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The mobile phone as the new 'mixed-reality' interface for digital art – a new form of *Apparatgeist*?

Abstract: *Apparatgeist* was a neologism invented in 2002 by James E.Katz and Mark Aakhus (Katz & Aakhus, 2002: p11) as a term to define a socio-logic basis of mobile communication theory, specifically within the context of its relationship to technology and society. It is a term that is used to:

> suggest the spirit of the machine that influences both the design of the technology as well as the initial and subsequent significance accorded them by users, non-users and anti-users. (Katz & Aakhus 2002: p305)

The word has its origins in the Germanic and Slavic word *apparat*, and the Germanic word *geist*; the former meaning the technological and sociological aspects of the machine, more commonly associated with the word apparatus, and the latter meaning spirit, in the Hegelian (Hegel, 1997) sense of spirit or mind which is defined as the essence which animates the lives of all human cultures in diverse ways. It draws attention to issues which include:

> the way that people use mobile technologies as tools in their daily life in terms of tool-using behaviour and the relationship among technology, body and social role….the rhetoric and meaning-making that occur via social interaction among users (and non-users). (Katz & Aakhus, 2002: p315).

This paper discusses specifically the role of mobile phone digital art, (content delivery and as an artistic medium) within the context of *Apparatgeist* theory (art being another form of communication within the social world). It also seeks to address the issues surrounding the mobile phone as an artistically viable and digitally expressive medium and in the light of the development of the delivery of 3G and 4G services questions whether the subjective medium of art can be readily translated into the objective *Apparatgeist* of mobile social living.

Apparatgeist – the mobile interface: The Past

The rapid expansion of mobile telecommunications technology, both at the service level and the device level (especially with the development of sophisticated mobile phone handsets) appears to have been generally overlooked as a potential medium for creative expression by many current digital artists, who perhaps concentrate more on meaningful reworkings of net-, virtual- and computer-art. This may be because the original theory described by Katz & Aakhus (Katz & Aakhus, 2002) concerning the development of the *Apparatgeist* or the 'spirit' of mobile phone technology is based solely on its function as a mobile personal device to assist verbal communication and social interaction over distance – an immediate aid, regardless of local positioning, to

satisfy and facilitate the basic innate human desire for constant, or at least the promise of constantly available, social linguistic connection, wherever the location. Connection is likened to 'the talk of angels that occurs without the constraints of the body'. (Katz & Aakhus, 2002: p307)

The use of the mobile phone as a purely communicative device has been well-documented, both in the western and developing world, where attitudes to its use among different cultures has been studied in order to analyse how people perceive their own sense of social reality, identity and 'place' when they use the technology. Such studies serve to emphasize varying theories of social interaction (Gese, 2004), (McGuigan, 2005), (Srivastava, 2005), personal identity (Pertierra, 2005), (Garcia-Montes et al, 2006), cultural identity (Horst & Miller, 2006), economic viability (Rouvinen, 2005), working practice (Hurme, 2005) and social space (Rosen, 2004) and are generally undertaken by scientists, technologists and service/technology providers.

The inclusion of the mobile phone into the subset of expressive media belonging to the category of digital art has not, until fairly recently, been studied and commented on. One of the earliest commentators on telecommunications art in general was Frank Popper (Popper, 1993) whose observations mainly focussed on the obvious artistic potential intrinsic to the connection of distant and contiguous spaces. He typified communications art through the description of certain characteristics, including emphasis on the apparent contradictions of staging physical presence at a distance, the inherently interactive nature of mobile communication technologies and the possibilities for creatively detailing the relationships in human social groupings in 'real-time'. These early commentaries on the development of artistic expression within the mobile communications genre are consistent with the development of the '*Apparatgeist*' theory later introduced by Katz & Aakhus (Katz & Aakhus, 2002) in relation to use of mobile technology and its place in society.

