

## **ENGINEERING NARRATIVES**

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### **ABSTRACT**

How might we *engineer* narrative strategies within design education to enable future change? Using language effectively, particularly within the contexts of narrative storytelling, is a critical tool to aid design thinking. Narrative theory affects design, architecture, art, management, cognitive psychology, computing, and the games industry, and rarely engineering. Narrative may be dominated by design disciplines valuing the visual data driven output over narrative thinking. Barthes refers to this visual dependency as the *tyranny of the visual*, and, we could add, the tyranny of data driven design. Narrative thinking may be constrained by academic writing, or confined by technical terminology native to that discipline. Whilst images may pretend to project a reality, Forty reminds us that language is about keeping that reality at bay, or as Saussure describes, *in language there is only difference*. This paper describes three narrative strategies involving the disciplines of Architecture, English and Interior & Environmental Design in Scotland, USA and Netherlands. The workshops explore **narrative making**, and the link between image and object; **virtual & cultural narratives**, simulating client designer relationships, and **ekphrastic narratives**, exploring the interrelationships between the poetic and the spatial. The authors speculate on the transferable potential to engineering, product and non visual educators, and particularly how narrative strategies could transform disciplines, improve client engagement and impact upon international academic exchange.

*Keywords: Narratives, Ekphrasis, Language, Storytelling, Ambiguity, Risk*

### **1 INTRODUCTION**

Narrative reflects an inherently human capacity to be absorbed by story telling. It is concerned with interpretations, decoding and encoding of our experiences of the world, as in factual, (engineering of a bridge), or fictional, ( a novel, movie, or design concept). Narrative can cross concepts of time, demographics and cultures, and its formats include oral, textual, digital or visual. It embraces dramatic analogies of *setting, characterisation, plot, invisibility, mood* and *movement*. Factual narratives may be defined as *personal experience narratives*, whilst fictional narratives projects a different voice in which the narrator is *ontological distant*, emerging from an imaginary other world. Barthes describes such ontologically remote narrative characters as mere *paper beings*, and parallels exist between this and visionary *paper* architecture of Archigram, Archizoom, Antonio Sant'Elia and Superstudio, and fantasy engineering of Boullée, Ledoux, Piranesi, and Buckminster Fuller. Derived from the Latin word *gnarus* and the

root *ghnu*, 'to know', narrative is used in a number of specialized applications from architecture, cinema, literature, web, art, management theory and cognitive psychology. Narrative offers a means of sense making, helping articulate and externalise actual and/or imagined experiences, places and contexts to an audience and offers space for creative ambiguity, intellectual freedom, discovery, subjective thinking and scope for *ludic playfulness*. Despite its playful connotations it has hard commercial realities of management & organisational theory. Narrative through storytelling implies the past projected onto the present, but future narrative strategies could be grounded in risk enabling holistic education [5], bringing emotion and feeling directly into learner's experience achieving *connectedness* with the design discipline one studies, ones audience and stakeholders. The cognitive psychologist Bruner suggests narrative is the richest of learning experiences and can aid future thinking. The authors describe three narrative experiments between the UK, Netherlands and the USA, involving Architecture, English and Interior & Environmental Design over a three year period. Three projects are discussed; *narrative making* explores the links between images and objects using low fidelity processes, materials within a neutral venue, between Interior and Architecture and involving thirty teams of mixed year groups. *Virtual & cultural narratives* focus on the relationships between *proxy designers* and their *pseudo clients* involving Interior student teams from Dundee and Texas working simultaneously and virtually to produce *cultural prototypes* through the web and workshop [2]; *ekphrastic narratives* exploring cultural, poetic and spatial thinking between the University of Groningen in the Netherlands, and Interiors at Dundee, bring emotive making, installation and interior architecture outcomes together through interpretation, translation and transformation of poetic ekphrasis. Insights into related narrative workshops seek to underpin the paper and a conclusion offers a summary of the main observations from the authors on the value of narrative to design thinking to visual design thinking.

