

MASH TO THE FUTURE

2D IMAGE MANIPULATION AS A DRIVER FOR IDEATION

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1. INTRODUCTION

Industrial Designers are renowned for their ability to work effectively with diverse and disparate individuals, disciplines and organisations during the creative process (Hurn, 2006). This is part of the makeup of the Industrial Designer that led to Tim Brown, CEO of IDEO coining the term 'T-shape' designer. The symbolic shape of the 'T' refers to the depth and breadth of the designers abilities; with the vertical stroke of the 'T' being the depth of skill that allows them to contribute to the creative process, and the horizontal stroke being the disposition for collaboration across disciplines (Hansen, 2010).

During the initial ideation phase of the design process, professional Industrial Designers use a variety of 2D source images as a jump off point to feed the creative process (Hurn, 2011). Concept artist Scott Robertson cites the building of a visual library of resource images as an important skill for Industrial Designers to inspire and inform their form and styling development process (Robertson, 2012). Professional Industrial Designers might be expected to take this lead, or be provided with source material by Marketers or Brand Managers working for prospective clients. Either way, students are taught to mirror this process of mood board or Pinterest visual language board creation to inform their ideation.

However, previous studies by the authors have shown that students collect these visual language image resources but that there is a disconnect in their application to the ideation process, meaning that students do not use this resource and complete the task simply to gain an academic mark (McDonagh & Storer, 2004).

There has been a continuing theme in the authors teaching within Loughborough Design School to encourage student engagement with visual resource materials during the creative process (McCardle *et al*, 2011). Form analysis criteria was used in this 2011 study to good effect however the authors observed that there was a lack of depth in the students understanding of the semantic messages expressed by the product form.

A 2008 study within Loughborough Design School also found that students' lack of confidence in their sketching ability was creating a barrier to creativity, and hampering their ability to accurately depict form, texture and materials (Storer, 2008).

This new study conducted with postgraduate Industrial Design students within Loughborough Design School integrates the collection and collation of visual language images into the ideation process by encouraging students to manipulate and combine those images using image manipulation software to create considered high quality conceptual start points directly from those images. Therefore providing the threefold benefits of a) removing the disconnect of visual research and ideation, b) removing the initial sketching barrier to creativity for some student's and c) allowing students to manipulate and understand high quality form, texture and materials through the direct use of those images.

2. METHODS

In a broader sense than the design industry, the term mash-up has been used for a number of years to describe the method of using image manipulation software such as Adobe Photoshop to create often comic combinations of film/TV characters, media celebrities and visual predictions of new automotive models.

The timely relevance of this approach as a design ideation tool at Loughborough Design School is supported by the emergence of 'mashed aesthetics' as a legitimate design direction within the design industry itself (Kascope, 2009). Mashed aesthetics refers to a recognized trend to reuse and reinterpret existing historical designs, following on from, and reacting to 'retro' design. Mashed aesthetic design can draw from different eras, product groups and disciplines, with designers 'mashing' them together to create new and exciting design directions. Wanderlust, a US design trend forecasting consultancy, recently stated that in the post-post-modern design world, all form is fair game (Kascope, 2010), and what better time is there to exploit this notion than when creating conceptual design directions.

At Loughborough Design School the Industrial Design Skills (IDS) module within the Masters in Industrial Design program was developed to facilitate the development of core skills such as design research, ideation and conceptual development, 2D visualization and 3D CAD modeling for students who have not previously studied Industrial Design at undergraduate level. The student cohort of 29 consists largely of international students from China with smaller numbers of students from Europe and the United Kingdom. The students were asked to create concepts for a communication device for a specific user of their choice. This involved defining the user, task and environment (UTE) initially by conducting visual design research using the image gathering website Pinterest. Effectively creating online versions of the traditional mood boards created by designers. The students were also encouraged to choose unusual or challenging users and environments as a method to provoke innovation. The students then received instruction on how to create mash-up visualizations in Adobe Photoshop software as shown in figure 1.



Figure 1. Visual language extraction from Pinterest resource to create an initial mashed aesthetic jump off point.

