

"Virtually An Alternative? The Medium, The Message and The User Experience; Collective Agency in Digital Spaces and Embodied Social Change"

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Introduction

This paper begins to look at the digital realm as an alternative space of self-organization; one where communities, collective agency and social change are in a co-evolving feedback loop - *by design*. The author firstly sets out why we require new methodology to understand human agency in digital space and then outlines a methodological basis from which to address the topic, based on the commercial practices of 'user experience' (UX) design. By looking at examples, she then goes on to demonstrate how UX design parameters are often subverted in the social use of digital spaces, giving rise to a type of collective agency that would have conventionally been understood in media theory as 'aberrant decoding'. However, she argues that collective agency in digital space is better understood as a type of 'human noise', a bi-product of the medium of transmission, as it is as often as undesirable as it is beneficial. She concludes that in digital space, 'user experience' is a part of a converged medium/message/effect transaction and proposes we must design responsibly for this, in the knowledge that engagement with the message, via this medium, *will* result in embodied social change.

The Medium is The Message

"It's inevitable that the whirl-pool of electronic information movement will toss us all about like corks on a stormy sea, but if we keep our cool during the descent into the maelstrom, studying the process as it happens... we can get through"¹.

In "Understanding Media: The Extensions of Man", published in 1964, Marshall McLuhan proposes that a medium itself, not the content it carries, should be the focus of study. He said that a medium affects the society in which it plays a role, not only by the content delivered over the medium, *but also by the characteristics of the medium itself*.

This is a type of technological determinism that has little precedent in the humanities; traditionally a research tradition that has been reluctant to recognize any *technology-led* theory of social change. Whilst media and cultural studies have naturally relied on models developed from other Humanities subjects such as anthropology, linguistics and sociology, technological determinism itself has been described as 'reductionist' in that it presumes that a society's technology drives the development of its social structure and cultural value. This of course, is a polarized position that conveniently overlooks the fact

¹ McLuhan, M., "Understanding Media: The Extensions of Man, Palgrave 1995

that people gave rise to the technology in the first place and that media is necessarily technological and socio-cultural.

We can see that there must be some grounds for further investigation of the concept of technological determinism from simple statements such as '[the computer would transform] world society at all levels'².

Furthermore, it is clear through our own experiences that there is some significant relationship not only between technology and society but also between media technology and cultural effects. For example, there is much data that demonstrates that successful advertising campaigns increase sales, yet

'As practice leads theory through the sheer velocity of technological change, experience outstrips theoretical understanding of the relationship between the sign and the signified, the simulation and the social, the model and the real'³.

By struggling to maintain divisions between the mind and the body, the technological and the social, media and its effects, we are simply falling into a Cartesian void⁴, into which the bulk of media theory has fallen over the last hundred years. We struggle to understand the relationship between media and behaviour as we struggle to understand the *interaction* between the conceptual (non material) and the physical (material). Inherited from the French Enlightenment, there are no solid precedents in the Western tradition for understanding the authorial intention of the media as an intentional impact upon our experience. In media and cultural studies, any notion of the causality of images is artificially arrested at Frazer's Golden Bough⁵ as a form of 'semiotic fallacy', 'a misjudgment of the pragmatic effect of signs and their effects' or at best, like religion and law, 'semiotic therapy'⁶.

However, when making any sort of product, the materials, tools and techniques inevitably impact upon the form of the result and the experience of whoever uses it; in fact, the authorial intent and thus the experience of use, is shaped *in interaction with the material*. Mass media production was constrained by linear editing tools, one film clip following another to create a message, and centralised broadcast models, the word 'broadcast' in itself meaning to spread a single message from a central source across a broad audience. The models of production were 'waterfall' and top down' (Fig.1). 'Waterfall' means to work in a linear manner towards a huge deliverable, and is common in print, film and TV production where huge teams work towards massively expensive complete products and a fixed release date. 'Top down' means where a centralised team, funded by a production company, advertisers or sponsors etc., make a linear product for a mass audience.

² Evans 1979, cited in Robins & Webster 1989, p. 24 <http://www.aber.ac.uk/media/Documents/tecdet/tcet02.html>

³ Cham, K.L., 2008 'Reality Jamming; Beyond Complex Causality in Mediated Systems'; ISEA 08, Singapore <http://www.isea2008singapore.org/abstract/i-1/p338.html>

⁴ Cham, K.L., 2008 'Reality Jamming; Beyond Complex Causality in Mediated Systems'; ISEA 08, Singapore <http://www.isea2008singapore.org/abstract/i-1/p338.html>

⁵ Frazer, J.G., 1922 *The Golden Bough: A Study in Magic and Religion*

⁶ Noth, W., 1990 *Handbook of Semiotics (Advances in Semiotics)*, Indiana University Press

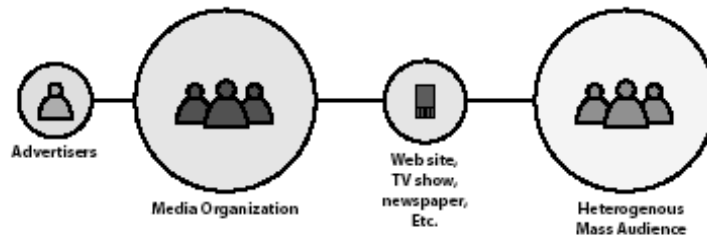


Fig 1 traditional top down model of news generation, distribution and consumption (Bowman & Willis)

This is conventionally a single Director's vision of a subject, manifest in many established genres but perhaps most obviously in documentary style programmes such as the recent ". Here, the UK's Channel 4 promised the show "reveals the reality of life on benefits", yet they were soon mired in controversy, with critics labelling it "poverty porn", as it polarised opinion between those who 'believed it victimised people on benefits' and those who claimed it "highlighted the flaws in the welfare state"⁷.