## 2 DESIGN, NARRATIVES & CULTURE

IDEO uses narrative storytelling, improvisational scenarios and experience prototyping in projects as diverse as social mobiles SoMo, to designing an underwater ROV. The engineer, architect and sculptor, Santiago Calatrava, uses body narratives as generators for engineering of bridges, buildings and sculpture, whilst within civic space, monuments exemplify narrative storytelling strategies, such as Maya Lin's [1] Civil Rights Memorial in Alabama, or the Vietnam WAR Memorial in Washington. Recently, US engineering schools have explored narrative writing, mapping and dance & physics. Asymptote architects applied cultural narrative thinking to the flagship store for the Brazilian fashion designer Carlos Miele, [3] describing this as, '*the architectural environment as a spatial narrative, centred on an abstracted reading of what constitutes Brazilian culture.*' The authors speculate how cultural narratives, as such, could transfer into engineering and civic contexts, particularly where issues of site are culturally significant, politically sensitive, or which illicit strong public opinion or resistance to design initiatives. Cultural narratives can also give expression to reemerging national identities. Mackovesc's designs for the Hungarian expo, and MONARC'S for the Finnish pavillions at Sevilla in 1992, give concrete expression within the commercial realities of a world fair, linking built form to historical and mythical contexts of Magyar and Finnish identity and independence. Designs for Edinburgh's National Museum for Scotland and Dublin's National Gallery of Ireland each represent narrative affecting form, function, identity and spatial experience,

translating Scots identity and James Joyce's novel *Ulysses* respectively. Narrative offers a creative bridge to disparate disciplinary fields: between poetry and the science of animal husbandry. Husbandry stems from the Old Norse for 'house', and 'bandi' refers to 'dwelling', and Wood's research into poetry draws architectural analogies on the creation of poetry to that of building of a house[4]. In written narratives, the author is mute, yet the reader *hears* the unfolding story through imagined singular or multiple characters voices. Narrative is embedded in architectural, literary and philosophical development, from the writings of Italo Calvino's *Invisible Cities*, (exploring imagination and the imaginable through the descriptions of cities by the narrator); to Gaius Plinius, (in which, through his numerous letters, describes to the reader, the now lost villa at Laurentium); to Bachelard's *The Poetics of Space*, (exploring the philosophical and phenomenological narratives of inhabitation); to Tschumi's theoretical investigation of the city, in *Manhattan Transcripts*, (using photographs and projections to describe spaces and indicate the movement of protagonists within a fictional narrative); to Libeskind's *Jewish Museum, Berlin* and the *Imperial War Museum of the North*, expressing in concrete terms and steel form, evocative narratives of warfare, identity and loss. Douglas Darden's *Oxygen House* explores the interrelationship of literature, archetypes, fiction and dwelling through spatial narratives signifying home as a place saturated with anxiety, not *home-sweet-home* [6]. Darden 'draws' out, (in architectural terms), a parallel text from William Faulkner's 'As I Lay Dying', creating what Darden describes as, "an oblique equivalent to the story's effects in the configuration of architectural space...the impetus for the project came out of my attraction for literary maps...to accompany works of fiction, such as Tolkien's *The Lord of The Rings*..". Significantly, Darden's client – on which the building is based, is entirely fictional and reliant on narrative for its *form, plot, sub texts* and *con-texts*. Similarly, the fabrication of the Celtic bard Ossian's, is equally fictitious, emerging from James Macpherson's 1760 publication *Fragments of Ancient Poetry*, and has been the narrative focus of the international artist Callum Colvin [8], in which the line between possible fact and potential fiction remains obscured but celebrated in all its subjectivity and bias. How might this narrative engagement influence engineering and product thinking in the future? How might these examples offer alternatives to analytical responses to engineering briefs, issues of site, history, or context?

