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The Emergent Role of the Social Designer

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This paper responds to the Academic Design Management Conference, Design Management Futures theme. It answers questions relating to the way in which we think about the future of Design Management, and the way in which Design Management may need to adapt to the changing nature of design and new management theories. This piece draws on the work of an interdisciplinary team of researchers from the fields of Engineering, Sociology and Graphic Design, and their experience in the areas of user-engagement, anti-oppressive education/pedagogy and inclusive design.

This position paper is a reflective piece that examines the value of designers, engineers and sociologists working together. It puts forward the question 'What can designers and engineers learn from the emancipatory paradigm of the Social Scientist?' Reflections from a UK-based team of undergraduate designers and engineers provide insight to their experience of engaging with the user through an inclusive design project. They cast light upon their experience of cross-faculty studies, interdisciplinary collaborations and both the challenges and benefits to working with different user groups. This paper concludes by examining the practical implications for Design Management, providing insights for Design Management education, research and practice.

Keywords*: Design Management research, education and practice; inclusive design; social inclusion; interdisciplinary projects; Sociology; Engineering*

Introduction

Within the Design Management literature, a number of trends have been noted. For Weick, (1995), Design Management is about sense-making (Weick, 1995). It is also becoming more 'process-orientated' and 'socially responsible' (Borja de Mozota, 2011, p. 290). New management theories suggest that Design Management now requires a 'learning attitude' - seeking 'new knowledge and experiences' (Borja de Mozota, 2011), and a 'willingness to experiment' (Meyer, 2011, p. 198).

In education and in the workplace, however, designers and engineers are encouraged to specialize. Researchers such as Doblin (1987) argue that designers *should* be encouraged to specialize, and that different types of designer should be distinguished and recognized, in order to maintain and develop competence in a particular area (Doblin, 1987, p. 14). Moving into organizational life, however, Michlewski (2008) highlights that vocations become even more specialised, with occupations acting as different 'subcultures', with different 'knowledge-bases' and 'codes' (Michlewski 2008, pp. 374-5). As a result, different specialisms operate with different values and attitudes, ultimately creating a cultural divide.

One of the issues for Design Management, is that 'Design is a knowledge-based activity', through which artefacts are 'embedded knowledge' for designers (Borja de Mozota, 2011, p. 289). Furthermore, as articulated in Michlewski's (2008) study, 'Designers don't do it [create knowledge] through writing papers, they don't do it by looking up references. They do it by collecting stimuli and tuning their responses to them and striving to be original in important ways' (Michlewski, 2008, p. 384). A particular priority for Design Management, therefore, is to adapt to consider different ways of enabling design teams to acquire new knowledge. Knowledge in the area of inclusive design, according to Imrie (2002), comes in the form of 'encouraging designers to interact much more with disabled user groups' (Imrie, 2002, p. 3) and offering 'continuing professional development for practicing architects and designers' (Imrie, 2002, p. 3).

In order to acquire new knowledge and experiences, however, Design Management will need to be particularly responsive to, and synthesized with, changes within education. In 1959, British scientist and novelist C. P. Snow argued that the education system in England needed 're-thinking', and many argue that his message is still relevant today. Snow (1959) drew

attention to what he referred to as a 'cultural divide' in Western intellectual circles, between the sciences and the humanities. In his lecture entitled *The Two Cultures*, he described this divide as a hindrance to the resolution of many of the world's problems (Snow, 1959). He was critical of the way in which the humanities were favoured over scientific education and engineering. He was also critical of the way in which scientists failed to display understanding of 'social fact', and the way in which insight to productive industry, such as engineering, was overlooked (Snow, 1959).

Fifty-five years on, and arguably, there is still evidence of the divide between the *two cultures* in academia and in society today. Bazaglette (2014), *The Creative Industries Federation*, argues that 'Science, technology, engineering and maths are important but are underpowered without the arts' (Bazaglette, 2014). Moreover, at the *Munich Security Conference*, January 2014, Estonian president Toomas Hendrik IIves emphasized the need for a more positive discourse across disciplines (Ilves, 2014). He attributed problems relating to freedom and security in cyberspace, for example, to 'the absence of dialogue between the scientific-technological and the humanist traditions' (Ilves, 2014). In the light of this discussion, the next section explores some of the issues that arise when contrasting disciplines connect through participatory research. The findings of which are of relevance to Design Management education, research and practice.

