

Of particular interest here is how the use of the sensors diverges from the norm, as Mikami's self-built device is employed to measure data distinct to what was anticipated with the original purpose of the parts. For example, the sound-sensor serves to estimate distance. Each of the combined sensors and the cameras capture and measure independently, but they are networked together and attuned to each other as a form of 'group behaviour.' The audience for this 'industrial invention' not only interacts but, because of the extremely miniaturised interfaces, can also experience the similarity between the behaviour (orientation in space, movement, response) of themselves and the machine. Because the devices are similar in size to toys, they appear harmless and attractive, not like control and surveillance apparatus.

Of note are the cultural aspects of referencing miniaturised computers, electronic toys and gadgets, which have spread like insects through the private and public sectors in Japan and South-East Asia. In her work, Mikami makes us aware of a close and personal relationship between human perception in general and individual senses and how they are affected. She draws our awareness to the humanoid behavior of increasingly small and smart robots and machine devices that are equipped with sensory instruments to detect us, target our behaviour and follow us. It is precisely this interface, built by Mikami herself without using standardised mechanisms, which evokes the experience of in-between-ness and makes us aware of our modes of perception in relation to surroundings that are machine driven and operated by a chain of codes.

Mikami, in the other two parts of the installation, further explores her view of the desire of codes, seen as a chain of behavior and responses corresponding to social behavior. Once we move away from the *Wriggling Wall* with its ninety units targeting at us, we find ourselves surrounded and targeted by six huge, over-sized robot arms that hang from the ceiling and reach into the space. The robot arms seek to express the desire of the code to follow and record the movements of visitors. The arms are equipped with cameras and projectors and simultaneously project the recorded footage onto the floor where we move. In the third part of the installation, *Compound Eye*, Mikami further focuses the anthropocentric effect of the miniature mechanical arms of the *Wriggling Wall*, with their LED's trained on us like searchlights.

If you enter this white room ninety moving units of structures with built-in small sensitive cameras (0.0003lux) are placed across a 15m long white wall. Each device senses with insect-like wriggling movements the positions and movements of visitors, and turns toward detected persons in order to observe their actions. Round-shaped screen (in sixty-one hexagonal parts), that looks like an insect's compound eye, is installed in the back of the exhibition space. Visual data transmitted from each camera, along with footage recorded by surveillance cameras at various places around the world, are stored in a central database and ultimately projected in complex images and sounds that are mixing elements of past and present onto the screen. This compound eye-screen and the room's sound system express a new reality in which fragmentary aspects of space and time are recombined, while the visitor's position as a subject of expression and surveillance at once indicates the new appearance of human corporeality and desire. (Mikami 2010)

In the image-structure, imitating an insect's eye, current and past recordings of viewers can interfere, via computer programs, with data from internet search engines, which have access, in real time and permanently, to surveillance cameras from places all over the world. The model of the hexagon here becomes a permeable interface of global surveillance: it makes us aware of how personal experience is caught up in a worldwide data transfer.



Fig. 3. Seiko Mikami 2010 *Desire of Codes*, Yamaguchi: Yamaguchi Center for Arts and Media.

The philosophy of the installation is testing our experience of the behaviour of machines, as they are driven by codes. We are also invited to think about the desire of the code to randomly grasp and process data from anywhere at any time and 'produce' endless chains of information input and output. The installation demonstrates its own structural components, such as repetition in the stream of data, and thereby makes us aware of our own desire to create and produce something and at the same time show our limits to influence and actually control the machine processes with which we interact. This interplay, in an in-between area, reacts like a circulation of perception. In it, participants experience the mechanism of permanent surveillance, as it is implemented in our technology and determines life in intensely structured cultures, like Japan. Here, any action is immediately the object of surveillance and triggers an endless, incessant search for input-data.

As these examples demonstrate, when we wish to discuss artistic-creative positions in computational development, it is important to mark the specific context of discourse and critique through the use of alternative models.

Notes

1. See <http://robotics.eecs.berkeley.edu/~pister/SmartDust/>

References:

Bhabha, H. K. (1994) *The Location of Culture*. London and New York: Routledge.

Castells, M. (1996) *The Rise of the Network Society*. Oxford: Blackwell.

Clifford, J. (1997) *Routes. Travel and Translation in the Late Twentieth Century* Cambridge, MA: Harvard University Press.

Han, B.-C. (2005) *Hyperkulturalität. Kultur und Globalisierung* Berlin: Merve.

