Art by Telephone: from static to mobile interfaces [1]

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Abstract

This paper investigates artworks that use telephones as interfaces. Considering telephones as telepresence technologies, it focuses on the point of transition from the fixed to the mobile telephone, exploring how artistic practices change when one component is added: mobility. In addition, location awareness capabilities transform cell phones into more than voice devices. Consequences can be perceived on artistic experiences that bring the medium into public spaces, transforming them into ludic, and collective interfaces, pointing to how mobile technologies can be used in the future. From a broader perspective, this study addresses how art mediated by technology deals with the connection between physical and digital spaces.

Keywords

Telephones, mobile interfaces, cell phones, virtual, physical, telepresence art

This paper investigates how the artistic approach toward telephones changes when they become mobile. The transition occurs mainly because cell phones are no longer only voice devices. Mobility and location awareness transform them into social and ludic technologies, giving them the ability to merge physical and digital spaces, and to find one's relative position in the globe merely with a personal handset. Examples of artworks with fixed and mobile telephones help to clarify this transition.

Reviewing artworks with telephone handsets [2] helps us to remember how the device has previously been used as an artistic interface, and to imagine new approaches when this interface becomes mobile.

1. Some early experiments on telephone-based art

Very early on, some artists started to use telecommunication media to develop projects. Experimenting with remote-controlled creation may have been the first use of telephones to produce art. Considered one of the first to create a telepresence piece, László Moholy Nagy experimented using the telephone to transmit directions for fabricating enamel tile paintings. He wrote:

> *In 1922 I ordered by telephone from a sign factory five paintings in porcelain enamel. I had the factory's color chart before me and I sketched my paintings on graph paper. At the other end of the telephone the factory supervisor had the same kind of paper, divided into squares. He took down the dictated shapes in the correct position. (It was like playing chess by correspondence.) One of the pictures was delivered in three different sizes, so that I could study the subtle differences in the color relations caused by the enlargement and reduction [3].*

Eduardo Kac suggests that nobody knows whether Moholy-Nagy's story is true or not, because his wife stated that in fact she ordered the paintings in person. Moholy-Nagy's work, whether actual or apocryphal, demonstrates that the artist could be removed from the location of artmaking.

In 1969 the Chicago Museum of Contemporary Art organized an exhibition called *Art by Telephone* that somehow repeated Moholy-Nagy's experiment. Thirty-six artists were asked to place a phone call to the museum and to instruct museum staff about what their contribution to the show would be. The museum then produced the pieces and displayed them. The telephone as a new artistic medium was not explored as a creative medium in *Art by Telephone*; it was only used as a remote interface to accomplish something that could be done, for example, if the artist went to the museum and talked to the curator.

Kac [4] says that one of the few creative uses of the technology by an artist in this exhibition was accomplished by Robert Huot. The artist

> *potentially involved all visitors of the museum and attempted to generate unexpected first meetings by employing chance and anonymity. Twenty-six cities in America were chosen, each starting with a letter of the alphabet, and twenty-six men named Arthur were selected, one in each city. Each Arthur's last name was the first listing under the initial letter of the city (Arthur Bacon, in Baltimore, for instance). The Museum displayed a list of all cities and names, and invited visitors to call and ask for "Art." The work was the unexpected conversation between "Art" and the visitor, and its development totally up to them.*

Huot's piece presents the artist as the creator of a context, in which the visitor participates in the creative process. Here the telephone is used to turn artmaking into a social experience. Generally, up until the end of the 1990's artworks that used telephone handsets were almost all restricted to calling another party, using the phone's ring as an artistic element, and recording voice messages.

More recent pieces that employed the telephone include the works developed by the Disembodied Art Gallery, a British Group that explores conceptual and telecommunication-based art. For instance, *Babble* was a telepresence-art installation created in 1993 that received over 70 voice contributions from the United States, Australia, Japan, and Europe. Callers telephoned a U.K. number and could record poetry, stories, and thoughts on an answering machine. Then these messages were collected and replayed automatically to visitors of the gallery whenever a member of the public entered the installation room. *Temporary Line* (1993/94), another piece by the Disembodied Art Gallery, was an audio-reactive sculpture constructed from telephone handsets. Whenever a member of the public walked close to the sculpture, the sound of whispering voices would dart around the sculpture, from telephone handset to telephone handset, at random around the feet of the visitor.