Apparatgeist - mobile Art: The Present

Although the primary function of a mobile phone is to act as a communicative device lack of access to its constituent elements and applications may have prevented it being utilized more frequently by artists. In practical terms the 'small-form factor' of the device can be a hindrance to many conventional types of visual artistic expression cancelling out some of the advantages of its mobility. The small, low resolution screens and low resolution camera and video output of certain phone models do not lend themselves to delivery of an artistic project or detailed visual art unless that specific aspect of the medium is to be emphasized, although its potential for logging daily life in such a fashion is an element that has been recently begun to be exploited, more especially by HCI designers (Cheverst et al, 2005), the general public through moblogging (including such example sites as flickr (Yahoo Inc, 2006), Moblog UK (Moblog UK, 2006, internet accessed), MMS Blogs (Derdack GmbH, 2006), Blogger Mobile (Google, 2006) and Yospace (Yospace, 2006, internet accessed)), 'citizen journalism' as for example in the London Bombings of 07 July 2005 (Koskinen, 2005), some mobile phone companies (Nokia, 2006) and one or two digital artists (Bruckner-Cohen, 2003(a)).

Access to programming the device for individual use has until quite recently been limited to technologists. although one company that has opened up their operating system is Symbian (Symbian Ltd, 2006) which manufactures one of the world-leading open operating systems used primarily in Nokia smartphones. Interaction with the Internet on mobile devices has also been severely frustrating due to the size of the screen, lack of intuitive forms of web browsing and slow connection speeds. However, despite these obstacles, digital artists who have used mobile phones in their work have been able to exploit the locative, gaming, communicative, linguistic, narrative and 'musical' potentials of the device.

Examples of artists in these sorts of categories are Blast Theory whose work "I Like Frank" (Blast Theory, 2004) used mobile phones to connect virtual and physical players in a game that took place round the streets of Adelaide, Australia thus emphasizing the locative potential of the mobile phone in art.

Another example of the exploitation of the gaming element of the mobile phone includes a work, Blinkenlights (Chaos Computer Club, 2001) by the Chaos Computer Club, who in 2001 transformed an 8-storey building in Berlin into a giant game of Pong with which people could interact using therir mobile phones as remote gaming controllers

Artists who have concentrated on the communicative aspects of the mobile phone include Jonah Bruckner-Cohen, Tim Redfern and Duncan Murphy whose example work SimpleText (Bruckner-Cohen et al, 2003) encouraged audience members to interact by sending SMS, text or voice messages to a central server from their phones. (This project appears to have been based on a combination of earlier work by Brucker-Cohen including AudioBored and AudioBored Machine (Bruckner-Cohen, 2003b) and Octree.Faces, a project by Tim Redfern (Redfern, 2003)) The messages were then spliced and mixed up influencing a central audio and visual output.

An artist who has turned the idea of using the mobile phone as a communicative device on it's head is Aram Bartholl whose project "Silvercell" (Bartholl, 2006) places the device in the equivalent of the Faraday cage. Once placed in this case, the mobile phone can neither transmit or receive data. The viewer then has control of when to be publicly accessible by removing the mobile phone from its cage.

The potential for narrative input and output on the mobile phone was utilized in a work by the artistic duo M+M. Song for C (M+M, 2006) invites the audience to participate in a 'film-noir' melodrama devised through mobile messaging, imaging and clues thus blurring the boundaries between fiction and reality.

The musical aspect of the mobile phone seems to have been the most commonly exploited with numerous mobile phone symphonies and sound installations including #Telephony (2000) by Alison Craighead and Jon Thompson, (UK), Spring Cellphony (2001) performed in the Bloomfield Science Museum, Jerusalem, MobilSymfoni (2001) by Tobias Trier, (Denmark), Dialtones:A Telesymphony (2001/2) by Golan Levin, performed in the 2002 Ars Electronica Festival, Handywolke (2002) by Peter Hrubesch and Dirk Scherkowski, (Berlin), Musical/Devices (2002) by Jonah Brucker-Cohen, Drumming Hands Orchestra(2003) a piece by Bernd Kremling, (Germany) amongst many others.

These are just a few examples of a growing genre within mobile digital art. A more extensive list is maintained by Reinhold Grether (Grether, 2006) including works from the late 1990's to the present. Within the last few years there have also been a burgeoning number of conferences, meetings and workshops to discuss and portray the importance of mobile phone art within the digital art context.

