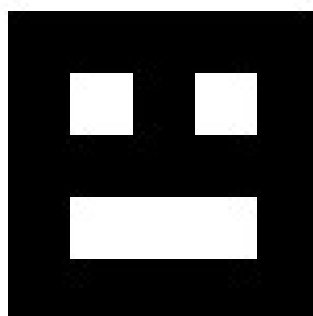
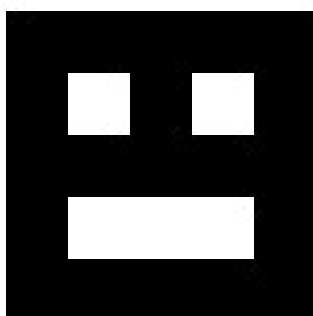
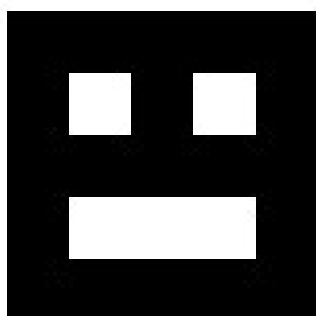
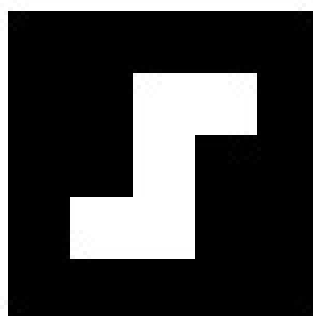
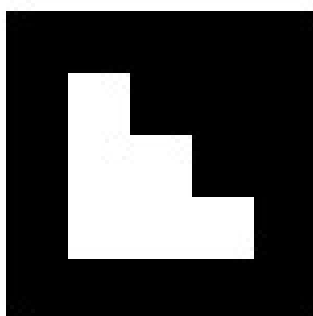
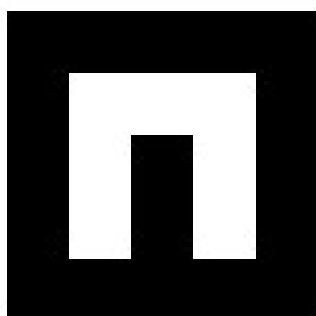
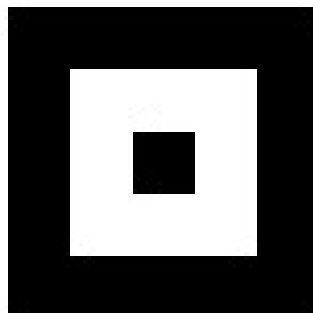
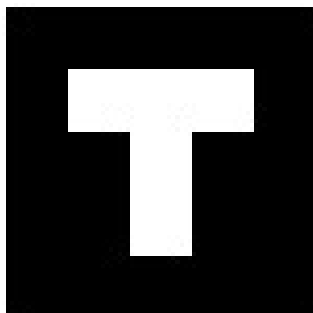
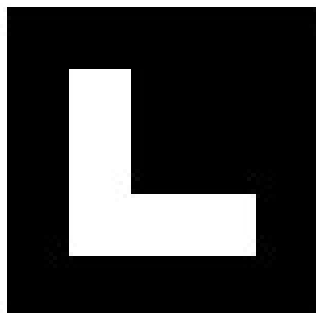
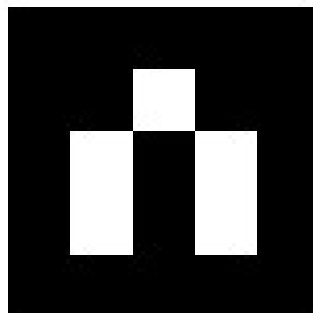
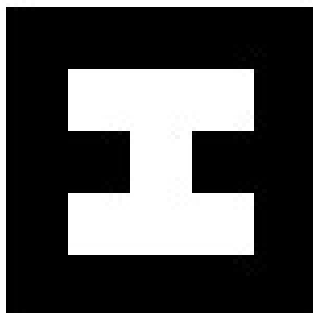
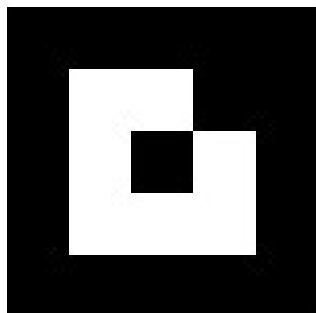




TELETYPEPHONE

DIALTONES

(A TELESYMPHONY)

A concert performed entirely through the ringing of the audience's own mobile phones. Presented Sunday, 2 September 2001 at the Brucknerhaus Auditorium in Linz, Austria as a co-production of Golan Levin and TAKEOVER: the 2001 Ars Electronica Festival.