Jay, M. (1993) *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought*. Berkeley: University of California Press.

Koelbl, W. (2000) *Tokyo Superdichte*. Klagenfurt and Vienna: Ritter.

Mikami, S. (2010) *Desire of Codes*, unpublished manuscript.

Spielmann, Y. (2012) *Hybrid Culture*. Cambridge, Mass: MIT Press.

OUT OF PLACE: DIGITAL IN-GROUPING

Donna Leishman

Abstract

Since the maturation of the mobile network and a pervasive immersion into social media, the concept of community has been irrevocably dislocated from traditional geographical interactions. Establishing what adequately characterises born or predominately digital groupings is being investigated and discussed in academic, public and civic arenas¹. Both the positive (Fig. 1.) and negative positions (Fig. 2.) have been voiced. Our 'always on', always-connected' status (Antonelli 2008) has created a close and some would argue dependent psychological relationship with our technologies (Charles 2011). If we consider that these technologies *have* significantly changed our practical reality, a reality where human experience and technical artifact have, for many, become inseparable, and that we now live within a 'life mix' (Turkle 2012) or pressured 'cycle of responsiveness' (Perlow 2008) then traditional concepts of how community is enacted using (deleterious or not) technologies merits review. This paper will look specifically at the heavy-user Flash developer/designer community and employ Social Identity Theory (SIT) (Turner & Tajfel 1979) as a means to interrogate how far technology has bypassed or developed established SIT concepts such as community, categorisation and identity.

Context

Predating more recent discussions around the negative or hidden effects of technology (Greenfield 2009) was an utopian ideology. Early digital culture (1993-2001) was driven by native Net communities who relished the freedom to work and communicate in a non-hierarchical digital space, where open-source sharing and virtual relationships gave respite from offline notions of ownership, materiality and physical identity. This early period was followed by the emergence of a larger browsing audience, who helped establish what has now been termed Web 1.0. Web 1.0 moved towards Web 2.0 (around 2004, onwards), which saw content providers and user groups evolve into more participatory 'prosumer' (McFedrie 2002), co-authorship and early crowd sourced enterprises (such as Threadless.org). Within Web 2.0 a confident commercial market and the expansion of the Social Network framed a decentralised culture. The current pervasive nature of mobile and networked technologies suggests we are entering a Web 3.0 and has enabled many to work and communicate with people in 'different time zones, on screens of different resolutions' (Antonelli 2008: 15-16) in both personal and professional dimensions (Naughton 2012). The initial technoutopian ethos remains – indeed, 'networking' and or 'connectivity' are often presented as irrefutable contemporary virtues, albeit an amalgam of philosophical and theoretical origins with an unabashed commercial strategy.

Current key positives tend to be organised around the notions of:

1. Access: Since Web1.0 we have been given greater access to a better-delineated world, where any content can be found, giving rise to the idea of both a knowledge economy and *more* democratic access to information.
2. Connection: That technology can foster better connections (faster, stronger) with individuals and groups.

3. Sharing: Arguably the most ubiquitous and tangible addition is the ability to connect and share via the 'broadcasting' of personal details, stimuli, and observations facilitated by commercial companies such as YouTube, Twitter and Facebook. User-generated content implies a more active, liberal, discursive culture.
4. Ease: where smart devices deliver pervasive computing to make managing responsibilities and relationships less difficult and time consuming.
5. Creativity: An active discursive culture suggests new thinking and innovation can take place – e.g. that technology enables the 'wisdom of the crowd' in crowd-sourcing, as a problem solving tool.
6. Freedom: an idea located within the original net community's liberal ideology, where users can conceive of any question, urge or desire and act without restrictions.

All of the above positives can be reviewed from a counter negative position:



Fig. 1. Nokia's more 'youthful' strategic direction (October 2011) for their *Lumia* phone based on 'co-creation', with consumers being invited to collaborate with the company's marketing. Image source: MarketingWeek.com O'Reilly (2012)

Fig. 2. 'The Social Media Venn Diagram' T-shirt Design from www.despair.com

1. Access: Rather than the notion that we have been given greater access to a better-delineated world, we are in an era where there is a lack of information quality. What we have now is the illusion of truth and a crisis of authentic and or verifiable knowledge; Wikipedia and Google do not offer users truth or fact.
2. Connection: that the cycle of connectivity – the expectation to 'always be on' – is creating anxiety and dependency in users (Turel, Serenko & Bontis 2011). Turkle's (2011)

hypothesis is that technology has introduced mechanisms that have created a relentless connectivity, a connectivity that decreases our time for uninterrupted thought, and as such interferes with concepts of both community and identity. Wajcman (2010) suggests that constant connectivity results in lower work efficiency.

