Golan Levin

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Aesthetics of Interaction in Digital Art

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often observed by onlookers. The recipients’ participation becomes a performance in which the collaboration is negotiated in the public space, active and passive roles can be assumed, and destructive or domineering behavior is just as possible as cooperative interaction. Different ways of organizing communication can be tested. The players must actively reach agreement with one another and at the same time demonstrate in public how well they are able to maneuver the joystick and how good their visual thinking skills are. Spectators may intervene by offering tips or making suggestions as to how the task should be best accomplished, by cheering the players on, by commenting on their progress or on their mistakes, and by celebrating when the puzzle has been completed.

The communication between the players—and its potential observation by spectators—is a central aspect of the aesthetic experience of this work. In a kind of model situation, actions are described, feelings are verbalized, and roles are negotiated. The aesthetic experience is a result of the creation of temporary relationships and role allocations—processes of identification with and distancing from others that become observable because they are negotiated in an artistic context. These phenomena are not staged or presented for the recipients, as they would be in theater or in painting. They are performed by the recipients themselves, who are motivated and channeled by the interaction system. The work literally orchestrates emotions that range from intense concentration to impatience, frustration, and indifference. It generates groups and lone wolves. Some people take charge; others follow orders. The work is still fascinating today not because of its (simple and now outdated) graphics and programming, but because of the constantly changing behavioral situations it generates. They are accentuated by their presentation in an artistic context and the resulting artificiality of the action, and they are staged as potential sources of aesthetic experience. In this work, social interaction in the form of face-to-face relations really is a central element of the aesthetic experience. The work requires social interaction and at the same time invites recipients to reflect on the relationship between art and play.

Case Study 7: Tmema, The Manual Input Workstation

This case study and the next describe works in which the primary focus is on multi-modal experience. Both of these works were displayed in the exhibition See This Sound—Promises of Sound and Vision, shown at the Lentos Kunstmuseum in Linz in 2009 and 2010, and both were documented, like the last of the cases studies presented here, in the context of research projects carried out at the Ludwig Boltzmann Institute Media.Art.Research.

Golan Levin and Zachary Lieberman have been working as media artists since the late 1990s. Levin focuses on audiovisual software; Lieberman is renowned for including magical effects into his works. Between 2002 and 2007 the two artists collaborated
Figure 5.15
under the name Tmema, creating several audiovisual art projects. Levin has also studied audiovisual software intensively at the theoretical level, and in 2000 he submitted a master's thesis titled “Painterly Interfaces for Audiovisual Performance.”

In New York, in 2004, at a Whitney Biennial evening dedicated to the topic of performing technology, Levin and Lieberman presented a performance titled *The Manual Input Sessions*, which subsequently became an interactive installation. *The Manual Input Workstation* has been exhibited in a variety of different locations, including the Ars Electronica Center in Linz. In the autumn and the winter of 2009–2010, the work was on view at the See This Sound exhibition at the Lentos Kunstmuseum in Linz. It was during that exhibition that Ingrid Spörl and I carried out a research project, with Lizzie Müller as a collaborator. The project included an in-depth interview with Levin (who was responsible for the Linz installation) and observations and interviews with several recipients using the method of video-cued recall.

*The Manual Input Workstation* is an interactive installation that allows users to create and manipulate images and sounds. At first glance, it resembles a normal overhead projector with some cut-out cardboard shapes lying next to it. Visitors can place the shapes on the glass top so that shadows of the shapes are projected onto the facing wall. But the work does more than simply project the shadows—it also records them with a video camera attached to a computer. The software analyzes the video data, then generates sounds and animated objects corresponding to the shapes, which are superimposed via a beamer onto the overhead projection. Thus, the visitors see the silhouettes of the shapes overlaid by computer animations and accompanied by sounds. Most visitors quickly realize that they can create images using not only the shapes that have been provided but also other objects—especially their own hands. In fact, visitors can use hand movements and gestures to discover more sophisticated ways of creating dynamic shapes.

In Linz, the installation offered three different program modes. The NegDrop mode invites the recipient to create closed contours that the system then fills with colored shapes. If the contour is opened, the shape inside drops to the bottom of the screen and bounces repeatedly, each time triggering a sound. The sounds vary, depending on the size, the form, and the fall speed of the shape. The second mode, Rotuni, generates sound-image formations based directly on the shadows created by the recipient. Starting from the center of the shape and extending only as far as its contours, a green radar arm rotates at a steady rhythm in clockwise direction. Each advance of the arm generates a tone, whose pitch is determined by the length of the arm (which depends, in turn, on the extension of the contours of the underlying shape). In addition, the entire shape lights up briefly when a very high note sounds. The third mode, InnerStamp, is again based on shapes that the system generates in order to fill out contours created by the user, but in this case the new forms are immediately sonified. As a result, the sounds can be modified in real time by altering the shapes. A large shape
generates a low tone, a small shape a high tone. Squeezing the shape changes the pitch and modulates the frequency, whereas moving the shape alters the stereo quality of the note. When the shape is “released” from its contours, the sound sequence and the animation that have been created are repeated in a loop.

The possibility of manipulating the sounding objects in real time allows the recipient to observe the interplay between shape and sound precisely. The factors that contribute to the generation of notes (volume, pitch, and timbre) are directly assigned to the characteristics underlying shapes (volume, contours, and position). Thus, the manipulation of shapes and sounds in real time enables the recipient to reflect, via exploration, on basic visual and acoustic phenomena.

