Making the Transient Permanent

Exploring the translation of personal data into material forms via the 3D printing of memory objects.

By Patrick McTaggart, Sheffield Hallam University. Melanie Levick-Parkin, Sheffield Hallam University. Johnny Wood, Sheffield Hallam University.

Abstract

Monkey Hats, Tat and making the Transient Permanent – Exploring the translation of personal data into material forms via the 3D printing of memory objects. Objects of adornment and personal artefacts, are often associated with life events. They are not just markers or memory triggers for those events but can also be stores for memory through design by selection, relationship to historical context and more obviously inscriptions. The physical sensory experience of the object can be a channel for the associated personal memories, 'memories may be equally viewed as embodied acts involving the transformation of sensory manifestations into semiotically dense objects' (Van Dijck 2012). 3D printing technology, still in it's infancy, is developing fast, with issues such as meaning making through 3D form in need of exploration, as much as the testing of application and quality of production. How can craft be materialized through modern processes such as 3D printing without alienating the personal nature of memories? Can digital making processes even offer an experience of the individual, despite their temporal situatedness in industrial modes of production?

The aims of this research project are:

1. To explore the mining of personal data for personal memory objects. Investigate appropriate quantitative or qualitative data sets that might be used for translation. Eg: Individual analytics drawn from sources such as personal biometrics or temporal narrative information.
2. To investigate links between aesthetic abstraction and social, cultural and philosophical meaning in order to give value and form to personal narratives.
3. To experiment with digital media and test and apply advanced methods, process and theory through the visual and physical materialisation of data via 3D printing.

This research project intends to address the need to investigate how data visualisation based on personal data can explore the technologies potential of creating memory objects that are both meaningful to the individual and aesthetically engaging. Abstracted personal narrative has the potential to create memory objects that facilitate the reflection on and conversation about values of social, cultural and philosophical nature. The aim is to work with this theme in relation to commercial design applications for the technology, whilst exploring the role design plays in visually encoding meaning and narrative. In response to the wider social concerns of data ownership, sharing and loss, the project intends to investigate how the de-personalisation, devaluation, abstraction and virtualisation of data might be addressed, reclaimed, decoded and rematerialised back into a tangible ownership of form. The aim is to investigate whether digital data visualisation processes, materialised through 3D printing, can offer a 'maker' rather than just a 'consumer' experience, and create meaningful memory objects rather than just another trinket; and whether all media really 'are active metaphors in their power to translate experience in new forms' (McLuhan 1964: 64).

The transient

This project explores the notion of transient experience and the relationship to memory and memory objects or mementos. In this work the transient, is our lived experience, these can be described as a collection of fleeting moments in our lives unfolding in time. The transient is often the feeling of belonging to a moment that might forsake us when the dynamism of that moment changes. Time moves on those moments in our lives where we feel a part of something, we cling to that sense of belonging, be it a time, a place or a group of people, these are strands of the social fabrics that defines us. The transient is the feelings we cling to, feelings and memories of how it was to live through a particular moment or phase of our lives. The memories can be a collection of events connected by an intangible sense of how it felt at the time. The intangible becomes a tangible experience again through recall, we are transported to the moments in a performance of those memories played out on the stage of our minds. The 'performance of recall' (Van Dijck 2007) is not lossless, Van Dijck describes the connectionist view of memory and remembering using the analogy of an orchestra. He describes the act or performance of recall as being something flexible, as time passes it changes each time we remember it. Drawing from this notion of memory and remembering it would be logical to say that if the orchestra were not to play the piece often it might be come less likely that a rendition would be accurate to the original performance. Memories can fade as time passes, even the act of remembering can induce forgetting (Anderson et al. 1994) those memories that we recall often become central to our personal narrative and a sense of our identity akin to a 'Lockean' idea of personal identity and the role of memory. Some of the memories that we see as important to our personal narrative need reaffirmation through shared memories and shared recall, without physical stimulus those feelings can recede, belonging is abandoned, feelings forgotten. We no longer really know how it felt to live in that time and be connected those strands that defined us in that moment. With memories being so central to a sense of self we often seek memento's to act as external triggers to substitute shared recall moments or aid recall and become an object around which the shared recall can take place. These extend our memories and become an external holder onto which we might project a sense that within them is stored the intangible memory.