In the last ten years, cell phones have become highly popular among telecommunication technologies, exceeding the number of existing fixed landlines and personal computers. Cell phone ownership has increased much more rapidly than PC ownership because of its relative affordability. This gap is markedly larger outside the U.S.

The common idea behind most of these projects is not so much to explore synchronous communication, as is considered the general use of the telephone, but to investigate the use of a recorded presence or voice as a past presence. Telephones have been considered the ultimate virtual medium [5], because they eradicated the distance between disembodied voices. Therefore it transformed the pure element of voice into presence: an absent presence. The above mentioned artists used the communication technology to emphasize not only this removal in space, but also a removal in time, by bringing past recorded voices into the immediate present.

Heath Bunting, a contributor to the Disembodied Art Gallery, created a piece that incorporated the use of the Internet to reach a more spatially distributed audience. The 1994 piece entitled *Kings Cross Phone-in* scattered numbers of the telephone kiosks around Kings Cross British Rail station using the Internet and asked whoever found them to choose a number and call it at a specific time and chat with whoever picked up the phone. Likewise, in December 1996, StallPlaat created *The Answering-Machine Solution C.D.*, a large collection of 30-second tracks that could be used as answering machine messages to celebrate their 100th CD release. Keith de Mendonça, from the Disembodied Art Gallery, provided the front cover for the CD and an answering machine message.

Also using telephones in public space, Stephen Wilson created a telephone-based project called *Is Anyone There?* (1992) during one week in San Francisco. In the project, a computer-based system with digitized voice capabilities made hourly calls to five ringing pay phones on the streets with the aim of involving whoever answered the call in a conversation about life in the city. The system used intelligent response programming to engage passersby into a short dialog. The conversations were then digitally stored in a database and accessible through an installation which included a database of these recorded calls. In the gallery, the installation changed randomly to a real time mode that placed live calls to the pay phones, linking viewers with a real person on the street. With this piece, Wilson tried to explore random communication between unknown people, placing the user as a content creator. Furthermore, he looked into possible developments for artificial intelligent systems, by analysing dialogs between computers and humans.

It is possible to perceive two characteristics in the above mentioned works. First, although they could have been performed in urban spaces, such as Is Anyone There?, they were still connected to a fixed place, like a pay-phone. Second, the pieces mostly transmitted voice and stored voice messages. This scenario changes with mobile phones.

2. Mobile phones: Bringing the interface into public spaces

In the last ten years, cell phones have become highly popular among telecommunication technologies, exceeding the number of existing fixed landlines and personal computers. Cell phone ownership has increased much more rapidly than PC ownership because of its relative affordability. This gap is markedly larger outside the U.S. In the United States, the rates of cell phone ownership and PC ownership are almost the same: 54.30% to 65.89% respectively [6]. However, in countries where fixed telephone lines are expensive and not so widespread, the difference is substantial. For example, in Brazil 26.36% of the popu-

lation owns a cell phone, while only 7.48% have PCs. The same difference applies to other countries in Latin America, such as Paraguay and Mexico. Likewise, in Japan there are more than 86 million mobile users (67.96%) as opposed to 48 million (38.22%) PC owners. Finally, in Finland 90% of the population uses cell phones while only 44.17% have PCs at home.

The large number of cell phones in use worldwide makes them significant social and communication tools. Moreover, the use of mobile phones as artistic interfaces both reaffirms their popularity, as well as indicates new uses for the technology. The artistic use of mobile communication interfaces is an arrow pointing toward two directions. First it draws our attention back to past telephone-based artworks. Second, it foresees new uses for the mobile interface. Although in the United States and in most countries of Latin America, the cell phone is mostly used to speak, much like a "mobile telephone," developments of the mobile Internet, SMS (Short Message Service), camera phones, and location-based services, mostly in Japan and Scandinavian countries, transform the mobile into more than a telephone.