In this process-intensive work (there are no recorded sequences of images or sounds), the constitutive rules play an essential role in the interaction process. The software on which the system is based not only analyzes the shadows projected onto the wall and then recorded on video camera; it also generates the animated shapes and accompanying sounds in real time, then superimposes them on the shadows. The software determines exactly how the system should react in the different modes to changes in shape, position, or size. It also has a pattern-recognition feature to manage the switch from one mode to another. The cardboard shapes provided for visitors include the numbers 1, 2, and 3, which refer to the three different modes of the work. As soon as the recipient places one of these numbers on the projector, the system recognizes its shape and activates the appropriate mode. The change in mode is thus built into the constitutive algorithm, but can also be generated operationally; the numbers act as a tool for switching between the different modes. Whereas in earlier manifestations of the work the visitors were left to grasp this function for themselves, for the See This Sound exhibition Levin decided to render the rule explicit by writing on the respective numbers the instruction “Place on the projector in order to switch to Scene 2” (or 1 or 3). In fact, Levin went even further in the explicit formulation of operational rules. He informed visitors that they could engage with the work by programming it to project the words “Please Interact” onto the wall whenever there was an absence of input, because he thought that instruction was necessary in the specific context of the Linz exhibition. In the first place, he observed, because the installation was displayed in a closed-off white cube, it wasn’t likely that visitors would be able to watch earlier interactions by other visitors that might provide pointers for their own interaction. Second, the exhibition included only a few interactive works, so visitors could not be expected to realize that this was an interactive installation. Third, the fact that it was presented in a museum for contemporary art, rather than, for example, at the Ars Electronica Center, meant that the visitors would not necessarily be familiar with interactive art.50

However, there is also another reason for the need to explain the mode change: the dual function of the number shapes. The number shapes are analyzed by the
system as abstract forms, which are animated and sonified, as are all the other shadows that are generated. But these three shapes also act as interpretable signs that bring about a change in mode. They operate both aesthetically and discursively. In Levin’s view, the availability of different program modes (he calls them “scenes”) is an important feature of the work because the artists were interested in presenting variations on a theme. In fact, each of the three modes of the work approaches the theme from a different angle.\(^{51}\) However, Levin allows that the mode changes might lead to interruptions of flow experiences.\(^{52}\) He thus sees the mode-change function as a flaw in the work that is a consequence of its history. In the original performance version, he recounts, switching from one mode to the next by laying down numbers worked very well because it was perceived as integral to the general workings of the system and was immediately comprehensible to the audience. In the installation version, however, Levin sees that the fact that the numbers react differently to all the other shadow forms that can be created causes irritation. Levin feels that his decision to write instructions about the mode changes on the numbers is a sort of capitulation.\(^{53}\)

The research project showed that the aesthetic experience of the work is significantly influenced by the dual functionality (discursive and aesthetic) of the numbers, and that this is true whether the operational rules are made explicit or not. The explicit formulation of the operational rules did not, in fact, guarantee that they would be unconditionally observed. Whereas one of the recipients reported that he saw the numbers but did not use them until he was reminded to do so by the camera team (when he was about to leave the work), another visitor had also noticed the shapes, but was so fascinated by the creative possibilities offered by her own gestures that she didn’t make use of the numbers until much later.\(^{54}\) In addition, placing the numbers on the projector doesn’t always lead to a mode change, for the pattern-recognition feature works only if the number can be recognized for long enough as a solitary shape. (If the number is held by the recipient’s hand or is touching other shapes, the system cannot recognize the pattern.) Another visitor, a media theorist experienced with interaction systems, immediately grasped the dual function of the numbers, but was then mainly interested in exploring whether these numbers could open up emergent potentials in the work. He reported that he initially interpreted the number shapes as actual orders of magnitude that might indicate a gradual increase in the complexity of the interactivity or of the audiovisual output. He dedicated a large share of his interaction time to the numbers, whereas the other two visitors were less interested in their special function.

One visitor, who described himself as musical, was initially attracted mainly by the acoustic phenomena.\(^{55}\) When he arrived, the work was in Rotuni mode, and he immediately began to move his fingers in time to the sounds, as though he were plucking the strings of a guitar. Observing himself on video afterward, he said he had found the overhead projector to be a physical hindrance, and he was surprised to see how
little he had moved. He also explained that he had found it difficult to coordinate his two hands with the mirror-inverted projection, a problem he had also often noticed in his job as a teacher. Such individual self-observations reveal not only how greatly aesthetic experiences can vary from one visitor to another, but also how much they depend on formative influences and previous experiences on the part of the recipients.

While formulating his reflections retroactively during the video-supported self-observation, the teacher said that while interacting he had mainly felt immersed in the work. His evident enthusiasm for the process of interaction was confirmed by the fact that while watching the recording of his interaction he spontaneously commented on the shapes he was creating with the words “Looks cool!” A female recipient was also enchanted by the constellations that emerged: “That was fascinating, when all these little things fell down and I knew they were coming from my hands, I liked that very much, I just liked the colors and I saw them falling. I didn’t think so much about the music then, it was more the colors, the shapes that were fascinating me, so I tried them very often because I thought it was really nice.” Like the visitor cited above, she started the interaction by making shapes with her hands. The acoustic elements of the work were, she said, of secondary importance to her, in contrast to the teacher. Her full attention was captured by the work’s visual potentials. This visitor’s focus was on the creation of visually perceptible shapes, not on physical activity. Both of these visitors also experimented with placing other objects (eyeglasses and a ring) on the projector. Generally speaking, their approach can be described as experimental exploration led more by intuition then by a quest for analytical understanding. They both allowed themselves to be guided by spontaneous ideas and to be enthralled by the shapes that were created. The female visitor even declared that she could have continued for hours.