Integral to a sense of who we are is a sense of our past. Possessions are a convenient means of storing the memories and feelings that attach our sense of past. A souvenir may make tangible some otherwise intangible travel experience. An heirloom may record and recall family heritage just as a historic monument may help to create a sense of a nation's past.' (Belk 1988)

Belk describes the accumulation of possessions or mementos as a strategy for people to build a personal repository upon which they can reflect and understand themselves in the past and in the present. This notion of possessions as the extended-self manifests itself in moments when we seek a memento because we know the experience we are currently undertaking is transient but of significance to our sense of who we are and who we are becoming. In this project graduation is explored as a marker in time for a significant lived experience. Completing university and the moment of graduation is an important milestone in a student's transition to graduate. At this point their self-definition (Wicklund and Gollwitzer 1981) may start to switch from student to graduate, after graduation they see themselves as a graduate aspiring and poised to become a professional in their chosen field. There is ceremony and ritual around the event that includes familiar imagery and symbolism such as the hat, the gown and the scroll. Beyond the printed qualification itself, there are some usual mementos that exist such as the graduation photograph either professional or amateur. Often the merchandise sold by student union shops is seen as an appropriate memento. There are many customised gifts online that are sold as graduation presents, an initial search will yield many sites such as 'notonthehighstreet.com' where a plethora of objects can be purchased as gifts. The customisation rarely goes beyond placing text on objects, the base object always remains the same in form.

To explore the notion of a memento or personal memory object this project set out to devise a creative strategy for translating some personal data about students into an object which could be personal but also be connected to the other graduates in some sense. The resulting object seeks to be a manifestation of a student's self-definition of themselves as a 'graduate' within the context of their university, year group and course.

The project

The project brought together academic researchers, undergraduate students and a commercial partner. The researchers co-ordinated the work the students carried out and liaised with the commercial partner in a series of creative and commercial dialogues to assess the viability of each idea.

Code 3D: Specialising in 3D printed jewellery Code 3D were asked to be a partner in the project due to their expertise and interest in exploring possibilities for imbuing printed artefacts with a personal connection. They have previous experience with customisation systems and 3D scanning as a method for generating personal artefacts.

Students: The project recruited a team of four undergraduate graphic design students to devise creative strategies for translating data into a personal object. The aims of the project were translated into a graphic design brief that would be familiar with this group of students. In this project the design activities of these students was aligned to a process described by Marenko and Brassett, 'A process of change, invention and speculation always possessing tangible implications that cannot but affect behaviours and lives.' (Marenko and Brassett 2014).

From this process emerged a sense of transcendence akin to Thrash and Elliot's (2004) notion of creative inspiration leading to ideation where novel ways to envisage the information became apparent. Each time the students reached the stage of transcendence and ideation they returned to stimulus to be inspired by, to reach a state of 'evocation'. The project had significant budget constrains which made it necessary to utilise the student's time as effective as possible. The point of holding the students in a loop in this early part of the creative process was to use each iteration of the stage as a way to build up a larger resource of ideas without moving too quickly on to the stage where those ideas would be refined further and realised in a designed outcome or mocked up. This resource was the material used in dialogue with the commercial partner, these dialogues were points at which the selection of ideas for further refinement happened.

The majority of the students were selected from the second year of BA Graphic Design at Sheffield Hallam University. In the previous semester these students completed a module called Tools and Systems. The module gives students a framework through which they explore data visualisation and novel approaches to graphic design resolutions, it includes a similar brief that sets the challenge of developing a system of translation and devising an appropriate designed resolution. Their recent experience of this module made these students excellent candidates for this particular research project. Other important criteria for selecting these students was they were relatively free in terms of time and at a stage where a degree of autonomy is at the heart of how they operate.

Overview of the creative process

To kick-start the creative process a workshop on convergent and divergent thinking was devised and run with the students. The activities in the workshop allowed for a rapid generation of initial scamps of ideas, small sketches that encapsulate two seed words or concepts that are either divergent or convergent to form the initial basis for a new creative strategy. This was run a number of times to keep students in the ideation stage to generate large volumes of sketches in a short period of time.

This was an important part of the initial process borrowed from the student's particular degree course, the deployment of studio-based workshops quickly give students creative momentum. Implemented in this project, it gave students a large volume of starting points for the brief from which they were charged with developing the starting points into tangible ideas. The visual material generated was followed through the use of a flickr site acting as an archive and means for tracking the progress, this archive was central to the creative dialogues with Code 3D.