Telecommunications-based art is primarily concerned with connecting distant and contiguous spaces. According to Frank Popper [7], communication art has six main characteristics: (1) it stages physical presence at distance, (2) it telescopes the immediate and the delayed, (3) it focuses on the playfulness of interactivity, (4) it combines memory and real time, (5) it promotes planetary communication, and (6) it encourages a detailed study of human social groupings. In a broader sense, it can be said that telecommunication art not only foresees new developments for existing technologies, but also changes our perception of space. It focuses on the relationships between participants, rather than on the creation of material objects [7], in a situation where the author is the context provider, not the content creator.

While the fixed telephone connected specific places, cell phones connect people who roam through urban spaces. Mobility strengthens the playfulness of interactivity, transforming urban spaces into a hybrid reality. Hybrid spaces are created by the merging of physical and virtual spaces. These hybrid spaces incorporate mobility and sociability.

When cell phones arose, as in the early days of the telephone [8], they were regarded as mediums to transmit messages, and generally only urgent messages. Even now, cell phones are viewed in many parts of the world as mobile telephones, that is, a telephone that can be carried around, used mostly for voice conversations. However, the incorporation of new functions such as text messaging (SMS), multimedia messaging (MMS), and location-based services contribute to the creation of new meanings for the mobile interface. The cell phone's potential for making new art is explicitly highlighted in cities with dense populations, because there is more potential for people to interact with each other. The emergence of nomadic technology devices allows whole cities to be used as a "responsive surface," or as a game board. It is as though the urban space has become a map of itself, a place for interaction and long-distance contact, without the need for a restricted or fixed space.

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The following works use cell phones as promoters of collective and social actions in public spaces. They envision the phone no longer as only a voice transmission device, but also as a musical instrument, and a game controller [9].

3.1. *Dialtones:* a telesymphony.
In the Ars Electronica 2001 in Linz, Austria, Golan Levin and the Ars Electronica Festival used the audience's cell phones to create a music concert at the Brucknerhaus Auditorium. Prior to the concert, members of the audience could register their cell phone numbers in kiosks, after which they would be assigned a seat in the auditorium and have a set of ringtones downloaded to their phones. Knowing each person's position in the auditorium and their respective ringtones, the computer could call them and produce a musical symphony, which was eventually a product of collective authorship.

[Picture 3: Dialtones in Austria 2001. The audience is able to see a mirror of itself on the ceiling, where the spotlights point to the actual ringing phones. The two projection screens placed on the side of the stage show the graphic interface used by the performers to trigger the audience's phones, constituted by the spotlights projected on the audience. © 2001 Golan Levin]

This piece was innovative because it used cell phones as musical instruments. Although Dialtones is not a communication experience and it does not include voice, it can be regarded as a social and collective action happening in public space [10]. The distance from the mobile phone as a two-way voice communication device becomes even stronger when cell phones' power is used to create collective games.

3.2. *Blinkenlights*: the cell phone as a remote controller and game device

In 2001, the Chaos Computer Club transformed an eight-story building in Berlin's Alexanderplatz into the world's biggest interactive computer display. One hundred forty-four lamps were arranged behind the building's front windows, which were independently controlled by a computer to produce a monochrome matrix of 18 x 8 pixels. Users could "control the building's façade" either via their cell phones or Internet, creating animations, playing Pong, or sending love letters.

Participants could use their mobile phones to call a specific number and play Pong against the computer. At first they heard instructions like "use the 5 to move the paddle up and 8 to move it down." If a second person called the system simultaneously, one caller played against the other. The difference between *Blinkenlights* and ordinary computer game was the size of the "screen": a whole building in the middle of "Alex".

Blinkenlights transformed cell phones into game devices, and brought the game board/screen outside into social urban spaces. The enlargement of the game board to the size of a building façade immersed large numbers of players and passersby into the game, transforming physical space into the game board. The possibility of carrying around the game control (that is, the cell phones) allowed people to interact with the screen and with each other in an open space. Blinkenlights explored the cell phone's potential to engage large groups of urban users and viewers in a hybrid space that is both virtual and physical.