The media theorist, on the other hand, explored the workings of the different modes in great detail. For example, he characterized the Rotimi mode as the least interactive of the three because all it did was set off an automatic process. It quickly became clear in his self-observation and self-description that he was used to dealing with interactive art. He was able to apply appropriate strategies when he explained how he approached the work (“I think my first approach was to try and figure out how it worked more or less and then to use it as an expressive device. That’s what I was hoping to do,”) and when, after about three minutes of interaction, he described the situation as follows: “Up until now I was really laboring a lot to try and figure out, ok, what are the rules of interaction and hopefully they will be more interesting than something you just do once and then it’s over.” At another point of the recording, he recalled that his main aim had been to find the most efficient way to achieve something new “as opposed to sort of repeating the same thing over and over again.” Thus, his self-description focused on the exploration of the system’s functionality, and he was also interested in discovering the limits of the work. For example, he spent a
lot of time trying to find out whether there were interim steps between two modes or whether such steps could be created, with the intention of making the Rotuni mode more interesting: “Here again I am perhaps too stubbornly insisting on trying to do something different with mode number two.” He also verbalized the difference between immersing himself in the activity and reflecting on it: “This is like an interesting tension between, on the one hand, trying to deal with it in a sort of right-brain kind of way, as here for example, just sort of playing with it, and then, on the other hand, sort of a left-brain kind of way, to try to figure out what some of the algorithmic logic and intuition there is.” Whereas this visitor explicitly verbalized the oscillation in the aesthetic experience between exploration, creativity, and immersion, the other two visitors tended to reflect on single aspects of their experience, such as their gestures or their focus on either acoustic or visual creations.

The statements of the visitors also show how the process of exploring the system repeatedly turned into a sense of creativity. The female visitor described this feeling as follows: “You are creating . . . not something important but something nice. . . . I know I don’t create, but in this moment, I am creating.” Such statements suggest that the question about the ontological status of interactive artworks discussed in chapter 4 deserves closer examination concerning this installation. As a process-intensive installation designed for the production and manipulation of abstract shapes and sounds, *The Manual Input Workstation* has quite a lot in common with musical instruments. In fact, Golan Levin says that his work is hugely motivated by the desire to develop new types of instruments: “The idea that these things can be both visual instruments and musical instruments was a core motivating factor.” Likewise, when asked if the installation could be considered a musical instrument, one visitor agreed that it could because it allowed the recipient to control pitch and rhythm, especially in NegDrop mode. The media theorist called the system an instrument within an instrument, comparing the projector to a music theater in which the modes were the instruments and the shapes the music.

We should therefore investigate the parallels with musical instruments in more detail. Owing to the use of human gestures, there is no distancing interface between input and output. The shapes are generated directly by hand. The artists themselves emphasize the novelty of the system, “in which the hands are used to simultaneously perform both visual shadow-play and instrumental music sound.” As the observations show, however, one mode of perception or the other tends to predominate in actual experience. Whereas one visitor moved his fingers in time to the sound, another said that she hardly noticed the sounds at all.

Unlike works that seek to activate the recipient’s entire body (for example, Cillari’s *Se Mi Sai Vicino* and Rokeby’s *Very Nervous System*), in *The Manual Input Workstation* the interaction is focused on the recipient’s hands, a part of the body often used for performing symbolic acts. The reduction of the gestures to two dimensions in the shadow
play also shifts the focus more to (bodily) expression than to embodied perception in this project. And yet the recipients’ hands are not used to create conventional symbols. The recipients do not express commands, make choices, or enter concepts as input; what they do is invent shapes. (The only exception is the use of the number shapes to change modes.) But although the recipients operate the system directly by hand, there is no direct physical or mechanical causality between their gestures and the animations and sounds they elicit. The relationship is based exclusively on programmed settings. The position of a shape could just as easily be mapped to the pitch as to the timbre of a sound. Technically speaking, this system is another black box. It interprets the gestures visually and sonifies them, but the gestures do not physically create the sounds and animations. However, the animations imitate physical causalities; rather, they behave as if a shape were squeezed by a hand, as if it were to fall to the ground because of its weight, and as if a sound were created by the impact. As a result, recipients can ignore the mediating role of the apparatus, believing that the audiovisual results are in fact directly created by gestures. This would correspond to the situation characterized by Coleridge as “willing suspension of disbelief,” because the recipient ultimately knows that the animations result from complex calculations. Nonetheless, the recipient may sense an immediacy in the relationship. On the other hand, the existence of the different modes—which the artist himself describes as variations on a theme—encourages the recipient to reflect on the arbitrary nature of the mapping.