Fig.1. Scamps/sketches from workshop

One of the initial dialogues with Code 3D centred around a review of ideas generated in the workshop, this review allowed commercial insights to be applied in an advisory rather than directive manner so that those insights didn't become constraints that stifled ideas. Code 3D were keen to give space for as many ideas produced in the early stages of the creative process to nurture each idea before the scythe of rationality was wielded on those ideas that had less viability. This fragility of an idea is neatly summarise by Jonathan Ives (Ives 2011 Cited in Elmer-DeWitt 2011) 'ideas ultimately can be so powerful, they begin as fragile, barely formed thoughts, so easily missed, so easily compromised, so easily just squished.'

From the creative dialogue sessions the commercial challenge of gathering personal data was discussed, based on experience Code 3D gave insight into their processes and attempts to explore deeper levels of interaction with consumers. Considering the consumers in this context and the potential price point of the object at a maximum of thirty pounds the project would in this phase explore the possibility of creating a personal connection with limited data that was not onerous on the commercial partner in terms of developing a system for data collection and not onerous on the consumer in terms of investment of time before a purchase is made.

At this stage the scope of the project was limited due to time and budget, the ambition to gather larger and deeper sets of data would be subsequent to this phase, which was more concerned with devising a system of encoding to deal with relatively simple data with the view to expanding this system. This was a key initial directive for the project that framed the student's creative challenge.

A sense of essence around a personal narrative and connection was deemed important in attempts to imbue the object with the personal and offer something bespoke based on simple data sets. The work would address the question of how it might be possible to use relatively cursory data to give a sense of narrative and belonging? A creative strategy to achieve this emerged through the review of the current graduate show at Sheffield Hallam University entitled 'I Am'. The possibility to expand this concept by using potential connections between the objects would also allow some notion that all of the objects represent a memory of the whole year group of graduates. To explore this expansion of meaning it was determined that there be consideration for the collective sum of all the objects reflecting the student body in a form of sculpture that could expand the "I Am" concept to "We Are".

Encoding

To explore possible systems of encoding and translating data into a visual form the test data encoded was limited to name, year of graduation, university, course name and student name. The data should influence the form in a way that would create cohesion but also some difference and individuality, aesthetically the students were exploring visuals that allowed for enough variation but not so much as to make the objects seem unrelated from person to person.

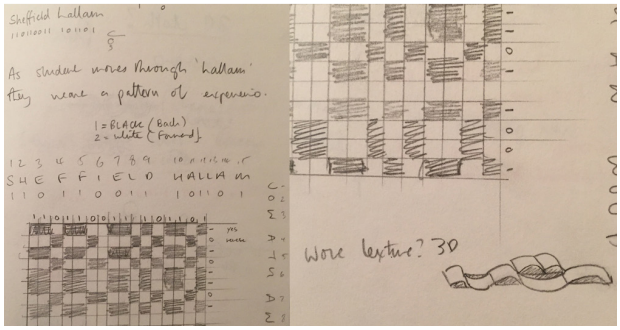

Fig.2. Sketches of ideas for encoding words

The students explored possible systems to encode text in visual patterns as a means to then translating these systems into a 3D printed object. Aspects of the challenge were referred to as the politics of pattern, this involved the ability to encode and decode information and how a given system allowed economy of space and efficiency.

New and existing systems of encoding characters as numerical values, were transposed into visual representation. This allowed the student's to explore possible pattern generation from these existing systems. Starting with straightforward numerical systems of representation such as ASCII and binary the student's also explored cipher and encryption and visual systems of encoding data and words Fig. 3.

