the IPO by Haskel and Pesole (IPO, 2011).

Design's importance to the modern UK economy has become widely recognised. It is identified in Nesta's *Innovation Index* as one of the key groups of intangible assets which drive innovation and growth in the UK economy (Nesta, 2011). The government's *Innovation and Research Strategy for Growth* (BIS, 2011) highlighted design as one of its core themes, while the Design Council (2011) published *Design for Innovation* to coincide with the launch of that strategy. Recent analysis of design-intensive industries by Haskel and Pesole (2011) suggests that it employs up to 350,000 people, and UK businesses spend around £35 billion on design each year.

3.1 Defining design and design-intensive industries

But despite the consensus on design's importance, there is surprisingly little clarity on what design means, and what constitutes the "design industry". There is no Standard Industrial Code that neatly captures design-intensive industries; that is partly because design takes different forms, and features in different industries. In the past, studies have used a variety of definitions of design-intensive industries, but none has gained widespread acceptance. Haskel and Pesole (2011) provide a clear summary of the different definitions that have been deployed in other studies.

In working towards a useable definition, it is helpful to distinguish between "design" as a concept and the "design industry" as a part of the economy. Design itself is a discipline, an activity that most people undertake to some extent as part of their jobs. Design-intensive industries, by contrast, is a clearer grouping of people and companies who work more formally on design. In some cases, the term "design industry" is taken to mean a very narrow group of design services; however, this does not do justice to the diversity of design-intensive industries. It is perhaps easiest to think of design-intensive industries as industries that employ designers in large numbers; to avoid any confusion in terminology, we refer to such industries as "design-intensive industries" (or "design-intensive sectors") in this report.

3.1.1 Design as a concept

Defining design as a concept is problematic, as it is given quite specific and different meanings by particular groups of people (Jones, 1970; Cross, 2000; Borja de Mozota, 2003; Lawson, 2004). Design can be viewed as a discrete activity, as a total process, or in terms of its tangible outcomes (Borja de Mozota, 2003; Julier, 2000; Best, 2006). Heskett (2002) contends that under the rubric of design the range of practice is vast. It encompasses craft, industrial art, commercial art, engineering design, product design, graphic design, fashion design, and interactive design to name but a few (Heskett, 2002). The exact meaning and boundaries of the field of design are ambiguous. Even designers' understanding of design is often implicit rather than explicit (Cross, 2007), while the industry struggles to define itself (Press & Cooper, 2003; Julier, 2000).

3.1.2 Two types of design activity: tactical and strategic

While there is no straightforward definition of the concept of design, it is possible to discern different levels of activity within design-intensive industries.

In its simplest form, design is viewed as being about aesthetics: about how an object looks. On this view, it is one of many discrete parts of the production process that can be easily separated out or bolted on to add value to a product (Heskett, 2002; Forty, 1986, Walker, 1990). This type of design activity has its origins in the industrial revolution and the specialisation of labour, which enabled workers to design products without also having to manufacture them (Raizman, 2010; Potter, 1980; Sparke, 2008). This discrete type of design has developed into a "tactical" approach to design (Brown, 2008), in which designers are used to develop specific, non-transferable solutions with outcomes that can be used to make something tangible.

By contrast, many modern designers have adopted a more complex view of design, in which design is a process that plays a more active and wide-ranging role in solving problems and meeting customer needs. This is referred to in the literature as a "strategic" view of design (Williams et. al, 2009; Murphy, 2010), and sits within the context of the shift towards a knowledge economy. (Cooper et al, 2009:3). The development of design as a strategic activity has seen design evolve in a number of different directions, which are summarised in the box below.

What does the concept of strategic design involve?

The shift from tactical to strategic design is characterised by the growing sophistication of the role of a designer. On the one hand, design has become more diverse, with a wider range of disciplines and specialisations. At the same time, design has become increasingly integrated into a wider range of activities, and more heavily involved in strategic business decisions.

Potter's work (1980) in classifying design-intensive industries provides a useful starting point for the emerging design disciplines that over the last decade or so have developed into what can be termed "inter-disciplines" (Fuad-Luke, 2009; Design Council, 2010b). The industry has embraced a more holistic manner of working, thus underscoring the complexity and sprawling nature of the discipline. This complexity has blurred the boundaries between disciplines – resulting in difficulties in classifying and defining design – and signifies the complex composition of design disciplines today (Cooper et al., 2009).

Modern design disciplines have expanded in line with the growth of a market-oriented approach to consumers and clients (Lees-Marshment, 2001; Kohli & Jaworski, 1990). Complementary disciplines to the traditional disciplines of product, interior and graphic design emerged and grew during, and after, this period including retail design, packaging design and corporate identity services. These services have expanded further to form the shape of the industry and service offers today, such as service design (Shostack, 1982) and interaction design (Koskinen, 2006).

Due to commercial imperatives, designers today are working in new areas on complex problems often referred to as 'wicked problems' (Rylander, 2008; Buchanan, 1992) where both the problem and solution are unknown. Designers find themselves often engaging with the entire development process from briefing, to design, to evaluation, increasingly interacting with engineers, marketers, even with psychologists and health professionals (Shin, 2009; Bray, 2000).

Brown (2008) underscores the difference between tactical design and strategic design and its relationship to value creation:

"Now, however, rather than asking designers to make an already developed idea more attractive to consumers, companies are asking them to create ideas that better meet consumers' needs and desires. The former role is tactical, and results in limited value creation; the latter is strategic, and leads to dramatic new forms of value." (Brown, 2008:86).

Many authors have extended this view of design as a strategic resource (Borja de Mozota, 2003; Brown, 2008; Press & Cooper, 2003; Bruce and Bessant, 2002; Design Council & Creative & Cultural Skills, 2007; Sanchez, 2006; Svengren, 1996) and designers now view themselves as strategy shapers; engaging at a deep level within businesses.

Design becoming a more strategic resource means that designers must "*pursue a deeper understanding of current business strategies*" (Fluarty, 2004:18). In addition, designers must also integrate with other functions within the client organisation, such as marketing and finance, in order to understand how these functions also aim to achieve corporate objectives (Fluarty, 2004).

There is a tendency to associate tactical design with the manufacturing industry, and strategic design with the business services sector. But there is little reason to hold such a distinction, especially given the increasing tendency of manufacturing companies to adopt more bespoke and service-oriented business models (Sissons, 2011). There is likely to be a role for both tactical and strategic design within all parts of design-intensive industries, whether in manufacturing or services.

Even if the distinction between tactical and strategic design does not follow sectoral lines, it is likely to have implications for the intellectual property system. In general terms, tactical design tends to involve developing discrete, codifiable outputs. These “blueprints” can usually be replicated and mass produced, as well as licensed. Such outputs generally lend themselves well to design rights and intellectual property protection, because they can be codified, and easily replicated and copied. As a result, tactical design may identify strongly with the design rights system.

On the other hand, strategic design relies far more on tacit knowledge¹ and expertise, which is harder to replicate but also harder to protect using intellectual property rights. As a result, design rights and other forms of intellectual property feature much less prominently in the literature on strategic design. This is not necessarily a problem, as intellectual property protection is likely to be less relevant to a bespoke, service-based activity.

3.2 Previous approaches to defining the “design industry”

Besides the literature on how design has evolved as a profession, there have also been numerous attempts to define design-intensive industries. There has been very little consensus and many different definitions have been used. However, the most complete studies of design-intensive industries have tended to include two distinct groups within their definition:

1. A group of specialised design service industries, in which most employees are designers, and companies sell design services; and
2. Designers that work in other non-design industries, such as manufacturing, publishing and fashion.

Haskel and Pesole (IPO, 2011) apply this approach. Their analysis includes both the specialised design *industry* (defined by industry 113 “Architectural activities and technical consulting” in the Supply and Use Tables) and a range of design *occupations* that are employed loosely across different industries.

Haskel and Pesole’s list of design occupations follows their “AEGPD” definition – it includes Architects, Engineers, Graphic, Product and Clothing related designers. Rather than take these as pure design occupations, they estimate how much time each of these occupations actually spends doing design activities. These estimates are:

- 60% for design and development engineers;
- 70% for architects;
- 50% for clothing, product and fashion designers;
- 10% for all other types of engineer.

1 For an explanation of the distinction between tacit and codified knowledge, see Brinkley (2008)

This approach is an interesting development in estimating the size of design as an industry. However, their list of design occupations differs from a number of others, including NESTA's (2007), the Arts Council's (2003) and DCMS' (2010), all of which include more creative occupations, and the Design Council's (2010a), which focuses more closely on core design occupations. There are also significant differences in approach towards counting purchased design, in-house design or a combination of the two.

Of course, these different definitions all lead to different statistics on the size of design-intensive industries. In terms of employment, estimates range from a conservative 185,500 (Design Council, 2010a), to a more comprehensive 350,000 (Haskel and Pesole, IPO, 2011). Equally, the Design Council estimates revenue for design-intensive industries at around £15 billion, while Haskel and Pesole put design spending at a much higher £35 billion. Meanwhile, Moultrie and Livesey (2009) found that UK businesses spend around £50 billion on design in general, of which £8 billion is outsourced.

These differences are largely explained by the different definitions of design-intensive industries. Haskel and Pesole's figure may be inflated by their use of the rather broad industry code for architecture and technical services, which is arguably a much broader area than the specialised design industry.

3.3 Definition of design-intensive industries used in this report

The definition of design-intensive industries used in this report builds on the approach taken by Haskel and Pesole (IPO, 2011). This approach involves identifying the industries in which designers work, and considering how big a contribution they make to value-added in that industry. There are a number of different occupations that can be considered "designers", and these designers work across a range of different industries.

Within this mix, there is a group of specialised design services that employ a high concentration of designers, but there are also many other industries that involve a significant element of design. Any useful definition of design-intensive industries must seek to capture both of these groups, and must also reflect the fact that design-intensive industries spans both service and manufacturing sectors.

An alternative approach would have been to define design-intensive industries based on which sectors register the most designs. We have rejected this approach, because it fails to take account of many industries (particularly in the service sector) that do not use design rights, despite being heavily involved in design activity. Defining design-intensive industries based on its use of the intellectual property system would exclude important parts of design-intensive industries, and would not help us to answer questions about how design rights could support the full range of design activity.

3.3.1 Design occupations

The first step in developing a definition is identifying the occupations that are considered as designers. This is not straightforward, since some occupations are heavily involved in design, while others spend less of their time doing design activities. To tackle this problem, we have divided the occupations between “core” designers and “design-related” occupations. The core designers are those that Haskel and Pesole identified as spending at least 50% of their working time on design, while design-related occupations are the occupations that Haskel and Pesole estimated as spending 10% of their time on design, plus additional craft, skilled trade and technician activities.

Our list of occupations follows that used by Haskel and Pesole, with two exceptions:

- **The inclusion of selected craft, skilled trade and technician activities** – following consultation with the steering board for this project, we have included a number of additional occupations within the “design-related” activities. These occupations include craft, skilled trade and technician occupations, and have been included based on a view that they are involved in design work. We have not included any of these occupations in the “core” designer occupations, due to a lack of evidence on how much time these workers spend doing design activities; and
- **Not using weightings for time spent doing design** – the weightings used by Haskel and Pesole to estimate how much time each occupation spends doing design activities are of limited use in this study. Whereas Haskel and Pesole used the weightings to derive a precise estimate of the amount invested in “own account” design work, this project is exploring a wider range of outputs, which would be confused by applying weightings. Instead of using the weightings, we have used the distinction between core and design-related occupations to take account of the different levels of design activity.

The occupations used in our definition are listed in **Table 3.1 (Occupations used in our definition of design)** below. The core designers group is made up of the four occupations that are most heavily involved in design: graphic designers; product, clothing and related designers; architects; and design and development engineers. The design-related occupations include a much wider range of occupations, made up of various engineers, technicians, and craft workers.

Table 3.1: Occupations used in our definition of design

SOC (2000) code	Occupation
Core designers	
2126	Design and development engineers
2431	Architects
3421	Graphic designers
3422	Product, clothing and related designers
Design-related occupations	
Engineers	
2121	Civil engineers
2122	Mechanical engineers
2123	Electrical engineers
2124	Electronics engineers
2125	Chemical engineers
2127	Production and process engineers
2128	Planning and quality control engineers
Technicians	
3113	Engineering technicians
3114	Building and civil engineering technicians
3121	Architectural technologists and town planning technicians
Trades and crafts	
5211	Smiths and forge workers
5224	Precision instrument makers and repairers
541 (all subsets)	Textiles and garments trades
5421	Originators, compositors and print preparers
5491	Glass and ceramics makers, decorators and finishers
5492	Furniture makers and other craft woodworkers
5493	Pattern workers (moulds)
5494	Musical instrument makers and tuners
5495	Goldsmiths, silversmiths, precious stone workers
5496	Floral arrangers, florists
5499	Hand craft occupations n.e.c.

3.3.2 Design-intensive industries

With these occupations established, we then analyse which industries these designers work in (at a 2-digit SIC code level). This allows us to assess where designers are concentrated, and to determine how design-intensive each part of the economy is. Our assumption is that industries that employ a high proportion of designers are heavily engaged in design activities.

The results of this analysis are presented in **Table 3.2 (Design occupations by industry 2009)** below. The data suggest that we can break down design-intensive industries into a number of distinct parts, which need to be analysed separately. These individual sectors are described in detail in **Section 5**.

Table 3.2: Design occupations by industry 2009

Sectors	Number of core designers	Number of design-related occupations	Share of sectoral workforce	Concentration index ²
Fashion and craft	53,000	61,000	24%	7.97
Advanced manufacturing	30,000	80,000	10%	3.33
Printing and publishing	13,000	12,000	7%	2.43
Other production	30,000	159,000	4%	1.39
Telecoms & computer services	18,000	23,000	6%	2.04
Design services	46,000	5,000	20%	6.53
Architecture	58,000	92,000	30%	9.77
Other services	67,000	155,000	1%	0.33
UK Economy	315,000	587,000	3%	

Source: 2009 Annual Survey of Hours and Earnings, 2009 Labour Force Survey (ONS Crown Copyright)³

- 2 The concentration index measures the concentration of designers in a sub-sector relative to the concentration of designers in the economy as a whole, defined using the following formula:

$$C_i = \frac{((D_i + R_i) / N_i)}{((D_e + R_e) / N_e)}$$

Where C_i is the concentration index for sub-sector i , D_i the number of core designers and R_i the number of design-related occupations in sub-sector i , and N_i the total workforce in sub sector i . The e subscript indicates the same values but referring to the economy as a whole.

A value greater than one indicates a relatively large concentration of design employment than in the wider economy, and a value less than one indicates that that sub-sector has a particularly low concentration of designers (for instance, other services in table 3.3)

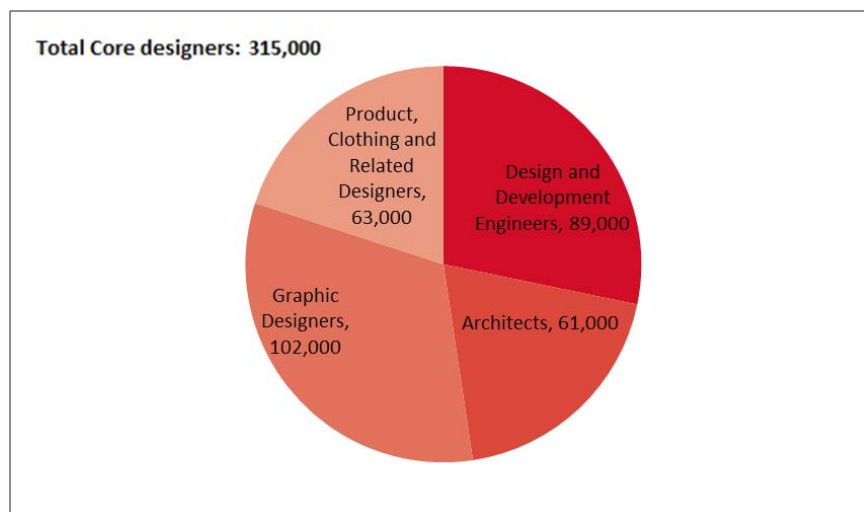
- 3 Data on employees from ASHE combined with self-employed numbers from the LFS. Because detailed occupational data are not available for the second jobs of self-employed, it is assumed that the proportion of those self-employed whose main job is in a design occupation is the same for second jobs.

These different parts of design-intensive industries form a key part of the conceptual framework for this paper. Each of these industries is relatively design-intensive, although to varying extents, and each industry has a different function and role in the economy. It is crucial to understand that design-intensive industries is not a unified entity, but a collection of various industries, each with their own features and needs. It is only by reflecting these different needs, and by charting the interactions between these industries, that we can properly understand the role of the intellectual property system in supporting UK design businesses.

3.4 How big are these design-related industries?

The data show that designers make up a small but significant share of the UK workforce.

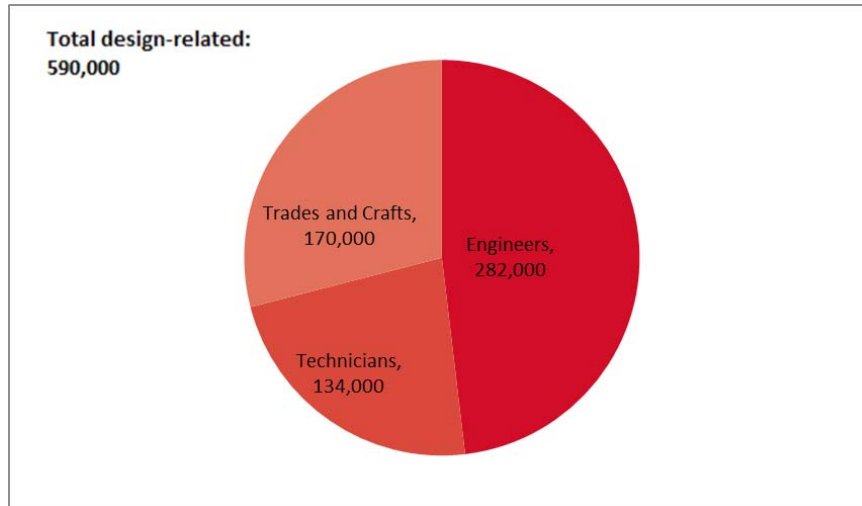
Figure 3.1: Core design employment 2009



Source: Annual Survey of Hours and Earnings 2009, Labour Force Survey 2009 (ONS Crown Copyright)

Figure 3.1 (Core design employment 2009) shows the share and number of each core design occupation. The largest is graphic designers, with 102,000, and design and development engineers, with approximately 89,000, either employed or self-employed in those occupations. Architects and product, clothing and related designers are smaller in number but significant, comprising around 39% of the core design workforce.

Figure 3.2: Design-related employment 2009



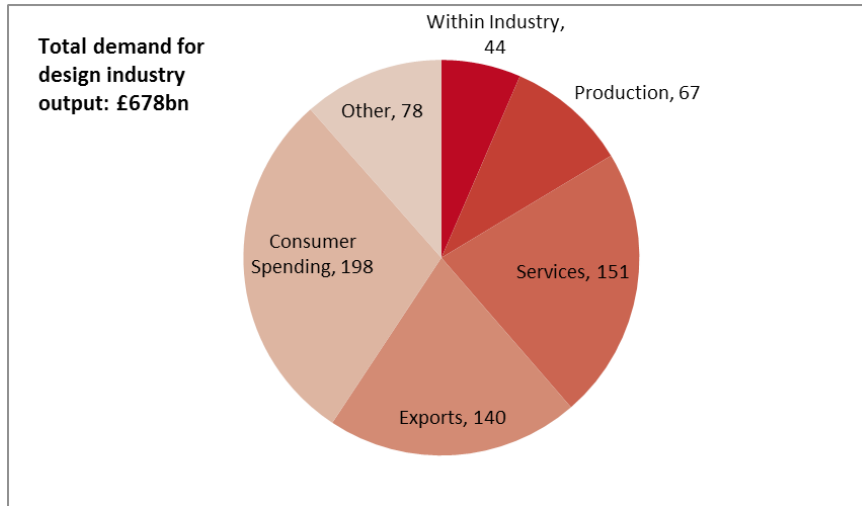
Source: Annual Survey of Hours and Earnings 2009, Labour Force Survey 2009 (ONS Crown Copyright)

Figure 3.2 (Design-related employment 2009) shows the number of employed and self-employed in the wider design-related occupational categories. Engineers comprise almost half of the design-related workforce, and trades and crafts and technicians each account for approximately a quarter.

3.5 Design's role in the economy

Taken together, these design-intensive sectors account for approximately 7% of the economy's GVA and 11% of its employment. **Figure 3.3 Who buys outputs from design-intensive sectors? (2009)** illustrates which parts of the economy these design-intensive sectors sell their outputs to, providing a description of the downstream buyers in the UK's design supply chain.

Figure 3.3: Who buys outputs from design-intensive sectors? (2009)



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Note: Production sector defined as SIC2007 codes 1-43, services as 45-99. Within industry represents intra-industry consumption of design industry sub-sectors. “Other” represents primarily investment spending, but also includes in several cases government final consumption and non-profit final consumption.

A third of demand (£198 billion) comes from consumer spending. This is primarily for goods produced in design-intensive manufacturing sectors such as fashion and craft and advanced manufacturing, reflecting the finished, consumer-focused nature of much manufacturing output. Approximately 17% (£34 billion) of consumer spending on design-intensive products is for service output, primarily the output of the publishing sector.

£151 billion of output (22% of total output) from design-intensive sectors is sold as intermediate inputs to other service sector businesses. The largest sectoral purchasers are human health activities and public administration and defence, who together purchase 16% of all design-intensive industry output for intermediate use. This is a proportionately larger share than in the economy as a whole and reflects large public sector spending on architecture, advanced manufacturing and printing and publishing. Intermediate demand from other manufacturers for design industry output is a smaller share of total demand than in the wider economy, at 10% of total output (£67 billion) from the design-intensive industries.

There is a significant amount of trading within the sub-sectors of the design-intensive industries, and intra-industry consumption makes up 6.5% (£44 billion) of the demand for the sector’s output.

Sales from services to manufacturing is a similarly-sized component of business to business sales within design-intensive industries, where it accounts for 32% of intermediate consumption, as in the wider economy, where it is 31%. This fits with the findings of chapter one of the IPO-commissioned research on design rights, which showed that most manufacturing design spending is own-account, or conducted in-house, rather than bought

in from specialised design businesses. This does not preclude the possibility, however, that design is an important strategic function of larger companies and purchased centrally by head offices or similar and then sent to be manufactured, or that a significant portion of design-intensive service exports are to manufacturers.

3.6 Summary – a nuanced and multi-faceted view of design

Design-intensive industries are not a single, unified entity; it is made up of a range of different activities and companies. Rather than seeking to generalise about design-intensive industries as a whole, it is important that government policy can reflect the nuances involved in different aspects of design. The next section goes on to describe the different parts of the design-intensive industries in more detail, and examines their characteristics in more detail.