As was explained in chapter 4, Dieter Mersch identifies imagination and figuration as basic parameters of creative productivity—in the sense of new, inventive creation, on the one hand, and in the sense of manipulation and combination of existing forms, on the other. One could thus argue that, whereas Tmema leaves a share of the figuration work up to the recipient, this figuration work is based on a figurational apparatus which has been created by the artist. But one could just as easily argue that it is the recipient who first uses his own gestures to create shapes in complete autonomy, and that the shapes are then interpreted and refigured by the artistic apparatus. The fact that the two descriptions are simultaneously valid is a factor in the aesthetic experience of The Manual Input Workstation. The act of exploring the system responds to the creative concept of the artist, which is conserved in the apparatus of the interaction proposition. The recipient’s shadow play emerges from an interplay between action and reaction. The recipient bases his actions on the reactions of the system in order to understand the algorithms that guide the process of mapping shapes and sounds. Even if this process is similar to musical improvisation, it is different in that the user is not familiar with the way the system works. The better the recipient understands these processes, the better he can productively “counter the resistance of the apparatus” and actually use the system as an instrument and achieve virtuosity in playing it. However, despite the relatively long time visitors spent interacting with the installation, and despite their detailed discussions of the processes of interaction in the
follow-up video-cued recall interview, neither their statements nor the video recordings suggest that they had internalized the specific workings of the different modes (which in fact follow clear constitutive rules) enough to use them in a controlled manner to create specific animations or acoustic compositions. On the contrary, it seems that they were not really interested in penetrating the work to such an extent, or rather that their interest in penetrating the work was secondary to their attempt to discover the limits of the system.

Levin and Lieberman emphasize the importance of a combination of simplicity and complexity for a successful interaction between human beings and audiovisual systems: "[T]he system's basic principles of operation are easy to deduce and self-revealing; at the same time, sophisticated expressions are possible, and true mastery requires the investment of practice." This is why these artists develop systems that react consistently to input from users but are nonetheless boundless because they register the smallest variation in the input. Thus, from the first moment on, the structure of the system enables a rich experience. The recipient can interact intuitively with the system, and can explore its functionality on different levels by means of direct audiovisual feedback which is clearly related to his actions.

The recorded reactions of visitors show that this concept is fruitful. For example, one visitor recounted that he had made clear progress, remarking that "now I could spend days and weeks with it." The media theorist summed it up as follows: "The artist was able to keep . . . me very engaged in that liminal space between looking for something that I was trying to play with, so I could understand a certain functionality . . . , on the one hand, and, on the other, keep it sufficiently open ended that I didn't become bored by it too quickly, and a number of interesting surprises like these little apparitions, for example, came up, as well as certain things that I was sort of going after, but never achieved . . . for example the idea of trying to get two modes to interact at the same time."

Thus, this work does, indeed, allow for a certain degree of emergence, because the recipient's own creativity can elicit audiovisual configurations from the work that the artists perhaps had not anticipated. Thus, visitors can experience a feeling of agency concerning their own creative potential, even if they have not understood the workings of the system so well that they are entirely in control of the emerging audiovisual configurations. The artists themselves have shown in their performances—which preceded this installation version—that it is possible to master the operation of the system. Mastering it requires an amount of practice time that would be difficult to arrange in an exhibition context, however. If mastery could be achieved, then (according to the arguments presented in chapter 4) the ontological status of the work would change, for the recipient's perception would be focused not on experimental exploration but on achieving a certain result. The work would become an instrument for audiovisual performance. However, a performance of this kind, too, if it is to be
convincing, requires that the apparatus be visible. Its effect is not based on the audiovisual composition alone, but also on the observable ways and means with which the sounds and images are created. The apparatus and the way the user handles it are always components of the manifestation. Levin makes this clear when he emphasizes that the point is not primarily visual or acoustic splendor, but the nature and the quality of the reaction: “The work is not about the relationship of sound and image but about the relationship of sound and image together to gesture.”73 This is why it is important for Levin that the public at the performance version of the piece was also able to understand the interaction processes, “making sure the audience understands that it is not canned.”74

Tmema’s installation is an example of an interactive work that uses multi-modal interplays in a process-intensive system to support feelings of agency on the part of the recipients. More than the other works discussed here, it places the experience of expressive creation at center stage. However, this doesn’t mean that media-reflective interpretations and insights are excluded. On the contrary, the work invites the recipient to reflect—whether incidentally or consciously—on media-based interrelations of visual, acoustic, and gestural formations.

Case Study 8: David Rokeby, *Very Nervous System*

David Rokeby is a Canadian media artist who began specializing in interactive art while he was studying experimental art in the early 1980s. His installations and environments look at the relationship between humans and digital technology, also with respect to visions of artificial intelligence and the implications of surveillance technology.

Rokeby’s early interactive environment *Very Nervous System* is a complex system for interaction between human motion and sound. Since its creation in the 1980s, the system has been exhibited on numerous occasions in many different international locations. In 1991 it was awarded the Golden Nica for Interactive Art at the Prix Ars Electronica. The work has been modified several times. This case study is based on a research project carried out during the presentation of the work at the See This Sound exhibition held in 2009 and 2010 in the Lentos Kunstmuseum in Linz, during which Caitlin Jones, Lizzie Muller, and I interviewed visitors (using the video-cued recall method) and conducted a detailed interview of the artist.75

Visitors who enter *Very Nervous System* encounter an empty, silent space. As soon as they move, however, they hear sounds—either the timbres of different musical instruments or everyday noises such as human breathing or gurgling water. The system records the visitor’s movements via video camera, analyzes them digitally, and responds to them by emitting sequences of sound. In the Linz presentation, the curators allocated the work a space measuring three by three meters which was accessed through
interactive art
and embodiment
THE IMPLICIT BODY AS PERFORMANCE

Nathaniel Stern
Munster thus recognizes the power of technology to highlight and intervene in relational emergence. But where she engages with (digital) art and media as topics that support her aesthetic theory, my core subject matter is individual works of (interactive) art that create their own art philosophical formations – that is, experience and practice. Here interactive art is understood as a situation for encountering the performance of bodies, of matter, of culture, of philosophy.