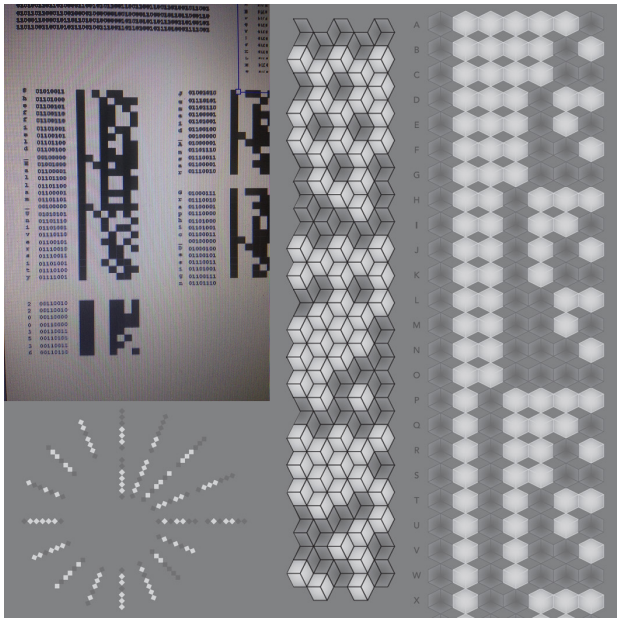

Fig.3. Visual systems of encoding data

Braille was selected as a useful seed on which to build a system that could create aesthetically varied patterns. There is an inherent materially in Braille and it is relatively efficient system of encoding and decoding alpha-numeric characters, these qualities made it an attractive system to draw upon. It seeded a number of creative possibilities for patterns that might be translated into 3D form. The six-dot grid was transposed in a number of ways to explore possible pattern generation in a range of visual outputs which can be seen in selection of samples shown in Fig. 4 through to Fig. 6.

The work explored possibilities of generating unique patterns for each graduate using the personal data as a primer for possible pattern systems, where the primer would set in motion each system resulting in unique pattern generation. Some of the patterns and systems explored were one-way, once the encoding generated a pattern it was not possible to reverse this and decode the information, this 'Hashing' of the data into a visual pattern though interesting in the output form became too abstracted from the original data. There was also discussion with Code 3D around the value in the possibility to reverse the encoding and determine the initial data, a person's data wasn't just a primer it would be embodied and could be read with the right knowledge or key.