The Together through Play project

Product Design and Engineering Level 4 undergraduate students at the University of Leeds provide lessons for Design Management by reflecting on their engagement in a participatory design project entitled *Together through Play* (TTP). This interdisciplinary project brought together an all-male team of Masters level students, consisting of two Engineering and three Product Design students. The team worked collaboratively with academic researchers on a piece of Action Research (Reason and Bradbury, 2001), which explores ways to faciliate meaningful play between disabled and non-disabled children. Through a process of co-operative inquiry (Druin, 1999), researchers sought to develop understanding of children's needs and aspirations for inclusive play. Co-operative inquiry uses the participatory process of developing and evaluating designs with children, as a basis for exploring their views.

Insights to their experiences cast light upon the prevalence of what Snow (1959) coined the '*Two cultures'* (Snow, 1959, p. 1). They noted various differences between the two disciplines of Engineering and Product Design, which they attributed to being 'taught differently' and possessing 'different skills'. Engineers were described by their counterparts as 'less creative', being more interested in 'exact numbers', and getting results 'right'. They were also perceived to be more predictable, due to being 'taught the same stuff'. The product designers were seen as 'more creative', being particularly good at generating ideas, 'picking random stuff up', adapting, and adopting different approaches to a given task. It was agreed that between them, they had a different 'work ethic', with engineers taking a more 'structured', and 'analytical approach'.

The TTP students referred to their interdisciplinary collaboration as a challenging, yet positive experience. They noted that a combination of the two perspectives led the group to make 'better decisions'. Their initial assumptions about their counterparts were for some, dispelled, and for others, further amplified. The 'more intuitive' approach of the product designers was perceived to be both a hindrance and an asset by the engineers. Their intuition was associated with both 'creativity' and youth or 'immaturity'. Conversely, the product designers were switched off by the way in which the engineers tended to 'go through the motions'. More superficial assumptions were discarded as a result of the project. For example, assumptions based on physical appearance led one of the engineers to assume that the product designers were 'last minute guys', and that they were 'crazy' and 'immature'. He soon realized, however, that they had a 'diverse range of skills' to offer; that they were well-organised; and that they were capable of demonstrating good leadership skills.

The most significant divide lay in their attitudes towards the value of design and engineering and the contribution that product designers and engineers can make to the process of inclusive design. Opinion in this regard further intensified as a result of the project. One of the product designers was skeptical about the involvement of engineers, as he found them particularly difficult to work with. With regard to their studies, he felt that the assessment criteria for Engineering also lacked relevance, and that examiners favoured the engineering aspects of the designs over the more human-centred factors explored by the product designers.

In-depth focus group discussions and interviews with child participants generated some rich qualitative data for the undergraduate students. This data, however, was received with mixed response. The engineers found the qualitative data difficult to work with. They were overwhelmed by the depth of feedback received, and raised concerns about the time and opportunity available for such rich data to be processed. Despite supporting the idea of taking into account 'everyone's views', one student suggested limiting user feedback opportunities to short questionnaires, in order to generate more 'manageable' data: arguably, a move that would be detrimental to the richness of the in-depth qualitative data.

The product designers, on the other hand, felt confident working with qualitative data. They valued the feedback received, but described working with it more intuitively. One Product Design student argued 'feedback *is* …your results …If you're designing for like, people - it's not really like a sort of figures thing', whereas the engineers perceived the interview data to be 'wishy-washy'. Despite having reservations about the 'subjective' and 'wishy-washy' approach of the product designers, the Engineering students were inspired by their counterparts. They recognized the importance of bringing interdisciplinary teams together. One Engineering student argued 'This [project] *can't* be exact, but there's got to be some, like middle ground between the two - really intuitive and really exact'.