From the late 1990s to the present, we have seen the rise of artist–researchers who are less interested in what we see, and more interested in how we move. Their installations are not objects to be perceived, but situations where we feel relations performed. Interactive art creates encounters with our ongoing and constitutive relations. It frames the moving–thinking–feeling of how relations matter, as matter. The play in and around all that technology accents how experience and affect, action and abstraction, implicitly and explicitly relate and emerge. It is not merely that interaction – as thing – is put on display for all to see. Rather, individual interactive artworks pose a challenge to how bodies are formed, mediated, re-mediated, and re-formed in contemporary culture, asking precisely what is at stake in the ways we perform our bodies, media, concepts, and materials. We are magnified as always and actively inchoate, and rehearse how we are: dispersed, enacted, entwined, interfered, differentiated, shared, and continuously embodied. In this way, interactive installations exceed extant models for understanding art.

And so I offer a new framework to move–think–feel with (Chapter 3). I turn to Zach Lieberman and Golan Levin’s Messa di Voce to help propose a concentration on four key areas when examining a given piece: artistic inquiry and process; artwork description; interactivity; and, relationality. Traditional readings of digital art and new media most often stop after the first two areas of concentration, and I assert it is the latter two that recognize the radical possibilities with interactive installation. Most writing on interactive art will explain that a given piece is interactive, and how it is interactive, but not how we inter-act (with emphasis on the action). This is vital to understanding the work of the art: what it does, and what we do. We must get away from concentrating only on the signs and images on the screen.
flected upon. Any number of implicit body thematics can be applied to a given piece in order to bring more insight into its study, through describing the limitation and amplification of potential and relation. While we must be careful not to pre-scribe meaning, to better understand interactive art and embodiment – what is at stake in staging an implicit body as performance – we must approach the multiplicity of ways that we relate, as they are inaugurated and introduced to us, with as much specificity as possible.

The Implicit Body Framework

Most succinctly, the four areas of examination in the implicit body framework are: artistic inquiry and process; artwork description; inter-activity; and, relationality. Respectively, they will show what kinds of questions the artists were exploring in production – taken from interviews with, and texts by, the artists themselves; how each installation works both technically and in a sensorial context; what viewers see, do, and experience through their inter-active engagement with the piece; and, some of the complex relationships that are suspended and intervened in through this embodied dialogue. The latter two areas of examination are the most crucial to the implicit body approach and, I am arguing, those which are most often left out in critical readings of interactive installation. This is not meant to be precriptive, but rather to insure the most descriptive and critical examination of what individual works stage, situate, and inaugurate, and the conceptual–material formations we experience and practice in that encounter. There will, of course, be a blurring between each of the implicit body framework’s four areas. But the strength of my approach is in naming, framing, and attempting to think them all. It includes the intent of the artist, the content and materiality of the installation, the inter-activities of the participant and software, and the relational feedback loops that affect and are affected by their interactions. I turn to Golan Levin and Zachary Lieberman’s collaborative project *Messa di Voce* (2003, Figure 11) to model the implicit body framework.
The first area of analysis simply gives us an initial context for experience and practice. It covers the artist’s approach to their own work: how they critique what it is doing, reapply that in production, and speak about it thereafter. This obviously affects our readings of, and encounters with, the rig or stage of the art. The conceptual frame for the work, the gallery, title, and text descriptions in situ, online, and in print, all feed back in to how we understand, interact, and engage. The Levin and Lieberman team (sometimes referred to as Tmema) is known for its interactive installations, performances, Internet art, technical contributions, teaching, and research in the fields surrounding digital art. Both members have highly influential instructional and exhibition practices, and both have contributed greatly to open source and educational developments for new media creatives more broadly. Their shows are highly charged with anticipation, and a desire to act. Messa di Voce lives as both an interactive installation and feature-length operatic performance – the latter with experimental singer–performers Jaap Blonk and Joan La Barbara. It grew out of several Tmema collaborative projects where the artists were exploring ‘the aesthetic implications of making the human voice visible’; they wanted to use interactivity to invite a practice of the relationships between emergent images, sounds, and bodies (Levin and Lieberman, 2004: 1).

Since we are not experiencing the moving–thinking–feeling work of the art ‘in the flesh,’ the implicit body framework’s second area of examination calls for a detailed description of the piece – what it looks and sounds and feels like, how it responds to us in the gallery or performance space. Tmema’s Messa di Voce software, for example, ‘augments the speech, shouts and songs produced by a pair of vocalists with real-time interactive visualizations’ (Levin and Lieberman, 2003a). Multiple computer vision techniques are employed to track both the locations of the performers’ heads, and the orientation of their bodies. The artists’ computer system additionally evaluates the audio signals from the performers’ microphones, extracting features such as pitch, spectral content, and autocorrelation data. In response to real-time position, movement, and sound, a creative array of visu-
alizations is projected onto screens immediately behind the performers, appearing to emerge directly from the their mouths.