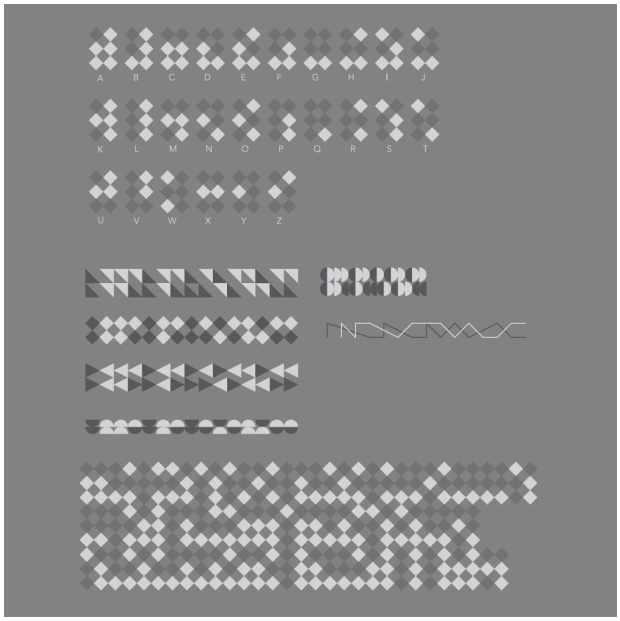

Fig.4. Exploring Braille as a basis for patterns

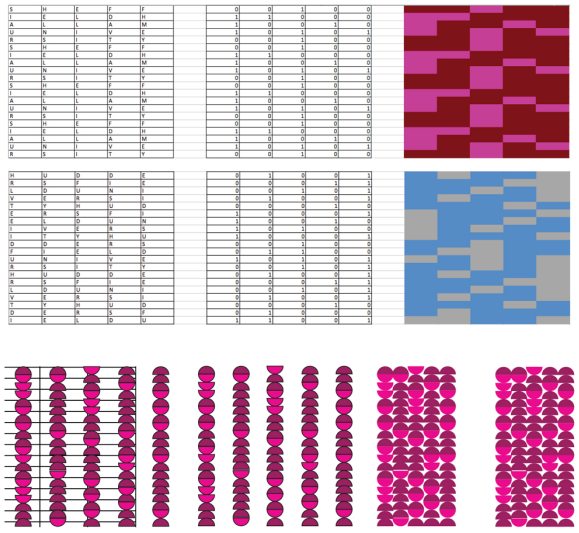

Fig 5. Patterning and encoding

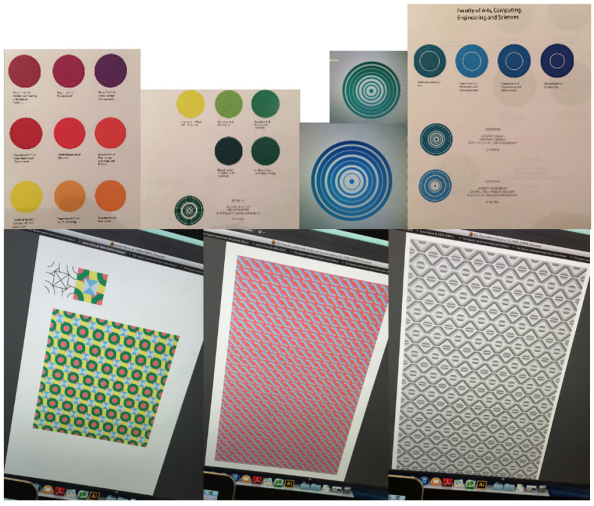

Fig 6. Pattering and encoding

A strategy for utilising the pattern work based on Braille was developed into a further system for creating 3D structures. Concepts around structures of meaning and knowledge combined with growth were used as a basis for creative ideas to develop 3D manifestations. This led on to work around crystalline structures that might represent the data sets, an early 3D sketch can be seen in Fig. 6.

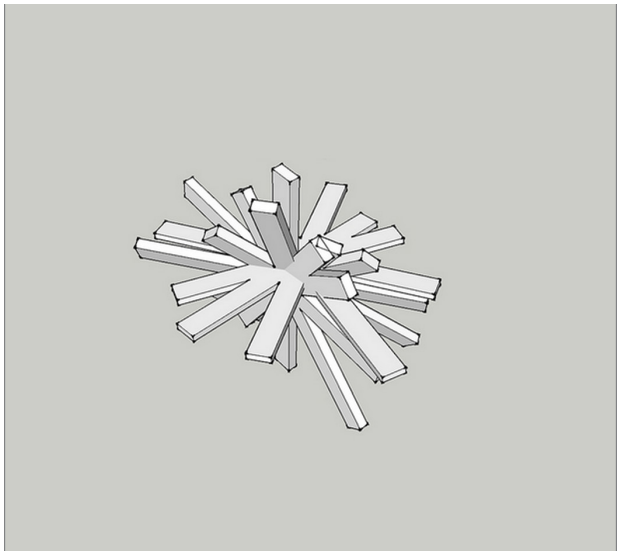

Fig 7. Early visual sketch of 3D object

The crystalline ideas were worked into notes on a system of encoding Fig. 7. The system transposed the Braille system to a linear system using radials from a central point. Each of the planes would cross on a central point to build a crystalline type structure. These notes and sketches were passed to Code 3D.

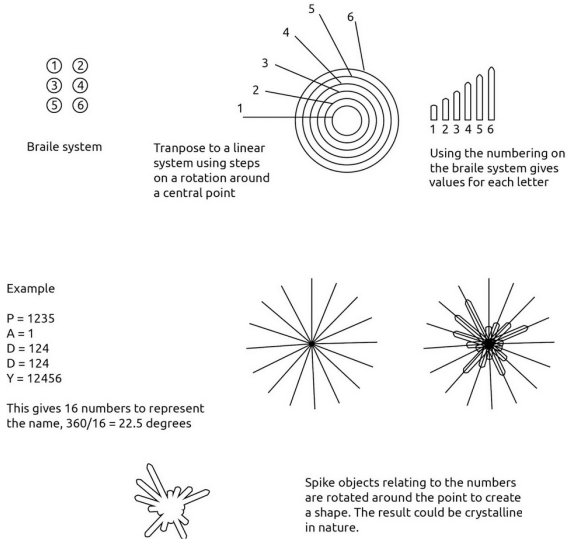

Fig 8. Notes for Code 3D on a system for creating the crystalline objects.