As the TTP project brought researchers from the fields of Design and Sociology together, the students benefited from the opportunity to learn about the social model of disability. According to Oliver (1990), the social model 'does not deny the problem of disability, but locates it squarely within society' (Oliver, 1990, p. 3). It does not attribute disability issues to 'individual limitations', but to 'society's failure to provide appropriate services and adequately ensure the needs of disabled people are fully taken into account in its social organisation' (Oliver, 1990, p. 3).

Despite being a well-known model in the area of Disability Studies, the TTP undergraduates assumed that designers from traditional disciplines would 'probably not' be aware of this perspective. Instead, in their view, designers are simply taught about 'the design of the object'. Some of the students linked their previous understanding of disability to the individual model, which, according to Oliver (1990), 'locates the "problem" of disability within the individual' (Oliver, 1990, p. 3). When introduced to the social

model, however, there was a tendency for the students to simply *accept* this perspective.

It is worth noting at this stage that the students did not attend Sociology modules as part of their studies. They were simply signposted to useful sources of literature in the area of Disability Studies. As a result, their understanding of the politics surrounding disability, and the nature of impairment for disabled people, required further development. Some of the students focused on impairment throughout the project, assuming that disability and impairment meant the same thing - a view strongly contested in the area of Disability Studies.

When asked to share their views on the idea of integrating Disability Studies into Product Design, the TTP student team expressed concerns about time and motivation. In hindsight, they felt it would have been beneficial to engage with the Disability Studies literature *before* embarking on the design process. Rather than being compulsory, however, they suggested that Disability Studies should be optional, and dependent on the designer's choice of vocation. One student argued that Disability Studies is 'not for everyone', as 'a lot of designers would want to focus on aesthetics'. It was proposed that one module, however, may be potentially 'quite helpful', particularly for those 'looking for jobs' in the area of Inclusive Design.

One of the engineers, on the other hand, suggested that Inclusive Design or 'designing for disability' should be taught as a discipline in it's own right, alongside Product Design. He did not, however, see the relevance of integrating the teaching of Inclusive Design with Engineering. He deemed the engineer's work as 'stand alone' or 'separate'. Further, 'there's enough to do, and you don't really want to bother with design inclusivity. It's more, later on, after it's, like, done'. He felt that engineers have 'enough on the plate already'. Alternatively, some of the product designers argued that just as sustainability had been emphasized in the past, and is now taught as a dedicated module on their course; so too should inclusive design.

The issue of specializing in their studies was a prominent one for the TTP students. One Engineering student expressed concerns about engaging in interdisciplinary projects in the future. He feared deviating from his subject specialism, and going too 'in-depth' into the issues surrounding inclusion.

For him, 'if you go in-depth, then it's not really Product Design, is it?' The team's response to the topic of inclusion in general was, at times, subjective and the engineers perceived their involvement as an exception to their typically 'objective' approach.

One of the TTP students suggested that the teaching of Inclusive Design should be made more accessible to designers and engineers and that it should be responsive to different learning styles and needs. For example, it was argued that visual exemplars and Knowledge Sharing opportunities would reinforce the key messages about inclusive design. One of the product designers, however, felt that it might already be too late: that assumptions about disabled people may already be embedded into the psyche of design students. For him, assumptions should be targeted within education 'from an early age, and to make it something that can be discussed'.

The TTP team emphasised the need for a more humanistic approach to design education in the future. The project became meaningful for them, when they developed an emotional connection with the data. They were 'surprised' by the way in which children were 'left out' during play, and at the realization of 'how extreme that was'. One student noted that he found some of the children's experiences 'hard to have to read'. Another student explained that when child participants were given codes rather than names, the designers 'disconnected' from their feedback. It made it difficult for them to empathise with the user, and to identify or remember individual comments made. For them, pseudonyms may have worked better.

The TTP team recognized the benefits of engaging with the user. It gave them insight to children's experiences, their perspectives on play, and ideas for toys and games. Engaging in the process of co-design brought students' attention to the wider impact of, and social aspects to, inclusive design. Furthermore, the TTP students found it inadequate to second-guess the needs and aspirations of the user. They particularly disliked working with fictional personas, which they felt this led them to more narrow solutions. One student commented:

> *I learnt that everyone who will have some interaction with the products needs to be involved in one way or another in the design process, regardless of whether it is the child, the parent or the*

teacher. They will all interact with the product in one way or another, thus their needs must be taken into account.