Following this process the students were shown how to use sketching to develop the largely 2D representations by using elevations, sketching planes, crating, cross-sections and projected geometry to describe the form in 3D (Storer, Campbell, 2012). Further to this, sketching was used to refine and blend the 'borrowed' elements and details more effectively into their unique refined designs. The students were encouraged to use the mash-up's to initiate a wide variety of possible design directions to develop, however, the more traditional method of sketching was still encouraged as the best medium to add clarity and coherency to the concepts.



Figure 2. Utilizing an image resource and a 'mashed aesthetic' visualization to aid sketch development of 3D form and detailing.

3. RESULTS

The expected outcome was that students would be able to engage with the front end of the ideation process more quickly and effectively. Producing visual conceptual ideas that contained a level of form, texture and use of color that was of a higher standard than had previously been possible through sketching alone. In order to assess the effectiveness of the approach, the authors inspected the mash-up's and sketched development concepts of all the students to identify the advantages of the process when compared to the traditional sketch ideation methods used by the authors during their twenty years of experience in teaching and industry.

The entire cohort of the students had engaged fully with the use of 2D mash-up's as their initial starting point, with 21 of the 29 students producing three or more substantially different design directions for their communication device. The authors noted that, drawing on their combined 28 years of experience of teaching Industrial design sketching and visualization, the all of the students involved had made significant progress in the project in a substantially truncated timeframe when compared to traditional sketching alone. The level of design detail, subtlety of form and product semantics had also made the leap that the authors had hoped for.



Figure 3. Examples of Industrial Design Master's Student's mash up's created for Pagarni, Communist China, 1960's James Bond and Designer Paul Smith Personas

Further to this, the authors found that 23 of the 29 students had used the combination of 2D mash-up's and hand sketching in the way that the authors had envisaged, using mash-up's to support the sketching process rather than replacing it. Designs were still developed on paper, particularly with consideration to how the forms provided by the mash-up would work effectively in three dimensions, with the students then using the 3D CAD systems such as Solidworks to combine and refine their sketches and mash-up's into design development 3D models that could be taken forward. For example, Figure 4 shows one student's successful combination of the methods previously cited, with initial resource material being combined effectively into a design direction mash-up which was subsequently refined through traditional sketching techniques with impressive visual fluidity from resource material through to final concept.



Figure 4. Example of an Industrial Design Master's Student's design development using the 'mashed aesthetics' process showing clear links to visual resource material

4. DISCUSSIONS AND CONCLUSIONS

This pilot study offers some opinions on the best way to approach the initial ideation phase of an industrial design project. It seems clear that the use of mashed aesthetics offers the opportunity for a broader range of students to create high quality ideation concepts early on in the design process by removing some barriers to creativity which stem from a lack of sketching ability.

It is also clear that students can create initial ideas more quickly, with a greater understanding and subtlety to their application of form and product semantics, allowing them to 'stand on the shoulders of giants' not only by using forms that already have inherent beauty, complexity or historical and emotional significance, but also in that the sourcing of images is now enhanced by applications such as Pinterest, because design students can access image libraries created by professional designers who collectively have countless years of experience that shapes and informs the selection of this raw visual research resource.

Industrial Designers' sketching behavior is dramatically different from that of other disciplines (Lau, K. et al, 2009), and therefore it should come as no surprise that their use and application of image manipulation software can, and arguably should differ to that of other disciplines also. Industrial Designers' are innovators by their very nature, therefore how they use CAD should be open to innovation and reinterpretation. However it is the authors and more widely held view that sketching should always play an accompanying role in this.

The methods discussed in this paper not only have the potential to aid fast and coherent ideation for industrial designers, but also these methods could be used to aid communication between disciplines if taught to brand managers and marketing professions, feeding the co-creation process.

This study will be followed-up by the examination of the use of hand drawn sketching within 3D CAD systems by Industrial Design Masters students as drivers for 3D surface creation, to ascertain what advantages there are in blurring the disconnect that exists between hand drawn sketching and 3D CAD modelling further down the design process.

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