4. Evidence on design’s international supply chain

While the place of design and the role of design in the UK economy have been evolving over recent decades, the global economy has also been undergoing major shifts. The UK’s design industry is highly export-facing, and as a result it is increasingly part of a complex global supply chain. This creates huge opportunities for the UK’s design industry – access to large markets, opportunities for collaboration, use of cheap overseas manufacturing – but it also creates some significant challenges. Design is a knowledge-based activity, but trading knowledge internationally is complicated; intellectual property protection is one of the issues that firms may face.

This section presents a range of evidence on the nature of design’s international supply chain, and explores the interactions between different design-intensive industries.

4.1 The evolution of international supply chains

The way in which goods and services are designed, produced and distributed has changed dramatically in recent decades. In the past the lion’s share of a product’s supply chain would have taken place within the confines of a single company, often located in one location. Globalisation has radically altered this dynamic, with continued trade liberalisation, the opening of new input markets in emerging economies and improvements in global communication and transport, making it easier for firms to spread their supply chains around the world. At the same time, outsourcing has become more prevalent in many industries, meaning that there are often many more companies involved in a typical supply chain (Sissons, 2011).

As a result, the networks that are involved in creating products can now span many different countries, producing complex international flows of goods and value. It is now taken for granted that any single product can draw on inputs, labour and expertise from many different firms in many different countries. Baldwin (2011) describes this rise of the international supply chain as the second “unbundling” of globalisation (the first unbundling having occurred during the industrial revolution, with goods produced en masse in one location and consumed around the world) (Baldwin, 2011).

Dicken’s *Global Shift* (2011), a seminal work on global economic geography, provides a strong framework for analysing these global supply chains. According to Dicken, design is part of the corporate research and development section of the chain, often retained in the home economy of large multinational companies and conducted in-house. The strong preference to locate research and development functions such as design in a firm’s home territory can be attributed to the established base of knowledge inputs in these locations, and the benefits of a geographical concentration of this kind of activity in knowledge clusters (Dicken, 2011).

However, thinking about international supply chains or value chains in this way risks adopting too linear a view of global trade. The problem with a linear supply chain model is that it compartmentalises design, and overlooks the different roles design can play throughout the development and production processes. As with other parts of international supply chains, design often involves dynamic interactions and highly iterative processes that are hard to capture within a supply chain. Like many other intangible assets, design is not a homogenous asset that is fed into the supply chain at a certain point; interactions with users as well as the changing possibilities (and requirements) of technology inform both designs themselves and the role of designers in creating new products and bringing them to market.

With product cycles in many industries (e.g., fashion (Ghemewat and Nueno, 2006)) speeding up, and digital technologies opening up new opportunities for collaboration and user-engagement, the linear view of a supply chain is being challenged on many fronts. In the area of digital gaming, for example, networked creativity and consumer co-creation, enabled by digital technologies, are transforming relationships between firms and consumers (Potts and Banks, 2010). There is a greater expectation among users that they will be treated as active partners in design processes and that their expertise will be taken seriously. Similarly, the wealth of data on patterns of consumer behaviour has increased the power of firms in many sectors, as well as public organisations, to tailor the services they offer, better targeting customers (Manyika et al. 2011); this offers significant potential for disruptive innovation in design-intensive industries.

It is clear from the literature that design plays an important role within increasingly globalised supply chains. However, it is important that we do not view design as a discrete input within a linear supply chain; innovation in design-intensive industries is far more dynamic than such a view would suggest.

4.2 Existing research on mapping design's international supply chain

While our understanding of complex international supply chains is growing, it is extremely difficult to quantify the value of design flows around the world. Attempts have been made at compiling databases on international trade in design, but there is no dataset that provides a comprehensive picture of design's international supply chain. Because it is difficult to trace the proportion of value that is accounted for by design without using firm-level accounts, the vast majority of research on value chains uses a case study approach.

We can broadly divide existing research into design's international supply chain into three levels of analysis:

1. At an economy-wide scale, by using macro-economic data and aggregate trade flows;
2. At an industry level, by examining typical supply chains within an industry or sector; or
3. At the level of a single product or firm, by examining a specific supply chain.

4.2.1 Economy-wide analysis

At the economy-wide level, efforts to map design's role within international supply chains have been hampered by the limited availability of data. In part, this is due to the complexity of the processes involved, and by the difficulty of establishing a single, internationally accepted definition of what constitutes "design". Design is not designated by a single product or industrial code, which makes it hard to use national accounts or trade data to map spending on it. One solution to this would be to analyse very detailed firm-level accounts, considering the share of the wage bill accounted for by designers, but this is difficult to do on an economy-wide scale.

The most promising macro-economic approach is that followed by Haskel and Pesole (2011). Their work combines data from official Supply and Use Tables (SUTs) with an estimate of 'own-account' spending (i.e., design work done in-house by businesses). They follow the ONS 'software method' to account for investment in design in the UK (Haskel and Pesole, 2011). One of the key assumptions behind this work is that the compensation paid to designers has some association with the amount of value they add, through design, to the goods and services sold by their firm; this seems a reasonable assumption, but it may not hold in all cases. Another complication lies in accounting for the management of user-led design innovation, which imposes real costs and provides value to businesses, but is a relatively new practice so hard to tease out of official data (Banks, forthcoming).

However, while this approach offers a strong empirical view of design-intensive industries within the UK, it is harder to apply to design's international supply chain. The value of design is most often embodied in a physical product, which may be manufactured in a country that is different from the one in which its design takes place. Where designs are traded many times between different companies and countries, it is very hard to track these transactions, and work out where value is added within supply chains using official data.

Problems with value-added international trade data

The increased complexity of international supply chains is highlighting problems with how well official trade statistics capture flows of value between countries. An emerging debate (e.g. the Economist, 2012) suggests that trade data give too much weight to countries that assemble and export finished manufactures, even if most of the value in those exports accrues to other countries. For example, if a product is designed in the UK but manufactured in China, most of the value will end up in the UK, but China's export statistics will reflect the whole value of the finished product. This has two effects: first, it may lead official statistics to overestimate the true value of the UK's trade deficit; and second, it makes it much harder to trace the value of intangible inputs such as design in international trade.

Johnson and Noguera (2011) are adopting an interesting approach to try and correct this bias in trade statistics. They propose "value-added export to gross export" (VAX) ratios, which adjust official trade statistics to compensate for hidden flows of value. Their initial work indicates that the UK has the second highest VAX ratio (behind Japan). This suggests that the UK captures more value-added from its exports than most countries. However, this method is at a very early stage of development, and is some way from being effectively applied to trace international flows of value from design.

4.2.2 Industry-level and product-level analysis

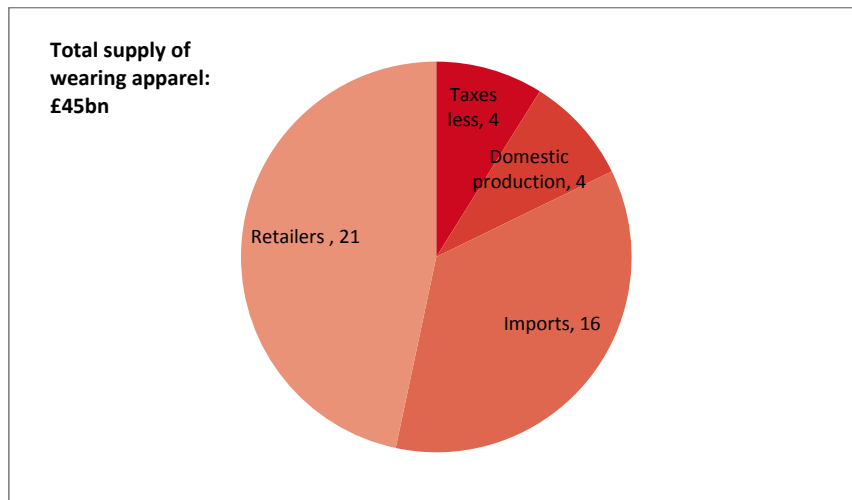
Because it is so hard to trace global processes of design and production, research tends to focus on individual businesses or industries; these are generally limited to case studies of successful products or business models. Two commonly referenced examples of this are the fashion house Zara's coordinated global production and retailing innovations (Christopher, 2000), and the iPad's transnational value chain (Kraemer et al. 2011). Recently there have been some attempts to generalise these insights using the types of methods described above, using macro-economic data, and tracing aggregate inputs throughout global supply chains. However, the research is still nascent and limited by the quality and breadth of data available. It is likely that changes to the way we collect data on imports and exports would be required in order to accurately describe global macro supply chains (Johnson and Noguera, 2011).

The fashion industry is a good example of an industry with a strong design component, and one that has experienced massive globalisation of its supply chain in recent years. Driven by cost pressures from large retail buyers, low barriers to entry and a decline in the costs of transport and communication, a significant proportion of the sector's manufacturing base has moved to countries in which low-cost labour is readily available. Over 50% of clothing production now takes place in Asia. The industry has had to develop lean retailing and just-in-time production models in order to cope with unpredictable and constantly changing demand for its goods. Fashion design firms engage with international suppliers in a number of ways, the most common being sub-contracting or taking an equity stake in local partners (Dicken, 2011).

Innovation in service design has also been a prominent feature of the fashion industry supply chain over the past twenty-years. Firms are increasingly moving from selling large numbers of homogenous products to differentiating their products through customer experiences. This can take many forms, including bespoke design and manufacture, or an increasing focus on innovative retail environments, and illustrates how design can be observed at more than just the R&D point on the supply chain.

The prominence of retail as the driving force behind the modern fashion industry is reflected in the data. **Figure 4.1 (UK output, imports, retailers' margins and net taxes of wearing apparel)** shows how output in the clothing industry is split between manufacturers, retailers and other sources, while **Figure 4.2 (Contribution to growth of wearing apparel supply, 1997-2009)** shows the change in UK imports and domestic output of clothing over recent years. Consumer spending on clothing has grown strongly since 1997, and there has been a big shift towards imports, at the expense of the UK's domestic clothing industry. However, despite the big increase in spending, very little of the extra value has gone towards the producers of clothing – the increase in imports has done little more than cancel out the fall in domestic manufacturing. Instead, most of the growth in the market has been captured by wholesalers and retailers, based primarily in the UK. Whilst this includes in part operating and domestic transport costs, it also reflects the power of branding and design, as well as the shaping of retail experiences, to add value.

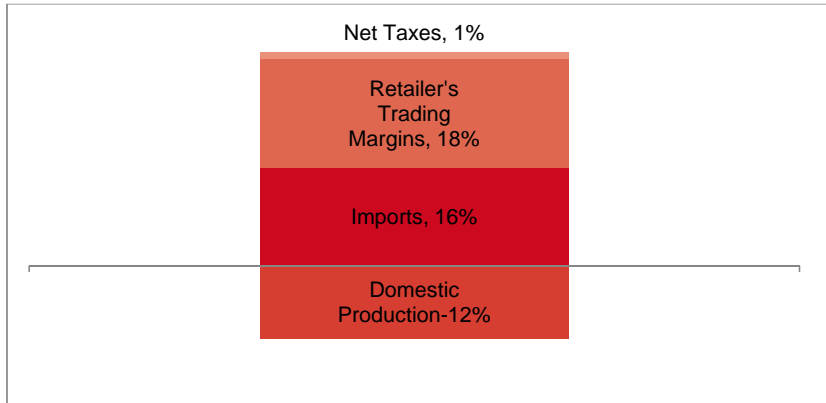
Figure 4.1 - UK output, imports, retailers' margins and net taxes of wearing apparel



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Note: Wearing apparel refers to SIC2007 code 14

Figure 4.2 Contribution to growth of wearing apparel supply, 1997-2009



Source: Supply and Use Tables 1997-2009 (ONS Crown Copyright)

Note: Wearing apparel refers to SIC2007 code 14. As price deflator's are unavailable at this level of disaggregation, we have applied a general price deflator.

As well as looking at industries, it is also possible to focus on individual products. Much of the international supply-chain literature focuses on individual products in rapidly developing areas of production and consumption such as computer, electronic and optical products. A recent example of a product that has been created through transnational processes of design and manufacture is Apple's iPad. Designed and marketed by Apple in the US, its components are sourced from South Korean and Taiwanese firms, assembled in China, and then shipped back to the US, Europe and elsewhere to be sold. What is particularly interesting about the iPad example is that by far the largest share of the profits (30%) goes to Apple, which has an indirect relationship with the firms responsible for the physical manufacture of the iPad and its components. It seems, at least in this example, that the part of the supply chain that captures the most value is the strategic design, branding and marketing of the product, not the cost of the inputs directly (Kraemer et al. 2011).

4.2.3 The approach to international supply chains used in this research

It is not possible to replicate the product-level analysis on a large scale within this study – it is unlikely that this method will provide any economy-wide evidence without significant advances in data gathering. At the same time, economy-wide data give us relatively little insight into the finer details of supply chain dynamics and international flows of value.

The approach taken in this paper is to look at international supply chains on an industry-by-industry basis, and to use available data at this level to gain an insight into how design's international supply chain appears. In practice, this means considering each of the design-intensive industries we have identified separately, and examining their dynamics carefully. For each industry, we can collect data on how much they import and export, which parts of the world they export to, as well as a range of indicators on how the industry works. We can also measure the interactions between different industries – for instance, considering how much a service sector sells to the manufacturing sector, or looking at where the industry's inputs come from.

This industry-level analysis does not provide a complete picture of the complex interactions that go on within international supply chains, but it gives us a good impression of how they work. This picture can then be built upon with individual case studies, to give further insights into the international interactions that take place.

4.3 The six distinct design-intensive industries

To begin this supply chain analysis, it is important to understand the characteristics of the different design-intensive sectors in detail. These six sub-sectors have been identified because they employ high concentrations of designers; they account for around two-thirds of the UK's designers, and around 40% of wider design-related employment. These six areas are:

- **Design services** (*SIC code 74*) – a group of specialised design and technical activities, employing a high concentration of designers and trading on a business services basis;
- **Architecture and engineering services** (*71*) – a diverse group of services that provide design and technical support to a range of building and engineering projects;
- **Computer and telecommunications services** (*61 + 62*) – services that provide IT support to other companies, including software programming, web design and computer facility management, as well as those that provide telecommunications services to business and to consumers;
- **Printing and publishing** (*18 + 58*) – this grouping spans the manufacturing and service sectors, including both physical printing and publishing of books, journals and other expressive material;
- **Fashion and craft** (*13-15, 31-32, 90*) – including a variety of manufacturing sectors producing low or medium-tech goods with a significant design element, such as wearing apparel, furniture, as well as designers working in arts services.
- **Advanced manufacturing** (*25-30*) – advanced manufacturing covers a group of technologically advanced manufacturing sectors, including aerospace, car manufacturing and electronic equipment. Many of these industries use design as a key source of value.

Each of these industries is examined in more detail over the following pages.

4.3.1 Specialised design services⁴

Design services are a small, highly-specialised sector providing services primarily to other businesses. Despite being dominated by small firms, the sector is extremely export-facing.

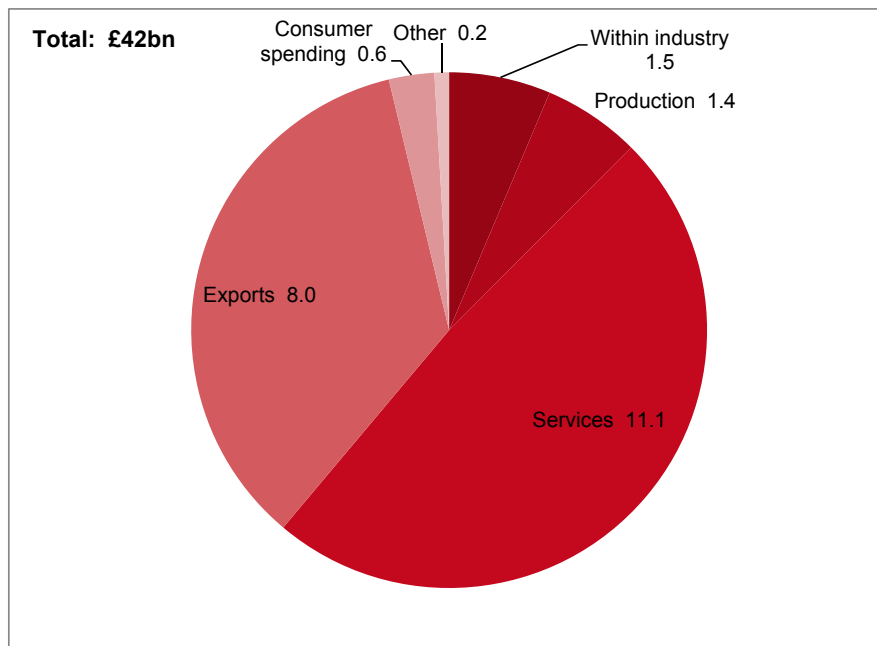
- The UK design services sector is very internationally facing, with a strong trade surplus. More than a third of design services created in the UK are sold as exports, with the UK exporting almost 50% more design services than it imports. This strong trade surplus suggests that the UK design services sector is extremely internationally competitive.
- Design services are largely sold either as exports or to other UK service sector businesses. The sectors that buy the most design services are head offices and computer consultancies, suggesting that design is a strategic function for large businesses and that it is an important input into computer programming and related activity. Design service firms sell surprisingly little to manufacturers within the UK, suggesting that design services are not heavily focused on product design. However, it may be that other service sector businesses that buy design sell it on to be used in the manufacturing process. It is also possible that a large share of design service exports is sold to foreign manufacturing firms.
- There is very little capital spending on design services. It is interesting to note that investment spending on design services is low. This may reflect accounting practices rather than the capital nature of much design services work.
- The design services workforce tends to work in highly-skilled, knowledge-based, technical occupations. The majority of workers in the sector are in skilled professional and technical occupations, which includes designers but also a range of other marketing, creative and research roles. Perhaps unsurprisingly, around a fifth of workers in the sector are designers or in design-related occupations, which is high relative to the economy as a whole.
- The design service sector is dominated by micro businesses and the self-employed. The majority of workplaces in the sector have less than 10 employees, and around than 73% of the designers in the sector are self-employed. This implies that most businesses in the sector lack a large corporate structure, and as such would find some activities such as exporting and long-term strategic planning more difficult⁵.

4 Data refer to SIC2007 code 74

5 This finding confirms conclusions drawn from interviews as part of the Design 2020 research project (Cooper et al. 2009).

- Despite being a highly-skilled sector, design services productivity is significantly below the national average. This is likely to be related to the labour-intensive nature of work in the sector, and the fact that design services firms tend to be micro or small businesses, factors which are commonly associated with low returns to scale and low productivity.
- Designers in design services earn less on average than other occupations in the sector. Average pay in the design services sector is only slightly below productivity, which is perhaps to be expected given the knowledge-intensive, skilled labour nature of the work. Those in design occupations, however, earn 10% less, and those in design-related occupations 25% less, than the average for the sector as a whole.

Figure 4.3 - Buyers of specialised design services output 2009 (£ billions)



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Note: In this and other sub-sector charts that follow, each portion of the pie chart represents the amount purchased of that sub-sector by different parts of the wider economy, defined as follows: production sector is SIC(2007) codes 1-43, services is SIC(2007) 45-99. Within industry represents intra-industry consumption of sub-sectors (i.e. purchases of design services by other design services companies). 'Other' represents primarily investment spending, but also includes in several cases government final consumption and non-profit institutions final consumption.

Table 4.1 - Characteristics of the specialised design services sector 2009

Key indicators	Design services	UK economy
Share of total workforce core designers	18%	1%
Core designers concentration index ⁶	16.7	
Share of total workforce design-related	2%	2%
Design-related Concentration index	1	
Share of core and design-related that are self-employed	73%	27%
Share of workplaces micro ⁷	63%	20%
Share of workplaces small	17%	23%
Share of workplaces medium	14%	36%
Share of workplaces large	5%	20%
GVA/hour (£) ⁸	17.38	26.98
Average core designer hourly pay (Employees, £) ⁹	15.47	16.89
Average design-related hourly pay (Employees, £)	12.66	15.86
Average employee hourly pay in sector as a whole (Employees, £)	17.70	14.39
Exports (£ bn)	8	396
Exports as a % of total demand	35%	12.6%
Imports (£ bn)	5.5	421
Imports as a % of total supply	24%	13.4%
Trade balance (£ bn)	2.5	-26

6 In this and the other sub-sector key indicators tables that follow, the concentration indices comprise a similar calculation to those in Table 4.2, referring to each sub-group of design occupations, core design and design-related.

7 Figures on workplaces are from the Business Register and Employment Survey, and do not include extremely small non-VAT registered businesses and sole traders.

8 In this and the other sub-sector key indicators tables that follow, GVA/Hour is constructed using hour figures from the labour force survey and GVA figures from the ONS supply and use tables, and is an indicative figure for productivity.

9 It should be noted that pay figures are from the ONS annual survey of hours and earnings and refer just to employees, since hourly pay figures for the self-employed are not readily available at this level of disaggregation.

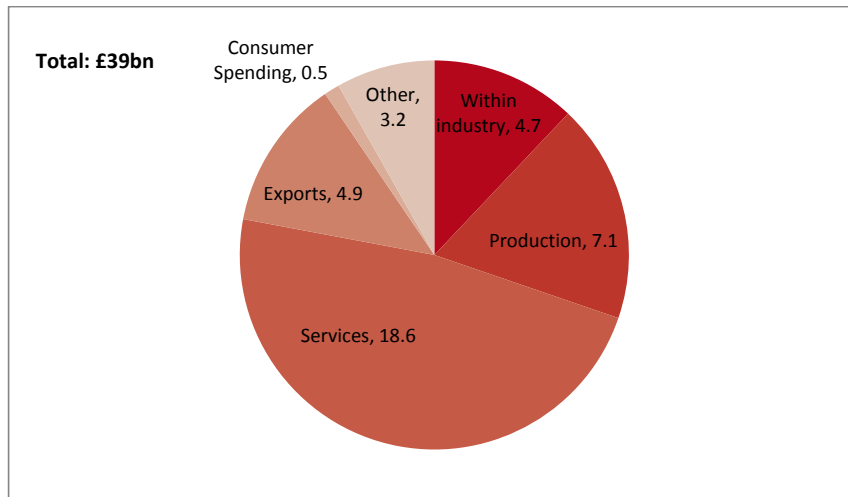
4.3.2 Architectural and engineering services¹⁰

Architectural and engineering services is a specialised sector selling services to other businesses. It is one of the most design-intensive sectors in the economy, and the vast majority of its workers are highly skilled. The UK has a strong trade surplus in architectural and engineering services, suggesting there is considerable scope to expand the sector's contribution to UK exports.