One of the Product Design students felt that child-centred research is particularly undervalued within the academic environment. He explained that members of the wider student cohort dismissed the TTP project as a mere 'kiddies project' and that 'there is a stigma around this field that seems to warrant it less merit'. With regard to designing with and for children, he advised 'the first big step is to actually show designers why this type of design is important, and the benefits it can have to both the target users and the designers themselves'.

Within the TTP student team, there was mixed-opinion with regard to the value of user-centred research. Some students found feedback from the child participants amusing and dismissed some of their suggestions as comical. In other cases, personal preference or prior experience played a greater part in the decision-making process than the children's feedback. Some designs were also further developed if students could see the 'potential for development' or if they were perceived to be 'feasible'. Others were determined by the skill-base of the students.

Lessons were learnt about the balance of power between designer and user through the TTP project. The students perceived giving power *to* the user, through early prototyping and evaluation, to be one of the most positive outcomes of the project. By adopting more inclusive working practices in their teamwork, the TTP undergraduates, in turn, developed more inclusive solutions. For example, the students promoted equality by dividing tasks up into areas of interest or expertise, rather than taking ownership of a specific game. Their aim was to work together, towards a collective goal, rather than working competitively.

Having time and space for creativity was another positive outcome for the students. They tussled with the debates, and even talked *themselves* out of ideas that conflicted with the user-centred agenda of the project. When the students were given the opportunity to experiment (i.e. by working with new softwares), they also found that they came up with more inventive and innovative solutions. One setback for them was having limited access to new softwares. They found experimentation difficult initially, as they had little guidance on programs not included in the curriculum. When experimenting

with new technologies in the future, they suggested that access to a basic level of training would be both beneficial to them, and necessary for innovation.

The TTP team found discourse across disciplines beneficial. On completion of the project, one student explained that he felt compelled to reconsider the roles and responsibilities of the engineer. Another felt he had become a more responsible designer, and that for him, TTP had become an important project. It is noteworthy that overall, the students expressed a lack of confidence in the power of inclusive design. Some of them assumed that inclusive toys simply would not have the same appeal as mainstream toys and games. The majority assumed that it would be *impossible* to design an inclusive product for disabled and non-disabled children to play with together. They had reservations about whether an inclusive product 'would work' and felt that inclusive design was an 'idealistic' goal.

Researchers from the field of Disability Studies would argue that rather than an ideal; inclusion is a fundamental right. Moreover, by placing an emphasis on the physical aspects of impairment in their design solutions, the TTP students may have overlooked the 'real issues in disability', which, from a sociological perspective, are 'oppression, discrimination, inequality and poverty' (Oliver, 1990, p. 2). In response to student reflections, the following section discusses the merits of engaging with the emancipatory paradigm (one of several paradigms within the social sciences) for designers, and some of the associated mutual benefits for sociologists.

In addition to the literature on Design Management, which 'Simply put…is the business side of design' (DMI, 2014), literature from the areas of inclusive design and Disability Studies are used to inform discussion. Inclusive design relates to design practice. It is a 'process-driven approach by designers and industry to ensure that products and services address the needs of the widest possible consumer base, regardless of age or ability' (Coleman, 2010, p. 19). Disability Studies, on the other hand, relates to theory. It is an academic discipline that examines and theorizes about the social, political, cultural and economic factors that define disability. It is this synergy of both the practical and the theoretical approaches to social inclusion that this paper argues, are contributing to, and further emphasising, the emergent role of the Social Designer.

What can designers learn from the emancipatory paradigm of the Social Scientist?