One resident asked BBC Radio 4's Today programme why working people who were filmed extensively had been cut from the final edit, including the intended whole sixth episode. A local Pastor joined the debate, incensed at how the production had impacted upon the community that were its subject, angry that they, Channel 4, had "to allow them to speak on their own terms".

In design terms, any linear edit of mass media content is a heavily constructed message and necessarily reflects the Director's/Editor's view of the subject matter that is then distributed to 'the masses'. Of course, even though in 'top down' media production unpredictable behaviours emerge, we are only looking to account for a degree of technological determinism. Umberto Eco used the term 'aberrant decoding'⁸ to describe such behaviour; where [a cultural artefact read as a 'text'] is 'decoded' by means of a different code from that used to 'encode' it. Stuart Hall suggested three positions for interpretation of cultural texts; 'dominant', 'negotiated' and 'oppositional'⁹. As part of "Reception Theory" these concepts emphasise the reception of a text and focus our attention on the scope for interpretation on the part of the audience, highlighting that any message is not simply passively accepted but interpreted on the basis of individual cultural background and life experiences. It is clear from common experience that free will plays a dynamic part in interpretive processes; we cannot define an entirely deterministic 'cause and effect' between images and

⁷ <http://www.theguardian.com/media/2014/jan/17/benefits-street-victorian-freak-show> Accessed 19th March 2014

behaviour because human beings can make choices. Unfortunately this point has stymied most of the 'media effects debate' by anchoring our behaviours on Raymond Williams' theory of 'human agency'⁸, or free will, where authorial intent is recognised as having no role in effect as it is a technologically deterministic position and therefore refuted outright.

It is in the work of Jean-Francois Lyotard⁹ that we find one of the few useful concepts that transfer from mass media theory to digital media practice, that helps shed light on the relationship between intention and effect in media production. Lyotard recognises a realm of the symbolic, between the imaginary and the real; a realm of signs that is transitory space where the imaginary manifests into the real, as in the creative or communicative process. Whilst supporting the basic notion of symbolic interactionism, Lyotard's concept fails in one key aspect: there is no feedback loop; the imaginary can become real but the real cannot become imaginary, so whilst it may be difficult to imagine something real evaporating absolutely into ideas, there is no accounting for any interplay between the two nor the role that the symbolic might play in these dynamics.

Even in sociological theory, which we may instinctively assume could help us understand social media behaviour, social interactionism fails as it doesn't account for the reality of the symbolic in itself; it assumes that representations are accurate representations of an *a priori* reality, something we all know is a core erroneous assumption online. We risk unpredictable outcomes when we assume we know what digital media is and how we should use it, without an understanding of its technological form and how that will impact upon us.

Yet 'Benefits Street' was a mass media product that was released into a digital media culture; social networks and viral messages manifesting the interpretations and impact of the content far and wide. As many traditional theories are based on the belief that people always make rational decisions and represent themselves authentically, it has been difficult to demonstrate causal links between images and effects, yet here, web metrics methodologies, that analyse and quantify digital activity, could not only track the evolution of the whole relationship, the signs, signifieds and *semiosis in extremis* around this 'communications event'¹⁰, but print it out in pie charts. Here, digital media afforded the subjects and their viewers an alternative site of collective agency that the programme makers had not anticipated.

The digital realm is also often consciously used as an alternative space for collective agency. Here, the social activity generates the media, rather than vice versa as above, and there is a recent, yet solid body of research that addresses the digital realm as an alternative place/space for communities, collective agency and social change as part of huge political events such as those of the Arab Spring¹¹. The digital comes into its own and as a place/space where 'transcendental self-organizing political projects that have alternative goals'

⁸ Green, A., 2007 'Cultural History (Theory and History)', Palgrave Macmillan

⁹ Lyotard, J. F., 1979, 'The Postmodern Condition: A Report on Knowledge', Manchester University Press

¹⁰ Qvortup, Lars., 2006 "Understanding New Digital Media." *European Journal of Communication* 21.3: 345-356.

¹¹ The Agonistic Social Media: Cyberspace in the Formation of Dissent and Consolidation of State Power in Postelection Iran http://www.tandfonline.com/doi/abs/10.1080/10714421.2011.597240#.UpND_BZH-II

can take a hold, as digital media communications are not 'top down'; the internet offers a decentralized peer-to-peer network where users can self represent and self organize, and the digital has been recognized as a 'dynamic socio-technical system'¹² in itself.