In *Messa di Voce*’s 30–40 minute, semi-improvisational theatrical event, Tnema and their collaborating performers serialize 12 audio-visual and performative vignettes – solos and duets, which each use drastically different particle system /generative algorithms (what Lieberman calls implicit, rather than explicit, animation) – in relation and response to Blonk and La Barbara’s embodied song and dance. As demonstrated in Figure 11, and in online videos, these complex interactive animations, individually, turn emphatic breathing into throbbing geometric shapes; transform man-made and storm-like sound effects into generatively forming clouds; convert vibrato sounds into rippling waves of water; map song and movement to the body in space; rework face distorting, raspberry-blowing, and baby-esque sounds as animated and circular music boxes (which can be re-triggered by the performers’ movements in order to play back the audio that created them in the first place); and, stage operatic and duel-like battles between the singers, where their weapons/charges include smoky fluids, porcupine suits, and painterly forms.

Each new scene in *Messa di Voce* builds on the last, asking for more or less activity from the performers both in their bodies and with their embodied music-making. The show begins with one of its singers standing completely still and simply breathing geometric shapes into existence on the screen behind them. This scene slowly transforms itself, performatively, visually, and sonically, as the singer and scenery erupt into a flurry of storm clouds. This in turn sets the stage for an operatic duet that ripples out into the projected motion of water, which in turn morphs into an intense ‘battle’ between two competing and embodied noise machines /performers, each emitting and directing enveloping billows of smoke from their mouths and bodies. According to the artists, ‘[u]tterly wordless, yet profoundly verbal’ (Levin and Lieberman, 2003a), *Messa di Voce* is designed to accomplish the ‘fiction that the voice can be seen’ (Levin and Lieberman, 2003b: 4) and thereby provokes ‘questions about the meaning and effects of speech sounds, speech acts, and the immersive environment of language’ (Levin and Lieberman, 2003a).
Figure 11. Tmema (Golan Levin and Zachary Lieberman) with Joan La Barbara and Jaap Blonk | *Messa di Voce*, 2003 | Courtesy of the artists
The performance version of this piece is meant for audience members to watch, while the installation uses the same software in an interactive and participatory mode, granting gallery-goers encounters with each of the aforementioned scenes so they might spawn geometric shapes or storm clouds, perform sonic battles as tidal waves or smoky fluid, and so on. Both versions present the possibility for playing out, intervening in, and amplifying an embodied interactivity, and relational embodiment, through the situations they create. But how do we practice and read that play/intervention/amplification?

Traditional readings of interactive art and new media tend to stop here: after the first two areas of examination in the implicit body framework (inquiry and description). I maintain that it is the latter two areas – inter-activity and relationality – that enhance understandings of interactive art and embodiment because of their engagement with the per-formed elements of body, matter, and matters. In other words, most visually-, technically- and linguistically-based writing on interactive art explains that a given piece is interactive, and how it is interactive, but not how we inter-act. This, the third area of examination in the framework, is vital towards understanding what is put in (absent) quotes and thus at stake. The viewers’ and artwork’s interactivities must be discussed intensively.

The third part of my framework is similar to Susan Kozel’s description of her dance works in *Closer* (Kozel, 2008) ‘without recourse to explanation or analysis’ (Craig, 2010) before she unpacks what is practiced in those movements. This exercise, I contend, holds three aspirations. First, to avoid further descriptions of technology and the interface; second, to move away from reading semiotic gestures or the elicitation of specific behaviors (rather than rehearsing specific conceptual–material relations); and third, to introduce the potential for polling styles of being and becoming as we move, affect, and feel affection. Here the art’s context becomes potentialized.

It must be noted that since its focus is on the primacy of action and experience, page-bound but demonstrative studies of interactivity are no small task. Although the large number of images presented attempt to show bodies moving–thinking–feeling, they are quite literally a series of snapshots (sequentialized images, Zeno stop-points);
and the process of writing out how participants are interacting in these photos simultaneously renders incorporation as inscription. I highly recommend readers visit the artists’ online video documentation (provided via the bibliography), but even then, the artworks will not be experienced as interactive, in space, and in relation.

In other words, I can describe in text and images what an artist intends and how he or she tries to realize it; and, I can point to videos that show what a piece looks like and does with the participants who engage with it, but the interaction itself will always be absent. How we move, sense, and think-feel, and even more importantly, what this highlights in doing and making, how we relate and perform, the work of the work of art, the inter-activities that are integral to it, and how they attune us to our embodiment, can never be sufficiently captured and presented. I am asserting that although such an endeavor cannot completely succeed, it is precisely interactive art’s resistance to representation that the implicit body framework demands we address as staged.

In the case of Messa di Voce one of the more fascinating aspects of the work is how its performer-participants – whether Tmema’s operatic collaborators or interacting ‘viewers’ in the gallery space – almost automatically exhibit grand physical gestures along with their enunciated sounds. Circular arm sweeps are instinctually deployed along with songs of ‘Ooooh.’ Repetitive, seemingly angry hand-waves from under the chin / neck and outward across the stage or room are spontaneously executed in tandem with tongue-rolling cries of ‘PH-BTTT’s’ that are worthy of a two-year-old’s appraisal. Each scene beckons atypical techniques that should be studied – not merely mentioned as possible – precisely because of how atypical they are. These awkward interactions are a re-situation and intensification of the body’s relational activity. They are no more or less relational than our ongoing and processual embodiment in the everyday, but they are exactly not everyday, in that they are both out of the ordinary and put in quotes. The ‘Oooohs’ and ‘PHBTT’s’ and their accompanying gesticulations are, this book has effectively argued, interventions in movement and continuity – in the emergence, potential, and
relationality of the body – and can thus offer insight into embodiment and materialization at large.