### **3 CASE STUDY 1 EKPHRASTIC NARRATIVES**

Ekphrasis comes from the Greek *ek* out + *phrasis* speaking and is concerned with translation, transformation and the dramatic description of a building, inanimate objects, event, or other work of art in writing. The literal meaning of the word is 'expression' and in modern contexts refers to a graphic, poetic or painting work. It was used in Classical Greece, where rhetoric conveyed the *essence* of objects, places, heroes or events (often mythical), so that an audience could visualise it subjectively. Whilst there are philosophical connections to Plato's ideal mathematical forms and poesis, (emotive making), it is Homer's *Illiad*, describing Achilles' mythical shield which exemplifies ekphrasis. Later, writers sought to use ekphrasis to describe the visual, (a process perhaps not dissimilar to verbalising the visual within design); Poetry expressed the essence of painting, and painting gave visual form to poetry [9]. ***Ekphrastic narratives*** workshops between the Word & Image department at University of Groningen and Interiors at Dundee relate ekphrasis directly to interior architecture studies. Initiated by the artist Brigid Collins [20], ***ekphrastic narratives*** explores the relationships of poetry, cultural identity and spatial thinking to interior architectural practice. Poetry, rather than

*brief*, is the theoretical trigger. Twenty students work in teams of four within the design studio over an eight week time frame. The project occurs in three distinct stages; an analysis of poetic structure, terminology, format, meter and rhyme is presented in a lecture illustrating ekphrasis in poetry, painting and installation. Teams are given a contemporary Scottish poem and translate this into a sculptural expression of the poem. The second stage sees new teams formed with new poems provided working at increased scale and complexity with installations in a public setting. The third stage sees students working independently in translating these early stages into interior architecture designs for a poet in residence in a real site on the university campus. This workshop proved very popular with students who seek more intellectually stimulating scope in their discipline. It illustrates how experimentation can merge with core disciplinary skills, (e.g. shifting from poetic and fuzzy, to unambiguous and deeply focused interior architecture). It exposes rather restrictive use of the word to visual disciplines, offering a dynamic alternative to engage with narrative and language. It brings in critical themes of cultural identity and narrative thinking, and offers considerable scope for international academic exchange, and blends workshop, design studio, team & independent study into intellectual focus.

#### **4 CASE STUDY 2 NARRATIVE MAKING**

The capacity for translation and transformation through narrative making became the concept for a collaborative project between Interiors and Architecture at Dundee. Over the last few years, 1<sup>st</sup> and 2<sup>nd</sup> year Interior students have merged with 2<sup>nd</sup> and 4<sup>th</sup> year Architecture, to form thirty three teams, (of 6 students per team), to produce objects in structural cardboard, reflecting themes of ekphrasis. The project occurs within a neutral space over an intense week. The conceptual focus for the project has been the *decoding* of 2D watercolours from an international exhibition of CR Mackintosh. Decoding the paintings includes formal analytical and rational research but includes more fuzzy, intuitive and instinctive re-readings. In recent years, architectural illustrations, rather than watercolours, of Le Corbusier, Allsop and Zaha Hadid have been used. Teams visited the national gallery in Edinburgh to view the CR Mackintosh works in-situ and receive a presentation from the curator. The process continues by gradually *encoding* their responses to the artwork within a 'functional' 3D objects for sitting in. Significantly, the workshop is flexible enough to adapt to a wide range of images, contexts, disciplines though large interdisciplinary groups create logistical problems of access, space and monitoring. Narrative making here offers a suitably neutral and conceptual framework in which to re-evaluate disciplinary identity, experience group working, re-frame attitudes to briefs and outcomes, extend creative thinking, work using low fidelity resources but with high fidelity thinking, explore issues of creative ownership, and challenge conventional responses to the visual. Assessment takes place in the fifth and final day involving staff from Architecture and Interiors. Students have to bring a new narrative perspective into their presentation in front of 216 students and up to 8 staff in the neutral studio / exhibition space. The project exposes considerable problems in overseeing progress, plus logistical problems and access to the faculty workshop remain difficult to overcome, however, the energy, enthusiasm and focus of the teams is very high, and expectations – which at the start were modestly focused, reveal how effective team working can be given a neutral space and equally neutral project brief.