Defining the Medium

There has been much debate in the arts and humanities as to whether 'digital media' is in any way 'new media' or not; and if it is new, how it is new and why that newness might matter. To be specific, digital media is actually 'digitally interactive' media and it is this type of interactivity that is explicitly new, although many commentators confuse it with interpretation to argue its lack of importance. For our purposes here the working definition of interactivity is from Simon Penny: 'a machine system which reacts in the moment by virtue of automated reasoning based on data from its sensory apparatus'¹³.

There are many commentators that demonstrate what is contentious about the topic of digitally interactive media such as Lev Manovich's conviction that digitally interactive media is 'not important as a medium' and that interactivity is a 'myth' stating only a 'basic fact about computer media'¹⁴ or Gansing stating it is 'not ..describing any specific functionality of digital media' but is rather 'cultural rhetoric'¹⁵ to Lowgren & Stolterman's assertion that digital media is 'a material without qualities'¹⁶

However, what is immediately and significantly different and important in digitally interactive media, is its provision of some dynamic form of media interface to a text, or the component parts of a text, such as symbol, metaphor and narrative'¹⁷. Thus, multiple 'authors' and multiple 'readers' of a digitally interactive 'text', often participate in a simultaneous and instantaneous reproduction and dissemination of their multiple interpretations of an artifact as part of a networked participatory process'¹⁸. Such an activity demonstrates that the digital interactivity of media is not 'unimportant as a medium', a 'myth' or 'cultural rhetoric' and is certainly a hugely significant, and new, quality of a material.

For example, to the traditional media organizations, the 'democratization of production'¹⁹ that digital media has afforded has been a huge cause for concern, as they now find themselves lost in a 'global miasma of competing perspectives'²⁰. Such a shift demonstrates in practice, the theoretical difference

¹² Fuchs, C., 2011, 'Internet and Society: Social Theory in the Information Age', Routledge

¹³ Penny, S., 1996, 'The Emerging Aesthetics of Interactive Art' Leonardo Electronic Almanac

¹⁴ Manovich, L., 2001, The Language Of New Media, MIT Press, London

¹⁵ Gansing, K., 2003, 'The Myth of Interactivity or the Interactive Myth?: Interactive Film as an Imaginary Genre' Fine Art Forum (Vol 17, Issue 8) August 2003 ISSN: 1442 4894

¹⁶ Lowgren & Stolterman, 2007 Thoughtful Interaction Design: A Design Perspective on Information Technology, MIT Press

¹⁷ Cham, Karen (2007). Reconstruction Theory, Designing the Space of Possibility in Complex Media. International Journal of Performance Arts and Digital Media, 3(2-3) pp. 253-267.

¹⁸ Cham, Karen (2007). Reconstruction Theory, Designing the Space of Possibility in Complex Media. International Journal of Performance Arts and Digital Media, 3(2-3) pp. 253-267.

¹⁹ McLuhan, M., "Understanding Media: The Extensions of Man, Palgrave 1995

²⁰ Cham, Karen (2007). Reconstruction Theory, Designing the Space of Possibility in Complex Media. International Journal of Performance Arts and Digital Media, 3(2-3) pp. 253-267.

in top down modes of production, dissemination and consumption, to non linear, interactive modes 'where the meaning *emerges* from the *interaction* between people and the text'²¹. In order to address interaction it is necessary to address relationships and it is Systems Theory that offers an holistic approach to analysis focusing upon interaction and relationships.

'Systems thinking' is a dialectical method that breaks with logical analyses to emphasize relationships and interactions. It can be traced from Socrates through Hegel to pragmatics^{17 22} and is applied as a trans-disciplinary methodology. It is used most often for understanding 'systems' such as the climate, software and organisations in terms of their interrelated components (structures) that cooperate in processes behavior and is a way of thinking rather than a specific set of rules.

Systems Theory has given rise to 'complex systems theory', whereby a system demonstrates specific capacities of 'complexity' such as 'self organization' and 'emergence'. The study of complex systems is very interdisciplinary and thus encompasses more than one theoretical framework, so there is no single unified Theory of Complexity, but several different theories have arisen concurrently. Whilst key ideas of complexity theory developed through artificial intelligence and robotics research, other important contributions came from thermodynamics, biology, sociology, physics, economics and law. For our purpose here, "complex systems" are systems that are diverse and made up of multiple interdependent elements, that are often 'adaptive', in that they have the capacity to change and learn from... and can be understood as emerging from the interaction of autonomous agents — especially people.²³ Finally, it is worth noting that the components of a complex system are often themselves complex systems; a 'fractal' type characteristic which is known as 'nested complex systems'.

A digitally interactive environment such as the world wide web, clearly demonstrates all the key aspects of a complex system. Indeed, it has already been described as a 'complexity machine'²⁴. When expanded to the pragmatic effects of the consumption of media images, this approach allows us to perceive the 'emerging media eco-system' as a complex adaptive system in play; forcing our understanding of interactivity per se, as 'the terms art, design and media converge into a process driven, performative event that demonstrates emergence through autopoietic processes'.²⁵ In his seminal paper 'The Work of Art in the Age of Mechanical reproduction', Walter Benjamin states that photography accelerated pictorial reproduction to the speed of speech.²⁶ It has previously been proposed by the author that 'the digital interaction of

²¹ Cham, Karen (2007). Reconstruction Theory, Designing the Space of Possibility in Complex Media. International Journal of Performance Arts and Digital Media, 3(2-3) pp. 253–267.