3. Sharing: Personal broadcasting has not improved the quality of discussion in society, rather it promotes the sharing of vacuous personal details and a covert form of affective labor as a new type of peer-to-peer-marketing (Martens 2011). The volume of unproductive sharing is contributing to a sense of a digital deluge and disorientation.
4. Ease: Smart devices make physically present the requirement to be immediately responsive to those connecting to us, in which depth of reflection or communication is eroded.
5. Creativity: Counter to creating an active discursive culture, privacy, identity, copyright and memorisation are obsolete notions – e.g. that the 'Internet has already integrated itself into the core processes of human mental activity beyond simplifying communication, acting as a gigantic external hard drive for the brain' (Pushkin 2011).
6. Freedom: with extended personal choice and pseudonymity has also come the loosening of social responsibility, an acceptance of hacktivism, piracy and a normalizing of destructive bullying behaviours such as 'trolling'.

Another major negative concept is the fear of 'heavy-user' groups who are hard to monitor in the current cacophony of interactions. That invisibility of connections is a problem. Any private or uncharted community can easily be presented as something to be fearful of; indeed we regularly hear popular press reports of 'loners' deeply involved with technology – these loners are perceived as more dangerous due to their technical prowess. Consider the Blackberry facilitated English riots in the summer of 2011 and the British Prime Minister's statement that these were evidence of a 'slow motion moral collapse' (Cameron 2010). A clear message to the press was that morality and mobile and social networks were potentially at odds with each other. Parental anxiety around new communication strategies has led to increased pressure from the American Medical Association (AMA) for the American Psychiatric Association (APA) to include internet addiction, video game addiction, e-mail/text messaging along with sexual preoccupations in the upcoming 2013 Diagnostic and Statistical Manual of Mental Disorders (DSM-V), the standard diagnostic text used by psychiatrists worldwide.

Expectations of social responsibility (personal and corporate) are being tested in this digitally mediated society. Most born digital users have a clear disconnect, where their responsible *More Knowledgeable Other*² have not corrected online behaviours as established in public and civic spheres. Rather, their experience is challengingly individualistic, private and plural, where they can connect to multiple peer groups and communities of their own choosing with little or no regulation or sanction. The changed semantics of context can be seen in the debate that ensued around appropriate contextualisation after Paul Chambers was convicted for his 'tongue-in-cheek' tweet about blowing up Robin Hood Airport in January 2010. The presiding judge understood that 'Any ordinary person' would interpret the tweet as alarming (Booth 2004). The notion of ordinary is now in itself a fraught concept. What is ordinary social insight within the network? In more domestic contexts, parents are often presented as

bewildered or shocked when faced with acts of trolling. Statements such as 'the Internet should be able to stop them' (Rayment 2012), whilst a clear plea driven by anguish at online bullying, clarifies the gulf of perception between what the Internet is and control in digital contexts.

Social Identity Theory

Within social identity theory John Turner and Henri Tajfel (1979) discussed how vital being a member within a social group is in developing a concept of self and belonging in the world. A key contribution to the debate within conventional psychology, which was still in a deep analysis of 'individuation' at the time, was the central hypothesis that group members of an *in-group* will seek to find negative aspects of an *out-group*. This process of definition and categorisation is used to enhance self-image, esteem and create a framework for existence.

Tajfel's work within his *Minimal Group* studies (Tajfel 1981) demonstrated that merely categorizing people into in-groups (us) and out-groups (them), without regard to any cultural, religious or racial frameworks, was sufficient to create intergroup discrimination. Whilst the original experiment was imperfect Tajfel highlighted how slight the conditions need to be to create the potential for inter-group discrimination, and indeed argued how intrinsic our group and social categorisation are to the idea of 'self'. Tajfel's *Minimal Group* studies become interesting in our contemporary context if one considers how our current disorientating freedom of choice, combined with a lack of verifiable facts, creates a similar erasure of frameworks and conditions.