Borja de Mozota (2011) notes that through areas such as 'eco design', 'inclusive design' and 'service design', design disciplines have broadened to answer societal changes in relation to 'sustainability, ethics and the digital economy' (Borja de Mozota, 2011, p. 289). The TTP project emphasized the need for design disciplines to broaden further, to respond to issues of social inclusion. Borja de Mozota (2011) highlights that on a strategic level, new 'meta-disciplines' are important, as they act as a bridge between existing design disciplines, to develop a coherent strategy for the value chain of an organisation (Borja de Mozota, 2011, p. 289). As an extension to this argument, this section considers the merit of integrating Disability Studies and design, to form a new meta-discipline on the sociology of disability, within design-related fields. An emphasis on 'Social Design' may equip designers to respond and adapt to both the market-driven and political forces at play in the area of inclusive design.

Politics have become particularly prevalent in the area of inclusive design, due to the 'rapid convergence between the market push of ageing populations'; 'the consumer pull of equal rights legislation', and 'a vocal and demanding disability lobby' (Coleman, 2010 p. 11). Where existing design-orientated research brings a wealth of knowledge on design for the market, Sociology provides insight to the politics. According to Oliver (1992), the 'emancipatory paradigm' of the Social Scientist, is about the 'facilitating of a politics of the possible by confronting social oppression at whatever levels it occurs' (Oliver, 1992, p. 110). When approaching issues of inclusive design, designers must, therefore, engage with matters of equality and participation. A degree of reflexivity is required. From a social sciences perspective, critical enquiry, praxis or emancipatory research involves a 'different view of knowledge (theory)' (Oliver, 1992). According to Lather (1987) it must

> *…illuminate the lived experiences of progressive social groups; it must also be illuminated by their struggles. Theory adequate to the task of changing the world must be open-ended, nondogmatic, informing, and grounded in the circumstances of everyday life (Lather, 1987, p. 262).*

Inclusive design must, therefore be informed by peoples lived experiences. It must be honest and capture their struggles. At present, commercial opportunities are used to promote inclusive design to designers. However, they cloud issues of poverty. Designers are led to believe that inclusive design offers an incentive for older and disabled people to 'spend the now considerable wealth they control on the goods and services that deliver independence and quality of life' (Coleman, 2010, p.3). However, 'a substantially higher proportion of individuals who live in families with disabled members live in poverty, compared to individuals who live in families where no one is disabled' (Department for Work and Pensions, 2014). Sociological perspectives encourage designers to challenge assumptions about disabled people and other marginalised groups, and to address the politics of inequality, oppression and discrimination in their work. In this regard, Sociology can help to *stretch* design briefs.

Disability Studies provides insight to the experiences of critical users for designers in the area of inclusive design, with its roots in the growth of the Disabled People's Movement. It offers a wealth of literature on anti-discrimination legislation. At an organizational level, British firm, B&Q exemplifies the way in which anti-discrimination legislation can be used to inform the process of inclusive design, through its diversity initiative. B&Q took a 'proactive approach' in their aim 'to go beyond compliance with DDA and to make inclusive design a key business strategy and way of developing the B&Q brand' (Coleman, 2010, p. 5). Engaging with issues of Social Policy, can therefore, lead design-related disciplines to more inclusive practices.

In the area of participatory design, successful design-led organisations, such as *IDEO*, currently utilize sociologists, in conjunction with clients and designers, at the 'observation' stage of the design process (Michlewski, 2008, p.381). This paper proposes, however, that a conversation with Sociology is useful *throughout* the design process, and particularly at brainstorming and refining stages. Oliver (1992) raises concerns about participatory research as 'all too often [it] leaves the relationship between the social and material relations of research production untheorised and untouched…Issues of politics and praxis need to be considered' (Oliver, 1992, p. 25).

Others challenge the rigour of a design approach. For example, with regard to design practice in the workplace, Doblin (1987) urges designers to

'grow up', and to 'forego their adolescent reliance on purely intuitive practices' (Doblin, 1987, p. 15). Sociology, therefore, may bring rigour to design, as it provides insight to the structures, methods, and objectives that Margolin and Margolin (2002) point out are currently missing in social design. Moreover, as highlighted by Doblin (1987), 'to avoid dealing with complexity, most designers drive tasks downscale by simplifying them' and ultimately, 'consumers get stuck with the results' (Doblin, 1987, p. 15).