²² Cham, Karen (2007). Reconstruction Theory, Designing the Space of Possibility in Complex Media. International Journal of Performance Arts and Digital Media, 3(2-3) pp. 253–267.

²³ Cham, K.L. & Johnson, J., (2007) 'Complexity theory; a science of cultural systems', M/C Journal, 'complex' Volume 10, Issue 3 Jun. 2007 Edited by Jayde Cahir and Sarah James <http://journal.media-culture.org.au/0706/08-cham-johnson.php>

²⁴ Qvortup, Lars., 2006 "Understanding New Digital Media." *European Journal of Communication* 21.3: 345-356.

²⁵ Cham, Karen (2007). Reconstruction Theory, Designing the Space of Possibility in Complex Media. International Journal of Performance Arts and Digital Media, 3(2-3) pp. 253–267.

²⁶ Benjamin, 2008, *The Work of Art in the Age of Mechanical Reproduction*, Penguin

computerized communications technology has accelerated that utterance to the speed of *discourse*; the primary complex system of human communication.’²⁷

It is online that communities, collective agency and social change can be *observed* as being in a co-evolving feedback loop as a result of some form of design mechanic, even if that is only the simple node and network system of internet computing. The role that design plays in online community agency is the topic of much debate and rightly so, yet tellingly it is very often not recognized as design. If we are to make any headway whatsoever in understanding what we are doing in digital spaces/places, we can and must understand online behaviours as engineered to an extent by the virtual space/place *design* and the relationship it has to communities, collective agency and social change. This is a methodological approach therefore that is similar to symbolic interactionism²⁸, but that is anchored on new design methods in commercial digital media practice.

In this new methodological context, varying degrees of community, collective agency and social change can be perceived as the ‘emergent behaviours’ of the design mechanics of the networked mediated space/place. This is essentially a field-interactional perspective¹ of community as a dynamic process of social interaction and purposive action, yet one that accounts for a designed and mediated place/space as a significant part of that symbolic interactive system. The recent work of Ira Livingston sets out this notion of an ‘autopoiesis’ or ‘self-making’ capacity for language based systems. Livingston’s ‘autopoetics’ or ‘the convergence of words and things’ is based on the proposition that a language-based system is ‘of the world, like galaxies and ecosystems...it participates in what it represents’²⁹A complex notion of language systems accounts for emergent behaviours rather than simply emergent interpretations, immediately crossing the Cartesian void between design and behaviour.

‘Furthermore, it appears that some type of autopoiesis is at play here across that void; not only that language systems and behaviour patterns are complex systems themselves, and part of the complex nested system of culture in dynamic, interactive relation, but that they are equally ‘real.’ In this realm of autopoetics, signification is best understood as a dynamic intermediate realm between the real and the conceptual; an interactive interface to the real, which can best be understood as a realm of invocation; all representational systems have a performative capacity for transformation of the real’³⁰

Designing the Message

It is important to remember that this ‘complexity machine’ has been *designed*; it is an intentional facility. The internet may display all the characteristics of

²⁷ Cham, K.L., 2011 ‘Architecture of the Image’ Electronic Visualisation in the Arts, EVA Conferences International, British Computer Society, London <http://ewic.bcs.org/category/15376>

²⁸ Charon, J.M., 2009 Symbolic Interactionism: An Introduction, an Interpretation, an Integration, Prentice Hall

²⁹ Livingston, Ira., 2005 Between Science and Literature: An Introduction to Autopoetics, University of Illinois Press

³⁰ Cham, K.L., 2008 ‘Reality Jamming; Beyond Complex Causality in Mediated Systems’; ISEA 08, Singapore <http://www.isea2008singapore.org/abstract/i-1/p338.html>

complexity but it has not emerged spontaneously itself, like a 'galaxy or an ecosystem'³¹ it was engineered. Tredinnick, for example, details the evolution of the internet through the *Memex* machine of Vannevar Bush, Ted Nelson's hypertext system *Xanadu* and Tim Berners-Lee's *Enquire*³² These works contributed to what we have today and the structure of these systems relates to the function of services they support.

In designing content for the world wide web, which is of course now accessed from a multitude of different devices including phones and televisions, the designer establishes co-ordinates to define a 'user experience' (UX) of the whole digitally interactive system. User Experience Design is about establishing and then authoring parameters that guide and delineate a performative 'autopoietic' process, across multiple touchpoints and often with diverse outcomes. These outcomes are types of 'emergent behaviours', as they are a result of a fundamental relationship between structure and function, and so are to a degree absolutely technologically determined by the design. 'We can not entirely predict complex behavior, but we can, and do, quite literally design the space of possibility within which it can arise'³³.

The International Organisation for Standardisation defines 'user experience' as 'a person's perceptions and responses that result from the use or anticipated use of a product, system or service'³⁴. UXD is a subset of the broader fields of experiential marketing and customer and/or brand experience design and is best described as 'an approach to the design of computer-related products, services and environments'³⁵. As recent advances in digital media computing technologies have moved into mobile, ubiquitous, social and tangible applications, such products, services and environments include, but are not limited to, web sites, mobile phone apps, digital television, interactive artworks, computer games, software and intelligent environments.