One of the key changes in social identity might be related to the Internet's unique ability to normalise, uniting people, irrespective of geographical location, through Web tools such as forums, blogs and email groups. As discussed previously, networking and connectivity have been given significant cultural value, as has the positive value of accessing information. The idea of more autonomous self-selection and access to specific interest groups suggests a move towards finding *your own* rather than a culturally driven in-group. This requirement returns us to the issue of conceptualising what you want when faced with limitless options.

Characterisation

Another challenge for digitally mediated social identity is visibility and trustworthiness. Within social identity theory, psychological salience is important for social categorisation. To affect behaviour it must be salient or distinguishable – this process is in addition to a preference for clear frameworks. Developed by Oakes (1987) from work by Bruner (1956), the principle states that key mental filters look for accessibility and fit to generate salience. People normally strive to use self-evident framework categorisations (e.g. age, gender, race) that in their context are valued *and* are (ideally) self-evident and perceptually salient. Interacting frequently with remote individuals has become commonplace, accessibility has increased dramatically but perception is less stable. It is well established that virtual identity can be orchestrated between a conscious misrepresentation or a more truthful representation (Turkle 1995, Holmes 1997). The lack of cognitive time or structures to perceive makes the process of comparative fit difficult and as such pre-existing stereotypical beliefs could become more influential within characterisation (especially given the long standing and fixed nature of offline assumptions).

The Flash Community

The Macromedia Flash Community (FC) provides an interesting case study to explore the formation of digital in/out groupings, as this group have always been a heavy-user group that generated characterisations and was deeply engaged with technology, both as a communication method and an expression of identity. The FC straddle both the deleterious (heavy use) and virtuous (independent, creative, connected) aspects of digital media.

In 1996, during the early formative years of the Internet, the computer software Macromedia Flash was introduced (Adobe took it over in 2005). As a multimedia technology it was initially developed to allow interactivity and animation to stream over limited 56k 'dial-up' Internet connections via its low-band vector based (opposed to hi-band Bitmap) drawing and animation toolbox. As a secondary feature Flash contained its own simple programming language, Actionscript. Four years later, at the turn of the millennium and undirected by Macromedia, the FC had moved from a nascent group of individuals into a community who were routinely living and connecting with different contexts over multiple time zones. Most members were resolutely working within the Dotcom bubble as programmers and web-designers – a period colored by Techno-utopianism. An interesting founding feature of this community is that there were two distinct sub-groups within the broader in-group; the 'makers' and the 'fan-boys'. Somewhat typical of a digital community even this distinction was given plurality as the Flash-makers were made up of a broad, complex international group of 'artists, developers, poets, geeks, punks and freaks' (Davis 2001) who were initially connected by the forum Dreamless.org (Fig. 3), a semi-secret community discussion board that was initially focused on technical problem solving but quickly established itself as a place to debate, collaborate and creatively remix members work. If we invert the descriptors from Davis's quote then we can sense who were the excluded *out-group*: pro-conformists and managers were the opposition. This initial definition of *them* and *us* clearly has an anti-authoritarian tone (bathed in the virtues of Internet freedom) but interestingly has a direct correlation to a physical social reality, where account managers and design agency managing directors were very salient – representing a pre-existing offline stereotype.



Fig. 3. The registration pages from Dreamless.org (Jan– July 2001) courtesy of the Way Back Machine Internet Archive 01/19/2001 <http://web.archive.org/web/200101191036/http://www.dreamless.org/>

Outside the *Dreamless* message-board there was close and direct communication between community members, centered on one another's personal projects. Direct communication came in the form of daily conversations held using early forms of Internet chat, such as ICQ and MSN messenger. These long and often multiple conversations often ran simultaneously alongside the day job (interactions with the out-group); a clear antecedent to Antonelli's and Turkle's always-on networked mobile

-user. These were relationships that were, importantly, chosen and desired – a subtle difference to the pressured 'cycle of responsiveness' as described by Perlow (2008).