The affective dancing of the interactor in interactive art must be described in detail in order to ask, as the fourth area of examination in the implicit body framework does, ‘What materials and bodies and sensible concepts emerge from this moving–thinking–feeling, in and of the relation? How might this work deepen our understandings and experiences of embodiment, materialization, and articulation? What techniques can be learned and practiced in the situation it creates?’ *Messa di Voce*’s activities, expounded in the last paragraph, for example, might be said to bring to light the ‘shape’ of our sounds and signs. Soothing arm sweeps usher in sorrowful ‘Oh’ songs while angry spittles, hand-waves, and chin-juts are accompanied by rolling tongues. And although these two gestures are on opposite sides of the emotional and emotive spectrum, each shows how both movement and language emerge and define one another in their mutual immanence. Our interactions in *Messa di Voce* highlight how material bodies know, perform, and relate to their visual, linguistic, and sonic communications. They reveal the performative, real-world implications of how what we say affects, is in fact a parallel to, what we do. Body and sign, and the forces that create and change them, are staged and implicated as continuously emergent from their relation, as made concrete – conceptually and corporeally – through a concurrently physical and symbolic enactment.

The fourth area of examination in the implicit body framework asks us how and what we move–think–feel in our inter-actions, how our conceptual–material relationships intervene in our transformation with the world around us. It invites us into our own potential to vary by means of how we interrelate, and then rehearse in the interval. In other words, where the explicit body in performance uses the stage to put aspects of the static body in quotes (Chapter 2), the implicit body as performance rigs quotation marks around a continuous body and its contrapuntal relation to something else. The implicit body framework attempts to analyze and examine interactive art as a materially performative proscenium for, and artistic framer of, ‘embodiment and X’ – X being a sensible concept (language, society, ar-
chitecture, other matter, forces, and matters) feeding back between the artwork and its participant. This formula is not meant to say that embodiment and X are ever separate and explicit ‘things’ or that they are ‘added together’ per se; like static and continuous bodies, it is another heuristic device to show the implicit body framework as able to de-contextualize and re-contextualize potential, and highlight our interactive and amplified bodily performances of/with meaning or community or space.

Interactive artworks like *Messa di Voce* attune participants to an exploration and practice of their embodied relationships and processual categories – implicit body thematics – such as meaning-making, temporality, spatiality, visuality, and bodiliness itself, among other matters. Each of these categories can and should be paid attention to individually in new readings, and each additional reading with any one of them would be a slightly different utilization of the implicit body framework – all of them implementing the concepts and approach laid out in the preceding chapters. Here we deepen understandings of the work itself, as well as those of embodiment, relationality, and potential, through and with the interactive installation. Where sensible concepts are the physical experience of ideas, what I call implicit body thematics are an approach to experiencing, inter-acting with, and rehearsing, how we per-form that which is conceptually sensed. They are used to explore, practice, and analyze interventions into the performance of what is and can be, as they emerge.

**The ‘with’ of Implicit Body Thematics**

The practical and critical application of the implicit body approach must be attended with the same nuance of the concepts and materials it engages. The framework needs to show deference to the complexities of emergence, while still enabling a critical and thorough investigation of the body’s suspended relations in interactive art. One major difficulty in unpacking emergent relationships between ‘embodiment and X’ is that to set up and discuss the relation of two things (which are precisely not things), we must first name them; and by naming
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theme, not always explicitly articulated below, concerns the contradiction between art’s parasitic absorption of a fad, demonstrating a bid for attention and relevance, and the ringtone’s role as an object of social critique, distancing art from that fad. As the fad became less novel, the ringtone itself became less interesting sonically. As aestheticized treatments of it became more widely known, the tension between interest and disinterest structuring the contradiction of ringtone art slackened. The techniques of aesthetic engagement were correspondingly (further) banalized, and ringtone artwork, already a peripheral phenomenon, was ultimately reduced to the gag that motivated it from the outset. The two most important and compelling representatives of ringtone art discussed below—Salvatore Sciarrino’s *Archaeologia del telefono* (2005) and Golan Levin’s *Dialtones: A Telesymphony* (2001–02)—best embody the contradiction of fad and critique. Both surfaced before the ringtone had become passé and fundamentally indistinguishable from other ambient music.

**Ringtones in Contemporary Classical Music**

In the broad domain of Western classical music, the ringtone functioned largely as a novelty phenomenon. Ringtones, ringtone melodies, and even mobile phones were used to draw attention to themselves as marked, even invasive presences within broader musical and performative flows. Employed in works and arrangements by composers, performing musicians, and orchestral conductors to make Western concert music more current and socially relevant or to ironically distance it from contemporary social phenomena, the ringtone and related paraphernalia surfaced primarily in two forms. In the first, ringtones participated in a number of medley-style compositions or performance works, typically in which familiar melodies were performed on mobile phones (as ringtones) in tandem with larger musical ensembles. For example, in October 2001 the percussionist and conductor Bernd Kremling of the Drumming Hands Ensemble in Würzburg, Germany wrote and led the premiere performance of a composition for 30 mobile phones and 30 percussion instruments titled *Von der Hand zum Handy* (From the Hand to the Cell Phone). The piece juxtaposes African-influenced percussion music with the quotations of works by classical composers (including the C major prelude from Book I of Bach’s *Well-Tempered Clavier*, Bach’s cantata chorale movement known in English as “Jesu, Joy of Man’s Desiring,” the Alla Turca from Mozart’s A major sonata K. 331, and Liszt’s Hungarian Rhapsody No. 2), each first played by a ringtone and then continued by a marimba, and tunes like...
to the museum visitors. Such artworks are reminiscent of displays at science and technology museums, in which children are meant to interact with the display (and perhaps each other) by pressing a few buttons. Marveling at the technological wonders of the feat installed before their eyes and ears, museum visitors are reduced to the status of children at a high-tech jungle-gym and, despite the stated intentions of the artists and museum, are not particularly intended to reflect upon “the contradictory aspects of wireless communication.”

