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DESIGN TRIBES AND INFORMATION SPACES FOR CREATIVE CONVERSATIONS

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ABSTRACT (250 WORDS MAX)
This paper reports on work in progress to augment the role and practice of Creative Conversations in product design education. We describe changes in practice designed to elevate the importance of conversations and various pedagogical approaches used to support this elevation. These changes are principally manifested in the formation of like-minded Communities of Interest, or 'Design Tribes', the adoption of revised design process models and the associated reorganisation of assessment philosophy and practice. We go on to describe and reflect on various technological interventions deployed, that have been designed to weakly augment the conversation space in both situated (studio based contact sessions) and distributed (work undertaken in between contact sessions) settings.

Keywords: Design Development, Creative Conversation, Idea Generation, Design Critique, Design Practice

1 INTRODUCTION

This paper describes approaches to working with final year undergraduate Product Design students on their major projects at Middlesex University. It is common practice for final year product design students to undertake a major project at the end of their degree programme that is typically self-initiated and self-managed, although time-scale and credit weighting vary across the sector, as do approaches to supporting, supervising and intervening in this work by academic tutors. We have adopted a conversational approach to design practice and learning and, as part of a wider study into the development of 'information spaces for creative conversations', we have begun to make technological interventions that aim to improve the quality of the conversations that take place and student engagement in them.

In this paper we describe some of these interventions with our final year Product Design students and we report on preliminary findings, emergent design insights and our future plans.

2 BACKGROUND

These developments stem from the premise that Design is best done – and learned – conversationally. Through conversation we can 'talk ourselves into a better position'. However, the prevalent technology in our studios (lap-tops, phones, power-point projections), and also the traditional 'crit and review' approach to design development, can often stifle rather than enhance conversation and group engagement. So, as part of a wider project undertaken through JISC Circular 08/08 'Transforming Curriculum Delivery Through Technology', we have set out to design technology to support our design conversations. This wider project is currently in its main study phase and these interventions are being trialed in a variety of design settings including HCI at undergraduate level and interactive system design at postgraduate level. Our initial pilot studies, and prototype development, took place with postgraduate interaction design students in the preceding year.

A fertile 'creative conversation', of the kind that might take place as part of a design process, requires many things, including a willingness and ability to quickly generate new ideas and to release less promising ones, a focus on evaluation and development of ideas and contributions rather than the personality or position of the proposer, and the possibility to revisit and change earlier decisions. Good creative conversations lead to clarity, shared understanding, renewed focus, tangible actions to

undertake and constructed learning. If members of the group are not engaged in the conversation then both design development potential and learning opportunities are reduced.

In the context of creativity, this focus on group work, as opposed to the work of the 'lone genius' has been a relatively recent phenomenon. Research, by Warr and O'Neill [12] has argued that '*real group'* collaborations, where participants interact face to face and genuinely work together, should generate more creative ideas than '*nominal group*' work, in which members of a 'group' are simply working side by side on the same task. In addition to this trend towards considering the need to support collaborative creativity, the increasing prevalence of geographically distributed design teams, and the rise of mobile computing have led to the need to support the activities of design teams which may be distributed in time or space. A team working on one part of a system or product may need to collaborate with another team in another country or time zone, working on other parts of the design. Equally, members of a design team may wish to contribute to the team's work even when they are away from the office, sharing ideas and inspirations with fellows as they are encountered.

A number of studies have already been carried out to investigate the use of systems including interfaces such as interactive tabletops in promoting the creativity of co-located design teams (see, for example, [7] and [13]). Findings from these studies suggest that the use of these kinds of interfaces may increase the quality of ideas generated, and carries additional advantages in terms of recording both ideas and the processes used to generate them. However, clumsy use of technology and unsuitable interventions can break the 'flow' which many believe is essential to creative thought [3], and may inadvertently contribute to inhibitory social influences such as production blocking, evaluation apprehension and social loafing [12].

Our work addresses a recurrent problem in design education: that students are sometimes disengaged from key 'creative conversations' and that this problem can be exacerbated by learning technologies present in the classroom or the students' wider networked world. The project deploys trial 'information spaces' that will provide learners with the appropriate artefacts and modes of interacting with a learning situation, and with their peers and tutors, to enable them to engage more flexibly and effectively in conversations characterised by innovation and reflective, critical thinking.