## 5 CASE STUDY 3 VIRTUAL & CULTURAL NARRATIVE

This describes a collaborative experiment between Interior Design departments at University of North Texas and University of Dundee which combines textual, digital, and workshop activities. The project explores virtual & cultural narratives between two independently minded cultures, Scottish and Texan. This three week project matched interior students in twenty teams of two, (one Texan, one Dundee). The project simulates the tensions, misunderstandings and conflicts which can emerge between designers and clients, and occurs in the studio, workshop, whilst the web is the principal access point. Students continually enacted roles of *proxy designer* and / or *pseudo client*, agreeing which role the other would play, seeking through the designing and questions, (not space), to establish a cultural perspective of their *pseudo client* culminating in a 3D cultural profile object, presented on the final day of the project on a virtual conference space. The project challenged assumptions of how digital technologies ought to impact upon design learning by incorporating software, such as email, instant messenger and texting, rather than AutoCAD and MAX, shifting from social to focussed IT usage, and reflecting recent research on social issues of *tethering* and *precense* in mobile technologies [12]. Creative authorship of the final 3d cultural profile rested with both client and designer, and provokes learners to understand the role of the 'other' in its creation. Critical thinking, risk and uncertainty echo Obeng's design paradigm of FOG thinking [10], whilst the improvisational ethos of IDEO's method designing [11] proved influential. Conflict in teams exposed distinct cultural, attitudinal and time differences, threatening to paralyse or energise creativity exchange. In enacting roles, designers were reminded of design as performers communicating ideas to others. Individuals quickly identified that questions to their *pseudo clients* could be manipulated and that responses meant recognising what was not read, (texted or emailed), and what is omitted from conversation can be as important as what is said. Recent enhancement conferences describe today's learners as fluent digital natives, [13], but given the diversity of learner's today is this assumption true? Narrative provokes visual learners to re-evaluate their connection with language, the 'other', and technology. We also speculate whether digital natives in a digitised campus will simply conform to a predominately visual, rather than multi modal future [14]: narrative, like multi modal design, offers multiple perspectives. The project allowed us to contemplate the metaphorical space between the overtly digital and physical world, beyond mere prosaic software delivery in the CAD suite. Indeed, it reflects Thackera [17] and Castells [15] speculation that we are moving from an age of recognisable *spaces of places*, (e.g. home, work, university), to spaces of virtual flows, of dematerialized and cybrid contexts affecting the behaviours we exhibit privately and publicly [16], to the factual realities of sinister fictions within chat line grooming. Improvising with difficult situations is mirrored in the optimal tension zones described in gestalt psychology theories, [18], and is used when learner's (and staff) take a leap of faith outside the comfort zones of their disciplines, and allows learners to embrace risk and play. The cultural perspectives of this project echo the open ended *cultural probes* designed in the Equator Project [19]. Whilst this digital / spatial theme is convenient for architecture and interiors, how useful is this project to the engineering community? The task revealed student's ability to design and *encode* questions to their clients which are then *decoded* through analysis and intuition. Exchanging facial characteristics were forbidden, but visual memorabilia could be exchanged allowing a creative decoding to occur. Ideas were brought into existence gradually through dialogue and exchange – often quite intense, yet for others, communication was difficult.

## 6 CONCLUSIONS

Narrative offers a means of sense making. Strategies can be explored through theory, design studio, workshops and the digital domain. Narrative enables risk and embraces group, independent and play ethic, and can compliment existing modes of learning. Narrative is being used across a wide range of disciplines and contexts in the creative and management world. It also allows new thinking on how theory and writing may be blended with visual disciplines. It can be a vehicle for exploration of designer and clients; physical spaces and digital places; being 'in' education but looking 'outside' to the real world; reading what's written; material and de-materialised objects and contexts. Cultural narratives offer educators opportunities for international exchange.

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