User experience design for such products and services is complex and as yet is a new and evolving field. Some visual communication designers do not account for UX at all, many technical developers don't have the skills to implement design concepts and yet others build user interfaces based purely on business requirements. All of this poor design practice has a negative impact on communication; a bad interface may do its job but a bad UX will mean a product or service isn't understood. For an holistic consideration of the users' experience, good UXD should aim to optimise the integration of functionality and aesthetics in digital interaction to reinforce and promote the communication goals. Digital interaction is specifically used here to refer to 'a machine system which reacts in

³¹ Livingston, Ira., 2005 *Between Science and Literature: An Introduction to Autopoetics*, University of Illinois Press

³² Tredinnick, L., 2007 "Post Structuralism, Hypertext & the World Wide Web." *Aslib* 59.2: 169-186.

³³ Cham, K.L., 2011 'Architecture of the Image' *Electronic Visualisation in the Arts*, EVA Conferences International, British Computer Society, London <http://ewic.bcs.org/category/15376>

³⁴ ISO FDIS 9241-210:2009. *Ergonomics of human system interaction - Part 210: Human-centered design for interactive systems* (formerly known as 13407). International Organization for Standardization (ISO). Switzerland

³⁵ <http://www.montparnas.com> October 10th, 2006 by Kimmy Paluch

the moment, by virtue of automated reasoning based on data from its sensory apparatus'³⁶.

Visual communications that are digitally interactive in this way are participatory, navigable in a nonlinear manner and/or open to user generated content and require different design methodologies. The author has previously proposed that designing for digital media is best approached by an integration of post structuralism and complex systems theory ³⁷. She argues that the designer must successfully integrate visual communication design, information architecture and usability by purposefully designing for semiotic autopoiesis³⁸; a fundamental dialectic between structure and function must be designed into the system and its use.

The design processes that allow us to execute such ambitious aims are established in commercial UXD practice. They anchor upon 'User Profiling' and 'User Testing', where data about the intended 'market' is understood and defined as types of people with types of needs and aims that dictate their idiosyncratic experience of the system. To define these people and their experiences of the yet to be developed system, 'User Personas' are developed, based on 'market' research that describe indicative Users, their background, interests, roles and hobbies. These indicative Personas then undertake 'User Journeys' through 'User Case Scenarios' all of which are narratives akin to the Treatment documents of a film, except of course a film is a linear narrative destined for an homogenous audience and their interpretations. In this case, end users are the multiple subjects and their experiences are the rhizomatic narrative framework that defines what will be built. The potential interpretations of the audience are the starting point for the narrative.

UXD is also an iterative process; that is, at each stage assumptions and estimations are tested against experience measures. UXD Laboratories have extensive technological equipment for measuring the user experience. Traditionally taking low tech practices from Psychology, these days every UX Lab has an eye tracker, which measures the gaze point, movement and intensity of the users gaze across a screen and many more are moving into combining this with other bio metric equipment such as heart rate monitors and caps that monitor brain wave activity. The current 'holy grail' in UXD for these methodologies is to evaluate 'emotional engagement', as when you achieve that, you can achieve changes in user behaviors, which is most often the aim.

³⁶ Penny, Simon, From A to D and back again: The emerging aesthetics of Interactive Art' Leonardo Electronic Almanac April 1996

³⁷ 2007 Cham, K.L., 'Reconstruction Theory, Designing the Space of Possibility in Complex Media'; in Special Issue: Performance & Play: Technologies of presence in performance, gaming & experience design, International Journal of Performance Arts & Digital Media, Vol 2&3: 3, Lizbeth Goodman, Deeverill, Esther MacCallum-Stewart & Alec Robertson (eds), Intellect

³⁸ Nishida, Y. The Relationship between Autopoiesis Theory and Biosemiotics: On Philosophical Suppositions as Bases for a New Information Theory. In *Proceedings of the 4th Int. Conf. Found. Inf. Sci.*, 21-24 August 2010; Sciforum Electronic Conferences Series, 2010, fis010:1-11.

Whilst this all starts to sound rather ethically dubious, its worth remembering that most UX designers are aware of systematic complex causality as they must account for it by design. This means that sustainable practice is core to good design, for example, consumers are informed, aware and engaged in the system and unethical practices such as 'dark patterns'³⁹, although currently still in use, are seen as very down-market, with no serious agency willing to compromise their quality of service to that extent in case one user notices and the bad press goes viral.

A 'dark pattern' is an interactive design mechanic that aims to intentionally mislead, like the mimicking of a trusted brand or the minimizing of the 'opt out' button. Meanwhile, most bio metrics are concerned with measuring brand loyalty across multiple platforms to test where the users emotional engagement 'drops out' to predict where the sale might fail. However, it is inevitable that within the next few years, research in this field will give rise to 'persuasion metrics' where we quantify the emotional engagement present in a system and mark it as acceptable 'nudge', consent based persuasion or unacceptably coercive. 'Nudge' is a concept from economics, political theory and the behavioral sciences, which argues that 'positive reinforcement and indirect suggestions...are more effective... in influencing decision making than direct instruction, legislation, or enforcement'. In art and design we have known for the best part of half a century that an advertising message is most effective if it is an 'open' message and leaves part of the semantics to be 'completed by the reader'.