Rapid development in handset design, including the potential to incorporate higher resolution video, camera, music players, body monitors, GPS, TV and multimedia delivery etc and development of new services, 3G and potentially 4G, expands the capabilities of the mobile phone as an artistic tool. The potential to creatively investigate a new, developing *Apparatgeist* hypothesis through experimentation in mobile phone art is ever more immediate in order to reinvent the 'spirit of the machine'.

Apparatgeist - mobile development: The Future?

The mobile phone and associated infrastructure is a technology, or collection of technologies, popular throughout the whole of society, embracing all cultures, enriching, or otherwise, the communicative life of all who can afford to make use of its services. The ability to communicate with others so easily regardless of time and place, either through talk, messaging (SMS) or photo-messaging, has been its major attraction. However, the device is becoming so much more than just a piece of equipment to facilitate communication. It is developing into a truly convergent appliance, capable of containing many functions within one technical design, a truly portable multimedia device, even accorded computer status. According to a BBC online news article in October 2006 more than half of all mobile handsets will have integrated cameras by 2007 (BBC, 2006). Many now have mp3 or music players, video capabilities, some have GPS or the facility to incorporate integrated GPS, body monitors for sport and health, internet and video-conferencing capabilities. A New Scientist article describes it as 'the only gadget you'll ever need' (Boyd, 2005), the swiss army knife of digital culture. Of interest to artists is a consideration of the direction in which the new mobile *Apparatgeist* might lead in the context of digital art. There are several areas in relation to the device itself and associated services which seem to be most obviously ready for artistic investigation. They are location awareness, context awareness, ubiquity, interactivity, content creation and sharing (Web 2.0), convergence, absent presence and mobile emotion.

1. Location awareness

There is a very exploitative contradictory feature embedded within the ethos of mobile technology that establishes that our small mobile devices are locative despite the fact that location doesn't really matter in terms of ability to communicate i.e people don't have to be tied to a static physical location in order to be able to use their phones as in traditional landlines, static computer terminals (skype and internet) and to a certain extent Voice over IP (voip - although the introduction of 4G services provisionally set for 2010 may change the mobility potential of the latter). Once the mobile phone is on and can gain a signal it can be placed precisely and dynamically plotted on a set of static GPS coordinates according to where the user takes it. Communication over distance (or any other application of integrated mobile services) can continue without the user being aware that location is potentially an important

factor. The user can browse the internet or walk-and-talk freely. The only time when the locative factor becomes an issue occurs when the phone is out of range of the signal provider. There are many implications for the artistic investigation of 'dataveillence', surveillence, people-tracking, 'Big Brother' society and the implications for personal privacy – all issues that artists are in a unique position to comment on. A prospective advantage of the locative awareness element of the device includes the possibility of creatively engendering augmented public spaces in an enriched 'mixed-reality' world which maybe will have more meaning and interactively enriching potential than the over-burdened and slightly unconvincing, statically placed worlds of virtual reality. This aspect may be particularly important in the enactment of gaming art, and role-playing gaming art and indeed artists who are already exploring this mixed-reality format are groups such as Blast Theory (Blast Theory, 2006).

2. Context awareness

'The vision (of context awareness) builds on the idea that devices can adapt to the surrounding use situation or the context' (Aulasvirta, 2005) Context awareness has implications for way an artistic piece can be designed in terms of interactivity and participatory experience. Context awareness can exist in many types of mobile application and has the aim of facilitating user experience. Primarily it aims to anticipate problem-solving in mobile 'need-fulfilling' user scenarios. Artistic scenarios in the mobile arena could actually question what the participator actually defines as 'need' in a particular mobile context, how the resultant information is learned and adapted and how, as a result, behaviour changes over time. The mobile phone is actually a very useful device for exploiting this concept as it already has the potential to keep recorded histories of interaction and to provide an integrated memory representation or 'diary' of occurring events at certain points of observation. Some mobile phone companies provide services that already exploit this potential e.g the Nokia LifeBlog (Nokia, 2006). Others have defined this type of mobile memorabilia as 'intimate media' (Cass et al, 2005). Context awareness in a mobile scenario is highly dynamic and some of the interesting areas to investigate will be those of presentation, interaction and communication restrictions as well as the device's ability to 'sense' and make sense of the environment.