- **The UK architectural and engineering services sector has a strong trade surplus, and it is moderately export-facing.** Exports are worth around £5 billion, making up around 13% of demand for the sector's output, in line with the economy as a whole. The sector has a strong trade surplus, with the UK exporting more than twice the amount of architectural services than they import. This implies the UK architectural services sector is extremely internationally competitive, but may have scope to export more.
- **Around half of architectural and engineering services output is sold to other service sector businesses.** The majority of architectural and engineering services are sold to non-tradable sectors within the UK. This includes public administration, defence and healthcare which make up almost a tenth of the demand for architectural and engineering services. This perhaps reflects the importance of architecture and engineering to large scale public sector infrastructure projects such as hospitals and roads, as well as the widespread use of urban planning activities by the public sector. Other service sectors for which architecture is a large input include finance and computer services. Among production sectors, architectural and engineering services are a significant input into the construction industry.
- **Spending on public services forms a significant input into the sector.** Almost a quarter of non-labour costs in the architectural and engineering services sector derive from public services, such as public administration. This is likely to be explained in part by spending on the publicly-provided planning services, but is unusually large for a sector of this size.
- **80% of workers in architectural and engineering services are knowledge workers.** This emphasises the highly-skilled nature of work in the architectural and engineering services sector. Almost half of workers in the sector are employed in professional occupations, which often entail occupation-specific post-graduate qualifications.
- **Designers' pay in architectural and engineering services is above average both for the sector and for the economy as a whole.** This is likely to be related both to the highly—skilled work conducted by architectural and engineering services businesses, and also may be related to the formal qualifications needed for entry into these types of profession.

10 Data refer to SIC2007 code 71

Figure 4.4 - Buyers of architectural and engineering services output 2009



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Table 4.2: Characteristics of the architectural and engineering services sector 2009

Key indicators	Architectural Services	UK Economy
Share of total workforce core designers	11%	1%
Core designers concentration index ¹¹	10.82	
Share of total workforce design-related	18%	2%
Design-related concentration index	9.21	
Share of core and design-related that are self-employed	28%	27%
Share of workplaces micro ¹²	33%	20%
Share of workplaces small	25%	23%
Share of workplaces medium	30%	36%
Share of workplaces large	12%	20%
GVA/hour (£) ¹³	23.82	26.98

11 In this and the other sub-sector key indicators tables that follow, the concentration indices comprise a similar calculation to those in Table 4.2, referring to each sub-group of design occupations, core design and design-related.

12 Figures on workplaces are from the Business Register and Employment Survey, and do not include extremely small non-VAT registered businesses and sole traders.

13 In this and the other sub-sector key indicators tables that follow, GVA/Hour is constructed using hour figures from the labour force survey and GVA figures from the ONS supply and use tables, and is an indicative figure for productivity.

Average core designer hourly pay (Employees, £) ¹⁴	19.42	16.89
Average design-related hourly pay (Employees, £)	18.57	15.86
Average employee hourly pay in sector as a whole (Employees, £)	16.86	14.39
Exports (£ bn)	5	396
Exports as a % of total demand	13%	12.6%
Imports (£ bn)	2	421
Imports as a % of total supply	6%	13.4%
Trade balance (£ bn)	3	-26

Sources: Annual Survey of Hours and Earnings 2009, Business Register and Employment Survey 2009, Labour Force Survey 2009, Supply and Use Tables 2009 (ONS Crown Copyright)¹⁴

4.3.3 Computer and telecommunications services¹⁵

Computer and telecommunications services is a highly productive sector of the UK economy, selling services to other businesses, often as part of investment packages. It is extremely highly-skilled and as a result wages are significantly higher than the national average. While the sector has a relatively low concentration of designers, it employs a significant number of designers overall.

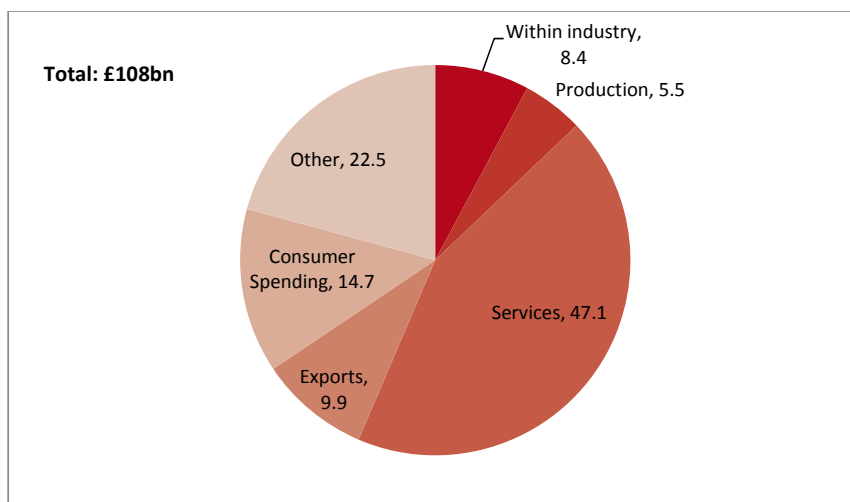
- **Computer and telecommunications services is less export-facing than the economy as a whole.** 9% of the sector's output is sold as exports, which is less as a proportion than in the wider economy. The UK does, however, have a strong trade surplus in this sector's products, equivalent to 5% of sector GVA. This suggests that the UK computer services sector is internationally competitive, and that the UK would benefit from increasing trade in the sector.
- **The majority of computer and telecommunications services output is sold to other service sector businesses, or as capital spending.** The largest business buyers of computer and telecommunications services include wholesale and retail, highlighting the importance of information technologies to the functioning of distribution systems in those sectors. Financial services and public admin also purchase a large amount of the sector's output. The large levels of investment spending on computer and telecommunications services highlights the capital nature of much of the sector's production, comprising services such as IT/phone systems and bespoke software development.

¹⁴ It should be noted that pay figures are from the ONS annual survey of hours and earnings and refer just to employees, since hourly pay figures for the self-employed are not readily available at this level of disaggregation.

¹⁵ Data refer to SIC2007 codes 61 and 62

- The largest sectoral inputs into computer and telecommunications services are electronic products, other business services and business support activities.** The single largest sectoral input is computer, electronic and optical equipment manufacturing. The sector also spends a lot on office administration and employment services inputs, which indicates significant outsourcing of general support functions and a widespread use of agency labour in the sector. They also use legal services, head offices and management consultancy, advertising and architectural services as significant inputs.
- Computer and telecommunications services is a highly skilled sector.** Approximately 84% of the workforce in the computer and telecommunications services sector are in knowledge-based occupations. This is likely to reflect both the complex and highly skill-intensive nature of work in computer services, but also the significant outsourcing of many less highly-skilled office functions, as noted above. A small but significant proportion of these highly-skilled workers are designers.
- Computer and telecommunications services is a high-value sector.** Productivity as measured by GVA/hour is around 60% higher than the national average in the sector. Whilst pay in the sector is significantly higher on average than in the economy as a whole. This is also true but to a lesser extent for those in design and design-related occupations.

Figure 4.5 - Buyers of computer and telecommunications services output 2009



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Table 4.3 - Characteristics of the computer and telecommunications services sector 2009

Key indicators	Computer and Telecommunications	UK Economy
Share of total workforce core designers	3%	1%
Core designers concentration index ¹⁶	2.56	
Share of total workforce design-related	3%	2%
Design-related concentration index	1.76	
Share of core and design-related that are self-employed	29%	27%
Share of workplaces micro ¹⁷	29%	20%
Share of workplaces small	16%	23%
Share of workplaces medium	32%	36%
Share of workplaces large	23%	20%
GVA/hour (£) ¹⁸	43.4	26.98
Average core designer hourly pay (Employees, £) ¹⁹	19.60	16.89
Average design-related hourly pay (Employees, £)	16.59	15.86
Average employee hourly pay in sector as a whole (Employees, £)	20.41	14.39
Exports (£ bn)	10	396
Exports as a % of total demand	9%	12.6%
Imports (£ bn)	7	421
Imports as a % of total supply	7%	13.4%
Trade balance (£ bn)	3	-26

Sources: Annual Survey of Hours and Earnings 2009, Business Register and Employment Survey 2009, Labour Force Survey 2009, Supply and Use Tables 2009 (ONS Crown Copyright)

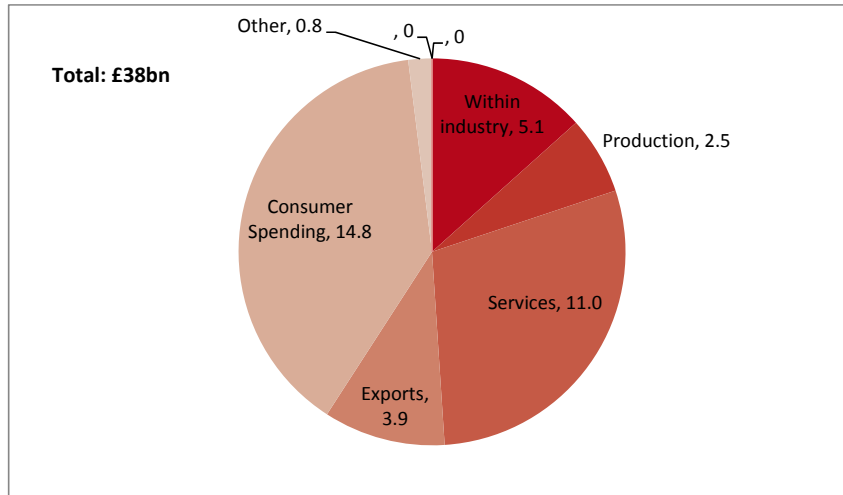
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- 16 In this and the other sub-sector key indicators tables that follow, the concentration indices comprise a similar calculation to those in Table 4.2, referring to each sub-group of design occupations, core design and design-related.
- 17 Figures on workplaces are from the Business Register and Employment Survey, and do not include extremely small non-VAT registered businesses and sole traders.
- 18 In this and the other sub-sector key indicators tables that follow, GVA/Hour is constructed using hour figures from the labour force survey and GVA figures from the ONS supply and use tables, and is an indicative figure for productivity.
- 19 It should be noted that pay figures are from the ONS annual survey of hours and earnings and refer just to employees, since hourly pay figures for the self-employed are not readily available at this level of disaggregation.
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4.3.4 Printing and publishing²⁰

The printing and publishing sector combines manufacturing of media and publishing services, and sells primarily to consumers through retailers, and to service businesses. The sector has a strong trade surplus.

- **Whilst printing and publishing is less export-intensive than the economy as a whole, as a sector it has a strong trade surplus.** Approximately 10% of printing and publishing output is sold as exports. The UK exports more than 50% more of the sector's output than it imports, implying the sector is internationally competitive and could benefit from increased international trade.
- **Most printing and publishing output is sold either to households or to the service sector.** Approximately 40% of printing and publishing output is sold to households, reflecting the finished, consumer-facing nature of much of the sector's goods output. Among service sectors that buy printing and publishing output the most, the largest buyers are in education, reflecting the importance of printed materials and other media as an input into teaching, and public administration and defence. This is more likely to reflect the public sector as a large, concentrated buyer of most goods and services in the economy than as a particularly concentrated purchaser of printing and publishing output. There is also significant trading within this industry, as publishers use printers to manufacture products.
- **The largest inputs into printing and publishing are paper products, transport services, advertising and employment activities.** Paper products are by far the largest upstream input into printing and publishing, reflecting the nature of manufacturing supply chains in the sector. Printers and publishers also have large inputs from advertising and transport services, indicating outsourcing of some marketing and distribution in the sector. The high spend on employment activities indicates agency workers are significant in the sector.
- **Retailers contribute a significant amount to the supply of printing and publishing output.** Distributors (retailers and wholesalers), form a significant part of the supply chain for the sector's output. This is to be expected given the consumer-facing nature of the industry.
- **More than half of workers in printing and publishing are in knowledge occupations.** This reflects the importance of high-level skills to the sector. There are also significant numbers of workers in middle-skilled trade occupations, particularly within the printing sub-sector.
- **Productivity in printing and publishing is above the national average.** Whilst GVA/hour is higher than the national average, and core designers are highly paid when compared with others in the sector and the economy as a whole, again underlining the highly-skilled nature of design work.

20 Data refer to SIC2007 codes 18 and 58

Figure 4.6 - Buyers of printing and publishing output 2009

Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Table 4.4 - Characteristics of the printing and publishing sector 2009

Key indicators	Printing and Publishing	UK Economy
Share of total workforce core designers	4%	1%
Core designers concentration index ²¹	3.63	
Share of total workforce design-related	4%	2%
Design-related concentration index	1.80	
Share of core and design-related that are self-employed	12%	27%
Share of workplaces micro ²²	17%	20%
Share of workplaces small	30%	23%
Share of workplaces medium	48%	36%
Share of workplaces large	5%	20%
GVA/hour (£) ²³	29.5	26.98
Average core designer hourly pay (Employees, £) ²⁴	17.33	16.89

21 In this and the other sub-sector key indicators tables that follow, the concentration indices comprise a similar calculation to those in Table 4.2, referring to each sub-group of design occupations, core design and design-related.

22 Figures on workplaces are from the Business Register and Employment Survey, and do not include extremely small non-VAT registered businesses and sole traders.

23 In this and the other sub-sector key indicators tables that follow, GVA/Hour is constructed using hour figures from the labour force survey and GVA figures from the ONS supply and use tables, and is an indicative figure for productivity.

24 It should be noted that pay figures are from the ONS annual survey of hours and earnings and refer just to employees, since hourly pay figures for the self-employed are not readily available at this level of disaggregation.

Average design-related hourly pay (Employees, £)	13.08	15.86
Average employee hourly pay in sector as a whole (Employees, £)	15.64	14.39
Exports (£ bn)	4	396
Exports as a % of total demand	10%	12.6%
Imports (£ bn)	2.5	421
Imports as a % of total supply	7%	13.4%
Trade balance (£ bn)	1.4	-26

Sources: Annual Survey of Hours and Earnings 2009, Business Register and Employment Survey 2009, Labour Force Survey 2009, Supply and Use Tables 2009 (ONS Crown Copyright)

4.3.5 Fashion and Craft²⁵

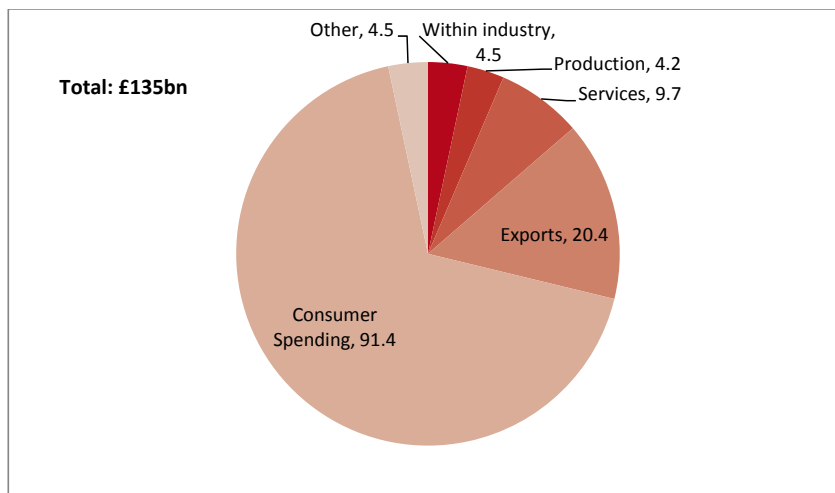
The fashion and craft industry comprises the manufacture of many design-based goods, such as textiles, clothing, other fashion accessories, jewellery and furniture, as well as some arts services that employ significant numbers of designers. The UK has a large trade deficit in the sector’s goods, due to large volumes of clothing and other manufactured design goods being imported to the UK. Core designers enjoy a wage premium over others in the sector, whereas those in design-related occupations such as artisan manufacturers earn less than the average for the sector. Designers are highly concentrated in the sector, making it the second-most design-intensive sub-sector of the economy in terms of occupations.

- **The UK has a large trade deficit in fashion and craft output, reflecting large imports of goods.** The UK imports more than twice as much fashion and craft output than it exports. This is likely to be related to the un-competitiveness of the UK in large volume clothing and other craft goods production. The trade outlook for smaller, specialised high-end fashion and craft manufacturing is likely to be different, but can not be extracted from the aggregated data.
- **The largest buyer of fashion and craft output are consumers.** Almost than three quarters of purchases of fashion are consumers buying finished fashion and craft goods output. This reflects the consumer-facing nature of much of the sector’s output, such as clothing, furniture and jewellery.
- **Domestic fashion and craft production uses basic materials as a large input.** Most of the largest inputs into domestic production are basic processed materials production such as wood products, petrochemicals and rubber. There are also large inputs from financial services and advanced manufacturing such as computer, electronic and optical products.

25 Data refer to SIC2007 codes 13-15,31,32 and 90

- **Distribution is an important input into fashion and craft supply.** Distributors add approximately 40% of the value to the supply of the sector's products. This reflects the importance of retailers to the provision of fashion and craft goods, and particularly of low-cost imports, to consumers, and can be related to the findings of fig. 4.1 and 4.2 above.
- **Fashion and craft is a higher-skilled sector compared to the economy as a whole.** Almost half of workers in the sector are in knowledge occupations, compared with around 44% in the economy as a whole. Whilst this would normally be associated with above average pay, in the sector average hourly pay for employees, including those in core designs and the design-related occupations, is below the national average. This is likely to be driven by the relatively lower-productivity of the sector, as measured by GVA per hour.

Figure 4.7 - Buyers of fashion and craft output 2009



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Table 4.5 - Characteristics of the fashion and craft sector 2009

Key indicators	Fashion and Craft	UK Economy
Share of total workforce core designers	11%	1%
Core designers concentration index ²⁶	10.62	
Share of total workforce design-related	13%	2%
Design-related concentration index	6.56	
Share of core and design-related that are self-employed	61%	27%
Share of workplaces micro ²⁷	29%	20%
Share of workplaces small	24%	23%
Share of workplaces medium	39%	36%
Share of workplaces large	8%	20%
GVA/hour (£) ²⁸	16.9	26.98
Average core designer hourly pay (Employees, £) ²⁹	13.06	16.89
Average design-related hourly pay (Employees, £)	10.42	15.86
Average employee hourly pay in sector as a whole (Employees, £)	11.99	14.39
Exports (£ bn)	20	396
Exports as a % of total demand	15%	12.6%
Imports (£ bn)	43	421
Imports as a % of total supply	32%	13.4%
Trade balance (£ bn)	-23	-26

Sources: Annual Survey of Hours and Earnings 2009, Business Register and Employment Survey 2009, Labour Force Survey 2009, Supply and Use Tables 2009 (ONS Crown Copyright)

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- 26 In this and the other sub-sector key indicators tables that follow, the concentration indices comprise a similar calculation to those in Table 4.2, referring to each sub-group of design occupations, core design and design-related.
- 27 Figures on workplaces are from the Business Register and Employment Survey, and do not include extremely small non-VAT registered businesses and sole traders.
- 28 In this and the other sub-sector key indicators tables that follow, GVA/Hour is constructed using hour figures from the labour force survey and GVA figures from the ONS supply and use tables, and is an indicative figure for productivity.
- 29 It should be noted that pay figures are from the ONS annual survey of hours and earnings and refer just to employees, since hourly pay figures for the self-employed are not readily available at this level of disaggregation.
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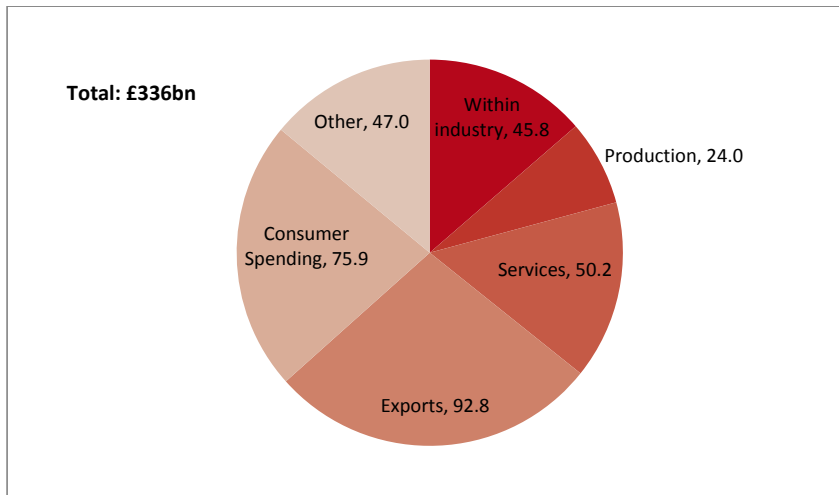
4.3.6 Advanced manufacturing³⁰

Advanced manufacturing covers a large part of the UK's manufacturing industry, employing a significant number of designers across a range of sub-sectors, although the concentration of design employment is not especially high. Its goods are sold in large quantities to other businesses, the public sector and to consumers. Whilst the sector is highly export-facing, the UK has a trade deficit in advanced manufactured goods.

- **Advanced manufacturing is highly export-intensive, but the UK has a trade deficit in its goods.** Almost 30% of advanced manufacturing output in the UK is sold as exports. Overall the UK imports approximately a third more advanced manufactured goods than it exports, with a varying picture in different sub-sectors. The UK has a large deficit in computer and electronic products, but in some smaller sub-sectors such as machinery equipment it has a minor trade surplus.
- **Advanced manufactured goods are sold across the economy, with the largest purchases being exports and consumer spending.** Consumer spending accounts for approximately 23% of advanced manufacturing sales, with a particular emphasis on computer and electronic goods and motor vehicles. Among intermediate sales within the UK, the public sector accounts for almost a quarter of purchases of advanced manufacturing, reflecting large health and defence procurement of the sector's goods. Other large sectoral buyers of advanced manufactured goods include telecommunications, wholesale, retail and repair of vehicles, as well as construction.
- **The largest inputs into advanced manufacturing are from repair and installation, basic processed materials and some services.** More than a third of advanced manufacturing intermediate consumption is directed within the industry. Among other production sectors, there are large purchases of repair and installation, electricity and other utilities, and other basic processed materials such as basic metals. Among service sectors, the industry spends a large amount on finance and transport, and on highly-skilled strategic service inputs such as computer, architectural and advertising services.
- **Distributors form a significant input into the advanced manufacturing supply chain.** Retailers and wholesalers form approximately a fifth of the total value of advanced manufacturing goods in the economy, emphasising the importance of distribution in supplying goods both to other business and to consumers.

30 Data refer to SIC2007 codes 25-30

Figure 4.8 - Buyers of advanced manufacturing output 2009



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Table 4.6 - Characteristics of the advanced manufacturing sector 2009

Key indicators	Advanced Manufacturing	UK Economy
Share of total workforce core designers	3%	1%
Core designers concentration index ³¹	2.6	
Share of total workforce design-related	7%	2%
Design-related concentration index	3.72	
Share of core and design-related that are self-employed	5%	27%
Share of workplaces micro ³²	12%	20%
Share of workplaces small	22%	23%
Share of workplaces medium	41%	36%
Share of workplaces large	25%	20%
GVA/hour (£) ³³	22.07	26.98
Average core designer hourly pay (Employees, £) ³⁴	17.22	16.89

31 In this and the other sub-sector key indicators tables that follow, the concentration indices comprise a similar calculation to those in Table 4.2, referring to each sub-group of design occupations, core design and design-related.