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OVERVIEW

Dialtones is a large-scale concert performance whose sounds are wholly produced through the carefully choreographed ringing of the audience's own mobile phones. Because the exact location and tone of each participant's mobile phone can be known in advance, *Dialtones* presents a diverse range of unprecedented sonic phenomena and musically interesting structures. Moreover, by directing our attention to the unexplored musical potential of a ubiquitous modern appliance, *Dialtones* inverts our understandings of private sound, public space, electromagnetic etiquette, and the fabric of the communications network which connects us.

Dialtones premiered in two consecutive concerts at the Linz Brucknerhaus on the 2nd of September, 2001, as a co-production of Golan Levin and the 2001 Ars Electronica Festival.

Dialtones begins with a brief preparation phase prior to its performance, during which the members of the audience register their wireless telephone numbers at a cluster of secure Web kiosks. In exchange for this information, the participants receive seating assignment tickets for the concert venue, and new "ringtones" are then automatically downloaded to their handsets. During the concert itself, the audience's mobile phones are brought to life by a small group of musicians, who perform the phones en masse by dialing them up with a specially designed, visual-musical software instrument. Because the audience's positions and sounds are known to the *Dialtones* computer system, the performers can create spatially-distributed melodies and chords, as well as novel textural phenomena like waves of polyphony which cascade across the crowd; these musical structures, moreover, are visualized by a large projection system connected to the performers' interfaces. Towards the end of its half-hour composition, *Dialtones* builds to a remarkable crescendo in which nearly two hundred mobile phones peal simultaneously. It is hoped that the experience of *Dialtones* can permanently alter the way in which its participants think about the cellular space we inhabit.

ARTISTS' STATEMENT

Wireless telephony has quickly become an indispensable aspect of modern life. Today, one out of ten people on the planet possesses a mobile phone; over the next three years, according to the industrial analysis firm The Gartner Group, this market is expected to increase by almost a billion new users. Ironically, the astonishing eagerness with which we have adopted mobile phones is matched by our almost equal repulsion on the occasion of a cell phone's ringing. Mobile phones now infuse our theaters and public spaces with the least welcome details of our neighbors' intimacies, and perforate our private lives with the sonic machinery of electronic commerce. Our emotional reactions to these interjections can even outstrip the veneer of our professional identities: when ringing mobile phones interrupted keynote speakers at a recent telecommunications conference in Finland, the conference manager became enraged and threatened to get a radio-frequency scrambler to silence the din. Caught between adoration and irritation, we have come to regard our intimate communications apparel with a deep ambivalence.

In the hype, hate and hypnosis surrounding the mobile phone, its potential as an ingredient of art has been largely overlooked. As with the proverbial fish who would never discover water, we take for granted that we are immersed in cellular space, our imaginations dulled by the extraordinary ubiquity of our wireless devices. Announcers at every modern-day concert command us to turn off our cell phones, but what Cagean aesthetic possibilities might we discover in leaving them on? What deranged beauty might we find, or what might we learn about our interconnected selves, in their high, pure tones? The mobile phone's speakers and ringers make it a performance instrument. The buttons make it a keyboard and remote control. Its programmable rings make it a portable synthesizer. Yet, although no sacred space has remained unsullied by the interruptions of mobile phone ringtones, there is no sacred space, either, which has been specifically devoted to their free expression. In the context of this lack, and in the context of our society's contradictory attitudes towards wireless communication technologies, *Dialtones* is proposed.

If our global communications network can be thought of as a single communal organism, then the goal of *Dialtones* is to indelibly transform the way we hear and understand the twittering of this monumental, multicellular being. One of *Dialtones's* strategies for doing so is the musical reification of this organism's sprawling and enveloping omnipresence. By placing every participant at the center of a massive cluster of distributed speakers, *Dialtones* makes the ether of cellular space viscerally perceptible. In a rejoinder to the eminent electronic composer Iannis Xenakis—who once complained that all electronic music sounded alike, because it would inevitably emanate from the same pair of speakers—*Dialtones's* radical surround-sound is at once musically and phenomenologically unique.