Many examples from this field demonstrate how the design mechanics of the virtual impact upon the actual, and are perfect optics on the nature of 'trans-national, informational/networked capitalism'⁴⁰, a designed system that is itself primarily concerned with community, collective agency and social change, if only to profitable ends. It is not difficult to understand, for example, how complex digital products and services, such as multi-platform branded marketing campaigns, Massive Multi-Player Online Role Play Games (MMPORPGs) and virtual worlds, e-commerce and social media operate as co-evolving ecosystems, alternative places/spaces of organization where communities, collective agency and social change are in a self reflexive feedback loop by design. By looking at examples from current practice, we can go on to demonstrate how degrees of community, collective agency and social change in digital space/place are either/or the intentional result of design mechanics; the inadvertent result of design mechanics, or an intentional subversion of design mechanics.

Evidencing this statement could be framed in simple terms, such as the relationship between media campaigns, brand loyalty and its attendant social habits⁴¹. For example, the 'Coca Cola Oceana - a little wild' campaign promoted their 'rotational flavour' strategy and resulted in a significant market share

³⁹ Brignall, H., <http://darkpatterns.org> a Dark Pattern is a type of user interface that appears to have been carefully crafted to trick users into doing things, such as buying insurance with their purchase or signing up for recurring bills

⁴⁰ Fuchs, C., 2011, 'Internet and Society: Social Theory in the Information Age', Routledge

⁴¹ Cham, K.L., 2008 'Reality Jamming; Beyond Complex Causality in Mediated Systems'; ISEA 08, Singapore
<http://www.isea2008singapore.org/abstract/i-l/p338.html>

growth 'in just four weeks'⁴² Such campaigns have been the stock in trade of the advertising agencies for over half a century and can be understood here as top down 'nudge' strategies., where behaviour is encouraged or 'nudged' in the direction desired by the producer of the content.

More subtly, but contentiously, this is a sound methodological basis for apprehending, if not fully understanding, how the 'Caesars thumb' principal of Facebook 'likes' leads, via a complex causality⁴³, to bullying and suicides; an unintentional, though perhaps inevitable result of the core design mechanic, which, whether historically accurate or not, is a well established cultural meme⁴⁴ representing the Roman Emperor's whimsical approach to the life or death of his gladiators. It is not difficult, from a complex systems understanding of digital interactivity, to extrapolate what the field of variable outcomes might be from this core mechanic. Loss of life would be one of them.

Whilst it could be argued that a better understanding of media effects, one that accounts for 'user experience' design principles, could have predicted the example above, sometimes a choice to subvert the design of a system demonstrates the instinct to collective resistance as an inevitable part of the whole complex system. One of the earliest examples of this type of 'post-modern' resistance⁴⁵ was demonstrated most directly and on a huge scale by the faxed resistance campaign of The Face et al, in support of the Tiananmen Square uprising in 1990. Here, twenty or more major 'glossy' magazines across the globe ran a full page statement in Cantonese from the leaders of this uprising who had escaped to Paris. On the facing page, they then printed a list of Fax numbers of major Chinese businesses and asked readers to fax the political statement en masse and flood China with it. This is one of the first examples where a technologically networked mediated space/place was subverted and used for the community of readers as a site of collective agency and a will to social change.

Collective agency does not always take the form one might expect from the days of mass media; top down production would naturally generate 'bottom up' resistance. In contemporary gaming practice, for example, 'open sandbox' MMORPGs, Massive Multiplayer Online Role Play Games', that are set in an open "world", where the gamer has full access to the whole systems from start to finish, the simple elective choice of individual players to collaborate instead of compete as a survival strategy, is a very common one. Originally developed military simulation platforms, open sandbox games such as DayZ, where the player has only one life, perhaps unsurprisingly, sees much more collaboration than combat. Perhaps the 'one life' mechanic could be integrated into 'Call of Duty' or 'Grand Theft Auto' and other titles where we are not entirely sure where the boundary between simulation and training lies. Whilst this could at first look like one way of destroying a lucrative market, recent neurological research from Kingston University, London demonstrates that the sales success

⁴² Cola Oceania - a little wild, Communication Agencies Association of New Zealand, Bronze, Advertising Effectiveness Awards 2005, Case Study, World Advertising Research Centre, www.warc.com

⁴³ Cham, K. L., 2007 Reconstruction Theory, Designing the Space of Possibility in Complex Media. International Journal of Performance Arts and Digital Media, 3(2-3) pp. 253-267

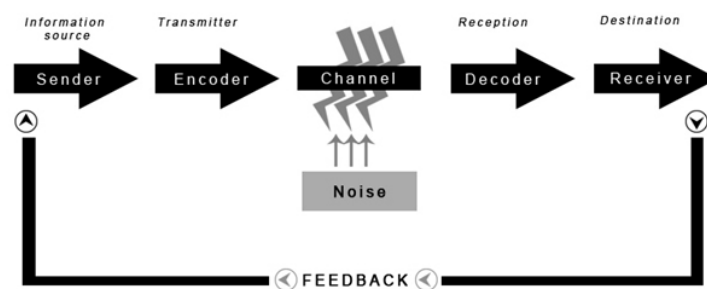
⁴⁴ "an idea, behavior, or style that spreads from person to person within a culture." *Merriam-Webster Dictionary*

⁴⁵ Pollitt, K.L., 1991 "Information, Image & Identity", Undergraduate Thesis, LJMU Library

of a game is correlated to peaks and duration of attention span, rather than body count.