32 Figures on workplaces are from the Business Register and Employment Survey, and do not include extremely small non-VAT registered businesses and sole traders.

33 In this and the other sub-sector key indicators tables that follow, GVA/Hour is constructed using hour figures from the labour force survey and GVA figures from the ONS supply and use tables, and is an indicative figure for productivity.

34 It should be noted that pay figures are from the ONS annual survey of hours and earnings and refer just to employees, since hourly pay figures for the self-employed are not readily available at this level of disaggregation.

Average design-related hourly pay (Employees, £)	16.18	15.86
Average employee hourly pay in sector as a whole (Employees, £)	14.62	14.39
Exports (£ bn)	93	396
Exports as a % of total demand	28%	12.6%
Imports (£ bn)	126	421
Imports as a % of total supply	38%	13.4%
Trade balance (£ bn)	-33	-26

Sources: Annual Survey of Hours and Earnings 2009, Business Register and Employment Survey 2009, Labour Force Survey 2009, Supply and Use Tables 2009 (ONS Crown Copyright)

4.4 Design and international trade

On the whole, the UK's design industry is relatively export-facing. The design-intensive industries detailed above export a higher proportion of their output than the economy as a whole, and they tend to be internationally competitive (as measured by trade balances).

To make this comparison, it is worth analysing the manufacturing and service parts of the design-intensive industries separately, since the manufacturing sector as a whole tends to be far more export-facing than the economy as a whole. **Table 4.7 (Comparing the design-intensive industries' export-intensity and trade performance with the economy as a whole (2009))** shows that both the manufacturing- and service-based parts of the design-intensive industries are more export-facing and internationally competitive than their respective sectors as a whole. When presented like this, it appears that design-intensive sectors tend to be around 50% more export-facing than their overall sector of the economy.

Table 4.7 - Comparing the design-intensive industries' export-intensity and trade performance with the economy as a whole (2009)

	Exports (£ bn)	Share of total demand from exports (%)	Trade balance (£ bn)	Trade balance (as a proportion of GVA) (%)
Manufacturing				
Advanced manufacturing	93	28%	-33	-75%
Other design-intensive manufacturing	18	13%	-22	-133%
Whole manufacturing industry	206	21%	-80	-63%
Services				
Design-intensive services	29	15%	9	10%
Whole service sector	165	10%	68	7%

Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Note: Manufacturing sector defined as SIC(2007) codes 10 – 33 inclusive. Service sector defined as SIC (2007) codes 45 – 97 inclusive. Advanced manufacturing includes SIC(2007) codes 25-30, other design-intensive manufacturing includes parts of the printing and publishing (SIC(2007) code 18) and fashion and craft sectors (SIC(2007) codes 13-15,31-32). Design-intensive services includes SIC(2007) codes 58,61-62,71,74,90. Construction, agriculture, extraction and utilities not included within this table.

As expected, the advanced manufacturing sector is highly export facing, more so than the manufacturing industry as a whole. Although the UK also has an overall trade deficit in advanced manufacturing, this deficit is smaller than for manufacturing as a whole.

Other design-intensive manufacturing sub-sectors, such as printing, fashion and craft, are less export-facing than the manufacturing industry as a whole and have a significant trade deficit of a larger size than their combined GVA.

The service-based parts of the design-intensive industries present a more interesting picture. They are far less export-facing than advanced manufacturing, but still undertake more trade than the service sector as a whole, again by around 50%. **Just as significant, each of the service sub-sectors of the design-intensive industries has a strong trade balance, with the exception of craft services, suggesting that they are all internationally competitive. This suggests that increasing international trade in these service-based design industries would make a big contribution to improving the UK's trade balance.**

Table 4.8 (Export-intensity and trade balance in the service-based parts of the design-intensive industries) breaks the service-based parts of the design-intensive industries down into their individual sectors. Among these sectors, specialised design services stand out as being particularly export-facing – indeed, the sector is more export-facing than the advanced manufacturing sector, making it the most export-intensive of the design-intensive industries.

Table 4.8: Export-intensity and trade balance in the service-based parts of the design-intensive industries

	Exports	Share of total demand from exports	Trade balance	Trade balance [as a proportion of GVA]
	(£ bn)	(%)	(£ bn)	(%)
Specialised design services	8.0	35%	2.5	37%
Architectural and engineering services	4.9	13%	2.7	13%
Computer services and Telecommunications	9.9	9%	2.7	5%
Publishing Services	3.8	15%	1.4	14%
Craft services ³⁵	2.0	22%	-0.6	-25%

Source: Supply and Use Tables 2009 (ONS Crown Copyright)

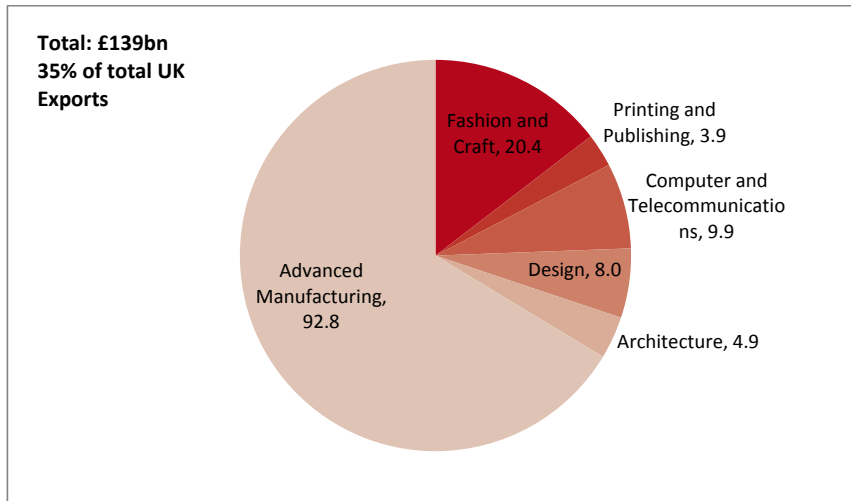
4.4.1 How much does each design-intensive industry export?

Given that design-intensive industries tend to be highly export-facing, it is also worth examining what share of UK exports come from design-intensive industries. Unfortunately, it is impossible to give a definitive answer to this question. We have identified which industries designers work in, and looked at exports by each of these industries, but there are no data that connects designers directly to exports. For instance, core designers make up around 3% of the workforce in advanced manufacturing; it is not possible to determine what share of those sectors' exports are attributable to these designers. Even if such data could be found, they would not do justice to the complex interactions between designers and other workers within an industry; designers need to work closely with a range of other professions, and trying to separate out the contribution made by these different professions would be fraught with difficulty.

Instead, we can use data on our design-intensive sectors to give an indication of how much designers contribute to UK exports. **Figure 4.9 (Exports from design-intensive industries (£ bn))** shows total exports for each of the design-intensive industries we have identified in this study. Overall, these industries export around £140 billion worth of goods and services, which is around 35% of total UK exports. The majority of these exports come from the advanced manufacturing sector, with a smaller but significant share from fashion and craft, while each of the service-based parts of the design-intensive industries also make a significant contribution.

35 Craft Services refers to SIC code 90: Creative, Arts and Entertainment Services

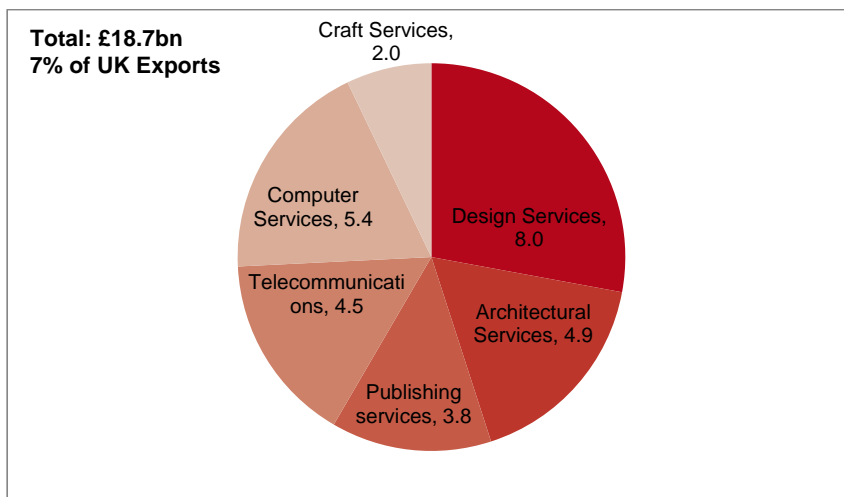
Figure 4.9 - Exports from design-intensive industries (£ bn)



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Figure 4.10 (Exports from design-intensive service sectors (£ bn)) repeats this analysis, this time excluding advanced manufacturing, fashion and craft manufacturing, and printing, to show the relative contribution of the service parts of the design-intensive industries.

Figure 4.10 - Exports from design-intensive service sectors (£ bn)

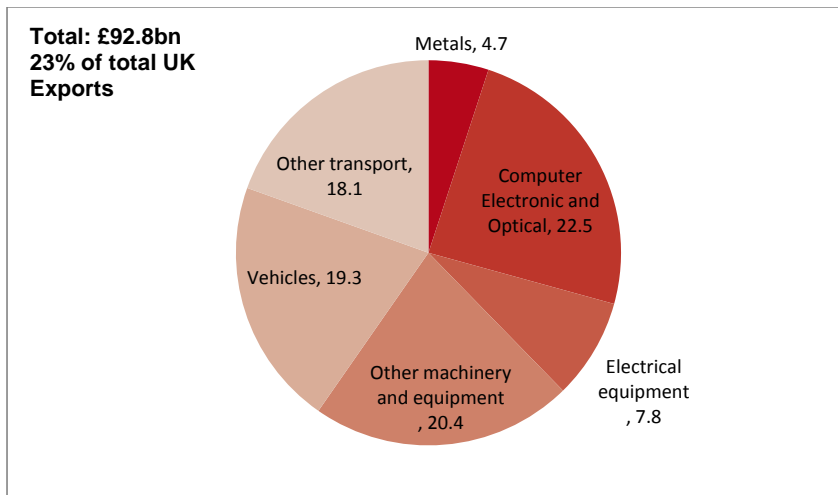


Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Note: Of the exports from publishing, around £3.4 billion are exports of goods, with only around £0.5 billion service exports

Figure 4.11 (Exports from Advanced Manufacturing Sub-sectors (£bn)) shows how the different sub-sectors of advanced manufacturing contribute to design exports.

Figure 4.11 - Exports from Advanced Manufacturing Sub-sectors (£bn)



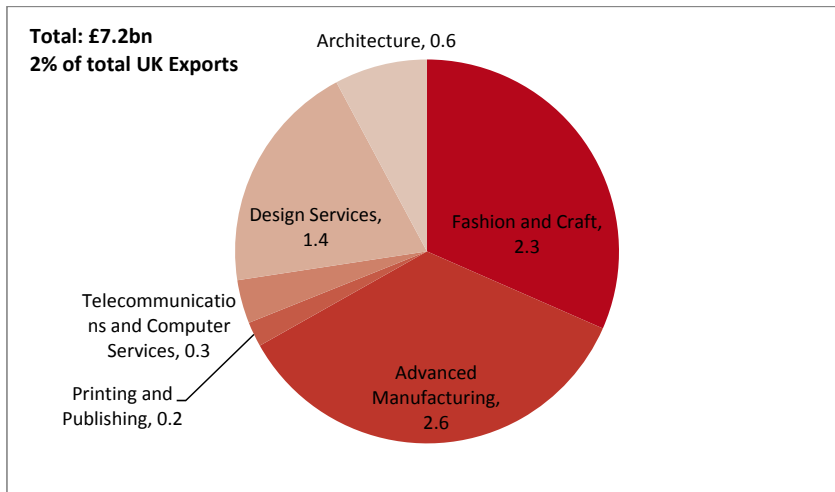
Source: Supply and Use Tables 2009 (ONS Crown Copyright)

However, these figures significantly overstate the value of design to UK exports; it would be misleading to allocate all of these exports to design, even though the industries all have higher than normal concentrations of designers.

To adjust the figures according to the input from designers, we have weighted the shares according to the share of employment in each sector of designers. We have used employment share as a proxy for productivity and value-added to provide a rough estimate of the contribution to exports from design occupations. Whilst this does not necessarily translate directly into exports, it gives a more realistic indication of the contribution of designers to UK exports. **Figure 4.12 (Contribution of the design-intensive industries to UK exports, weighted by employment share of core designers (£bn))** presents this analysis weighted only by core designers, while **Figure 4.12 (Contribution of the design-intensive industries to UK exports, weighted by employment share of core designers plus design-related occupations (£bn))** extends the weighting to include design-related occupations (engineers, technicians and crafts)³⁶.

36 The weighting is carried out as follows: First the share of total employment in each sub-sector is calculated for core designers, and for core designers plus those in design-related occupations. This is then applied to the total exports figure for each sub-sector.

Figure 4.12 - Contribution of the design-intensive industries to UK exports, weighted by employment share of core designers (£bn)

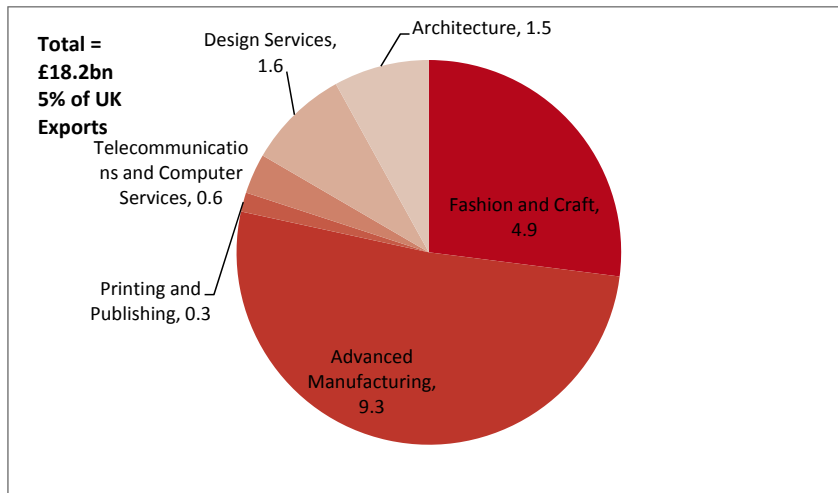


Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Once the figures have been weighted according to the employment share of core designers, we get a total of **£7.2 billion of exports** that are linked to the design-intensive industries, equivalent to just under 2% of total UK exports. That may sound like a modest figure, but it is still relatively high considering that core designers working in design-intensive industries make up just 0.7% of the workforce, the majority of them are concentrated in the service sector.

Under this analysis, the role of the service parts of the design-intensive industries also becomes more important. In particular, the specialised design services sector makes a significant contribution here, partly because it has the highest concentration of core designers.

Figure 4.13 - Contribution of the design-intensive industries to UK exports, weighted by employment share of core designers plus design-related occupations (£bn)



Source: Supply and Use Tables 2009, Annual Survey of Hours and Earnings 2009, Labour Force Survey 2009 (ONS Crown Copyright)

Once the shares are adjusted to take account of design-related occupations as well as core designers, the design-intensive industries' contribution to exports grows significantly, **to around £18.2 billion or 5% of total UK exports**. Much of this is due to the large numbers of design-related occupations in advanced manufacturing, and the export intensity of that sector.

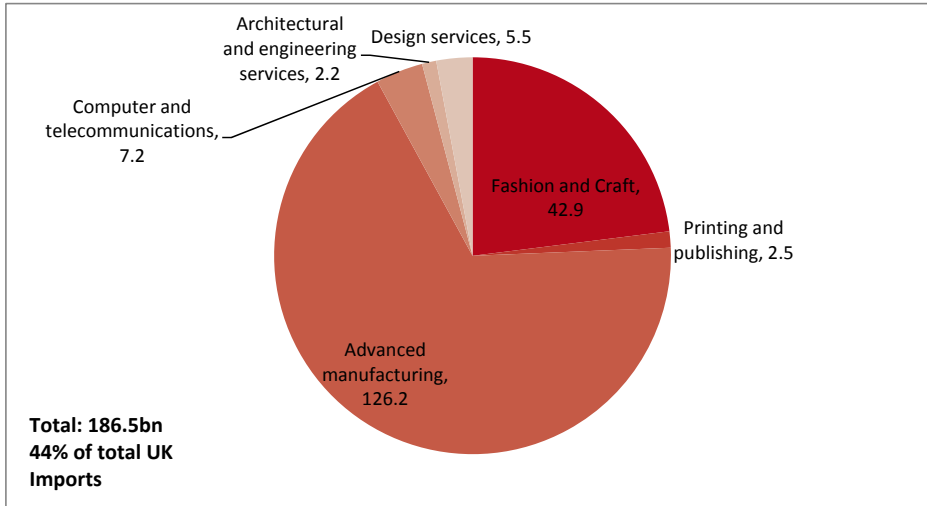
None of these estimates can be considered a perfect figure for design's contribution to exports. However, the analysis puts the scale of the UK's design-intensive industries into context, and shows that design is an extremely export-intensive area of the economy.

4.4.2 How much design-intensive goods and services does the UK import?

As **Figure 4.14 (UK imports of design-related goods and services (£bn))** shows, the UK also imports a significant amount of design-intensive goods and services. Total imports in these sectors total £186.5 billion, or 44% of total UK imports, which is higher than total exports. However, this figure is dominated by imports in the manufacturing sector; it reflects high consumption of imported manufactured goods within the UK. The UK has a large trade deficit in these manufacturing industries overall. The vast majority of these imports will not be inputs into the manufacturing industry; most will be sold directly to consumers.

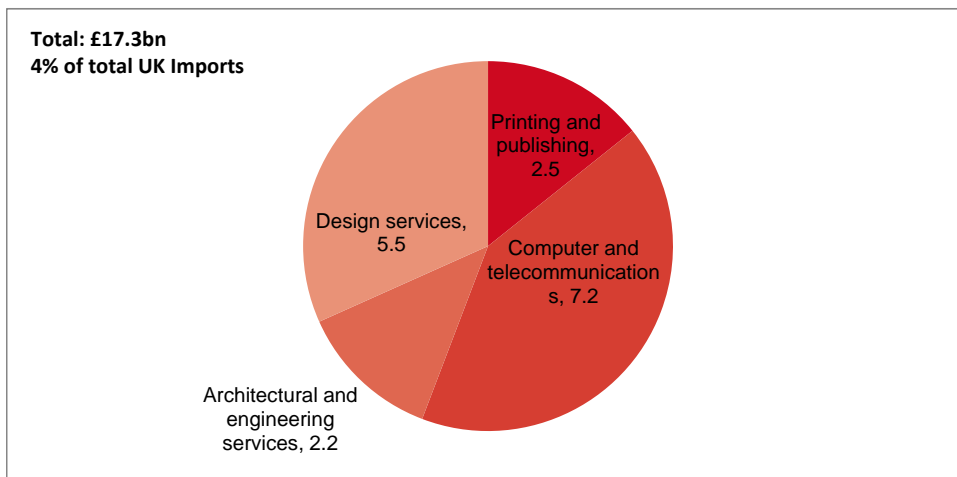
Figure 4.15 (UK imports of design-related services (£bn)) repeats this analysis just for design-intensive services, with the manufacturing sub-sectors removed. Imports of design-intensive services are much smaller, at around £17 billion, which reflects the UK's trade surplus in these activities.

Figure 4.14 - UK imports of design-related goods and services (£bn)



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Figure 4.15 - UK imports of design-related services (£bn)



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Evidence on export-intensity from the Community Innovation Survey

To complement our industry-level analysis on design exports, the research has also collected firm-level data from the Community Innovation Survey.³⁷

63% of firms that are design-active (that is, they engage or invest in design activity) are exporters, compared to 41% of all firms. This result holds for both manufacturing (where 72% of design-active firms export versus 48% of all firms) and service companies (58% versus 38%). It also holds for small (61% v 38%), medium (71% v 55%) and large (76% v 62%) firms.

Design-active firms are also more likely to collaborate internationally on innovation activities, with 23% of design-active firms doing so against 13% of all firms.

These results confirm the finding that firms involved with design are more likely to export and trade internationally.

4.5 Interactions between the different design-intensive industries

The evidence on exports by design-intensive industries is revealing, but on its own it does not provide a full insight into design's role in the international supply chain. Besides exporting goods and services directly, the different design-intensive industries also interact with and support other UK export activities.

Business-to-business trade makes up a significant proportion of the value of the design-intensive industries. Design service companies mostly sell their services to other businesses, rather than consumers, while many design goods are also sold to business customers. Intermediate consumption (i.e., business-to-business sales) accounts for around 56% of all transactions from the service-based parts of the design-intensive industries, and around 31% of all sales from manufacturing-based design sectors. Understanding which sectors buy these outputs from design-intensive industries is important if we are to build a picture of design's supply chain.

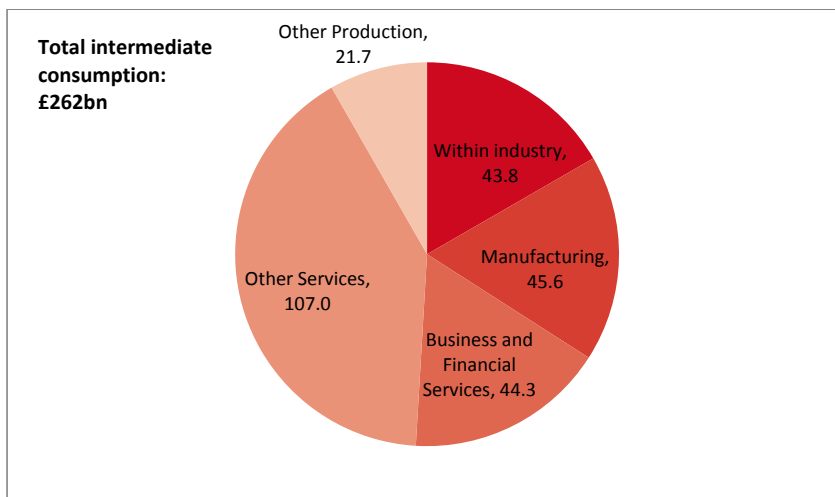
The majority of intermediate output from design-intensive industries is sold to the service sector, with a smaller fraction of this output going to the manufacturing sector. **Figure 4.16 (Share of business-to-business output from design-intensive sectors sold to different sectors of the economy (£bn)³⁸** presents a breakdown of business-to-business sales from design-intensive sectors. It shows that most business-to-business sales from design-intensive sectors are bought by parts of the service sector, particularly less export-oriented services such as transport, retail and public services. There is also a significant amount of trade within each design-intensive sector, suggesting that companies within design-intensive

37 These data from the Community Innovation Survey are for the period 2006-08.

38 'Within industry' consumption here represents trade within each of the individual two digit SIC(2007) codes of the design-intensive industries, i.e. sales of design services to the design services sector, or sales of wearing apparel (part of the fashion and craft sub-sector) to the wearing apparel sector.

sectors trade a lot with each other. 17% of intermediate output goes to the more export-facing manufacturing sector, which suggests that design plays a relatively minor role in the international operations of UK-based manufacturers. Any perception that design-intensive industries make money by selling blueprints to the manufacturing sector is not borne out; design’s main market is in the service sector, helping to add value to service activities.