3. Ubiquity

The vision of ubiquitous technology is:

> that populations of computing entities - both hardware and software - will become an effective part of our environment, performing tasks that support our broad purposes without our continual direction (Milner, 2006: p386).

One of the main features of ubiquitous technology (including mobile phone technology) centres round the mobility of people and the many varieties of potential cooperation between hardware (sensors and effectors) and software in the mobile context based primarily on the patterns and resultant purposes or directions of hardware and software interactions. In terms of modelling ubiquity Robin Milner asks:

> What concepts are needed to specify and describe pervasive systems, their subsystems and their interaction? (Milner, 2006: p383)

His range of concepts provide artists with the potential to investigate this sort of mobile environment in a truly creative way. They are:

> *authenticity, belief, communication, compilation, connectivity, continuous space, continuous time, data protection, delegation, duty, encapsulation, failure, game theory, history, knowledge, implementation, intention, latency, locality, mobility, negotiation, obligation, power supply, protocol, provenance, reflectivity, security, specifications, stochasticity, trust, verification, workflow* (Milner, 2006: p386)

Ubiquity is the foundation on which mobile context awareness is based and with the mobile phone gradually developing into the potential 'all-inclusive' wearable gadget, access to the 'all-pervasive' world of computing/machine/sensor interaction (although already present in some mobile contexts) has the potential to be much more highly developed in the future.

4. Interactivity

The basis for interactive mediation is centred on the behaviour, function and presentation of information to users. To develop the type of ubiquitous techniques that are sensitive to the needs of and engage individuals, communities and society, new paradigms of interaction are necessary.

Interactivity is a very-highly emphasized factor in present-day digital art, maybe at a cost to more traditional artistic elements. With the continual development of the phalanx of personal and mobile technology, person/machine interactions are one of the main areas of development in human/technology artistic communication, the idea being, perhaps, to change a traditionally passive media experience to one that is either more dynamic and informative or to one that is emotionally responsive to the individual. Once again this throws up some interesting areas for investigation, such as whether the intention of a piece of interactive mobile digital art will be understood by the person interacting with it, or the intentions of the person participating will not be those anticipated by the author of the work. The grey area of defining traditional interactivity in mobile digital art contexts remains uncertain.

5. Content Creation and Sharing - Web 2.0

The core of Web 2.0 philosophy appears to be based on the premise that collections of web software (such as Google, BitTorrent, Napster, Wikipedia, The FreeSoftware Movement) should actually act as a dynamic service to engender and facilitate the social engagement of internet and mobile internet communities thus enabling individual users of the services to easily add, share and develop content over the web platform. Web and mobile web users now have the potential to develop and share the services of interest to them. Some have described Web 2.0 as the harnessing of collective intelligence (O'Reilly, 2005) and examples of such collaborative software efforts include flickr (Yahoo Inc, 2006) for photosharing, youTube (Google, 2006b) for video sharing, wikipedia (Wikimedia Foundation 2006) for knowledge sharing amongst the many varieties and examples of 'blogging' and 'tagging'. These

methods of social information-sharing have also been enthusiatically embraced by the mobile community. Infact the general public appear to have embraced the collaborative engagement of photo-messaging and mobile blogging even more than artists.

6. Convergence

> The growing trend of communication technologies points to convergence....the tendency to integrate digital audio, video, text and data into new devices and networks (Wei. 2006).

The mobile phone (particularly the 3G mobile phone) as a multiform, media-rich platform has become an integral part of the distinctive class of mass communication. Although the motivations for mobile phone use are still based on its position as a status symbol, its mobility and the potential for immediate accessibility and the redesign of mobile interfaces to facilitate internet/web access have led to a more enthusiastic embracing of traditionally computer-based internet activities, such as searching for information, engaging in web entertainment and community/social activities such as blogging and information-sharing. . With the advent of 4G phones (expected 2010), the mobile phone will still evolve into a more powerful all-in-one medium including Video Telephony, Voip and Wifi. Users can also easily become producers of information. Future artistic projects could investigate the mobile phone as a uniquely interactive medium which offers a high degree of control over personalization. This will depend on whether mobile phone as a new delivery platform of information will be able to compete with the development in existing media devices and applications.