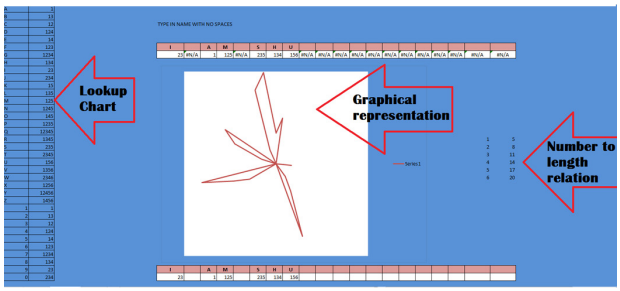

Fig 9. Tool developed by Code 3D for translating the notes into a usable system.

Code 3D used these notes to develop a tool for generating splines for use in 3D modelling, this can be seen in Fig. 8. These pieces generated from the tool and based on the initial data were then used to create 3D objects that crossed through each other. A preference for rounded forms has been suggested in those with an interdependent self-construal (Zhang et al. 2006) leading the angular shape to be refined to a more rounded form. The rounded form was an attempt to realise a shape that reflected an interdependent self-construal that being part a university's graduating cohort might instil.

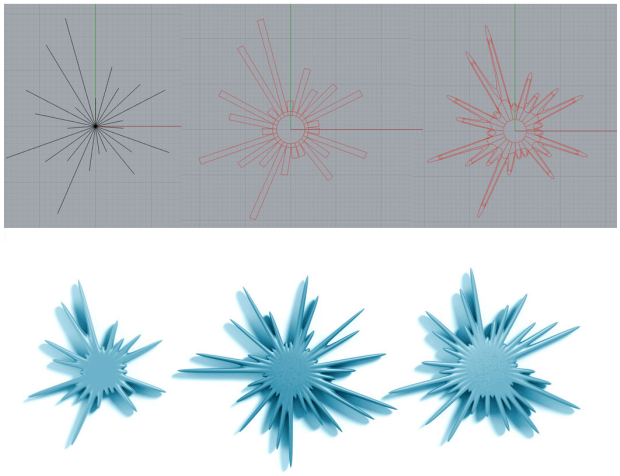

Fig. 10. Refining the shape from splines and angular form

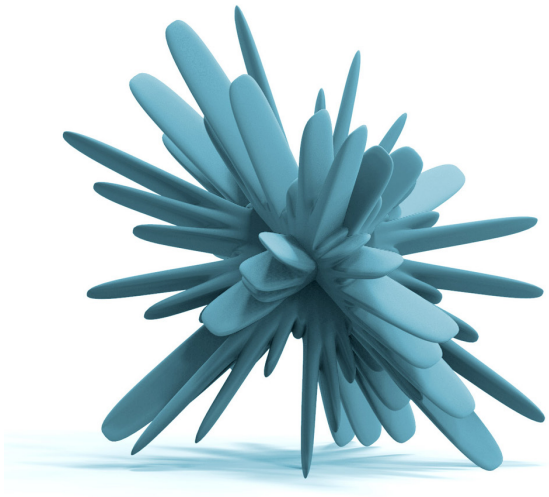

Fig 11. Final object render pre-printing

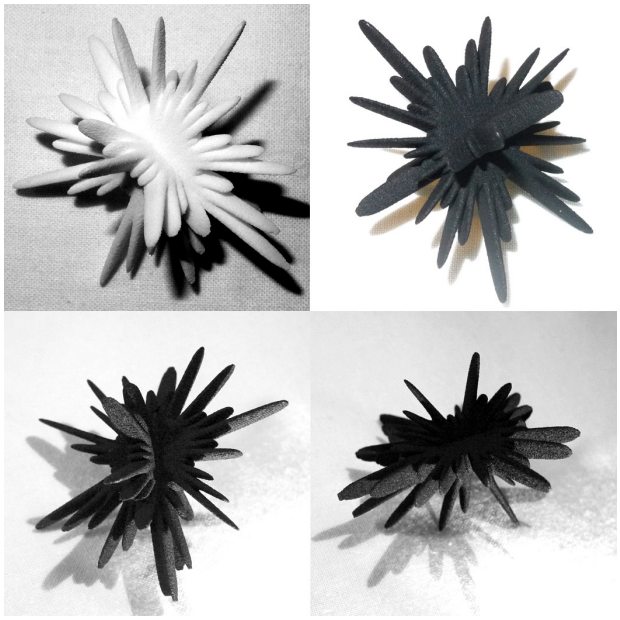

Fig. 12. 3D Printed prototypes

Collective Memory Sculpture

The objects were subsequently considered in terms of how they might form a cohesive sculpture to represent the whole graduating cohort in a particular year. Representing the larger graduate body this proposal creates a sense of collective belonging, a sense of something larger than the individual constituent parts. Suspended, the objects are together in the structure. Each one and the spaces between them become something more. They are that group of people, the spaces between them filled with experiences and connections, from one to another and everything in between reflects that group of students from one to another and the lived experiences in between. The experiences and the network of exchanges between this body of people might approximate to communicative memory as Van Dijck (2012) describes it.