By engaging in sociological discourse, designers are encouraged to consider different epistemologies, and to think differently about social problems, such as disability. Campbell (2008), for example, proposes alternative ways of thinking about difference, and more positive ways of looking at impairment. Through the Sociology of Impairment, he challenges contemporary representations of the medicalised body and seeks alternative perspectives (Campbell, 2008). 'Good Grips' designers, *Smart Design*, first introduced in 1990, attribute their success in the area of inclusive design to their emphasis on meeting user needs, rather than product functionality. Their philosophy is that 'physical design is dead', and that the design of experiences is now a priority (Coleman, 2010, p. 5).

Of mutual benefit to Sociology; designers have the ability to 'rapidly' transform a project from something that is very 'broad', and 'subjective' into something that is 'rational and tangible', something that is discussable and debatable' (Michlewski 2008, p. 380). Designers, therefore, have the potential to bring theoretical ideas to life. Such qualities equip the designer to play a key role in bringing about positive attitudinal change. According to Inns (cited in Borja de Mozota, 2011, p. 289), designers now act as 'negotiators of value, as facilitators of thinking, as visualisers of the intangible, as navigators of complexity and as mediators of stakeholders'. Moreover, designers have 'an important role to play in supporting change initiatives' (Michlewski 2008, p.381).

Design plays a significant role in many areas outside of the traditional creative sector. Hunter (2014), Chief Design Officer for the Design Council, reflects on the social dimension to his own design activities; working 'with social enterprises and government by using design to look at youth unemployment and the ageing population' (Hunter, 2014). Researchers in the field of design have recognised 'a strong commitment among designers to make a fundamental difference' (Michlewski 2008, p. 384) and the

'possibilities for positive action to redress disablist and disabling design' (Imrie, 2002, p. 3). Due to its 'humanistic agenda' (Meyer, 2011, p. 188), design offers 'intrinsic benefits' to organisational life, providing 'critical value', not only in 'end products', but in the overall 'culture' of an organisation (Meyer, 2011, p. 191).

Borja de Mozota, (2011) agues that interdisciplinarity, in the context of Design Management involves respecting differences and 'not the dream of the end of the disciplines' (Borja de Mozota, 2011, p. 291). Furthermore, rather than being a specialist area or a specific responsibility of the Product Designer, *The Principles of Inclusive Design (They Include You)*, published by the Commission for Architecture and the Built Environment (2006), stress that 'Inclusive design is *everyone's* responsibility…[it] should be an integral part of what we do every day' (Fletcher, 2006, p. 4). Design Management, therefore, is a key player in the process of inclusive design (Coleman, 2010). In the light of this discussion, the next section concludes by examining the practical implications for Design Management education, research and practice.

Conclusions and Implications for Design Management

This paper presents reflections from an undergraduate team of Product Design and Engineering students, on their experience of an interdisciplinary project entitled *Together through Play*. It provides lessons for Design Management by highlighting some of the current issues in design education. The students gave insight to their experience of engaging with the user; working as part of an interdisciplinary team; cross-faculty studies and the challenges they encountered. Their feedback casts light on the practical implications for Design Management, with regard to embedding inclusion into Design Management research, education and practice.

Despite their initial reservations, the TTP students found their interdisciplinary collaboration a challenging, yet positive experience. The group recognized that a combination of the two perspectives led them to make 'better decisions'. Some of the students also expressed an interest in further research in the area of inclusive design and careers in Inclusive Design, as a vocation. This calls for Design Management to increase opportunity for interdisciplinary collaboration in Design Management education, research and practice in the future. Interdisciplinary

collaborations may present themselves in the form of student competitions, work placements, cross-faculty research and inter-departmental projects.

A particular challenge for Design Management at present is, 'managing complexity', and 'innovation' (Borja de Mozota, 2011). As highlighted in the TTP project, as projects embrace interdisciplinarity, Design Management will be required to adapt to dealing with increasingly complex data, and data of a qualitative nature. In doing so, Inns (cited in Borja de Mozota, 2011, p. 289) points out that emergent, more radical routes of 'exploiting and importing design knowledge across the traditional borders of design' offer engagement with new design forms that are 'value driven'.