3.3. Broadening the concept of mobile technologies: Blast Theory

Although the British group Blast Theory did not work with cell phones initially, their projects foresee new ways mobile communication devices may function in the near future. In conjunction with the Mixed Reality Lab at the University of Nottingham, England, Blast Theory employs handheld computers and wireless devices to mix physical and virtual spaces, transforming the city into a playful multiuser experience. Their work focuses on developing games that happen simultaneously in physical and digital spaces, integrating and forming communities between players who walk on the street and online players. In their games, an action in the physical space might influence a decision in digital space and vice versa.

Street runners were equipped with handheld computers connected wirelessly to the Internet, GPS receivers, and walkie-talkies to communicate with other users. Up to 20 people could be online simultaneously. Online players ran away from street players in order to elude capture. If a street runner caught a virtual player, she was supposed to take a picture at the place where the chase ended, which was obviously an empty space. Street runners caught an online player if they were within 5 meters of each other.

Their first collaboration, *Can You See Me Now?* [11], resembled a traditional Pac-Man game played in hybrid space. Players from anywhere in the world could play online against the members of Blast Theory. Tracked by satellites, Blast Theory's runners appeared on a virtual map of the city center next to online players. On the streets, handheld computers showing the position of online players guided the runners in tracking online players down. Street runners were equipped with handheld computers connected wirelessly to the Internet, GPS receivers, and walkie-talkies to communicate with other users. Up to 20 people could be online simultaneously. Online players ran away from street players in order to elude capture. If a street runner caught a virtual player, she was supposed to take a picture at the place where the chase ended, which was obviously an empty space. Street runners caught an online player if they were within 5 meters of each other. The game has been played on specific days in Sheffield (UK) in 2001, in Rotterdam (Holland) in February 2003, and in Oldenburg (Germany) in July 2003 [12].

Similarly, their recent collaboration, *Uncle Roy All Around You* [13], sets online players alongside players on the streets. Street players search for Uncle Roy with the aid of handheld computers. On the other hand, online players search for the street players and also for Uncle Roy in a virtual model of the same physical area where the street players are running.

Online and street players must work together, and they have 60 minutes to complete the task. Street players can see online players on the map of their handheld computers and online players also see street players in the virtual modeled city. During the gameplay, online and street players can communicate through walkie-talkies and ask each other for help. The game was played in 2003/2004 in Westminster, Manchester, and West Bromwich (UK).

With the increasable availability of 3G phones [14] that incorporate all of the above mentioned features, Blast Theory started using cell phones as their primary interface. Their most recent project *I Like Frank* [15] is a similar experience that uses 3G cell phones to connect virtual and physical players in Adelaide, Australia (2004). Blast Theory looks to establish cultural spaces for mobile devices via games. Future games might allow the public to play on the streets using their own cell phones. The rapid worldwide spread of 'smart' phones may increase the potential for this type of games and ludic experiences with cell phones to bring together users in different and distant places in the world.

Within this context, it is important to understand that when mobility was added to telephones they became more than mobile phones. Mobility brought new artistic meanings to the telephone interface: bringing phones into the city space, releasing them from a fixed place, transforming them into collective/social mediums and ludic devices. Henry Jenkins [16] suggested that "games have been to the PC what NASA was to the mainframe - the thing that pushes forward innovation and experimentation." Location-based activities will play the same role for cell phones, differentiating them from fixed phones, and increasing their power for communication and community formation.

Mobile and pervasive technologies help us to be aware of the physical space in which we live. Digital technologies in the 1990s have been mostly criticized for creating sociability in a virtual space, which was disconnected from our reality, placing users in a simulated and "unreal" world. Mobile technologies bring these multiuser and playful experiences to physical spaces, encouraging users to go out on the streets, and bringing new meanings to familiar spaces.

As art always foresees new uses for technologies, it is wise to look at these artistic experiments and try to picture the future, imagining how contemporary society will incorporate mobile devices into its everyday activities. Mobile phones are no longer just telephones.

Notes:

1. This article comes from my Ph.D. dissertation, titled From cyber to hybrid: Relocating our imaginary spaces through mobile interfaces, defended in the School of Communications at the Federal University of Rio de Janeiro, Brazil (2004).