This [communicative] memory belongs in the intermediary realm between individuals; it grows out of intercourse between people, and the emotions play the crucial role in its process. Love, interest, sympathy, feelings of attachment, the wish to belong, but also hatred, enmity, mistrust, pain, guilt and shame - all of these help to define our memories and provide them with a horizon. (Van Dijck 2012)

The void between objects is the spaces into which the individuals can project the communicative memory, the unseen connections and exchanges, the feelings of being connected to all of the other individuals, in the void feelings can be orientated. Out of the void the individual object allows the people to orientate themselves as something existing within a bigger structure, they can see themselves as part of the whole amongst their peers. As the students take their piece the sculpture dissolves/dissipates but each part for it's owner becomes a representation of the whole. They were once a part of something, the object embodies them and that sense of that which they belonged to.

Here we find the structure of Freud's description of the genesis of the fetish: a part of the body is substituted for the whole, or an object is substituted for a part, until finally, and inversely, the whole body can become object, substituting for the whole. (Stewart 1984: 135)

The sculpture can be seen as a collection of commodities, mass printed objects. However, in the each object/commodity is encoded the information about each graduate, but more than this, the personalisation represents the potential embodied in it: the potential of the object to become a memory object. In the act of exchange when the object transforms from commodity to a possession and then from possession to a memento. Jarman (1998) posits the transition of an artefact from manufactured state to symbolic relic as one that follows a pathway from commoditisation to singularisation, in which the act of purchase and transfer of possession transfers the artefact from commodity into an inalienable object. Each object becomes a possession, something knowable and personal in the embodiment of personal information and in the transfer to personal memento.

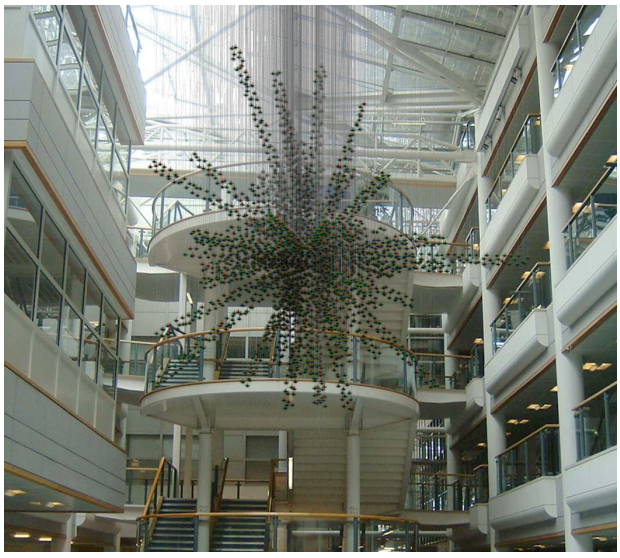

Fig. 13. Render of sculpture

Conclusion

The final object embodies some personal data about the graduate whilst connecting them to a wider body of students in the sculpture. Whilst the data used is relatively simple, it can be said that each resulting object will have a unique form based on this data. The uniqueness reflects the individual students and their sense of identity, the placing within a sculpture and the cohesion of aesthetic connects the students to each other. This is their object, within their year group, when this moment has passed it seeks to be a reminder to them of their place within that body of graduates. An object onto which they can project memories of that time.

Looking forward to a second phase of this project the resource of ideas and experimentation built from this phase of this work will form the basis for further exploration. This will include some evaluation of form and aesthetic output in terms of the object, this needs to take place before an iterative process of refinement can happen. Whilst it has some meaning in terms of the personal data ultimately it must be a desirable object. The strategies of encoding data in a 3D form can be explored further, in particular in up-scaling the quantity of data used if an appropriate data gather tool or system is developed.

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