These types of collective agency would have conventionally been understood in media theory as ‘aberrant decoding’⁴⁶, a concept widely used in media and cultural studies to understand how messages are sometimes interpreted outside the frame of their intended meaning, with the ‘right’ interpretation being known as the ‘preferred decoding’. This concept is from the work of Umberto Eco in 1967 [1] and it is based on the principal that every act of communication requires that the message must be encoded into a set of signs, transmitted, received and decoded by the receiver. For the preferred reading to be the result, the encoding must be a system shared by both the sender and the receiver.

However, in digitally interactive media, messages are not transmitted in a linear top down manner, they participate in a co evolving feedback loop of interpretation. It is this ‘feedback loop’ that is the core missing element from existing media theory and the defining factor of existing media practice. Fortunately, Shannon and Weaver’s ‘Mathematical Model of Communication’⁴⁷ provides us with such a paradigm (Fig. 2). Again, it is a technological model, although it should not surprise us how much of the medium is the message in this context. Developed from Harold Laswell’s theory of communication which states: "Who (says) What (to) Whom (in) What Channel (with) What Effect"⁴⁸ , Claude Shannon’s model was designed to underpin effective communication between sender and receiver in technical communications signal transmission over the telephone. It was Warren Weaver who applied it to all interpersonal communication and together they provided the basis for Information Theory . In addition to Umberto Eco’s elements of positional receivership above, Shannon and Weaver’s model had three other important factors: physical noise, semantic noise and feedback and, perhaps most importantly, Shannon developed ‘information entropy’⁴⁹ as a measure for the uncertainty in a message.



SHANNON-WEAVER'S MODEL OF COMMUNICATION

Fig.2 Mother of all Models

So here, in Information Theory, we have a recognition of ‘semantic noise’ as impinging upon the encoding and decoding of the ‘preferred reading’ of a

⁴⁶ Encoding/Decoding, Stuart Hall - Media and cultural studies: Keywords, 2001

⁴⁷ <http://communicationtheory.org/shannon-and-weaver-model-of-communication/>

⁴⁸ <http://communicationtheory.org/laswells-model/>

⁴⁹ Grey, M., 2011 Entropy and Information Theory, Springer

message; physical noise also impacting upon sense making from the mode of transmission and a recognition of feedback as part of the whole system. It is clear then that understanding the theory of telephone communication gives us the first accurate model for virtual communication using telematic technology.

In digitally interactive media communication, semantic interpretation and physical noise are merged into a virtual experience of the whole message feedback loop where aberrant decoding becomes effectively 'human noise' as it is a bi-product of the medium of transmission, and is as often as undesirable as it is beneficial. Furthermore, 'Shannon entropy', as a measure of the uncertainty in a 'random variable', that is a variable whose value is subject to chance variations; quantifies the expected value of the information contained in a message. A theoretical foundation, when understood in the frame of Complex Systems Theory, that allows us to frame 'loss of life' as an entropic outcome of the Caesar's thumbs design mechanic core to Facebook UX; the deaths as a result of 'complex nudge' mechanics.

Furthermore, It must be remembered that these singular mechanics are part of huge networked systems, where any 'nudge' can 'go viral', in what appears to be the domino effect on social behaviours. Just one recent example of this would be "Neknominate", an online drinking game which require the participant to film themselves drinking a pint of alcohol in one gulp and upload the clip to the web, nominating two others to do the same within 24 hours. For any commercial agencies pondering the mystical secrets of how to make their product or service 'go viral', the dynamics here are almost a mathematically precise model of 'peer to peer nudge', with risk taking making it desirable, the invitation making it exclusive and the time limit fuelling its trajectory.

There is much recent research offering an insight into the role of the internet in the 'Arab Spring', an wave of civil uprisings across the Arab world that began at the end of 2010. Within three years, 'rulers had been forced from power in Tunisia, Egypt (twice), Libya, and Yemen; civil uprisings had erupted in Bahrain and Syria; major protests had broke out in Algeria, Iraq, Jordan, Kuwait, Morrocco and Sudan and minor protests had occurred in Mauritania, Oman, Saudi Arabia, Djibouti, Western Sahara and the Palestinian territories'⁵⁰

The role of attendant disaporas and how 'online political activism fills an important gap for what is absent offline' is the point most often given focus in this dialogue, for example 'how the internet gave birth to a Palestine in cyberspace and has altered the traditional tactics of activists' by strengthening social and political agency, even in some contexts being described as 'cyber intifada'⁵¹. Aouragh states how 'a political assessment related to the internet portrays how Palestinian political agency transcends into virtual reality'. However, as we know virtual reality transcends back again; there is a feedback loop that leads to a complex evolving system. This is essentially a field-

⁵⁰ http://en.wikipedia.org/wiki/Arab_Spring

⁵¹ Aouragh, M., (2008) Volume 1 Issue 2 "Everyday resistance on the internet: the Palestinian context", Journal of Arab & Muslim Media Research, Intellect

interactional perspective⁵² of community as a dynamic process of social interaction and purposive action, yet one that accounts for a designed and mediated place/space as a significant part of that symbolic interactive system.