The creative potential and sense of freedom in developing projects, without the corporate client, was enticing. The fact that there were like-minded connectable (via ICQ or private forums) peers was 'intoxicating' (Gifford 2011). Counter to the standard SIT observation that competition occurred between the in/out groups, the FC used a competitive urge to 'do better' as an internal driver to increase innovation within the production of personal projects. In an interview with a FC maker, Hoss Gifford (UK), we discussed the common fallacy that the maker sub-group were ideologically open source. Apart from Davis, who copied and sold his *Praystation* hard drive, most of the makers did not actively share their code within the group or publicly. Rather, there was a fast cycle of deconstruction and reverse engineering of the makers new experimental projects by these fan-boys. This practice of reverse engineering had little or no deleterious effects – the appreciation of the makers craft grew from those novice Flash-makers, who were stimulated by meddling with the code inside inspirational projects. Without the fan-boys the upcoming move to a broader cultural impact and the self-esteem of the FC would have been impossible. The group self-esteem was amplified further by a swelling internal member audience for these personal projects, visually evidenced by community members adding each other to their link sections on websites, user hit-counters, Website hosts' stats on downloads, online 'zines' and forums.

Turner states (Tajfel & Turner 1979b): 'The individual's choice of behaviour is posited to be dictated largely by the perceived intergroup relationship. In particular the choice of strategy is an outcome of the perceived permeability of group boundaries, as well as the perceived stability and legitimacy of the intergroup status hierarchy.'

Frequent heavy usage in the established forums, the launching and critiquing of new work and the personal instant messaging between peers kept the group visibly active and helped promote salience for categorisation. These virtual relationships also traveled past the boundaries of the Internet with impromptu local meetings, or 'riots', that were arranged for Dreamless users to meet face-to-face and exchange ideas around the NYC area. As the FC matured, at the turn of the Millennium, and during the period leading up to Web 2.0, in-group tensions developed, helping fuel member disputes within Dreamless, especially within the notorious Dreamless thread *08 – Meaningless and Shallow*. Davis shut Dreamless down on July 2001, after 3 years. Various systems of commodification had fallen into place and the remote networked nature of the makers and fan-boys had been given a more physical structure. The Flash Forward conferences (2001 -5) talked about 'meeting your heroes' on their registration site – giving credence to the idea that there was an e-Hollywood with new media superstars (Sapnar 2002). Mainstream cultural visibility was achieved via the various books in publication (O'Reilly lead the market), makers' personal projects were offered sponsorship by brands attempting to co-associate (e.g. fashion label Diesel had a new media gallery and Sony developed Thethirdplace.com) as well as invitations to exhibit in the likes of the Design Museum, the ICA (both London) and MoMA – PS1 (New York).

The semantics of behavior had problematically changed within the FC. As actions became more physically distinguishable salience seemed to become more complex (or diluted) as individuals continued to communicate online but had a more public dimension. This tension or dislike around FC 'superstardom'

ultimately resulted in an extension of the FCs designated out-group; superficial and broad cultural legitimisation became problematic, alongside being too conformist and corporate. In addition some of the original makers, such as Robert Hodgins, Casey Reas, Mr. Doobs and Hoss Gifford, were now exploring *Processing* (Java) and *openFrameworks* (C++) and as such moved almost entirely away from Flash as a tool, challenging the fundamental premise of why individuals would gravitate toward or seek the FC.

What is unclear is that this change has created a new out-group, which trumps the original, or an extension of what constitutes the FC out-group. Looking for any Web 2.0 era migration within the initial maker group it is clear that the majority have retained their initial dualism between corporate and personal projects – but with many founding their own digital media agencies. This gives rise to the challenge of hypocrisy. That conforming to corporate stereotypes was now permissible in either scenario evidences a recent change in the FC identity. Further research undertaking a close reading of makers' emergent corporate politic could reveal if they assimilate or sustain the FC's original anti-establishment ethos.

Summary of Observations – Conclusion

This diversification of context into more of an offline and less of a closed online communication, combined with a broadening of cultural reception and blurring of specialist technology interest (rather than the lack of a clear out-group), has ultimately broken the internal self-enhancing positive distinctiveness within the FCs intergroup status. Whilst the FC has a split ecology of fan-boys and makers, the maker group has been more instrumental in creating this change and challenged the groups distinctiveness.

By looking at the FC it is immediately clear that the dynamics and conditions of social identity have altered but not radically 'bypassed', as Turkle suggests (2011). Even within the current context of ongoing deep change and uncertainty, categorisation as process can still be located – ergo, the impetus to create social identity remains.