The 'crit and review' process is still widely used in design education, and allows students to receive feedback and critique on their ongoing work and is an example of learning through conversation (e.g. see [8]). In a typical crit, each student gives an account of progress, and receives critical feedback from peers and tutors. Such sessions work best when a student's report provokes a lively interaction within the group, with an exchange of ideas, reframing of problems, restructuring of design knowledge, and co-construction of a new understanding of the design project that moves the student and their project forward.

In a constructivist approach to learning, such as active learning, students learn by doing, and learning can be seen as an active social process. Students with different skills and backgrounds are expected to collaborate in tasks and discussions in order to arrive at a shared understanding [5]. Thus an appropriate approach to preparing students for becoming designers of complex systems and artefacts is to involve them in group-based studio exercises where effective conversation is essential to the development of understanding. In a learning milieu where students initiate and manage their own projects, and where innovation is valued and rewarded above operational skill, with 'ideas' as the primary currency, such an approach is especially apposite. Furthermore, as Product Design wends its way ever further from the exemplification of design craft through 'industrial design' outputs - as discursive design, exploratory design, design as art, interaction design, service design, emotional design, tangible and intangible customer touch-point design, etc. enter the workspace of the product designer - it is difficult to envisage how high quality design, and design education itself, can persist without vibrant and active conversational interplay.

A common problem with an approach that relies heavily on immersion and interaction is a lack of engagement by learners in the conversation. One reason for this is when available technology either fails to support, or actively stifles, productive conversation by creating distractions, inappropriate expectations or additional cognitive demands. For example, where students report back on their work in the style of a 'one-to-many' formal presentation with text and images projected onto a wall-mounted surface, opportunities for more free-flowing 'many-many' conversation may be lost.

We have initiated explorations of the design of 'information spaces' – clusters of technology embedded in physical spaces – configured so as to remove some of these barriers and better support a face-to-face conversational style of learning. Our aim is to 'weakly augment' the spaces in which

conversations about creative design take place, in such a way that the spaces themselves are not changed, but their behavioural properties are enriched [4], and to provide technical support for collaborative creativity, while maintaining face-to-face communication and other natural interactions [7]. A guiding principle has been to make the use of technology as seamless and unobtrusive as possible. In practice, this has sometimes meant deploying what seem to be 'low-tech' and simple solutions, rather than using cutting edge technologies.

3 CONTEXT

In recent years, and particularly when working with final year Product Design students, where projects are personal propositions, our practice in product design at Middlesex University has moved away from 'crit and review' towards engaging with students in Creative Conversation. This has been mediated by the insight that 'large and complex design projects cannot be accomplished by any single person, and they often cut across different established disciplines, requiring expertise in a wide range of areas' [1] and that, as such, 'design projects are ***unique***, and therefore each design project requires learning and produces new knowledge in the form of understanding as well as artifacts.' [11]
Our early and informal understanding of these approaches indicates that they are best applied in the pre-brief, 'design thinking' stage of the project; using the sense that Buchanan [2] proposed of a generalized design approach that could be applied to nearly anything, whether a tangible object or intangible system. We have purposefully extended the timeframe for this stage, by moving assessment milestones, to elevate the importance of the pursuit of good ideas above an early and 'safe' engagement in design craft skill by students. We have reassured students by valuing and exemplifying design process models that reflect this approach, such as 'The Process of Design Squiggle' (See Figure 1) as the philosophical underpinning, with procedural support from a generic process, **Understand - Explore - Create - Validate** decontextualised and developed from User and Activity-Centred Design models, such as 'IDEO': **Learn – Look – Ask – Try or Insight – Inspiration – Ideation - Implementation -** in the Interaction Design sector, and from 'Engine': **Insight – Evidence – Concept – Action** in the Service Design sector.

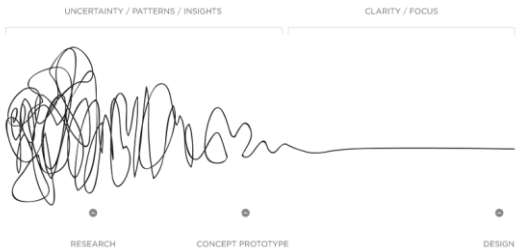

Figure 1. 'The Process of Design Squiggle' by Damien Newman, Central Office of Design

We have encouraged working practices that stimulate conversation, with two principal manifestations:
1. As project proposals begin to gain early clarity and definition the group has self-organised into a number of 'design tribes' or like-minded Communities of Interest. Product Designers could be expected to form Communities of Practice. However, as the discipline has evolved and fragmented through diversification of project style, coupled with cross-disciplinary engagement of final year BA and BSc Product Design students, the idea of Communities of Interest – CoI [6] is self-generating, with the attendant 'symmetries of ignorance' [10] – and the creative potential therein.
2. Tutors engage with these design tribes, on a peer level, in shared conversational spaces, which are typically writable table surfaces using white-boards or large paper, akin to brainstorming spaces. Participants are discouraged from taking notes, using laptops, and making formal presentations to the group to encourage and support engagement in the conversation and many-to-many interactions.