It has always been important to consider how those without a voice represent themselves and from a user experience design perspective, we know that the internet is a democratized environment which undermines 'top down' dictatorships by virtue of its technological form. How much of the Arab Spring is a virtue of the medium being the message is open to debate, however, the 'peer to peer nudge' mechanic can clearly be seen at work here. In the UK, but for the Data Protection Act⁵³, we could also model the users attendant consumption of goods, downloading of music and film, file sharing, personal comments and lateral associations into a complex behavioural graph. I am sure some agency somewhere, with a big interest in power play across the middle east, has the metrics, tag clouds and cluster maps showing exactly how this rolled out.

The internet and worldwide web is not a 'free' place/space from where authentic voices can emerge unhindered; this is simply the 'mass media' perspective on digitally interactive media. It is a complex social and economic eco-system where dynamics we do not yet understand are at play. To muddy the waters further, sophisticated behavioral design mechanics are at play for a variety of reasons from a variety of stakeholders. Perhaps it is only when these dynamics 'go wrong', as in Nekominate that we can see the internet for what it actually is; a self organizing co-evolving social engine that performs like a vitrine of invocation. You can put ideas into it and they come out real; like autosuggestion for the global mind, the worldwide web is sometimes semiotic magic indeed.

Suffice to say, a core practice in UXD for a very long time has been 'reverse engineering', the process of revealing the technological principles behind a system through 'analysis of its structure, function, and operation'⁵⁴. The purpose of reverse engineering is to deduce design decisions from end results with little or no knowledge about the original production. For the mass media theorists, 'deconstruction' did the same, revealing the intentions of the advertiser through the construction of the advertisement⁵⁵. In digitally interactive media, we can not only deconstruct and reverse engineer products, services and systems but social phenomenon in order to understand how they evolved, but also vice versa, to design products, services, systems and social phenomenon.

For this very reason, 'designing for behavior change' is a hotbed of activity in UXD research at present. Ranging from neuromarketing, to dark patterns, to viral ad campaigns and social media networks, designers, behavioural scientists, psychologists, neurologists and business analysts know that this is 'where it's at'. There is even now a UK Govt. 'nudge unit' or to give its proper title the

⁵² Atkinson, P., 2001 Handbook of Ethnography, Sage

⁵³ Data Protection Act, <http://www.legislation.gov.uk/ukpga/1998/29/contents>

⁵⁴ http://en.wikipedia.org/wiki/Reverse_engineering

⁵⁵ Barthes, R., (1968) Mythologies, Paladin, London

“Behavioural Insights Team”⁵⁶.

The question remains as to what ends we put these practices, though it is heartening to know that the notion of ‘social marketing’ that is, the use of marketing methodologies to socially beneficial ends was the result of one of the first ever neuromarketing trials at Kingston University in 2000. Professor Ruth Rettie, who lead that study, now heads up the Behaviour and Practice Research Group, who specialise in socially ethical work on behavior change by design⁵⁷.

Conclusions

This paper only begins to look at the digital realm as an alternative space of self organization. Its aim is to expound why we must consider online communities, collective agency and social change being in a co-evolving feedback loop - *by design*. In order to do this effectively it is important to recognize that what is new about ‘new media’ is digital interaction, which takes communication into a whole new realm, above and beyond that of conceptual interpretation.

As to the internet as an alternative place/space for communities, collective agency and social change, whilst the digital realm comes into its own as a decentralized peer to peer network, it is important not to mythologise the internet as a place where ideals can become manifest free of the political constraints of the real. Many aspects of this new type of social activity are both designed and mediated by virtue of the place/space within which the activity happens, and the medium does impact upon the message, even if that is only the simple node and network system of internet computing.

The role that design plays in online agency is the topic of much debate and rightly so, yet tellingly it is very often not recognized as design. It is clear that online behaviours are engineered to an extent by the virtual space/place *design* and that it has a complex yet causal relationship to communities, collective agency and social change. In this new methodological context, varying degrees of community, collective agency and social change can be perceived as the ‘emergent behaviours’ of the design mechanics of the networked mediated space/place. This paper therefore argues the case for how the design mechanics of the virtual impact upon the actual, as the intentional, inadvertent or subverted result of design mechanics and thus it must be argued that a better understanding of media effects must account for ‘user experience’ design principles. We are a part of a converged medium/message/effect transaction in digital space and we must design responsibly for this, in the knowledge that engagement with the message via the medium will result in embodied social change.

The author, as ever, adopts a biomimetic perspective to understand all media as

⁵⁶ <https://www.gov.uk/government/organisations/behavioural-insights-team>

⁵⁷ <http://business.kingston.ac.uk/research/research-groups/behaviour-and-practice-research-group>

the primary technology for an autopoietic species; we self make by means of our communications. Digital media is a computational material that operates as a language, so the digital realm is only ever virtually an alternative, as *we are the medium and the message*.

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