1. In considering salience in the FC – stereotyping of the out-group was more privileged rather than looking for a comparative fit. This method avoids the issue of inauthentic representation from those who choose to play in the freer possibilities of online identity and expression.
2. However the process of comparative fit may have been part of the endless reception and critique of the makers' personal projects.
3. The goal of reducing uncertainty – to 'achieve meaning and clarity' (Brewer 2003) for oneself in social settings – was solid in the early FC stages and was loosened with expansion of the group and changes in the characteristics of the makers' offline interactions, challenging established in-group distinctiveness.
4. Although a deeply digitally mediated grouping the offline context provided the content for conceptualising the FC's out-groups. This supports the idea that people are able (rather than failing) to cross the threshold of offline and online; that their behavioural assumptions and attitudes can be carried between contexts.

5. Structure of status can be even more complex or nested within digital in-groups. For example, the FC possessed both a constructive sub-group of expert makers and fan-boys whilst still having an explicit out-group.

How ideas of self are formed and *the process* is sustained remains key. Critical Psychology, as a potential perspective, acknowledges that social conditions affect the well being of groups and individuals. Being out of place – neither in one place or another but two (or many), both virtually and physically, could be described as a normal condition of living. For participants in the FC they were out of place whilst creating a strong in-group. The loss of boundaries or self-evident framework categorisations (e.g. age, gender, race) placed greater weight on frequent communication and interaction between the fan-boys and makers. Creative productions of personal works helped foster some comparative fit and create self/group esteem. After approximately eight years of functioning (a lengthy time by Internet standards) and coinciding with the emergence of Web 2.0, the FC faced new existential challenges, predominantly from the physical world, which has seen the in-group and out-group change. What remains unclear is if the FC will evolve and elastically transform their in-group characteristics within a Web 3.0 environment or disband and dissipate into a digital deluge of possible identities.

Notes

1. Academic: *Digital Transformations in Arts and Humanities* is a key theme for the UK's Arts & Humanities Research Council in 2011/12. Public: Rise in tabloid press and broadcaster interest; see *The Anti-Social Network* (Monday 19 March 2012, 9pm) a documentary shown on the BBC channel, the British public service broadcaster. Civic: The UK wide *Draft Communications Bill* was formally presented as part of the Queens Speech 2012 which requires internet companies to install hardware enabling Government Communications Headquarters to examine 'on demand' any phone call made, text message or email sent, and website accessed in real time.
2. In her book *Alone Together* (2011) Turkle gives an example of the 'Life Mix' in which she observed a man playing with kids in the park whilst communicating with his virtual mistress on his iPhone.
3. In *Social Development Theory* Vygotsky (1978) argues that social interaction precedes development; consciousness and cognition are the end product of socialisation and social behaviour. *The More Knowledgeable Other* (MKO) required for development can, in this contemporary context, become the computer and or digital relationship/s.
4. Predominately based in theories from Schopenhauer (1844), Jung (1956) et al. and more recently Stiegler (2009).
5. The test cases were schoolboys who it is argued are problematically predisposed to view groups as competitive teams (Karp, D. et al., 1993).
6. Weblogs or 'Blogs' are a phenomenon that appeared around 1999. This blogging explosion is often attributed to the easy to use and free authoring tools such as Blogger.com and Pitas.com and recent tools such as Wordpress.com and tumblr.com. Blogs tend to be communal portals for discussion in which an individual author/editor 'posts' subjects / topics for discussion and 'members' can then in turn post replies. The most simple criterion for a blog is that the website consists of dated entries, though most blogs contain hyperlinks, embedded visuals, animated content, commentaries, personal notes and are frequently updated – often daily.
7. Somewhat muddled by the rise of 'bots' profiling our search engine requests and cached cookies from browsing.
8. Dreamless.org intentionally used an understated Web presence and hidden registration page to create intrigue/intimacy/some privacy based on an early collaborative hack over a 'faces to names' thread (Cloninger 2001).
9. Actionscript/ Flash developers are lower ladder workers and artists and poets are (stereotyped) as too creative to be management.
10. An OpenSource software license permits the user to modify or copy the source code.
11. Eastgate Systems also sold Praystation's limited edition Hard-disk (2002), <http://www.eastgate.com/catalog/Praystation.html> [Assessed 6th of July 2012].