2. Other telecommunication media, such as satellites, slow scan TV, and even those which use the telephone network, like modems, videophones, and telefacsimiles, are outside the scope of this review. Some examples of telepresence art with satellites, and the transmission of data via modem, faxes, and slow scan TV are "Hole in Space" (1980) from Kit Galloway and Sherrie Rabinowitz, and "The World in 24 Hours"(1982) from Robert Adrian. Other examples can be found in Stephen Wilson's *Information Arts* (2002), Frank Popper's *Art of the Electronic Age* (1993), and Heidi Grundman's *Art Telecommunications* (1984).

3. Moholy-Nagy Apud Eduardo Kac, "Aspects of the Aesthetics of Telecommunications," in John Grimes & Gray Lorig (eds.), *Siggraph Visual Proceedings*, New York: ACM, pp. 47-57 (1992) <http://www.ekac.org/Telecom.Paper.Siggrap.html> (01 Sep. 2003).

4. Eduardo Kac [3].

5. Stephen Wilson, "Chapter 6: Telecommunications," in *Information Arts: Intersections of Art, Science, and Technology,* Cambridge: MIT Press, p. 489 (2002).

6. All statistics provided by the International Telecommunication Union, 2003. <http://www.itu.int/ITU-D/ict/statistics/> (16 August 2004).

7. Frank Popper, *Art of the Electronic Age*, New York: Harry N. Abrams, Inc., Publishers, p. 127 (1993).

8. See Diane Zimmerman Umble's article, "Sinful Network or Divine Service" in Lisa Gitelman and Geoffrey B. Pingree, *New Media - 1740-1915*, Cambridge, Massachusetts: The MIT Press, p. 143. About the first days of the telephone in Lancaster, England, around 1910: "Telephone company advertising in the village weekly newspapers amplified these themes by emphasizing the value of the telephone in times of emergency: accidents, fires, illness, stolen horses, mad dogs, robbers, and threatening weather."

9. Other examples of artworks with cell phones can be found at Stephen Wilson's compilation under "Telecommunications: Telephone Art/Cell Phone" <http://mercury.sfsu.edu/~infoarts/links/wilson.artlinks2.html> (16 August 2004), and in Golan Levin's list "An Informal Catalogue of Mobile Phone Performances, Installations and Artworks"

<http://www.flong.com/telesymphony/related/index.html> (16 August 2004).

10. A past work combining telephones and music was *Telefonmusik, Wiencouver IV* (1983) in Heidi Grundman (ed.), *Art Telecommunication*, Vancouver, Canada: A Western Front Publication, pp. 112-125. (1984). However, whereas this project was mostly concerned with the idea of transmitting and receiving music over the telephone, Dialtones transformed the cell phone in the music instrument itself. In 1983, one of the major characteristics of the project was the limited frequency bands which the telephone could provide for music broadcast. In 2001, Midi (Musical Instrument Digital Interface) ringtones enables the creation of polyphonic musical compositions simulating an orchestra on the handset.

11. Blast Theory <http://www.blasttheory.co.uk/work_cysmn.html> (26 Jan. 2004).

12. *Can You See Me Now?* was nominated for an Interactive Arts BAFTA in 2002 and has won the 2003 Prix Ars Electronica Golden Nica for Interactive Arts.

13. Blast Theory <http://www.uncleroyallaroundyou.co.uk/> (26 Jan. 2004).

14. Blast Theory <http://www.ilikefrank.com> (17 May 2004).

15. Third Generation Cellular System. "Third Generation Cellular Systems include the possibility to offer data services without the need of establishing a connection (permanent connection) and speeds up to 2 Mbps. The main systems are WCDMA and CDMA2000 1xEV. The ITU refers to 3G as IMT-2000." <http://www.teleco.com.br/glossario.asp?termo=3G> (10 Jan. 2004).

16. Henry Jenkins, "Games, the New Lively Art." <http://web.mit.edu/21fms/www/faculty/henry3/GamesNewLively.html> (16 August 2004).

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