4 CURRENT INTERVENTIONS

The focus for this case study is an individual, student-defined project where each student works autonomously, with reported progress on a weekly basis to the rest of the group in a 'crit' session. This phase of the module runs for 16 weeks. There are 2 staff members, with 26 students.

General requirements for encouraging and supporting conversation, within the 'crit' session, are:
Open access - easily accessible, no complex login or setup procedures being required before use.
Shared spaces - technology should create a shared experience, rather than taking individuals into private spaces (e.g. by allowing prolonged 'head-down' use of a traditional computer).
Projection and display - allowing learners to bring digital materials (e.g. slides, video, photos, etc.) to the physical conversation space, alongside physical objects (documents, devices, prototypes, etc.)
Interaction - learners must be able to control presentations and any other facilities of the information space. It is desirable for the locus of control to be shared or easily moveable between people.
Capture, replay and reflection - Lose nothing - familiar interactions (e.g. sketching and writing) with physical as well as digital artefacts should be supported. Traditional note taking is cognitively demanding and removes the note-taker from the conversation, so support should be provided for capturing the content of a session and making it available for later review.
Initial practice was to use a downward pointing projector, employ a scroll of large format (1.1 x 20m, 90/95g/m^2) tracing paper and create a writable surface with projected and unprojected segments.

Figure 2. Creative Conversation using information space

The students and tutors worked around the table, and were encouraged to write on this surface to take notes and express ideas, and also to recruit a range of other physical artefacts as conversational props (see Figure 2). Initial intent and specifications were:
1. Each 'tribe' has an allocated 'pod' constructed from a bespoke aluminium and Perspex shell, with a projector, Logitech hi-res webcam, an Apple Mac Mini, bluetooth keyboard and mouse [see Figure 3].
2. Individual students are grouped into 'tribes' according to interest, and each tribe has a fixed location and standard 'Pod' and surface facilities, in which they present their work and receive crit.
3.. Capture, replay and reflection are provided via individual student blogs, onto which video and audio recordings of crit sessions are posted. Blogs are also used as a 'notebook' or repository of ideas and where digital materials they may want to bring to future presentations and crits are placed.
4. Hi-res photographs are used to record the detail of the writing, drawing and artefacts on the table surface as an alternative to note taking.
5. A visual 'timer' is projected at the base of the screen that is divided into 'reporting', 'discussion' and 'targets' with the intent to manage the conversation.

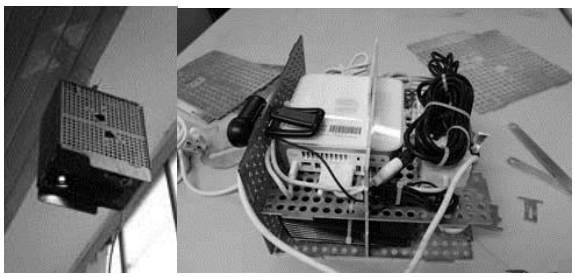

Figure 3. Information space - 'Pod'

The infrastructure required videos to be captured easily, and seamlessly made available to students after (or during) the session. The fexperimental framework used Apple's MacOS X TeamServer, which provides wiki and blog tools integrated with Apple's Podcast Producer system. Podcast recordings can be easily be made using the Podcast Capture utility on a Macintosh computer, and posted to personal and shared blogs on the server. Students were encouraged to make use of their

personal blog outside of the sessions, to record reflections, post ideas, and assemble media. In addition to video recordings, still photographs are used - to capture everything written on the table and anything else interesting that was unlikely to be captured on the video. The higher resolution of the images provides an effective supplement to the captured video. However The uploading process was manual and carried out by the tutors with photographs from a session posted to the shared blog.