12. For example Yugop's *Nervous Matrix* a 3x3 grid project was remade and shared within the week after it was launched by fans. <http://yugop.com/ver2/works/typospace3.html> [Assessed 6th of July 2012].
13. An interesting set of posts spanning March 2003 to July 2008 talking about Flash's experimental form over usability / function and the commercial inflated price charged by the Kioken NYC Agency /Joshua Davis: <http://gadgetopia.com/post/304> [Assessed 6th of July 2012].
14. Designer led forums set up after the demise of dreamless: YayHooray.com, Humhum.be and butt3rscotch.org [Assessed 6th of July 2012].
15. The Design Museum held the *Web Wizards* exhibition in London, 30 Nov 2001 – 21 April 2002. The Carnivore client /group was exhibited at the *Open_Source_Art_Hack* at The New Museum of Contemporary Art, New York City, May 2002 and at the Princeton Art Museum in *Anxious Omniscience: Surveillance and Contemporary Cultural Practice*, January 2002. *InsertSilence / James Paterson* has exhibited at the ICA, *Forget Me Not and Other Stories*, London, 2003, 13 Feb - 15 Mar, and the Seoul Museum of Art, *Seoul International Media Art Biennale*, Seoul, 2002, 26 Sept - 24 Nov. Joshua Davis/Praystation has exhibited at the Tate Modern (London), the Design Museum (London), le Centre Pompidou (France), The Institute of Contemporary Arts (ICA) 2003 in London and Whitney Museum – December 2002. Design Museum has permanent archived influential designer pages for Daniel Brown/Noodlebox, Yugop Nakamura and Joshua Davis.
16. Notable Maker migrations between 2000-5 to 2011: John Maeda, then MIT media lab, now Academic (was principle of RMIT). Daniel Brown, then working for *Showstudio*, now freelance consultant and artist. Natzke, then designer at forum, now working for Method and freelance. Prate, freelance designer / art director, now has her company *SansNom*. Mike Cina, then founder of *Wework for them*, now owns company *Cinaart*. Jared Tarbell, then freelance developer now Partner in *Etsy*. James Paterson, then *Insertsilence*, now technical Director in an agency. Joshua Davis, then freelance *Praystation*, now Academic at Pratt and freelance artist. Marcos Wescamp then, *Razorfish* now owner *Flipboard* iPhone App. Gmunk, then Freelance designer, now Motion graphics – recent *Tron* remake.
17. Reviewing the current Flash conferences such as *FITC* and *Flash on the Beach*, reveal the wide-open scope of interests spanning motion and video graphics, gaming, mobile technologies, HTML5, film as well as Flash.

Bibliography

- AMA (2007) 'Emotional and Behavioral Effects, Including Addictive Potential, of Video Games'. <http://www.amaasn.org/ama1/pub/upload/mm/467/csaph12a07.doc> [Accessed 7 July 2012].
- Booth, R., (2004) 'Twitter joke trial: bomb threat "obviously facetious" <http://www.guardian.co.uk/uk/2010/sep/24/twitter-joke-trial-obviously-facetious> [Accessed 7 July 2012].
- Burke, P.J. (ed.) (2006) *Contemporary social psychological theories*. Stanford University Press.
- Bruner, J., Goodnow, J., & Austin, A., (1956) *A Study of Thinking*. New York: Wiley.
- Brewer, M.B. (2003) 'Optimal Distinctiveness, Social Identity, and the Self' in M. Leary and J. Tangney (eds.) *Handbook of Self and Identity*. pp 480–491.
- Charles, K. (2011) 'Why Facebook is stressing Us Out'. <http://www.newstatesman.com/blogs/the-staggers/2011/02/facebook-friends-social-users> [Accessed 7 July 2012].
- Cloninger, K., 2001. 'Mouchette has a posse'. <http://rhizome.org/artbase/artwork/2261/> and <http://rhizome.org/search/?q=dreamless.org> [Accessed 7 July 2012].
- Davis, J. (2001) 'Issue 100 k10k.net' (offline). <http://www.cubancouncil.com/work/project/kaliber-10000> [Accessed 7 July 2012].
- Farago, P. (2012) 'China Now Leads the World in New iOS and Android Device Activations'. <http://blog.flurry.com/bid/83261/China-Now-Leads-the-World-in-New-iOS-and-Android-Device-Activations> [Accessed 7 July 2012].
- Giannakakis, A.E. & Fritsche, I. (2011) 'Social identities, group norms, and threat: on the malleability of ingroup bias' in *Personality and Social Psychology Bulletin* 37(1). pp. 82-93.
- Gifford, H. (2011) *The History of Flash?* Oral Interview with Donna Leishman. Glasgow, Unpublished.
- Greenfield, S. (2009) 'How Facebook addiction is damaging your child's brain: A leading neuroscientist's chilling warning'. <http://www.dailymail.co.uk/femail/article-1172690/How-Facebook-addiction-damaging-childs-brain-A-leading-neuroscientists-chilling-warning.html>