The TTP project has highlighted the need for Design Management to develop more meaningful ways in which to assess design value in Design Management research, education and practice. As previously highlighted, the TTP students were of the opinion that, in the assessment of the project, the functional, engineering aspects were more highly favoured than the human-centred aspects. A similar sentiment is echoed in Design Management research. Borja de Mozota (2011) notes that when assessing value in design, there is either a reliance on peer reviews – as in design awards for "good design" – or on quantifiable evidence - improving sales figures, brand market share and reputation,' over the value it brings to society (Borja de Mozota, 2011, p. 278).

The social barriers to inclusion were deemed the 'hardest to deal with' by students participating in the TTP project. Despite learning about the physical barriers encountered by disabled people, through the Principles of Universal Design, they highlighted that the *social* aspects are not generally considered. Input from the social sciences may be beneficial for Design Management in this regard. Coleman (2010) suggests 'Build appropriate knowledge and skills within design and marketing teams. This may require the engagement of specialists, attendance at appropriate conferences and workshops and collaborations with the research community' (Coleman, 2010, p. 13).

As highlighted in the TTP project, there is much to be done in design education, with regard to building student confidence in the power of inclusive design. This calls for Design Management to showcase its successes, to highlight its social impact, and to raise the profile of a design

approach to social inclusion. Furthermore, the lack of exposure to inclusive artefacts received by the TTP students, and the way in which coverage on the topic of inclusive design was limited in their studies, now poses a creative opportunity for Design Management education. We learnt that designers tend to develop and acquire new knowledge through artefacts, rather than reading and writing papers. New ways of acquiring knowledge through Design Management education in the future, therefore, may involve more active participation in artist collaborations, exhibitions, inter-disciplinary projects and modules of an 'applied' nature.

It was suggested by students participating in the TTP project that Inclusive Design should be taught as a subject in its own right. An implication of such a move, however, could result is inclusivity being perceived as an abstraction, rather than an integral part of the work of designers or engineers. If Inclusive Design is managed as a specialist area, or if it is limited to areas such as Product Design only, then, as illustrated in the TTP project, engineers and designers from other fields will continue to remove themselves from all lines of responsibility. Coleman argues that it is important to simply see 'inclusivity' on a par with 'quality' (Coleman, 2010, p. 27). Indeed, one might also ask, therefore: how do the skills of an inclusive designer differ from those of any other designer?

In response to the attitudinal and cultural barriers to inclusive design within design teams, Melanie Howard, Co-Founder of the Future foundation (cited in Coleman, 2010, p. 10), argues that it is essential for all design-related subjects to provide modules on the topic of inclusive design. Moreover, in response to issues such as age discrimination, Howard suggests that 'All design and marketing curricula should include some compulsory module on the implications of living longer, and the requirement to think differently about designing for the future'.

A particular problem for Design Management education, at present, is that it exists in 'insecure research programmes' and 'poorly funded research departments' (Borja de Mozota, 2011, p. 291). Furthermore, Gorb (1986) flagged up 'cultural inhibitions' (Gorb, 1986) as a particular barrier to a design approach to social problems. Design Management must, therefore, raise the profile of socially inclusive projects. In a bid to attract financial investment and support for Design Management education, Design

Management must also take responsibility for ensuring that innovative ideas are delivered to non-specialist audiences, in accessible ways.

The TTP project highlighted the need for more accessible resources on the topic of inclusive design for designers. This, the students informed the researcher, would help them to develop a better understanding of inclusive design. In response, Design Management must now learn to exploit new technologies, and demonstrate a commitment to promoting and facilitating Knowledge Sharing and experimentation in the area of inclusive design. In the light of the findings of the TTP project, and the reflections highlighted in this paper, work is currently underway to further enhance Knowledge Sharing at the University of Leeds. A Massive Open Online Course (MOOC) is currently being developed, which uses the TTP project as a Case Study for learning online. The MOOC is designed to help students to understand that innovators come from diverse backgrounds, and to learn about the way in which people can help organisations to innovate.

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