5 EARLY FINDINGS AND INSIGHTS

The initial intent to locate the pods permanently in fixed areas of the Studio, projecting vertically was swiftly modified. The structure of using a single 'crit' pod, with the other three as flexible 'tribal' pods, immediately became the norm. This evolution stemmed from practical issues – ceiling-mounting the portable pods is time-consuming; the 'crit' pod was found to need the addition of 'physical asset storage' areas (horizontal space to hold DSLR cameras, marker pens, laptops, coffee) – which initiated procedural and philosophical reflection. The autonomy and group-ethos of the 'tribes' developed by the introduction of choice, in terms of use and positioning of a pod. 'Tribal' pods were used to project horizontally, onto a number of surfaces, including whiteboards, walls, drawing boards and cardboard boxes, depending upon the scale and focus of the tribe and conversation.

As Molotch [9] suggests, "stuff" comes partly from designers doing things with other stuff.

Early indications of 'stuff' we have learned:

'Tribes' should not be allocated. They form, initially, through a negotiated conversation, led by tutors. They remain fluid, and self-organising, in the 'Squiggly' stage of the process, as the projects gain clarity and definition, which we have encouraged. The initial number of 'tribes' was four. Characterised as: 'Conceptual', 'Digital', 'Intangible' and 'Tangible'. The fluidity was evident in that the four coalesced to three (Conceptual, Digital and Tangible), then to two (Intangible Digi-Con and Tangible), as the end of the squiggly stage approached. This, from observation, was related to the increasing overlap of type of manifestation in the prototyping requirements and technical knowledge necessary for embodiment. This formation of CoI through negotiation and ongoing fluid self-management has embedded a sense of self-determination and confidence in the more functional tribes. The status of the Tutor as temporary active member of the Tribe, not as an external assessor/disassociated advisor, has supported this impression, in the same tribes. One vertical 'crit' pod and three 'roving' horizontal pods has been effective in managing the practical elements of the conversations and supporting the philosophy of autonomous, motivated 'tribes'. There has been increased use of 'pods' in higher functioning tribes (some converse, share and progress more than others) and pods have been in use outside the formal contact day.

Students commented: "Direct feedback within the tribe helped with progress." "Tribe productivity was dependent upon individual input, ie. Some groups had less vocal/helpful members, making the process suffer." "LOVE NOT HAVING TO PRINT."

The barriers associated with the 'judgemental' - "Crits felt more constructive this year; less formal, more casual." - status of tutor involvement have reduced, via the non-hierarchical structure of the central information space and opportunities for inclusive engagement. These need to be carefully nurtured and mediated to build confidence and engagement in students.

The addition of a timer to manage the conversation has enhanced the 'flow' of the conversation, by intimating an equality of importance to each individual within the tribe, by reducing 'over-reporting' and 'under-discussing' and focusing on target setting in the concluding phase of the conversation.

The pods have proved beneficial during required milestone assessment. They allow full feedback to be immediately available. This is via a podcast of the verbal feedback following each individual student's presentation. They, therefore, remain in full context, with the detail and nuance of feedback retained (limitation - verbal only, no 'body-language' due to camera facing student), rather than an artificial, brief textual summary. This also enhances opportunities for student self-review and peer assessment.

Students commented:

"Pods/webcams usage was brilliant. It helped with remembering feedback and discussions."

"Being able to watch yourself present helped with presentation quality for the next time around."

"Blogs eliminated incentive to produce documented work – didn't feel as if we had to constantly pad-out/upload a portfolio (although this feeling isn't universal, as others found this fun and helpful)."

6 Conclusions and Further Work

In the coming year we will be working with students via a curriculum that has been updated through recent review to reflect this developing practice and refining the specific final year experience.
The key technical developments that we intend to implement are:
1. Set-up time and task-switching (log-in, podcast, timer) is inefficient and could be automated.
2. The blog space lacks forum-style conversation areas, which lead to private email Q/A outside of sessions, as opposed to public, shared, podcast conversation in class.
3. Manual follow-up image upload is laborious and could be automated using wifi cameras.
The update of our curriculum reflects our belief that the opportunity to 'embrace uncertainty' and to 'wrestle' with the loosely defined, but highly creative stage of the Squiggle design process is essential, but can be intimidating for students. This approach will encourage students to engage with the process and to do so within a supportive environment.
The process underpinning the creative conversation at the Squiggle stage will be reinforced as being active, iterative, exploratory, prototype-rich and hands-on, thus eliminating the confusion over, and artificial separation, of 'research' and 'practical' stages. As evidenced by student comments such as: "Felt that the research stage was dragged out." "Need for 'practical work' was postponed." "Needed to get into the workshops earlier."
As product design practice moves inexorably forwards, and as the 'discipline' embraces new technologies, new practices and new approaches, the role of Creative Conversation will become central to meeting these new challenges and opportunities.

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