Figure 4.16 - Share of business-to-business output from design-intensive sectors sold to different sectors of the economy (£bn)³⁹



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

On the surface, this evidence suggests that design-intensive industries do relatively little to support exports in other UK-based industries. The “other services” sector exports just 6% of its output, and design-intensive industries are unlikely to have much input into international supply chains in this area. If design-intensive industries do support any international supply chains in the service sector, these are likely to be unclear and hard to measure.

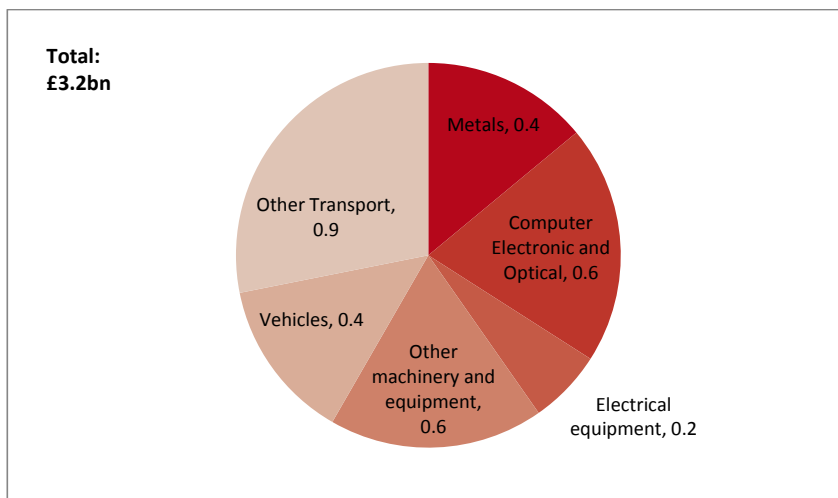
Even though design-intensive sectors sell relatively little to the manufacturing sector, it makes sense to focus most closely on the interactions between design and manufacturing. Of the £46 billion worth of output sold to the manufacturing sector, around £8bn comes from the service-based design-intensive sectors (most design output sold to manufacturing comes from within design-intensive parts of the manufacturing industry).

Of these sales to the manufacturing sector, the most concentrated are to the advanced manufacturing industry, which is particularly export-facing and tends to have highly globalised supply chains. Design-intensive service industries sell around £3.2 billion worth of services to advanced manufacturing firms, the majority from computer services and architectural and engineering services. The breakdown of design service sales to each sub-sector of advanced

39 ‘Within industry’ consumption here represents trade within each of the individual two digit SIC(2007) codes of the design-intensive industries, i.e. sales of design services to the design services sector, or sales of wearing apparel (part of the fashion and craft sub-sector) to the wearing apparel sector.

manufacturing is shown in **Figure 4.17 (Purchases from design-intensive services for each subset of the advanced manufacturing industry (£bn))**. The sums traded here are not large, but this provides some evidence that design services make a small but important input into the UK's leading export industries.

Figure 4.17 - Purchases from design-intensive services for each subset of the advanced manufacturing industry (£bn)



Source: Supply and Use Tables 2009 (ONS Crown Copyright)

Overall, there is little evidence that design plays a big role in the supporting international supply chains of other industries. Design-intensive industries are very export-facing, but their exports are done directly, rather than through inputs into other industries. **Contrary to perceptions, design plays more of a leading role in the UK's international outputs, and much less of supporting role.**

There are another set of questions about design's international supply chain that are difficult to answer within this research: are exports of UK design sold mainly to overseas manufacturing companies or service companies? Do UK design companies export goods to overseas manufacturers, which use the designs to make finished products? Are some of these products then imported back into the UK?

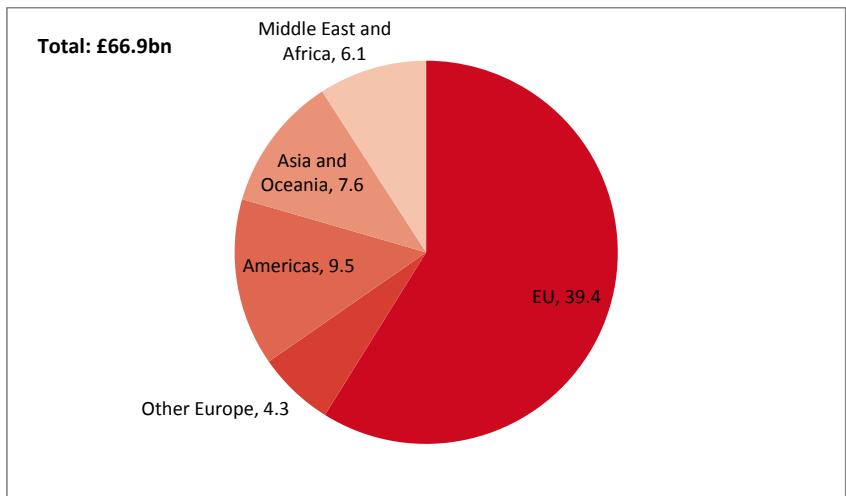
Unfortunately, there is no direct evidence available to answer this set of questions, as there are currently no international Supply and Use tables to provide this information directly. However, based on patterns of trade within the UK, it seems likely that a large share of UK design exports are bought by overseas service companies. Given that the majority of UK design exports go to other advanced economies (see next section), such as the EU and the USA, there is no reason to expect these patterns to look significantly different to the patterns of exports overall (i.e. it is reasonable to expect that most exports of design services are sold to service companies overseas).

4.5.1 Where do UK design-intensive industries export to?

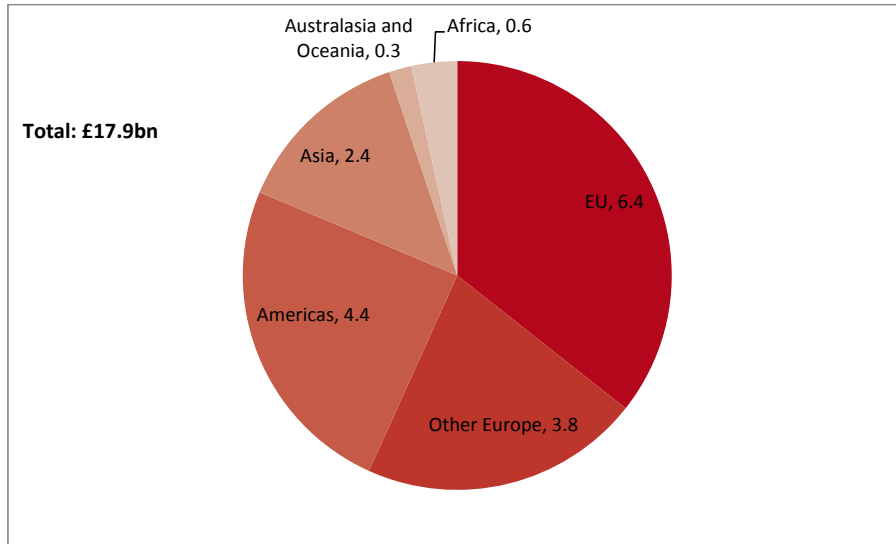
Most of the UK’s exports go to other advanced economies, particularly in the EU and North America. This picture is beginning to change, with the rise of emerging economies, but UK export markets are still dominated by traditional trade partners. The design-intensive industries broadly follow this pattern.

Figure 4.18 (Where are UK design goods exported to? (£bn)) shows which parts of the world goods from design-intensive sectors are exported to, while **Figure 4.19 (Where are UK design services exported to? (£bn))** shows a similar analysis for services. In both cases, the key export markets are in the EU and the Americas. It is striking that design services depend slightly less on exports to the EU, and have a greater share of exports going to different parts of the world. Despite this, a relatively small proportion of both design goods and services are exported to Asia, and to other emerging economies such as Russia.

Figure 4.18: Where are UK design goods exported to? (£bn)



Source: HM Revenue and Customs, UK Trade Statistics 2009

Figure 4.19: Where are UK design services exported to? (£bn)

Source: International Trade in Services 2009 (ONS Crown Copyright)

Table 4.9 (Exports of goods related to design-intensive industries by continent and country) presents more detailed data on where goods from the design-intensive parts of the manufacturing industry are exported. The figures show that the key export markets for UK design goods are established trade partners such as France, Germany, Ireland and the USA. Exports to Asia and Oceania stand at around 10%, which is split between several countries. China accounts for less than 2% of UK design-intensive good exports, while India accounts for less than 1%. Other emerging economies such as Brazil, Russia, India and South Africa represent a small proportion of design good exports.

Table 4.9 - Exports of goods related to design-intensive industries by continent and country

Export Industry					
SIC Codes					Exports (£bn)
Total EU + Non-EU					72
Of Which:	EU				39
			Of Which:	France	6
				Germany	8
				Irish Republic	4
	Non-EU				33
	Of Which:	Asia and Oceania			8
			Of Which:	Australia	1
				China	1
				Hong Kong	1
				India	1
				Japan	1
		Eastern Europe			2
			Of Which:	Russia	1
		Latin America and Caribbean			1
			Of Which:	Brazil	0
		Middle East & North Africa (MENA)			4
		North America			9
			Of Which:	United States	8
		Sub-Saharan Africa			2
			Of Which:	Nigeria	0
			South Africa	1	
	Western Europe exc EC			3	

Source: HM Revenue and Customs, UK Trade Statistics 2009

Note: Identification codes used in trade data do not match exactly with Standard Industrial Codes. These codes have been assigned to industries by the researchers. There remains a significant discrepancy in the total value of design goods exported between this data source and the Supply and Use Tables used for overall export figures.

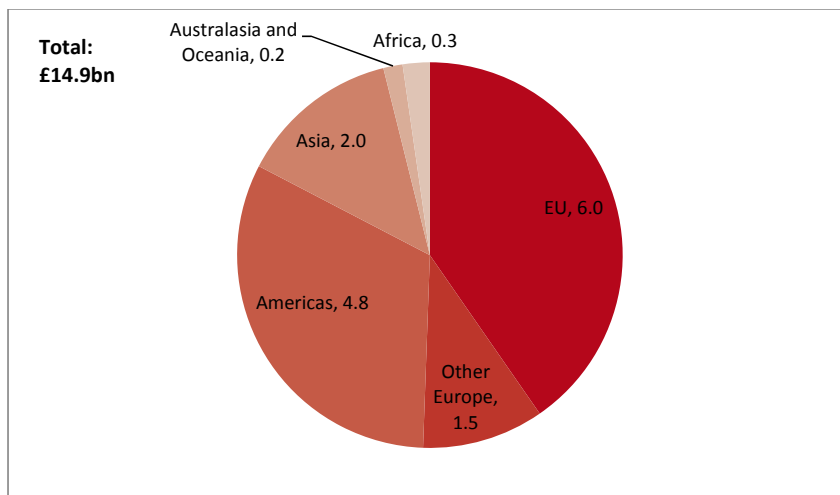
4.5.2 Where does the UK import design-intensive goods and services from?

Figure 4.20 (Imports of design-intensive services by continent) and **Table 4.10 (Imports of design-intensive goods by continent and country)** show imports of design-intensive services and goods, respectively, by continent and country.

Design-intensive service imports follow a similar pattern to exports, with greater trade from the EU and Americas and smaller but significant volumes of service imports from Asia and non-EU Europe. **The UK has a trade surplus in design-intensive services with all these continents except the Americas**, where we import approximately £0.4bn more than we export.

In comparison, for most other continents and countries the UK has a trade deficit in design-intensive goods. There are some small countries where we export to more than import from in these goods, such as the Middle East, Africa, Eastern Europe and Ireland. This reflects the large scale imports of manufactured goods from the Rest of the World seen in all of the UK economy.

Figure 4.20: Imports of design-intensive services by continent



Source: International Trade in Services 2009 (ONS Crown Copyright)

Table 4.10: Imports of design-intensive goods by continent and country

Export Industry					
SIC Codes					Imports (£bn)
Total EU + Non-EU					119
Of Which:	EU				61
		Of Which:	France	6	
			Germany	17	
			Irish Republic	2	
	Non-EU				59
Of Which:	Asia and Oceania				34
		Of Which:	Australia	0	
			China	14	
			Hong Kong	5	
			India	2	
			Japan	3	
	Eastern Europe				0
		Of Which:	Russia	0	
	Latin America and Caribbean				1
		Of Which:	Brazil	0	
	MENA				1
	North America				13
		Of Which:	United States	11	
	Sub-Saharan Africa				0
		Of Which:	Nigeria	0	
			South Africa	0	
	Western Europe exc EC				4

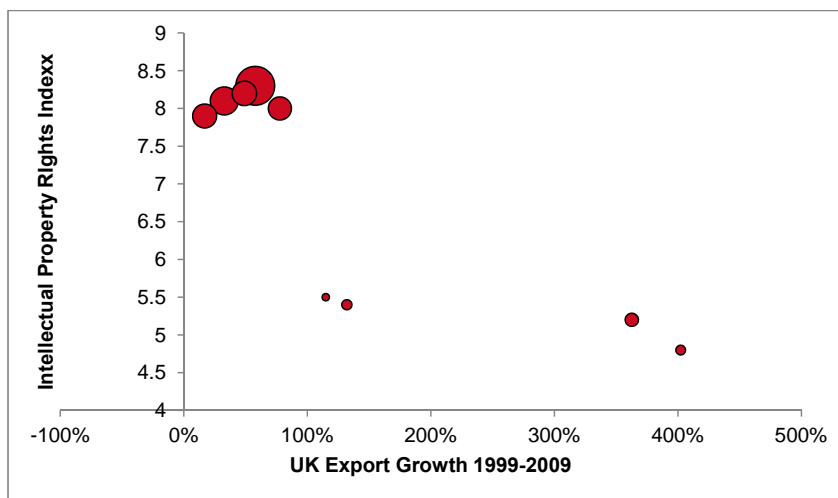
Source: HM Revenue and Customs, UK Trade Statistics 2009

Although the UK’s design-intensive sectors’ main export markets are in traditional areas, the UK’s fastest-growing export markets overall are concentrated in the emerging world [see **Figure 4.21 (Growing export markets and strength of intellectual property regimes)**]. Exports to emerging economies such as China, Russia and Brazil are growing much faster than those to traditional trade partners, a trend which has been sped up by the problems in the Euro area. It is important to focus on the growth of export markets as well as the total amount exported.

This shift towards emerging markets has implications for intellectual property in design-intensive industries. As **Figure 4.21 (Growing export markets and strength of intellectual property regimes)** shows, these fast-growing emerging markets tend to have weaker intellectual property protection, which may present obstacles to design companies exporting.

To help overcome these obstacles, UK design companies need to find the most effective ways to protect their intellectual property; relying on registered design rights is unlikely to be effective for doing this. Instead, it is likely that firms will use a variety of strategies, including legal contracts, intellectual property rights protection within the EU, and more sophisticated service models to overcome these challenges.

Figure 4.21 - Growing export markets and strength of intellectual property regimes



Source: ONS Pink Book (2009 data) and International Property Rights Index 2012 (Property Rights Alliance) - bubble size is export value in 2009

5. The intellectual property system and UK design's international supply chain

Given the international nature of the UK's design-intensive industries, it is important that the intellectual property system can support firms engaged in complex process of value creation in increasingly global markets. Previous studies for the IPO, including the Hargreaves Review, have raised concerns about the relatively small number of firms using the UK registered design right, as well as the effectiveness of the design protection system in helping firms to capture the value of their activities. However, the analysis in this report suggests that low levels of design registration in the UK reflects the extent to which design is being embedded within broad processes of value creation and leveraged using a variety of forms of intellectual property protection and business strategies. This often means that design registration is not perceived as particularly valuable for firms producing designs. Companies involved in design innovation and trade are often relying on patents, copyrights or unregistered design rights to protect their work.

This section presents the results of our case study work, along with some quantitative data on the intellectual property system, to provide an overview of how design firms use the intellectual property system, and how well it supports them.

5.1 Design rights in the UK and Europe

The most common economic arguments for protecting intellectual property rights are well known: intellectual property rights encourage companies to make risky investments in research and innovation by providing a time-limited monopoly on the innovations they produce. This rationale can also be applied to design rights. The production of new designs requires investments of time, skill and creative labour. In theory, providing a mechanism for the protection of new designs should stimulate investment in design (Haskel and Pesole, 2011).

In spite of these general economic arguments for the existence of intellectual property rights in design, the Hargreaves Review identified a lack of detailed understanding about the relationship between the UK's system for protecting designs and the very large investments being made in design related activities noted by Nesta (2011). In an effort to address this gap in knowledge, the IPO has commissioned an extensive programme of research to provide evidence on this issue. The first chapter of the work on design commissioned by the IPO (Haskel and Pesole, 2011) showed that the percentage of firms that have registered designs in the UK is relatively small: only 15%. Chapter four of that document also found that the UK has significantly lower rates of design registration than both France and Germany (BOP Consulting, 2011).

Taken at face value, it might be tempting to conclude that these findings are an indication that the UK's design rights system is failing the nation's designers. However, the real picture is more nuanced. It reflects the embedded role of design in complex processes of value creation and business models, as well as the use of other areas of intellectual property law and clever business model approaches to protecting and leveraging investments in design.

The analysis presented in **Section 4** of this report suggests that many of the design-intensive industries rely on tacit knowledge and expertise, which are not easily codifiable. Because it is difficult to codify, tacit knowledge and expertise are also difficult to protect through institutional mechanisms such as design rights. However, the other side of this coin is that tacit knowledge is also difficult to copy and distribute on a large scale. This means that even without formal intellectual property protection, service based areas of the design-intensive industries are relatively resistant to threats of unrestrained copying in a global economy because they depend on the application of expertise in highly specific contexts by skilled practitioners (Sissons, 2011b). The apparent contradiction between the number of designs being registered and the value of design-intensive industries to the UK economy may, therefore, indicate the predominance of design as a service, rather than codifiable design as a product that is being traded by the UK's design-intensive sectors.

At the same time, design rights make more sense for more tactical, process-driven and compartmentalised (e.g. product development or technology) aspects of design-intensive industries, because the IP they produce tends to be more explicit and design rights can be more easily defined.

Although an effective intellectual property regime needs to be able to encourage both of these kinds of design activity, the needs of these two parts of the design-intensive industries may be quite different.

The speed of product cycles may also be a factor in low levels of design registration. Haskel and Pesole (IPO, 2011) find that average design right benefits a business for four years. Bascavusoglu and Tether (IPO, 2011) find that design rights ceased to be associated with stronger business performance in the early 2000s, when a change in the European design registration system made design registration less important for designs that had a life of less than three years. Thus companies with short-lived designs (of which there appear to be many) have little incentive to register their designs (although they may derive some protection for unregistered designs).

5.1.1 Changing the balance of costs and benefits for design rights

Chapter four of the IPO research (BOP Consulting, 2011) explores how the decision to purchase a design right depends on a number of factors:

- The cost, both in fees and administrative, of the right;
- The likelihood of being able to successfully defend against an infringement;
- The presence of alternative forms of protection;
- Awareness and knowledge of the rights system; and
- The expected life of the design investment.

The evidence on the UK, gleaned from a combination of surveys and interviews, suggests that the balance between the costs and benefits of design rights do not encourage registration, with higher transaction costs through a paper-based filing system and limited benefits, due to the difficulty of defence and the availability and efficacy of other substitutable methods of IP protection. There also may be a lack of knowledge amongst UK designers of the design rights system.

Similarly the structure of the design-intensive industries and the balance between small, medium and larger design agencies may affect where IP resides and how likely it is to be registered. Research conducted as part of the Design 2020 project highlights how smaller design consultancies face significant cash-flow and cost pressures that prevent them taking a royalty stake in their work, and also the way in which they focus more on product processes than business development, perhaps neglecting IP (Cooper et al. 2011).

Is intellectual property a barrier to collaboration in design-intensive industries?

A lot of strategic design activity involves collaboration between designers and their partners (Adelson, 1999; Chiu, 2002; Cross & Clayburn Cross, 1995; Susskind & Landry, 2007). In these situations, intellectual property, and concerns over its protection, can sometimes become a barrier to effective collaboration. Designers can be fearful of sharing their ideas for fear of diminishing their worth (Murphy, 2010). Worryingly, in some cases, discussion and protection of IP is avoided as it is viewed as a complex and counter-collaborative distraction from the creative process. What is more, the issue is sometimes avoided completely because organisations don't know how to protect the IP of their designs and no framework from which to approach it exists. The intellectual property framework for design must support, rather than hinder, collaborative work by designers.

5.1.2 Quantitative data on design rights

To examine the link between intellectual property and exporting, we have used two firm-level datasets. The first is the Community Innovation Survey (CIS)⁴⁰, which asks firms a range of questions about issues related to innovation and intellectual property. The second is a combination of the IPO's design rights database and the Annual Respondents Database (ARD)⁴¹, which gives data on the export behaviour of firms who have registered design rights with the IPO.

Table 5.1 - Results from the Community Innovation Survey

Community Innovation Survey 2006-08 results		Sample Size
How many firms register design rights?		
Design -active manufacturing firms registering design rights	5%	1919
Design-active service firms registering design rights	4%	2242
Do firms registering design rights or engaged in design activity in general tend to export more than all firms?		
Design rights holders exporting	84%	199
Design-active firms exporting	63%	3219
All firms exporting	41%	8677
Does the link between design rights and export activity vary by sector?		
Manufacturing design rights holders exporting	89%	155
Design-active manufacturing firms exporting	72%	1599
Service design rights holders exporting	81%	71
Design-active service firms exporting	58%	1660
Does the link between design rights and export activity vary by firm size?		
Small firms with design rights and exporting	84%	52

40 The Community Innovation Survey is for 2006 – 08.

41 These databases have been linked using Enterprise Reference Numbers. The data are for 2009, and the ARD only covers around two-thirds of the economy.

Design-active small firms exporting	61%	24348
Medium/Large firms with design rights exporting	86%	174
Design-active medium/large firms exporting	71%	8129

Source: Community Innovation Survey 2006-08 (Department for Business, Innovation and Skills)

The CIS data (summarised in **Table 5.1 (Results from the Community Innovation Survey)**) show that 5% of design-active⁴² manufacturing firms register industrial designs, and that 4% of service firms do so. This suggests that design rights are not just used by firms in the manufacturing sector.

Firms that register designs are more likely to export, with 83% of design-active firms holding design rights exporting, compared to 63% for all design-active firms, and 41% for all firms. This result appears particularly strong for service firms, where 81% of design-active firms registering a design right export, compared to 58% of all design-active firms. The result is also true for manufacturing, where 89% of firms with design rights export, against 72% of all design-active firms. Among design-active small firms, 84% with a design right are exporters, against 61% of design-active firms – results are similar for medium and large firms.