In an appropriate acoustic environment, the sporadic triggering of calls to mobile phones can evoke the placid chirps and trills of crickets, cicadas, frogs and birds. If hundreds or even thousands of mobile phones were to ring simultaneously, by contrast, the result would be an unimaginably seething, engulfing cacophony. Between these two textural extremes lies an enormous terrain of more musically familiar possibilities: gently shifting diatonic chord progressions, distributed and aggregate melodies, roving clouds of spatialized sound-clusters, and pointillistic hyper-polyphonies. Over the course of its half-hour duration, *Dialtones* explores sequences and combinations of each of these possibilities, scaffolded throughout by a set of recurring harmonic themes and slowly-evolving melodic phrases. Ultimately, the exact composition of *Dialtones* is a function of both the scored and improvised performance produced by the project's staff, and the specific settings of the phones brought by the concert's attendees.

In *Dialtones*, the phones, and not their owners, speak to one another. By summoning a communication between communications technologies in which there is no interlocutor, *Dialtones* invites its participants to perceive an order in what is otherwise disorganized public noise, and ratify it as a chorus of organized social sound. Thus the overdetermination of the world of Work is countered with an equally determined Play, as the ringing of mobile phones—ordinarily, the noise of business, of untimely interruptions, of humans enslaved to technology—is transformed into a sound of deliberate expression, startling whimsy, and unconventional beauty.

TECHNICAL REALIZATION

Dialtones' technical realization is broadly divided into three distinct software subsystems: (A) the means by which the audience's mobile phones were registered (prior to the performance) into a networked database; (B) the means by which the audience's cell phones were computationally dialed (and thereby performed) during the concert itself; and (C) the telephony middleware which communicated the dialing requests from the performance system to the infrastructure of the local Mobile Switching Center. In addition, two special optical subsystems added visual and diagrammatic dimensions to the performance: (D) a vertical video projection system, in which spots of light were cast from above onto actively ringing audience members; and (E) an assembly of autonomous miniature lights which visually augmented the audience's highly-localized cellular activities. In this section, each of these mechanisms is treated in turn.

A. Prior to the *Dialtones* concert, audience participants register their mobile phone numbers (and model numbers) at special Web-based terminals located outside the performance venue. ASP-based CGI scripts are used to store this information in a SQL database. At the same time, the scripts also use a ticketing algorithm to issue the audience member an assigned seat in the concert auditorium. Depending on the make and model of the participant's phone, it can be possible to programmatically modify its ringtone at this time; if so, a specially-composed ringtone is encoded in the RTTTL (Ring Tone Text Transmission Language) data format and transmitted to the user's phone as an SMS message. The *Dialtones* staff composed more than 100 customized ringtones for the concert, created special software to convert these ringtones from MIDI sequences into RTTTL, and created a special CGI system to transmit the tones automatically to the audience phones. In the Linz performances, a small number of preconfigured phones were also available as temporary loans for phoneless participants.

B. After the participants' phone numbers and models have been collected and stored in a database, *Dialtones* itself is performed live on a custom software instrument which makes use of this database. This performance system consists of an interactive graphical software interface, which represents each mobile phone in the audience as a spatialized cell in a visual grid. During the performance, the performers place "animated paint" into specific cells in the visual grid; these actions trigger the ringing of the corresponding mobile phones in the audience. It is important to emphasise that no part of the dialing-performance is pre-sequenced or automatically triggered—all of the phone dialings are executed "by hand", that is, set into motion by the direct action of a human performer. The performance instrument is implemented as an OpenGL-based Windows application, using a standard mouse and keyboard as its interface system.

C. The Windows-based performance software transmits dialing requests over a TCP/IP LAN to a nearby Linux-based telephony server. This machine uses an Aculab telephony card in order to convert these requests into actual phone calls. The phone calls are then sent out over two dedicated E1 lines (primary-rate 2Mbit ISDN connections), and transmitted directly into the Mobile Switching Center (MSC) of the local mobile service provider (in the case of the Linz performances, Mobilkom Austria). The Base Transceiver Station (BTS, or cell antenna) in the location of the concert venue was specially modified by Mobilkom in order to allow at least 60 simultaneous signalling channels.

The audience-orchestras at the two Linz performances each consisted of 200 participants, who were arranged in a 20x10 seating grid. Of these 200 participants—whose phones hailed from 13 different countries—as many as sixty could be dialed at any one instant. Each performance lasted approximately 28-30 minutes, and entailed the placement of more than 8000 phone calls.

D. Two optical subsystems were deployed to add additional, visual layers to the *Dialtones* performances. The first of these was a vertically-suspended video graphics projection system (implemented with a wide-angle 12000-Lumen Barco ELM R12), which beamed individualized spots of light onto audience members to coincide with the ringing of their phones. Specifically, the performers' own grid-based graphical user interface was simultaneously projected onto the audience from above, and carefully registered with their seats. As a result, each participant was lit up by a personal spot of light whenever their handset was rung. Audience members were able to witness the play of these spotlights by observing their reflections in a large (12x6m) reflective-foil mirror, diagonally suspended above the stage.