- Holmes, D. (1997) *Virtual Politics: Identity and Community in Cyberspace* G. Turner, ed., Sage Publications.
- Jarrett, C. (2011) 'Has the Internet become an external hard drive for the brain?' *Research Digest: Blogging on brain and behaviour*. <http://bps-research-digest.blogspot.co.uk/2011/07/has-internet-become-external-hard-drive.html> [Accessed 7 July 2012].
- Jung, C.G. (1956) *Symbols of transformation – an analysis of the prelude to a case of schizophrenia*. Princeton University Press.
- Martens, M. (2011). 'Transmedia teens: Affect, immaterial labor, and user-generated content' *Convergence: The International Journal of Research into New Media Technologies*. 17(1). pp. 49-68.
- Karp, D. et al. (1993) 'Raising the minimum in the minimal group paradigm' *The Japanese Journal of Experimental Social Psychology*. 32(3). pp. 231-240.
- McFedries, P. (2002) 'Prosumer. Word Spy'. <http://wordspy.com/words/prosumer.asp> [Accessed 7 July 2012].
- Naughton, J. (2011) 'Only a fool or Nicolas Sarkozy would go to war with Facebook'. <http://www.guardian.co.uk/technology/2011/may/29/children-social-networking-sarkozy> [Accessed 7 July 2012].
- Naughton, J. (2012) 'Improve efficiency – switch off your smartphone'. <http://www.guardian.co.uk/technology/2012/may/20/smartphone-email-switch-off-productivity> [Accessed 7 July 2012].
- Oakes, P.J. & Turner, J.C. (1986) 'Distinctiveness and the salience of social category memberships: is there an automatic perceptual bias toward novelty?' *European Journal of Social Psychology*. 16(4). pp. 325-344.
- O'Reilly, L. 'Nokia reveals 'chapter two' of new strategy'. <http://www.marketing-week.co.uk/news/nokia-reveals-chapter-two-of-new-strategy/4000321.article> [Accessed 7 July 2012].
- Perlow, L. (2008) 'Sleeping with your smartphone: How to break the 24/7 habit and change the way you work'. Boston, MA: Harvard Business Review Press.
- Pushkin, M. (2011) 'Beyond Paradigmatic Shift: Mapping Culture and Society of Digital Age' *Theories of Social Media Panel ISEA*. Available at: <http://isea2011.sabanciuniv.edu/paper/beyond-paradigmatic-shift-mapping-culture-and-society-digital-age> [Accessed 7 July 2012].
- Sapnar, M. *The Code Looks Back: Flash Software, Virtual Spectators, and the Interactive Image*. Georgetown University MA Thesis.
- Schopenhauer, A. (1818) *Die Welt als Wille und Vorstellung (The World as Will and Representation)*, vol. 1 in 1818 and vol. 2 in 1844
- Stiegler, B. (2009) 'Teleologics of the Snail: The Errant Self Wired to a WiMax Network Theory' in *Culture & Society*. vol. 26 no. 2-3, 33-45.
- Tajfel, H. & Turner, J., 1979. An integrative theory of intergroup conflict. IN: WG Austin & S. Worchel. eds. *The social psychology of intergroup relations*. Brooks/Cole, pp. 33-48.
- Tajfel, H. (1979) 'Individuals and groups in social psychology' *British Journal of Social and Clinical Psychology*. 18(2). pp. 183-190.
- Tajfel, H. (1981) *Human Groups and Social Categories*. Cambridge: Cambridge University Press.
- Turel, O., Serenko, A. & Bontis, N. (2011) 'Family and work-related consequences of addiction to organizational pervasive technologies' *Information & Management*. 48(2-3). pp. 88-95.
- Turkle, S. (1995) *Life on the screen: identity in the age of the Internet*. New York: Simon Schuster.
- Turkle, S. (2011) Part 2. *Avatars and Identities. Alone Together: Why We Expect More from Technology and Less from Each Other*. New York: Basic Books.
- D, C.P. et al. (1978) *Mind in society: The development of higher psychological processes*. LS Vygotsky. M. E. Cole et al. (eds.) Harvard University Press.
- Wajcman, J. et al. (2010) 'Enacting virtual connections between work and home' *Journal of Sociology* 46(3). pp. 257-275.