This evidence from the CIS provides a strong signal that firms which register design rights tend to be more export-facing.

The evidence from the IPO/ARD data (summarised in Table 5.2 (Results from matched Intellectual Property Office/Annual Respondent's Database)) tell a similar story. Of enterprises that hold an IPO-registered design right, 21% earn some export income, against 5% of all firms. This is true of production firms (21% versus 2%) and service firms (22% versus 6%).

If we look at exports as a share of turnover, companies with IPO-registered design rights generate 1.5% of their income from exports, against 1.25% for all firms.

Both of these data sources suggest that design rights are associated with higher levels of export activity among individual firms. This firm-level analysis provides a useful insight, because it suggests that design rights are associated with export-facing behaviour by firms.

42 i.e., firms that engage in or invest in design.

Table 5.2 - Results from matched Intellectual Property Office/Annual Respondent’s Database

IPO/Annual Respondent’s Database results (2009)		Matched sample size
Do firms with IPO-registered design rights tend to export more?		
Firms with IPO-registered design exporting	21%	514
All firms exporting	5%	44253
Does the link between IPO-registered design rights and export activity vary by sector?		
Service firms with IPO-registered designs exporting	22%	103
All service firms exporting	6%	33474
Manufacturing firms with IPO-registered designs exporting	21%	430
All Manufacturing firms exporting	2%	10779
Do firms with IPO-registered design rights earn more export income?		
Firms with IPO-registered design exporting	1.50%	512
All firms	1.25%	44253

Source: Intellectual Property Office data on design rights 2009 and the Annual Respondent’s Database 2009 (ONS Crown Copyright)

5.2 Evidence from the case studies

It is clear that the design rights system can support design companies which are exporting, and that companies with design rights tend to be more export-facing. However, this report has also shown that it is inadvisable to take a blanket approach to design-intensive industries; as **Sections 4** and **5** of this report have made clear, “the design industry” encompasses many different types of company, which may require different kinds of support from the intellectual property system.

To try and understand how design companies use the intellectual property system, and whether there is scope to make the system more supportive of international trade, this research conducted 10 case studies to examine these questions. Given the range of activity within the design-intensive industries, it is important to understand what strategies design firms use to make money, and how they use design rights to support this. The cases therefore span design companies that do and do not use design rights, to examine whether changes to the intellectual property system could support these types of company better.

Overall, the case studies suggest that design registration only helps a limited portion of design-intensive industries to realise the value of design in increasingly global markets. Design companies that work internationally are involved in complex processes of value creation, codification and trade, and many of these activities cannot easily be covered by the intellectual property system – and potentially do not need to be.

Although the case studies highlight areas of the design protection system that might be targeted for improvement, the overall picture that emerges suggests that the current design rights system performs reasonably well – including in relation to international trade and supply chains. Where design companies choose not to register designs, this often reflects the existence of alternative forms of intellectual property protection that are perceived as more appropriate to the needs of businesses investing in design and trading in international markets.

Design registration did not form a central component of the intellectual property strategies of the majority of case study organisations. This might be interpreted as a reflection of the extent to which the value of design is embedded in wider processes of value creation among UK firms, as well as the extent to which UK firms are engaging with the value of design as something much more than the outward appearance of a product. The firms interviewed described sophisticated strategies for realising the value of their investments in design activities, including through exports. These strategies draw on a wide range of intellectual property rights and business model solutions. By-and-large, the firms interviewed did not perceive the UK registered design right as being particularly valuable to them in their efforts to develop and market design-related products internationally. Unregistered design rights and the European Community Design registration were identified by firms having more prominence within their business models and IP strategies, as were patents, trademark and copyrights.

5.2.1 The use of registered design rights

In spite of major differences in the size of firms, as well as the nature of their core products, all of the firms selected for the case studies described design as central to their business's value proposition. Nonetheless, only **one of the firms interviewed identified design registration as an important aspect of their intellectual property strategy and business model**. While that company does regularly register its designs, it primarily uses the OHIM registered community design at a European level, rather than the UK's design rights system.

Joseph Joseph

International manufacturer focused on design and branding for competitive advantage



*“Most of our products do not represent new technology so it is generally their form or function that makes them unique. This often presents challenges as a lot of our range provides additional functionality (e.g. a chopping board that can be used a funnel for the chopped food) and registered designs tend to be very focused on the form or shape of the object. Nevertheless **some method of registered design usually represents the best type of protection for us.**”*

Joseph Joseph is a high growth international home wares business. Founded and based in the UK in 2003 by twin brothers Richard and Anthony Joseph, it now has 42 direct employees and forecast sales of £25 million in 2012, up from £1.9m in 2008. Joseph Joseph’s products are designed by external UK-based consultancies and licensed or purchased by the business. The company’s products are priced at the premium end of the category and sold through retailers across the world.

Joseph Joseph exports to 73 countries from Australia and New Zealand to Iran and Panama. All of its plastic products have always been made in the Far East. Although Joseph Joseph do depend heavily on registered design rights, it is interesting to note that they tend to **prefer the OHIM Registered Community Design**, rather than the UK Registered Design. Joseph Joseph identified the **ease and speed of the registration process** as well as **EU wide recognition** as the driving factors in this decision.

“We often adopt the registered Community design as opposed to the UK registered design for two reasons. First the Community design is recognised across the EU and secondly the examiners have a reputation for being less rigid so it is often a quicker process than the UK registered designs.”

More than 80% of Joseph Joseph's manufacturing takes place in the Far East. As with many international businesses, Joseph Joseph have found it difficult to enforce intellectual property rights in China: *"Generally the threat from copying is in China rather than in the developed economies where intellectually property is far more respected"*.

Joseph Joseph products have been copied in the Far East and then imported into the UK or other territories in which the company trades. In these instances, although it may not have been possible to prevent copying at the point of manufacture, registered design rights were used to prevent infringing products from being sold within Joseph Joseph's established markets:

"The distributors importing these goods are unaware that they are bringing copied products in to the country (they are approached by the manufacturers), but we are able to enforce our rights once they are here".

It appears that an ability to enforce registered design rights within key markets for Joseph Joseph products and the low costs of manufacturing in China combine to ensure that the benefits to the company of manufacturing in a country in which design rights cannot be easily enforced outweigh the costs associated with design right infringements that may result from their decision to locate manufacturing in the far east:

"...currently we feel we are able to defend most instances of IP infringement and we have excellent and highly cost effective manufacturing partners. Overall we feel the risks are outweighed by the advantages of manufacturing in China so far we have not had any purposeful efforts to copy products in the developed territories we trade in."

The case studies also highlighted another, perhaps less expected, way in which UK registered design rights are being used by firms: **as a signaling device which can be used by design businesses to demonstrate to funders that their work is producing intellectual property outputs**. As the case below makes clear, design rights registration was useful in terms of evidence of IP value when looking for investment, and for ensuring compliance with a particular public sector procurement process.

KwickScreenwww.kwickscreen.com*UK manufacturer focused on technical innovation and automation for competitive advantage*

KwickScreen are a UK-based designer and manufacturer responsible for producing the KwickScreen™; a portable, retractable screen initially developed for use in hospitals, which has won several design awards.

KwickScreen have purchased, through a licensing agreement, an exclusive right to use vital technological components of their KwickScreen product. The technology that KwickScreen licenses in is protected by four internationally registered patents. KwickScreen also holds its own patent, protecting innovations made in the application of the technology it licenses in. The KwickScreen brand is protected as a registered trademark.

“I have always felt comfortable in exporting the KwickScreen for two reasons. First, our technology provider is well funded and will aggressively defend infringements on its international patents. Secondly our product requires substantial know how or ‘dark art’ to manufacture at this stage and whilst we are still a small business it is unlikely that sufficient efforts will be made to re-engineer this process.”

Although KwickScreen identified patents as the most important area of intellectual property protection for their business, they do hold one registered design. This registered design was obtained because the NHS needed the company to demonstrate intellectual property creation as part of an innovation program that KwickScreen was involved in. As a relatively easy to obtain, low cost registered intellectual property right, a registered design right provided KwickScreen with an accessible signaling mechanism that could be used to demonstrate to a funding body that they were producing new design related knowledge and innovation. Although KwickScreen may have had no intention of defending the design monopoly associated with a UKRD, the value of an inexpensive, accessible, formal framework for the codification of design related knowledge claims may be one of the ways in which the design registration system is helping UK designers to realise the value of their products.

Nonetheless, it is important not to exaggerate the extent to which KwickScreen themselves valued this function or felt that it was anything more than a box ticking exercise carried out in order to satisfy the bureaucratic demands of a funding agent. KwickScreen were very clear in identifying manufacturing expertise and innovation as their key advantage when competing in global markets.

“With engineered products you have the opportunity to develop significant competitive advantages through automation and well designed manufacturing processes. If you can reduce the labour input to a tiny fraction of the overall cost it is very difficult for low wage economies to compete purely on price. We will continue to invest in our intellectual property portfolio but ultimately we believe production and commercial expertise will be a more effective defence against international import or export competition. The biggest influence on our import (components) and export activities is therefore our own manufacturing capabilities.”

5.2.2 Choosing not to register designs

The case studies offer us a range of important insights on why design-intensive organisations are choosing not to register designs. One important factor that may account for the discrepancy between levels of investment in design intensive activities and the number of designs being registered in the UK is the focus of the design registration system on *aesthetic* aspects of design, on the one hand, and the importance of functional aspects of design to UK-based designers.

The design registration **system’s focus on aesthetic, rather than functional aspects of design** was identified by several interviewees as a reason registered designs were not especially useful for their business. This theme emerged across firms of all sizes.

BAE Systems



BAE Systems is a British multinational defense, security and aerospace company that has global interests, particularly in North America through its subsidiary BAE Systems Inc. BAE Systems is involved in several major defense projects, including the F-35 Lightning II, the Eurofighter Typhoon, the *Astute*-class submarine and the *Queen Elizabeth*-class aircraft carriers.

BAE is among the world's largest military contractors; in 2009 it was the world's second-largest based on revenues.

Although BAE are a major investor in design and design innovation, BAE systems do not hold a single registered design. BAE's head of commercial intellectual property and technology law identified the UK registered design system's focus on the appearance, rather than the function of products as the most important factor in the firm's decision not to register designs.

"We are a technology company, rather than a design led company. We design technological solutions. We don't design things to look nice, we design them to do something."

In spite of the fact that they do not hold a single UK registered design, BAE systems are a major exporter and licensor of designs:

"We don't license any designs in, but we do license designs out. For example, we have just done a deal with Brazil for the license of a ship design, which they will probably make in country."

BAE's ability to license out designs depends heavily on the existence of UK unregistered design rights, which inform intellectual property license agreements that specify the terms on which a package of intellectual property rights can be used. A lack of international harmonisation in systems for protecting design rights and BAE's operations within markets beyond Europe means that the UK registered design right is of little use to the firm:

“IP rights are at the cutting edge of global homogenisation of law, but design rights are a long way behind patents or trademarks. As a result, it is more effective for us to specify what another party can do than to talk about design rights. We tend to license our designs through licensing agreements that provide customers with a package of rights. Our ability to grant those licenses might arise from our unregistered design rights in the UK, as well as our copyrights and other intellectual property rights, but we tend to use the language of contract because not everywhere recognises design rights. In other markets, the rights we are talking about could be covered by another area of law.”

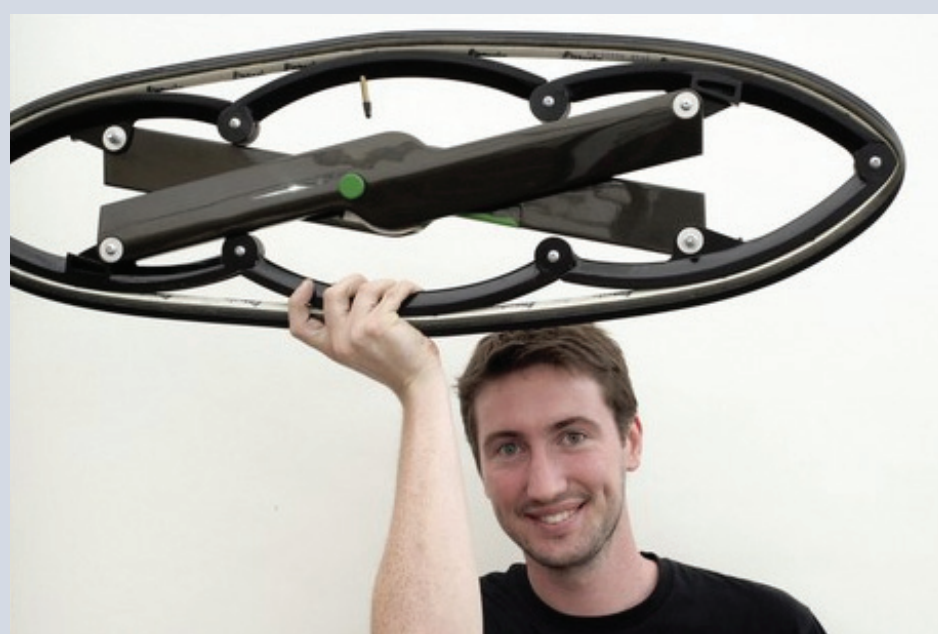
Perhaps surprisingly, BAE depends heavily on copyright in order to protect its design related work. Although it also patents components of its products, copyright provides a practical mechanism through which codified knowledge can be controlled and protected.

“The most important rights to us as a company are copyrights – in a broader sense, as copy type rights. Patents come next, but you can’t get a patent for every piece of industrial design and they are miles down the list in terms of useful protection as far as I’m concerned. Copyright allows us to protect drawings, plans, software and technical reports. A lot of the time technical reports can be a lot more important than the plans for a new technology. You might have a drawing, but you won’t know why it looks like that, where the clever bits are, how to make it and all of the important information that means that it is possible to capture the value of those drawings. All of those other things are protected by copyright or as confidential agreements.”

When asked whether anything could be done to increase the number of rights being registered by UK firms, BAE was very clear:

*“It doesn’t take a lot of skill to register a design and it isn’t particularly expensive. But I don’t think that people see what the value in doing that is. Maybe the IPO should do more to promote RDs. However, they would have to think about which market would get value out of that, because it definitely isn’t us. **More effort to promote the design registration system won’t provide companies like us with value.**”*

A discrepancy between the focus of design innovators on improving function, and the focus of the design protection system on appearance also impacted on decisions by smaller firms about whether or not to register designs. It appears that many design businesses are concerned with function – which is normally covered by patents – as well as by visual appearance, which is covered by the design rights system. This may help to explain why design companies appear as likely to use patents as design rights (see Moultrie and Livesey, 2011).



Vitamins

Design and invention studio Vitamins was founded in 2007 founded by Duncan Fitzsimons and several classmates after graduation from the Industrial Design Engineering course at the Royal College of Art. It works on its own account and with companies to develop new products and services. The company's clients include Nokia, Burton, BBC, Samsung and Blackberry. Vitamins takes a hybrid approach to the intellectual property rights associated with its designs, sometimes owning and licensing them to clients and sometimes working for a fee and giving up all intellectual property rights.

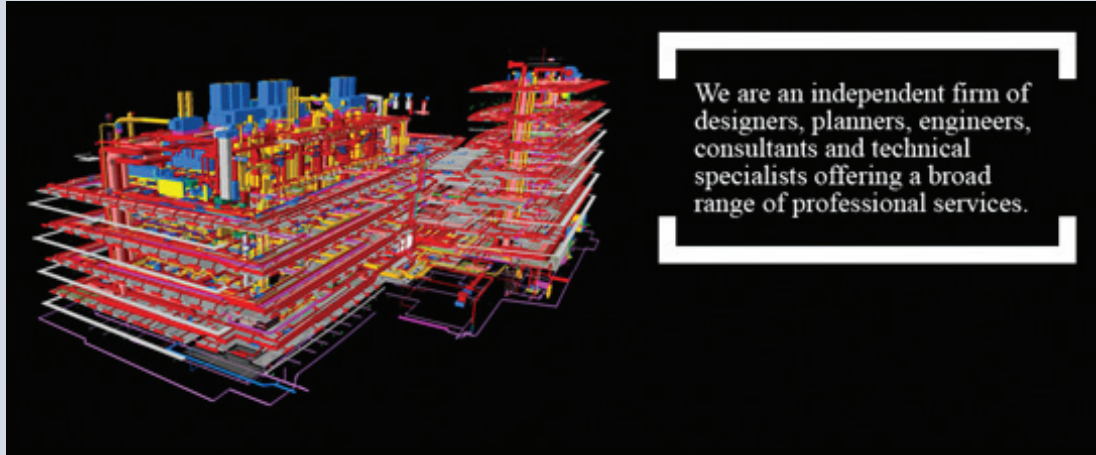
One of the company's most successful products is a revolutionary folding wheel, which reduces the folded size of wheelchairs and has applications across the spectrum of mobile products. Duncan Fitzsimons developed the folding wheel himself and Vitamins owns all of the IP on the design. The innovation of the folding wheel is functional rather than aesthetic. Furthermore, aesthetic aspects of the wheel's original design that might have been protected through design registration needed to be revised as the design was refined for mass manufacture.

"I decided not to register the design because I was aware that there would be a number of changes to the look of the product as it was redesigned for mass manufacture."

In contrast to a registered design right which was not understood by Fitzsimons and his colleagues as adding any genuine value to the product he had developed, an international patent has been vital:

"My experience with the folding wheel confirmed the decision to patent the design was correct as the business that is now commercialising it has made several changes to the form but still relies heavily on the original innovation that is detailed in the patent. As I am licensing the IP I am totally reliant on these rights to generate income from the design so a good international patent has been invaluable."

ARUP



We are an independent firm of designers, planners, engineers, consultants and technical specialists offering a broad range of professional services.

Arup is a multinational professional services firm headquartered in London, United Kingdom which provides engineering, design, planning, project management and consulting services for all aspects of the built environment.

Arup has participated in projects in over 160 countries. Its main clients are developers, major contractors and architects, but also governments.

Although ARUP is primarily a professional services firm, it does commercialise product ideas developed by its consultants in the course of their work. It is, however, conscious of the negative impacts on innovation that overly aggressive IP strategies would have for its industry:

“The construction industry in general in the UK doesn’t often file for IP rights in any form. There is a big push to keep it that way because we have engineers who are finding solutions for clients. If they needed to spend a lot of time looking up patents or design registrations to make sure that they weren’t treading on anyone else’s toes it would hold up our work significantly.”

ARUP does not carry out any of its own manufacturing. However, it does derive income from licensing out intellectual property rights that emerge.

ARUP does not perceive registered design rights as particularly valuable in the international licensing and commercialisation of its intellectual property rights. As a result, it places much more emphasis on patents.

“Our strategic route in terms of trying to protect our intellectual property is patent biased. We feel that patent is a stronger mechanism for protecting our intellectual property than a design right.”

ARUP holds two registered designs. In contrast to this, it holds over forty international patents.

Swiftly Scooters



Swiftly Scooters is a UK based designer and manufacturer of an innovative scooter, which launched at London Design Week in 2011. The Swiftly Scooter retails for £450. During its first 6 months Swiftly Scooters have been exported to countries including Australia, Canada, Japan, America, Holland and Singapore.

Although Swiftly Scooters has registered designs on certain elements of its products, its key strategy is to update the Swiftly Scooter and related products continually in order to stimulate demand for newer versions of products and to keep ahead of the competition. As a result, registered designs are quickly outdated and design registration is not seen as a particularly important aspect of the firm's strategy.

"I think that a lot of the advice that designers receive on intellectual property is overly cautious and cramps innovation. There is far too much of a focus on protecting ideas and designs and not enough on getting them out in to the market."

In contrast to design registration, which the company does not see as particularly useful, Swiftly Scooters places significant emphasis on protecting its brand.

"The one area where we have been careful is to trade mark the brand. Though we are always working to update our products the brand is a constant and holds a huge amount of long term value for us as it becomes increasingly well known throughout the world. We are building a brand for the future so this has been the focus of our IPR investment."

British design and British manufacturing are understood as an important aspect of the company's brand and a key advantage in global markets.

"The great advantage that British designers have is that British products still have amazing cache across the world and the 'made in Britain' label also holds huge kudos. I would say that these historical associations with British products, built up over generations since the industrial revolution, are the biggest influence on our business model. Making products in Britain and then focusing on the export markets is a fantastic opportunity for British designers."

A further aspect of the role of intellectual property protection in UK design that was apparent from the case study interviews was the practice by design consultancies of assigning intellectual property rights to clients as standard terms of project contracts. This was the case for two of the design consultancy firms interviewed: Radius Creative and Raymond Turner Associates. As Raymond Turner put it:

“At the end of the day it’s all to do with the right to use the idea – and the right to use an idea is, certainly by design companies, invariably given away to the people who pay you to develop it in the first place, whether you are a staff designer, or a consultant working for somebody.”

Overall, the case studies highlight that intellectual property protection for design is important for many UK based firms making investments in design and design-related innovation. However, a significant proportion of design origination and international trade in design related products does not relate directly to the very specific aspects of design that are protected by the design registration system. With the exception of Joseph Joseph, all of the case study organisations involved in development and manufacture of designs and design related products cited patent, trade mark and copyright as more important for their business and more appropriate to their products and business strategy than registered designs.

Nonetheless, the case studies tell a positive story of highly innovative UK-based design firms that are adopting intellectual property strategies and business models that reflect the diverse characteristics of their products and the diverse markets in which the UK’s design related businesses are trading. The UK’s brand as a design innovator and site of high quality manufacturing, the importance of keeping some areas of knowledge open so that firms are free to apply lessons learned by others, the value of speed to market and effective branding and communications strategies emerged as important themes in the case study interviews.

Comparing the case study findings with previous surveys on how design firms use the intellectual property system

The results of this case study analysis correspond well to the findings of a slightly larger survey in Moultrie and Livesey (2011). With a sample of 32 companies involved in design- and technology-based activities, Moultrie and Livesey found that companies use a wide range of different strategies to protect and monetize their designs. In particular, the survey highlighted low levels of design right registration, especially among design consultancies, and suggested that companies have relatively little confidence in design rights either as a defence against copying, or as a means of turning designs into an economic asset. Design companies appear to use trade marks and copyright much more widely than design rights (whether registered or unregistered). For technology-based companies, patents and secrecy stand out as being particularly useful for protecting designs.

Moultrie and Livesey go on to argue that there may be scope for changing perceptions of the value of registered design rights, so that companies view them as being as valuable as other forms of intellectual property right, such as patents and trade marks.