7. Absent Presence

During interactive mobile phone communication the user is generally present in one reality (maybe surrounded by other people) while conversing with an absent 'other' person in another reality. The user and 'other' are also absent in relation to their local social realities because their attention is diverted by their use of mobile technology. 'Phone conversation is seen as an example of presence without a place'. (Rettie, 2005: p23).

Kenneth J Gergan describes the potential of absent presence to

> 'render daily life a landscape of 'dangerous liasons'.....The dialogic of local meanings may also be curtailed; when we are listening to voices from afar we are no longer building the realities and moralities of the local together'. (Gergen, 2002: p231-232).

Mobile phone technology has the capacity to revitalise the singular identity in relation to others, both at the intimate level and at the level of community interpersonal relationships. At the present, such interpersonal communications take place through talk, texting and photo-messaging although the concept of absent presence may come more into question once 4G mobile services are established, especially if video-messaging becomes popular.

8. Mobile Emotion

The potential for exploring the expression of inner emotions within the mobile digital art context releases many interesting possibilites. Conveying or representing expressive emotion can be difficult on such a small device, although outward emotivity in the device-user is sometimes very obvious (changes in voice level, arm gesturing, pacing etc). A few artists and researchers have experimented with attempting to convey emotion in SMS messaging through the use of affective colour (Stahl et al, 2005), (Lindstrom et al, 2006). The emphases in these types of studies have been based on finding novel ways undertake these tasks in a mobile context, ignoring perhaps the more obvious (and more difficult to implement) potential for emotional expressivity as a result of monitoring bodily states. Critchley in an article in the British Medical Bulletin observes that 'brain regions implicated in emotional processing are involved at some level in control of autonomic responses and peripheral arousal states' (Critchley, 2003: p40) implying that emotions can be individually monitored by changes in bodily states. This brings mobile art into the 'wearable technology' domain especially when combined with RFID and GPS technologies. Although researchers are investigating bodily monitoring hardware and software for mobile phones, primarily as health or sport aids (Chen et al, 2005), (Kogure et al, 2005) the potential also now exists for building embodied emotional response into mobile digital art through interactive monitoring of bodily states. Potentially this could be one form of a new type of interaction that could be implemented on mobile phones.

Conclusion

Traditionally the mobile phone has been restricted to digital artists mainly because of the difficulty of programming the device and creating meaningful, creatively enlightening and enriching content. Also traditional mobile phone '*Apparatgeist*' has always been so closely interlinked with flexible communication over long-distance. There have also been various limiting physical constraints within the device itself such as the size and resolution of the screen, the substandard audio playback and recording facilities and the lack of effective interactive device such as a mouse or pointer. However with the development of new handsets, such as smartphones and new services, such as moblogging and photo/videosharing services (Web 2.0) and the fact that so many people own handsets mean that artists are in a unique position to creatively exploit the *Apparatgeist* inherent in the mobile phone and develop a new consciousness in relation to it, or at least investigate the nature of *Apparatgeist* in a creative way. The mobile phone could potentially become the computer interface of the future, the advantages of its un-wired portability, social interactivity independent of location and potential economic viability being major factors in its rapid popularity. Once designers address the issues of screen, keyboard size, interactive device such as pointer or touch screen or develop other alternatives, this will be the communicative and multimedia digital tool of the future. For too long a time comment and study on mobile phone technologies has been the preserve of technologists, commercial service providers and resellers, academic institutions and social theorists. *Apparatgeist* may always be driven by the technical developments in mobile phone technology but with the advent of more convergent and sophisticated mobile devices and user-friendly services digital artists are now more in a position to incorporate this relatively new medium into the larger realm of digital and computer art thus helping

to inform and reinvent the nature of *Apparatgeist* in relation to social mobile theory and art itself.

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