E. The last visual subsystem consisted of a set of two hundred small keychain lights, which were distributed to the audience-participants at the time of their pre-concert registration. These inexpensive and autonomous devices, which are sensitive to energy in the 800-1900 mHz radio band, illuminate a small red LED when they are within one meter of a ringing mobile phone. Despite their small size, the darkness of the concert hall made it possible to observe the flashing of these lights, which were also reflected in the large suspended mirror.

Generally speaking, these keychain lights would flash about two seconds prior to the ringing of a nearby mobile phone, while the overhead video projection system would typically enable its corresponding spotlight about half a second after the phone had begun to ring. These minute differences in timing had the effect of diffusing events over time, creating micro-anticipations and multilayered syncopations between the light and sound of the performance.

The combined effect of the telephone rings and their synchronized visual phenomena was to render each individual person as an audio-visual pixel, a twinkling particle in an organic, audiovisual substance—and the participants, as a group, could at once be audience, orchestra and (active) score.

COMPOSITION AND INTERACTION IN *DIALTONES*

The *Dialtones* composition consisted of three major subsections, or “movements,” each approximately ten minutes long. The first section was produced entirely through the ringing of the handies of the 200-person audience; these phones were completely unamplified by any means. The second section, a “solo” movement, was performed entirely by *Dialtones* staff member Scott Gibbons on six amplified (but otherwise unmodified) mobile phones. In the third section, the soloist played together with the ensemble.

The goal of *Dialtones*’ three-part structure was to introduce the contrasting aesthetic possibilities of virtuosic real-time handy performance (“phone jockeying”) on the one hand, with coordinated-ensemble handheld-music on the other. In addition to yielding a variety of sonic contrasts, this structure also allowed for the exploration of a broad range of new musical interaction-models for wireless technologies: from the deeply practiced (e.g. Gibbons’ instrumental solo performance), to the entirely visual (e.g. the graphical interface controls used by Levin and Shakar to interactively perform the audience phones), to a lightweight model of consumer participation (e.g. through the selection/purchase of a phone model and the negotiation of its ringtone).

Within each of the three movements, the composition was structured as a sequence of sound-textures. These texture-segments were realized as interestingly distinct combinations of ringtones; while the sound of one texture resembled a forest full of twittering birds, another consisted of pure drones, and recalled the sound of a pipe organ. There were thirteen sound-textures in all, each approximately two minutes long. Although the order and duration of these sound-textures was explicitly scored, the moment-to-moment details within each texture was left to the improvisation of the *Dialtones* performers.

The final movement of the *Dialtones* concert concluded with a climactic crescendo involving both orchestra and soloist. During the course of this section, the *Dialtones* soloist Scott Gibbons initiated the “ringing” of a phone’s vibrator, transduced by a flat piezoelectric microphone and amplified by a subwoofer. At the same time, increasingly greater numbers of phones were introduced until the maximum possible number of simultaneous rings (60) was achieved. At this point, louder phones were swapped with quieter ones, and the selection of rings shifted around the orchestra until, within the space of a few seconds, all 200 of the audience phones had been triggered.

The negotiation of chance elements was an important part of the overall compositional strategy. In addition to encountering an unpredictable network dialing delay (on average, 4.7 ± 1 seconds), another important unknown concerned the specific models of phones that the audience would bring, and whether or not these phones could receive new ringtones .

SPONSORS

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Scott Gibbons began composing electronic music in 1984. Under the stage name of Lilith he began a two-fold exploration into the possibilities of natural acoustic sound on the one hand, and those of information technology on the other. Many of his compositions defy normal frequencies and come close to silence. Amongst the CDs he has released are *Stone* in 1992, *Orgazio* and *Redwing* in 1994 and *Field Notes* in 1998. Scott records on the Sub Rosa and Hushhush labels and is currently developing a new music opera with Societas Raffaello Sanzio in Italy.

Gregory Shakar is exploring various paths toward the goal of creating emotive and expressive active art. In the course of this effort he taps his experience as an artist, musician, and composer with the intention of teasing out the fundamentals of human attention and fascination. While participating with his recent reactive sound sculptures, viewers have controlled thunderous 30-meter long wires, expressive 3-meter tall metronomes, dozens of dangling tentacles, sociable spiny metal spheres and musical bolts of lightning. Shakar is currently a Research Fellow at the Interactive Telecommunications Program at New York University.

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