6. Conclusions and recommendations

The analysis presented in this report makes it clear that the UK's design-intensive industries play a major part in the global economy. The key findings from the quantitative analysis can be summarised as:

- 1. The design industry is a diverse group of industries** – the UK design industry is not a single, homogenous entity; it is a collection of industries that operate in different ways. This report has identified six distinct design-intensive industries, spanning both manufacturing and service sectors, each with their own characteristics and roles in the economy. Future work on design policy and the intellectual property system should recognise this diversity, and avoid applying one-size-fits-all policies to design-intensive industries;
 - 2. Design-intensive industries are highly export-facing** – the design-intensive industries identified in this report are more export-facing than the economy as a whole. These design-intensive sectors account for around 35% of UK exports (although designers make up a relatively small share of the workforce in many of these industries). When weighted by the contribution of core design workers, designers contribute around 2% of UK exports, despite making up just 0.7% of the total workforce. Within the design-intensive industries, advanced manufacturing makes up a large share of exports. Specialised design services, a small business services sector dominated by micro businesses, is also extremely export-facing, exporting around 35% of its output;
 - 3. The UK's design-intensive industries appear to be internationally competitive** – the service-based parts of the UK's design-intensive industries have strong trade surpluses, suggesting that the UK is highly internationally competitive in these areas. The manufacturing-based parts of the design-intensive industries run a trade deficit; however, for advanced manufacturing, this deficit is smaller than for manufacturing as a whole, suggesting that the UK remains relatively competitive in design-intensive areas;
 - 4. Design plays a leading rather than a supporting role in international supply chains** – the quantitative analysis suggests that design-intensive industries export a large share of their output directly, rather than supporting other export-intensive activities within the UK. While many of these design exports may be used in the supply chains of overseas companies, there is limited evidence of UK design firms exporting services that are used by manufacturers on large scale, and sold back to UK markets. However, there are limits on the ability to test this issue with currently available data, and this would be a suitable area for further research;
 - 5. UK design exports are predominantly sold to advanced economies** – export data suggest that the majority of design exports go to advanced economies in Europe and America. However, there is some evidence that exports to emerging markets, such as China, Russia and India, are beginning to grow.
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It is clear, then, that design-intensive industries play an important role in the UK economy, and that they make a significant contribution to UK trade. UK design is a knowledge industry that operates on a global stage, and it needs to be supported effectively by the intellectual property system. Previous research has raised concerns that the UK's design rights system is not being used as widely as those in other countries (BOP Consulting, 2011), and that this may be holding back the growth of design-intensive industries, but for the UK design industry – particularly in design services – there is little evidence that international trade in design is being held back, export rates continue to be high, and we operate a trade surplus in that area.

6.1 How do design companies capture value from their work?

So, although the nuances of the different design-intensive industries make it hard to draw generalisations about it, this report has highlighted a number of groups within the design industry. We can classify design firms by sector (as we have done using our design-intensive industries), by the way they make money from design, and by their size.

The combination of quantitative and qualitative research in this report has highlighted three different approaches to making money from design, all of which place different requirements on the intellectual property system:

- **Selling products** – Many design companies in the manufacturing sector use their design work to manufacture finished products, which are sold directly to customers. Manufacturing companies do the majority of their design in-house, rather than purchasing it from design service companies, so there are likely to be few intellectual property issues involved in developing the designs. The key question for many designer-producers is to stop other companies mimicking their finished products, which may undermine the value of their design. Companies guard against this threat in a number of ways, from making their products hard to copy (e.g., KwickScreen), protecting technical plans with copyrights (e.g., BAE Systems), or using registered or unregistered design rights (e.g., Joseph Joseph). In general, we would expect these companies to benefit from design rights that are easier to enforce globally, although this is by no means true for all designer-producers. It may be harder for smaller firms to protect themselves against copying from around the world, as they have fewer resources to pursue legal action;
 - **Licensing designs** – Some design companies develop designs and license them to other firms, in the same way that technology companies might do with patented inventions. This licensing model involves capturing value directly from the design. Intellectual property protection is clearly vital to this model, as licensing requires a clearly defined right to work effectively. Companies that take this licensing approach may use a variety of different methods for defining and protecting their designs, including registered and unregistered design rights, but also patents, copyrights and trade marks. We would expect companies using this model to benefit from a stronger global design right, although this would have to be supported by an effective, easy to use legal code for licensing;
-

- **Design as a service** – It appears that a very large share of design-intensive industries sell design as a service, rather than as an item of intellectual capital. This service model is different to the product or licensing models; it derives value from a bespoke service provided to individual clients, rather than from developing valuable, codifiable assets. Design service firms tend to rely less on intellectual property protection, because they don't develop intellectual property that can be easily defined or protected. However, design firms do rely on being able to collaborate with and write effective contracts with their clients and partners. Intellectual property rights can help to define terms used in these legal agreements. Design services are dominated by smaller businesses, which makes the challenge of securing effective legal contracts harder to fulfill, due to their lack of legal resources.

These three approaches are not mutually exclusive. Many firms use more than one of these models; some design service firms sometimes license outputs, many manufacturing firms also provide design services or license their designs. Equally, there are degrees of nuance between these approaches. However, this breakdown provides a useful framework for thinking about how intellectual property relates to design. Future intellectual property policy must reflect these types of variety of business model.

Small business, design and intellectual property

The design-intensive industries – particularly their service elements – feature a large number of small businesses. It can often be hard for smaller businesses to use the intellectual property system effectively especially in a field like design where there are so many different ways to handle intellectual property. Small design businesses may face a number of challenges when trading internationally, which arise due to their lack of legal resources:

- Identifying the most appropriate type of intellectual property mechanism;
- Establishing workable contracts with overseas clients;
- Pursuing action against firms who infringe their intellectual property.

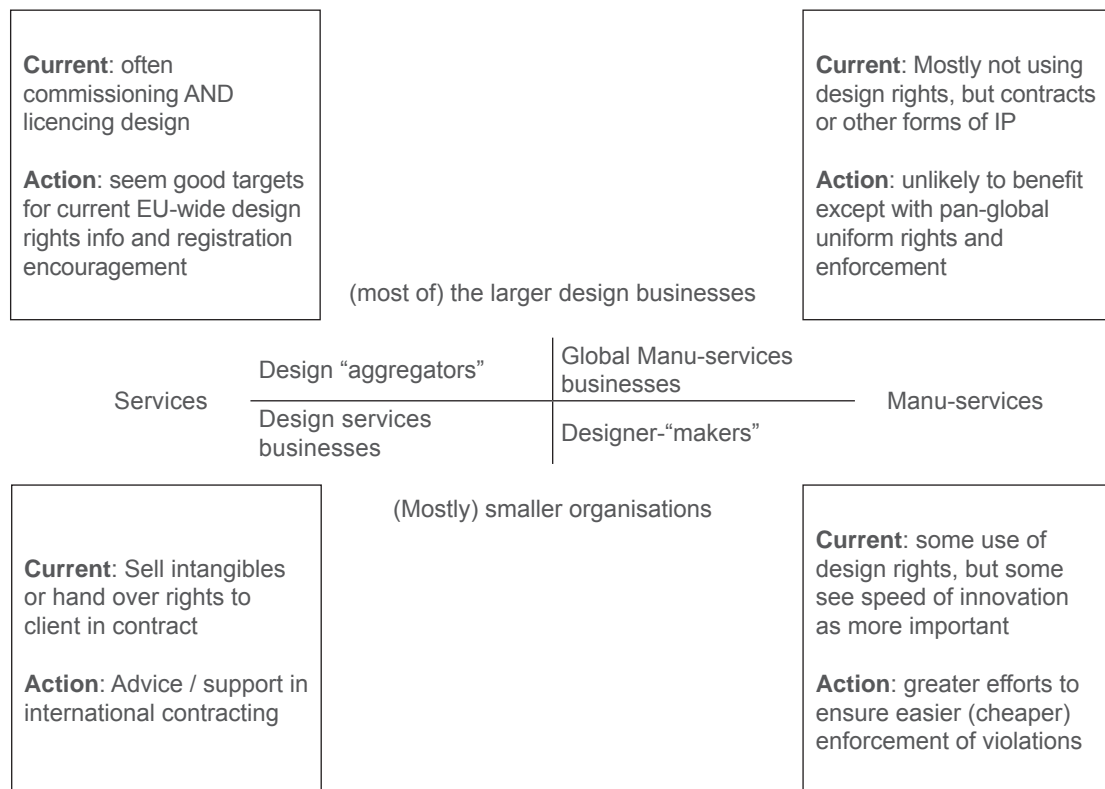
Simply encouraging small businesses to use the IPO's design rights registration system is unlikely to overcome these challenges. Just as important is helping small businesses find the right type of protection, and making it easier to enforce these different rights. This is true of unregistered designs, but also of copyrights, patents and trade marks.

6.2 Recommendations

Bringing together this report’s findings on UK design’s international trading patterns, the shifting business models deployed by UK design organisations, and their design rights and IP strategies, the diagram below organises design-intensive industries on a scale between services and ‘manu-services’, and in terms of organisation size.

The four broad categories of design organisation that can be mapped onto this structure – and tallied with our industry analysis – are: global manu-services (primarily SIC codes 25-30), designer-maker organisations (from SIC codes 13-15, 31, 32 and 90), design services (most of SIC codes 61, 62, 71 and 74) , and design ‘aggregators’ who tend to license and commission designs (a broader SIC group possibly drawn from other but including codes 18 and 58). Some design aggregators also sell directly. Clearly some UK design organisations operate multiple models that would stretch across these categories.

Table 6.1 - IP action required by type of design business



From these categories we can derive four recommendations for the Intellectual Property Office and the broader UK government (see Table 6.1 - IP action required by type of design business).

Focus for global manu-services organisations:**1. International harmonisation: There may be value in focusing on the creation of a global system for the registration and protection of designs.**

This research has provided some evidence to suggest that there would be benefits to extending the global reach of the design rights registration system. Having a design rights system that is legally enforceable in more countries would make it easier for a variety of design companies to do business, even though relatively few design firms would use the right directly. There is also some evidence that the EU-wide OHIM design registration system offers benefits over the UK-based system. There is little evidence that strengthening the UK design rights system would provide significant benefits to international design businesses.

Of course, there are many obstacles to extending the global reach of design rights, and this is not something that the IPO alone can take forward. However, there is a stronger case for putting effort into extending the international reach of existing design rights than for extending the scope of design rights within the UK. This recommendation also implies a long-term strategy – but this is appropriate as the level of competition in aspects like design aggregation and services from competitor nations is likely to intensify over a 10-15 year timeframe. First steps might be greater engagement with international efforts to harmonise the measurement of design industries and activities.

Focus for smaller design services organisations:**2. Providing clearer, timely guidance to SMEs on the range of intellectual property protection methods available**

The range of intellectual property protection used by design-intensive industries may make it hard for SMEs to assess which approach to managing their designs is most appropriate. The IPO could provide further guidance to SMEs, explaining the full range of different options that can be used by designers, rather than focusing solely on registered design rights.

The alternative options highlighted should include unregistered design rights, copyrights, trade marks and patents. As well as listing out the different options, it would be helpful to provide guidance on different strategies for using these rights (such as using copyright to protect technical reports).

Moultrie and Livesey (2011) proposed a “question and answer” tool to help businesses understand these issues, and this may merit further exploration.

Focus for smaller designer-makers:**3. Making enforcement of unregistered designs and contract agreement easier for small companies**

As well as providing clearer guidance to small businesses, there is also a case for expanding support for small, internationally-facing design businesses in writing contracts and enforcing intellectual property. There is a case for the IPO to work with UK Trade and Investments and other relevant bodies to provide better export support to small design firms.

This support might include access to legal support or advice on how to agree contracts with international clients. It may also involve improving the enforcement of unregistered design rights for small design businesses.

Providing clearer guidance on likely legal outcomes – such as by providing examples of cases where designers have brought successful and unsuccessful court action in different countries – may also help to make the legal system easier to use for design companies.

Focus for design-aggregators:**4. Focusing efforts to encourage design rights registration at UK and EU level at those licensing organisations / design aggregators whose business models are most reliant on direct design IP – and most likely to need to enforce design rights in their main EU markets.**

Existing efforts by the IPO to inform design businesses regarding design rights and other IP protections could be focused on design aggregating businesses. This might result in these organisations deploying other kinds of protection – for example patents, but the focus would be driven by the centrality of licensing and commissioning to the organisation's business model. As the case studies make clear, the majority of enforcement problems for what are often high-value items are not elsewhere in international supply chains, but in enforcing design rights in 'home' consumer markets like the EU – the primary export markets of designs. Support for these organisations might include alternative design deposit systems such as those provided by ACID or others.

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Appendix 1 - Case studies not included in main text

Rodd Industrial Design – Ben Davies

www.rodd.uk.com - Provides an international client base with user-centred design direction and user centred innovation. They blend user research, empathy and innovation to create meaningful and engaging products, strategies and consumer experience.

Q Ben, could you briefly describe your role, your organisation and its current situation:

A Rodd is a 7 person strong design studio, 5 full time, 2 part time staff. At Rodd I'm managing director and drive the day-to-day business forward. By training we are all industrial designers and historically that's what we did. We then realised that we had a sensitivity to what has now become user centred design and inclusive thinking. That is combined with front end innovation either from a technical, user, or futures bias. We're a "time for fee" consultancy but perhaps a slight point of difference from others our scale is that we develop our own IP and capitalise upon that wherever possible.

In relation to developing our own IP, that grew out of a relationship that one of my two co-directors had historically in that we had a client that had more ideas than cash but the ideas they had were pretty significant and they offered us an opportunity to take a share of the IP in return for some of the risk. That became an interesting business model as the doors that he opened through his licensing would actually lead to consulting development contracts for us for his clients. For a while that was all quite exciting and the way that we operated with this client. We then developed a range of concepts based upon involvement as a finalist in the Helen Hamlyn Inclusive Design research challenges and that was picked up by a retailer who wanted to licence it. That then became two IP options we were involved in. The third came when one of our clients, during the height of the economic crisis, wanted to do things a little differently and asked us if we wanted to come on board for development for a piece of consumer electronics. The client was looking to take over the licensing of a global brand and develop a range of new products very quickly under that brand but they didn't have the design budget to do it. We took the decision that this was a good opportunity rather than a reactionary measure to outside influences.

Q Could you describe your organisation's involvement in international trade in design(s)?

A With the exception of one start up we're currently working with and one major consumer brand who are UK focussed, all of our clients are globally trading brands. Our clients range from [Company A] in Japan, [Company B] in the US and Netherlands, [Company C] in the UK, [Company D] also but they are more of a home-grown brand.

Q What kinds of IP protection have you used / considered for your design work?

A Our traditional model is that we retain copyright until payment of the final invoice. This is the way the design consultancy business has operated since year dot which is not so much about IP protection but it's about bounced payments and protecting getting ripped off. We also are very actively involved in commissioning patent attorneys either for our own work or our clients, design registration, and trade marking.

A number of years back we were taken on by a client who was in patent litigation in the US for an infringement that one of their early distributors had made. Our role was purely to come in and make sure that we were developing new product concepts that were patentable. Their thinking was that if they won their litigation they were fine and would have some new stuff on the back burner, but if they lost they could come straight back into the market. Our role was absolutely, intrinsically creating work and checking out its IP worthiness and liaising with patent attorneys.

For the most part in traditional consulting we have very little to do with IP protection at all if the model is "time for fee" as invariably the client will deal with that. In our own situation (where we are creating IP) that is 100% our remit and our responsibility so we will work with patent attorneys close to use and I think we have a healthy grasp of what the concept is.

Q How do you think your decisions about IP rights have affected the way in which you do business internationally?

A It's hasn't really. Our international work is all consulting so therefore it falls into the pocket of the client dealing with that. That works both ways in that if we don't do an IP sweep we can't knowingly infringe either. Our work has always influenced us due to our first experiences with a client whose business was to create, patent, and licence high volume IP, so our model became 'we create some IP, we protect it, and we licence it' whereas the experiences we're currently having with a project is quite the opposite. It's about 'don't worry about it (the IP), don't sink a load of cash into that, but rather have first mover advantage and go to market with it'. Hopefully we will now have two frames of reference going forward.

If we do have IP in place, until we have a filing date it precludes pre-marketing that product unless you want to wave an NDA (non disclosure agreement) in people's faces for just talking to you so it closes as many doors as it opens. For one of our former clients in structural packaging, patents and licensing mode, he saw that very strong patents added numerous zeros to his licensing agreements, which of course they did. In the very competitive marketplace of FMCG (fast moving consumer goods) packaging it had an enormous value as it blocked out the competition, whereas for an agile start up you can invest a handful of thousands of pounds even to get to a patent filing, then another handful, and another handful only to get to thrown out at the end anyway.

Q What has been the biggest influence / would make the biggest difference on how you do business internationally?

A For us, the IP international thing is no problem at all. It's fine as long as you have sound IP advice about how to manage your IP across multiple territories. It's fine, it's not a problem. Given that the bulk of our work is with internationally trading brands, I don't see there are any barriers for us particularly.

A few years ago some organisations were making a lot of noise around the 'shared risk/ shared reward' model but I think there was more shared risk than shared reward at the moment in the current economic climate. It's hard as there is a need to balance the satisfaction of bringing your own product to market with very lucrative consulting contracts. The personal satisfaction is always balanced with the size of the pound signs on the consulting agreement as that means getting your money quicker. In some ways due to the cash flow challenge faced as you become more entrepreneurial you may become more risk adverse. It's a chicken and egg really!

Radius Creative – Mike Willshaw, Director

www.radiuscreative.co.uk - An independent team of product designers and manufacturers who provide a full product design and development service from concept to manufacture.

Q Mike, could you briefly describe your role, your organization and its current situation?

A Radius Creative do product design predominately and we offer a full service from concept, through prototyping, potentially to manufacture. All clients don't need this full service so we provide aspects of our service as required. My partner in Radius is an expert in the manufacturing aspect of our service, I am the director and owner. I have degree in design, worked as a designer for many years and also have an MBA so we do also provide advice for business in terms of taking a product to market in terms of how they can launch into a market. We also provide advice if clients want to take a different route in terms of licensing a product so we provide support in this area. We work with inventors and entrepreneurs, small companies, right through to multi-nationals and design products from all of these types of clients. We do work with some clients who we design and manufacture for and we ship out batch manufacture and arrange assembly of components for them. For the majority of our clients we do either the design work or sourcing work for them.

Q Could you describe your organisation's involvement in international trade in design(s)?

A We work internationally but it tends to be for multi-national clients, clients who have a UK base as well. The brands that we're designing for are often a brand within a larger holding company. Some of their brands are American only, some are UK, so this involves other countries as well to a lesser extent, but we do work on projects that may appear across brands so we need to design into the American market but most of the work that we do for them is UK based.

Q What kinds of IP protection have you used / considered for your design work?

A The way it tends to work is that we work with the clients particular IP lawyers, so we work with them rather than us enforcing anything upon them. They tend to have their own systems in place for IP protection. Not all clients we work for have an understanding of IP protection. Entrepreneurs and inventors are usually the types of people who are least aware IP rights and often need things explaining to them which we can do to some extent, but we do have a network of contacts that we do refer them onto as needed to discuss their IP with them to see for example if they have a patentable invention and do the background research with them. All our work is conducted under confidentiality agreements for any advice that you give. Some of our clients are quite sharp in terms of IP issues, surprisingly so, so they can be part of the way down the track and have spoken to an IP lawyer but those that aren't, we work with them in a basic way by discussing the costs involved, the route that they need to take through it, the searches that they need to do, how to approach it, what to keep quiet and under wraps, and how to use a confidentiality agreement. For the actual IP advice we refer them and call in the experts for that.

Q How do you think your decisions about IP rights have affected the way in which you do business internationally?

A This is a bit of a tricky one. In my experience, international clients tend to be already established in several markets and have their team to do this or have a team of people to hire to do it. We tend to work alongside the client specialist team. One example is where we developed a product for an international client which had some IP attached to it in terms of novelties and inventions, we described this to their three man patent team who looked at it, undertook patent searches, and registered it in several countries or were at least applying for the patents. They identified prior art which we considered in terms of if we may infringe existing patents so we then designed around it to make sure we didn't actually infringe anyone else's existing patent.

Q What has been the biggest influence / would make the biggest difference on how you do business internationally?

A The biggest difference on how we would do business internationally bizarrely would be China respecting design rights!!! We have a client who manufactures in China and this places some restrictions upon who they want to use or who they can trust. Its up in the air. If they develop something that has any kind of IP, they are inclined to have it produced somewhere else (other than China) but this disrupts their whole business model. They know that if they manufacture it in China no matter what protection they have, what design rights they have, however many patents they have applied for, after its produced there they will see it again somewhere else within a few months. Someone will have totally ignored any protection and manufactured it anyway. I think that's a general feeling. When we developed some IP for a client, and although patents were applied for, the feeling is that you don't really have long and the patent system is sneered upon really. It will give clients a couple of months, if that, before it will be snapped up and produced for someone else.

Raymond Turner Associates – Raymond Turner – Principal

Q Raymond, could you clarify your understanding of design rights and IP?

A I have always taken the view that it is to do with IP and ownership and I think people probably muddle up IP with design rights, and copyright and those other terms, but at the end of the day it's all to do with the right to use the idea – and the right to use an idea is invariably, certainly by design companies, invariably given away to the people who pay you to develop it in the first place, whether you are a staff designer, or a consultant working for somebody.

Q Could you briefly describe your role, your organisation and its current situation?

A I don't live in England of course, and so a lot of the work I do is not in the UK, and in fact it is some time since I have done any work in the UK to be perfectly honest! I mean I have worked for plenty of other organisations, but not based in the UK – so you could say that all of it is international in your terms. I mean the type of work that I do and the few people that work around me, and I have a little black book of people that get involved in projects based on the nature of them, and it is mostly to do with using design thinking, but it's basically to use an approach to design to try and solve some of the strategic ambitions of organisations. And those organisations can be public companies, or private businesses and they can be small and they can be large. Sometimes it's working with people to make them more effective in organisations, and sometimes it's working with the clients to rethink their strategies, but using design tools to help them to do that. So I suppose that the turn of phrase that I often use, and the one that most people understand is that I work in the field of design leadership and strategy. But usually when we sit down and talk about what that means, it tends to get tailored to suit that particular business that I am talking to.

Q Could you describe your organisation's involvement in international trade in design(s)?

A Well in the last few years I have done a lot of work in Ireland with companies who are trading there and overseas, an international telephone company for example, transport organisations, which tend to be in Ireland but the effect of the design decisions impact upon people all over the world – particularly people that use airports for example. I have been doing mentoring work in Denmark and I have been doing what might be described as future envisioning for a big company in Spain. And also looking at Design Management resources in the Middle East for a company that is building a new city.

Q In terms of international trade, what kinds of IP protection have you used / considered for your design work?

A Well, I think every piece of work that I have ever been involved with has always – I have never done any work for myself in the sense that I haven't done any design thinking for something I might want to produce. The only things that I have ever worked on have been for somebody else. And the rights to that thinking, whether its strategic positioning or directing a piece of product design work or the design of a building, really all of that thinking which may well have come from me, belongs to the people who have picked up the tab. In my life it has been that simple.

Q Is that something you have discussed explicitly with clients or has that been implicit in how you work?

A The only time I ever discussed it with a client was when I was a member of staff, I led a new product development team for [Company E] for a number of years, and we were designing mostly personal care appliances but not exclusively – so you know, things like hairdryers and facial massagers – all those kinds of things in the realm of personal care as well as quite a wide range of medical devices which were mostly disposable. And we were inventing things and I remember having a conversation with the people that I worked for about where the Intellectual Property lies on all these things, and I was told in no uncertain terms that they lie with us because we pay your salary! Which I think is fair enough – and it has always been the case, whether I have been a member of staff with a company or employed as an independent consultant or advisor, it has always been the case. And so I have never really given it a great deal more thought other than that – other than advising people – don't forget, that the moment the client pays the bill, you lose any real right to that – unless of course you make it a specific condition of your employment that that is not the case.

Q And have you ever done that at all?

A Not personally, no. but I know plenty of people who do. For example, it is very common in the world of illustrators and photographers. That's a fairly good example, where the copyright which of course is inherently owned by the person who developed it – so if I have a piece of writing, the copyright is mine but the usage gets given to someone else when they pay the bill. I can't transfer copyright – it's not possible. So copyright inherently owned by creator, usage given to who's paying for it. Unless you make a specific condition that that is not the case. And as I say, if you take photographs, and the photo is used, you can retain your copyright of the photographs and you can put some conditions even though someone paid you to take the picture you can put conditions on how the photograph is used. And that is a perfectly normal thing in that world of photography and illustration.

Q In terms of your dealings with other collaborations and situations, have you considered or advised in terms of any issues of collaboration – have you discussed IP?

A Well, only along the same sort of lines really. It is certainly made much more complex when you have a collaborative approach and increasingly design thinking, design development, innovation, is taking place across many fronts all at the same time with a group of people. And I think assigning the rights to any one person becomes increasingly more complicated – I think it takes the issue out of their hands because it becomes patently clear that a group environment is not conducive to one person making the claim that that was “my” idea and not “theirs”.

Q So the group element takes that away?

A It does, yes. It takes the problem away somewhat.

Q So you are saying it isn't an issue for yourself particularly because in doing that work you are openly collaborating as is everyone else, and this almost removes the issue if you like. But has it ever come up – not necessarily your IP – but has a client raised it with you?

A I have seen that coming up in terms of getting paid. I've seen designers coming up with ideas, and client might want to pay rather than outright for the work that has been done – pay on a royalty basis until such time that the royalty mechanism has given the right fee and the right to that design thinking still resides with the people who developed it. And I think that is a sort of grey area and I don't think it does anyone any good when it's not really that clear who owns that.

Q Do you tend to do that, offer different clients on different projects different agreements – do you have a contract that you tailor for your interaction with clients, or is it a standard clause? The reason I am asking is that some consultancies have said that they have a standard contract and a clause within that that covers off any IP issues if there are any. And I just wondered with the kind of work that you do, whether that's something that you do?

A Well I have a very clear view about contracts – and although I do have standard conditions of engagement I think I have only ever used them once. And they include issues to do with IP and the transference of that upon payment of the final bill, all that kind of thing. But I also take the view that if you have to reach in the drawer and take it out, then the relationship that you have got with the client has gone beyond redemption. And so I ask myself, is there any point? Where I do find it, I have often had to sign the equivalent of such contracts or non-disclosure agreements that have been requested by the client. So that's a different matter. So they have been obsessed with the idea that any intellectual property that might come out of the relationship they we have with you belongs to us.

Q So they are protecting themselves about confidential issues they talk to you about – in terms of their business?

A Well, not just that, but if you become good at that – at advising a particular type of client or company in one sort of industry, or you become good at designing one particular type of thing, then you will naturally find it much easier to get more work of that sort by potentially going to a client's competitor. And I think that there lies the rub! I can remember when I was running a product design department and we did a lot of work in the design of wood burning stoves made out of cast iron. And we became quite good at it. And of course, because we were good at it, it became very easy to sell that expertise to people who were in direct competition for the company where we learnt all our skills in that. And we had a lot of negotiation as to how we could work with another company and give them (the original company) the confidence that we wouldn't let out any secrets. But we had developed a body of expertise that we could not just make available to one client only. So I think that is a tricky one. It is complicated to handle but not impossible. But it is a trust issue. I mean I have seen a range of contexts – like "once we finish working with you, you can't work for a competitor for a further 2 years" – that is pretty standard. The other thing is that you can work for other companies making similar products to ourselves, as long as they are in a completely different market place. So that sort of thing. There are conditions on the use of the learning that you have gained from working with one company is using it for another. But all those clauses in the contract relating to IP invariably come from the client and not from the consultant.

Q You mentioned about payment as being the marker for the transference of IP is that the point at which you would transfer this over?

A Yes put crudely yes – if they don't pay for it, they don't get it. But I think the problem is bigger than who owns the IP if they don't pay you. There'll be a reason they are not paying you – they will be either broke, or you have done a bad job. And the relationship has broken down – so I think at the end of the day IP ownership tends to be symptomatic of the problem if there is an issue over it, rather than the issue itself.

Q How do you think your decisions about IP rights have affected the way in which you do business internationally?

A I don't think the work has depended on that at all – I think the work you do is dependent on other things. Broad experience, strategic capability...Having said that I am not sure if this is IP or not, but I am working with a company at the moment – a branding consultancy and I have been helping them do some strategic positioning for one of their clients, and it happens to be in the banking industry and there is now a question of a competitive bank asking the same company to get involved in a similar piece of work – and the question facing you is because we now know a bit more about the industry, can we reasonably work for this so called competitor, and I think that is going to cause them a problem because I think the short answer is that they have got to dump one of them. They can't work with both.

EM I think that is a really important issue. Because although you are saying that IP isn't a massive issue for you and you are dealing with it, it might massively impact upon the decisions of those you collaborate with – this branding consultancy for example. And it's out of your control somewhat. And it's about risk and protecting their business.

RT It is a problem. And this notion of setting up – and I don't know the correct term for this – Chinese walls or whatever in project teams in an office where you set up imaginary boundaries between project teams and the don't discuss the issues with one client in the presence of the other –and it sounds all fine and well in theory but the reality of the cut and thrust of day to day work means that you could never sustain that.

Q What has been the biggest influence / would make the biggest difference on how you do business internationally?

A I suppose common currency is quite a useful thing. One of the benefits of being based in Ireland is that the currency between Ireland and Spain where I do a lot of work along with the small international team that I have led – we have all had the same currency – which makes life a little easier. So in a way I think interestingly enough – and I know it doesn't apply in the UK – but in Europe – despite the problems that the Eurozone has given those countries, it has actually enabled consultancy work to vary on quote smoothly. And it might seem like a slightly odd thing – but it is quite a practical aspect – in working for a Spanish client operating globally, we had 2 people from Ireland – and someone from Holland and someone from Germany, and it was this four person core team working for the company in Spain. And the common currency made life easy.

Q Have you had any guidance in working internationally or is it something you have found out about yourself with experience over the years?

A No, if anything rather the reverse – I have advised trade bodies and clients and others about working internationally.

Q Is there anything else you want to add?

A Not really other than that there should be a push and perhaps there is, for a common understanding and a common set of rules about things like design rights, IP, copyrights –and any of those related terms – and real, human wording – that work across the Western working world – and there appears to be none of that. Maybe there is and I just don't know about it. Here's a simple anecdote – recently I have had reason to try to register a new company name. or help the client do that. They are based in Ireland and they at best would expect their services to be available in Ireland and the UK. And there would appear to be no mechanism for registering a name in just those 2 markets. You had to find a name that would be accepted across the Eurozone – across most of Europe. So in other words, you had to find a name that was clear in Ireland and UK in between the 2 principal markets, and in something like 7 or 8 other countries in Europe. It's just the international legal requirement for that is very apparent.

Graven Images Ltd – Ross Hunter, Founding Director

Company Size: 25

Established: 1986

Turnover £1.7m

Services: Branding and communications design, interior design, exhibition design for hotel and leisure, corporate and public sector clients.

Countries of operation: UK, Europe, USA, China and the Middle East.

Q Could you tell me a little about your experience with design rights and working internationally?

A One of the big questions about design rights is how many designers and design companies is this relevant to? To what degree is this relevant to the normal work of a graphic designer, or an interior designer (working internationally)?

I would say for most of them it's of practically no value. Firstly, what they are producing is relatively instant and also – where it is single usage – a fast thing that you do as a one-off and then it becomes obsolete; something that is specific to the particular project that you are doing it for — is it relevant for those situations? I would guess that a huge amount of the output of designers is based on things that are protectable but are not worth protecting. Like designing a Christmas card for a client. One of the issues with IP discussions that always strikes me is that it always focuses on these aspects of industrial design, or product design where there are potentially huge numbers involved – huge manufacturing runs and huge sums of money involved – huge investments involved in taking something from the nebulous conceptual idea into production and relatively long periods of time –and in those instances, it is really important. But for very very many designers it's not. And even if it is important, the value of the work, or the potential value of the work, is always very difficult to establish!

If you are a small designer or a small design business, there is absolutely no way that you can raise an action against someone that is enormous. If we designed a chair, for a hotel operator, who decided that they are going to put it into production through the whole estate, we can't fight them! We can't take them to court. So the only solution to that is to insure against your breach of copyright, or your breach of design right. And that means you need to make a decision about the potential value of it. That's almost always certainly going to be massively overvalued because lots of ideas have potential value, but the real value, as it turns out is usually, you know, practically nothing, because it doesn't happen. There are only relatively few good ideas that people have that are in the right place at the right time and in the right circumstances to create a great deal of wealth. And so I think that is another issue as well – and it seems there are a lot of lawyers trying to figure out the legalistic aspects of design rights and ownership, but a lot of the time it is not overly important.

Q You talked about designing a chair – so if you are working with a long term client overseas, and there is trust there, would this constitute an IP agreement – in the sense that you would have your own bespoke agreement which isn't seen just as IP protection, or is it like a contract?

A Within the typical contract there is a clause within that about ownership or copyright of design or design rights which covers these issues. In the same way that photographers try to establish what their rights are and what their client's rights are – and what the image rights are basically.

Q What about UK Trade fairs? As a designer with a design business do you see these as a breeding ground for competition?

A If you go to Milan furniture fair you go onto the stand and start taking pictures of things then people will chase you as they will be thinking that you are about to go and rip them off. But it's got to be the bizarre situation now where if you are on a stand and you see something you like, and that you might specify in a project, and people start to chase you off it, then you are like, *"I assume you want to sell me this thing? Well if you don't let me take a picture of it then I am not going to buy it, because I am going to forget what it looks like!"* And so there is a sort of common sense aspect to the whole thing. I mean first of all, people don't just copy things that they think might be good ideas, they copy things that are successful. The person that is first to market has got a massive advantage and by the time the copyists jump on – and they inevitably will because there's nothing you can do about it – the world is totally internationalised in terms of product. If a small independent design business designs a nice chair or a nice light, and if the East, or anybody decides to copy that – what is the designer going to do about it? And within the hotels sector – which as you know we are deeply involved in, it's almost part of the culture. There are teams trying to replicate products overseas for significantly less than it should cost. In the US they might say *"Ok we need to change 3 aspects or 5 aspects..."* and when you change 5 dimensions by 10 mm, you might have something that is essentially the same thing but doesn't qualify as being the same thing, and from a legal point of view has satisfied the criteria set by the establishment to make it different.

Q Could you just give me a brief overview of the company's involvement in international trade in design in terms of import and export?

A Between 30 and 40% of our clients are based outside the UK – we have designed hotels etc for a number of international brands. Of this 30-40%, we work in Europe, the Middle East, and the US.

Q You said that when you started working in America, and you were creating a concept room and you had been talking about what would happen when you got involved with architects or another team who were involved in implementation, and this is obviously something that has kind of happened with Project X (Project pseudonym). That multi-headed, multi-international client relationship situation that we talked about. You have highlighted issues in product design and copyright, what about the more complex issues in projects where the output is less tangible? How do you set up those legal agreements? For designing a concept for an interior, or a brand and then rolling it out internationally or handing it over, or in terms of the other outcomes that could happen – was there any decisions around IP or design rights or protection that you can remember?

A Well, within any typical contract, within architecture, or a similar contract, there is that clause which says - and it's always pretty clear – and it is slightly different in America than what it is here, and it means *“you can use this for the purposes for which it is intended but you can't go making more of them.”* And so if we get commissioned to design a restaurant and we agree a fee for it, that doesn't give the client the right to take that....they own what we do specifically in some cases, or they own the right to use it specifically in some cases. But it doesn't mean that they can go out there and start rolling them out. But the standard clause within a normal interior design project covers that pretty clearly. And the reality of that is that it's not often a big problem. I mean, pretty much every project is different and so we design a hotel in one place – and it's not realistic for the guy to take all the drawing information and replicate it because every project is different, in a different place with a different context with different issues, different problems, different budget, and everything else – and maybe even a different market. And by that time he has got fed up with that furniture or product or that wallpaper or whatever it might be, he doesn't want or need to replicate it. And when you think about the hotel - the typical 4 star hotels and the typical 3 star hotel room, they're still all different. And so there are the same issues and the same elements and the same approximate area of floor space, and there is a bathroom and a wardrobe and a desk, and a soft chair and a desk chair and a bed and a couple of lights – and you'd think that that would have been designed to death by now and there was no way of improving it – but there is – and the same would apply to every simple product that there is out there. How many iterations of a 4 legged chairs are out there? Countless, tens of thousands – and the most successful ones are the 6 quid plastic garden chairs, of which there are an estimated 7bn of them...And who owns that? Nobody? Because you can't protect it. So it's quite a hard one – and it is extraordinarily important for some areas. There are pieces of work where there is a process or a tool or something like that can be tailored to an organization. There are ways of writing an agreement which productizes it and allows them to use it under a kind of multi-user licence I guess.

Q In terms of different applications – or how you have come across IP...the furniture you have designed in the past for hotels, in the UK and in America – has there been any kind of IP protection for that?

A No – I mean it belongs to us because that is just the way – but there isn't anything over and above that. But if...and I used to get exorcized about this stuff – nobody is just going to say *"I like that chair I am going to get that into production..."* it just doesn't work like that – and even if it did, it would be difficult enough for us not to be able to do anything about it.

So there is a whole area of design – and the point I am trying to make is that out of everything which is made and designed, there is only a fairly rarefied slice which really is worth bothering about in terms of IP protection. For a variety of different reasons. One is the longevity and two is the ease of change, three, the complete difficulty in challenging any supposed breach. And so, there is no point in protecting if that protection is no good. It's only a kind of personal vanity that gives you a piece of paper that says this is mine – there's not really any point in having that piece of paper if someone can just go and take it off you anyway. And there's nothing that you can do about it. So why waste money – why spend thousands of pounds on something that is not worth thousands of pounds? And that problem is exaggerated by the fact that everything is accessible. You know, you go on to any of those "Archetonic" type sites and there is everything from high end product by BB Italia right through to the experimental student type stuff – and it's all there. In the glare of Internet sunshine. And how much of it gets ripped off? Probably not that much you know, because people are like you know, faced with 50,000 products, which ones do you copy? Because you don't know! You should maybe make one for yourself – for your own little project. Interpret it in some way. But these aren't the things that need IP protection. The point I am making is that in order to focus this piece of research the real question is what needs protection ? Not what could be protected? Because there is shed loads of stuff that *could be* protected. Imagine you were a journalist – I mean going back to your daily journalist, you know, writing an editorial. What would you protect? Would you protect the whole article? Every sentence? Would you just accept that it comes under the overall umbrella and that you're the author and the newspaper will stand by you if someone rips it off...?

Q Ok, so what should be protected?

A Well, interestingly it raises another issue – is it right to protect it? There was a guy on Radio 4 – Jim Al Khalili on a programme called The Life Scientific – and he was talking about science and polymer design and the person who had discovered that... And he hadn't even tried to protect it because as soon as you protect something you potentially undermine the commerciality of it. I mean what would happen if you tried to own the genome? It becomes potentially a real issue for the future of mankind because someone says that you can't commercialize and discover because someone owns it. Get your fee, and move on, rather than trying to have your arm round the top of your jotter, saying that no-one can have this. Because the other guy that is looking over your shoulder might be the one who's really going to commercialize it. And make money out of it. And that might be what you want in a really fast economy, potentially you could slow down an economy by making sure that that everything is tied up with lawyers.

Q So potentially the IP discussions could slow down collaboration or stop it?

A Yes. I mean what usually happens is that people get on with it – with collaborating and then they sort it out. There is a Chinese philosophy which says that business is about relationships and trust and networks and you agree something and you get on and do it. And you know, you don't waste a huge amount of money trying to get the contract in place so that it covers off every potential cheating move that your client or your consultant might try and pull.

Q Exactly. I mean if you start tying these things down does it change the dynamic? Is it a barrier? And another thing I'd like to ask you – as we move towards models of working which adopt principles of co design, you're collaborating and so the product, or essentially the outcome is collaborative or is the product of collaboration – so when do you start trying to protect that? Whose was it? Because it is collaborative?

A Yes. I was listening to Material World on Radio 4 last night, and they were talking about trying to work out that water footprint of certain products – manufactured products, and the example they gave was the electric toothbrush which has components from 40 different countries – and so even a simple product has got enormous collaboration involved in it – and if there is a barrier put in place for one component then they would just go round it and find a different way of solving that problem. I am not against protection, but there is so much effort involved in that kind of thing!

Q So would resources be better spent helping start ups that are naïve, what do you think would be a better use of resource in this area? Or are there other protection issues? Is there anything that does need protecting that isn't being considered in the current model? You know, are they only looking at the stuff that can be compartmentalized because it is easier?

A I don't know. I think start ups could potentially spend way too much – too large a proportion of their rare resources on protecting something that doesn't need protected. You know it's like saying if you are only earning £10k a year, and you are going to spend £1000 on insurance then you wouldn't.

Q You mentioned earlier that they should be looking at protecting the things that need protecting – could you elaborate a little on this? What do you think needs to be protected?

A I think that the decision is about risk isn't it? You know, what would the cost be of losing control over some particular aspect of your business. It's about value. If you can't stop somebody taking it away from you, then there is no point in trying to protect it. And so I think that is a huge part of it.

Q So it might be about, in collaborating internationally for example, your biggest barrier is not about IP – that’s not the biggest risk, it might be that you have organized a contract and a payment structure so that you are getting properly recompensed at each stage of the project...you know, that there are bigger risks?

A Yes, that is absolutely right. The biggest risk is that you don’t get paid. And you can’t afford to take any action. It might be much smarter to put the effort into getting paid regularly and quickly as opposed to try to prevent them from finding an alternative way of doing it. And I think that like all transactions, the best way of protecting your position is the quality of your relationship.

Q So are those clauses that you put into these contracts, are they pretty standard, or are they bespoke and you amend them, or do you find the standard is satisfactory?

A They are all different. But yes, you can amend them. Sometimes we use our lawyers – depending on the value of the contract. So if it is familiar territory then I will just do it myself and take the risk that involving the lawyer isn’t necessary. But as you also know, just because you have got a contract doesn’t mean to say that you will get paid or that you are not going to get ripped off. So neither of these things are especially powerful instruments in the face of someone’s determination to do one thing or another.

Q So it’s about building the relationships – close relationships – and also about realizing what is important – i.e. getting the payment structures in place – that’s the protection.

A it’s a bit lame to go to chairs again and if you are Fritz Hansen and McDonald’s rip you off with the chair, you know, you are a big company and they are a HUGE company, you need to have some kind of way of stopping them from taking that away from you. So when you get into big scale manufacturing it’s quite a big issue – I mean it’s obviously a big issue. But the important thing is to be able to be focused on not thinking of IP – I think it’s not about the little designers doing fast agile work. I think the most important thing that designers – especially small young designers can do is be incredibly prolific. Imagine buying a lottery ticket and then spending an extra pound to insure it, in case you lost it – it is a little bit like that. And it’s not really worth insurance because the chances of it being valuable are small. It’s better just to do it, to get on and do it and then do another one and see what happens. And so the overall lesson in that is that protection is fine but don’t let it get in the way of creativity and production.

Q Or opportunity?

A Exactly.

Q What has been the biggest influence, or what would make the biggest difference to how you do business internationally? So in terms of growing your business internationally, or doing more stuff overseas, is there anything that would really help you do that?

A A fast train link from Scotland to London! It's stuff like that that makes the biggest difference. Ease of communication. So the fact that you can have a regular and effective relationship with someone over email – and Skype – you can know powerful people in foreign lands...and then also the complete universality of business English – at least in the West – and the biggest difference is being able to talk in the same language. And the generations of people – they are not even embarrassed about speaking English. They are confident and are perfectly able to do it.

Q And we almost expect it now as well.

A Yes we do. So that is the big thing. Being able to speak English and being able to travel.

Q In terms of the support available from Government Agencies, is there any support that you would be looking for to help you do business better internationally? Because as a business over the years you have kind of had to find these things out by yourself. You know as a private organization. Are there any things that would help you do more business internationally? I mean clearly you are doing really well as it is!

A I am not sure that the Government need to intervene – once you are at the point that you having a face to face conversation with someone about it then I think the Government have done their job. I mean, it is important that what they have done is made it possible to do business internationally. By dealing with the impediments – you know, all to do with those agreements that Governments have with each other over these trade agreements. I mean, we had to fill in all of those funny forms every time we sent an invoice to America you know, we have to fill in various different forms – waivers and stuff like that. It's good if it's possible to get round that stuff. If someone can help you do it. But the Government's job really is to make sure that it is possible to do business internationally. So they should be thinking about what is the kind of trade that is going to be happening between these places and remember that some of them might be services.

Q And also making it easier to hang on to the people that you employ that are international – international people in your business.

A Yes. It's a huge issue I think – given that our education sector is spending such a lot of money and effort trying to educate the sons and daughters of the wealthy business community so well – particularly in the far East – we shouldn't be sending them home quite as readily as we are! The ones that are talented – the ones that want to stay should be given the opportunity to stay – it's insane that this Miss X – in her case – you take money off her family to educate her and you get her into a graduate work scheme and then a couple of years, and then there is an extension to that, and then as soon as she gets to the point where she is really good, really useful – integral to our business, they try and send her home again! That is absolutely insane! And every single person like that that becomes integrated and is so valuable. Company Y in Edinburgh: that is exactly how their work in China came about – they had a guy that was educated in China and then worked for them for a year or so and then went back to China and then phones back a few years later and says "I have some big work for you" – exactly the same with Company Z. And you know those relationships that you build in the workplace are far more valuable than going off on some trade mission. You should make sure that while they are here, the good ones are introduced to the good businesses. And that should be the quid pro quo almost. Get the chance to keep them here for a while – and hopefully you get them here long enough so that when they do go back eventually, they go back and set up some kind of relationship, as opposed to take everything they have learned and compete against you – be good competition!

Q So there's your model for international trade – help the good students to stay over here and develop and form good relationships and so they will start sowing the seeds.

A And the smartest and most ambitious students are the ones who want to go abroad.

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