Among the best publicized of such works is *Dialtones: A Telesymphony* (2001–02), a collaborative effort, conceived and organized by the media artist Golan Levin, to combine with relative precision the ringers and ringtones of 200 cell phones to produce an extended multimedia work that could “make a sacred space for the enjoyment of these phones.” Levin worked in collaboration with several musicians and programmers, most notably the electronic musician Scott Gibbons and the sound sculptor Gregory Shakar. Their composition has three sections: one in which audience members’ own cell phones are used as an “orchestra,” a solo section for cell phones played by Gibbons, and a section in which “soloist” and “orchestra” play together. The technical requirements of the multimedia work were extraordinarily complicated, working on three levels. First, audience members’ phones were pre-registered in a database and were either assigned new ringtones or were allowed to play already existing ringtones. Second, Levin and Shakar manipulated graphical user interfaces live onstage. The interfaces allowed each person to activate groups of cell phones in the audience, who were seated in a large grid, by touching an image of a grid on a computer screen. Third, the team of technicians led by Yasmin Sohrawardy worked out a complicated switchboard mechanism. With the help of access to the high-speed mobile switching center of MobileCom Austria, Levin and Shakar were able to ring as many as sixty phones simultaneously. In addition to the sonic aspects of the performance, each member of the grid-arranged audience was given a small red LED light that illuminated when a cell phone rang within a meter; similarly, audience members whose phones rang were spotlighted from above. The audience and the light effects were reflected by a huge (12 meters × 6 meters) angled mirror, which was hung toward the front of the stage.

*Dialtones* wasn’t cheap: the initial two performances in Linz, Austria, were estimated to have cost about $100,000, and the subsequent seventeen concerts in Switzerland to have cost about $200,000–$350,000. According to Levin, the entire operation turned out to be at least as much of an exercise in fund raising as a creative activity, with nine months devoted to
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the former and less than three to the latter. Some of the major funding sources for the Linz performances included jet2web Mobilkom Austria, Aculab Germany, Cell phoneart.net, Design Machine, Ericsson, the Daniel Langlois Foundation for Art, Science, and Technology, Nokia Austria, and Siemens. In contrast, the Swiss performances were solely funded by Swisscom Mobile. Levin explained the difference as follows:

The right way to understand this is that [no commercial sponsors] had any faith in the concept in 2001, and so we were only able to raise very small amounts of support with great difficulty (e.g. the sole contributions of Siemens, Nokia Austria and Ericsson consisted of 10 loaned phones apiece). By 2002, the concept was proven and major companies lined up to use the event as an advertising prop. The truth is that the premiere was mostly self funded by me, and I consented to present it “commercially” the following summer in order to help pay off my credit card debt. Many new-media artworks go through this life-cycle.

Dialtones is a remarkably well documented and commented-upon project—a fact best confirmed in the extensive “Final Report” produced by Levin and his colleagues. In addition to providing patient and accessible descriptions of the technical dimensions of the project, the report includes two components that merit consideration: an “Artists’ Statement” and musical instructions for performance. In the former, Levin et al. advocate for the “Cagean” possibilities implicit in listening to cell phones and ask “What might we learn about our interconnected selves, in their high, pure tones?” The reference to Cage can be a misleading bit of artspeak; although numerous unpredictable elements were present during the performances, including those based in the limitations of the communications network, audience members’ phones, and control over audience behavior, ultimately, as Levin points out in editorial remarks on an interview with a chance/indeterminacy-preoccupied interlocutor, “the Dialtones project was trying to wrangle an extremely complex and inherently unpredictable communications system into some semblance of order. We were trying to negotiate chance, rather than seek it out.” What, then, was the project attempting to illustrate, beyond presenting an aestheticized, “deranged beauty” drawn from its unlikely source objects? Toward the end of the statement, the ambition becomes clearer when articulated as presenting the “musical reification” of the “sprawling and enveloping omnipresence” of the “global communications network.” And, later, “In Dialtones, the phones, and not their owners, speak to one another.” As with the Sciarrino composition, the notion of “reification” is crucial here and, when paired with the complementary term “personification,” suggests a situation
in which social relations take on the character of relations between things (reification, or thingification) and thing relations take on the character of social relations (personification).46 The fact that audience members for the most part passively observe their phones communicating with the artists on stage—and with themselves and one another by means of the spotlighting and the LEDs—problematises Levin’s enthusiasm for interactivity and participatory art.47 Discussing this dilemma, and in the process implicitly describing the strange kinds of reifications and personifications that result from a consumer’s identification with a phone (or other commodity), Levin said:

I felt kind of awkward about Dialtones when I made it, because I’m so concerned with interactivity, and it is concerned with ownership. But the strange thing actually is that people feel surprisingly close to their cell phones; they’re actually a little extension of their body. The piece is more interactive than I’d expected, because all they had to do was own the phone. But when they were sitting in the performance space and suddenly their phone rang, something happened in the mind. Probably, something like, “Someone’s calling me, I have to answer my phone.” A mental event transpires there. And to catch yourself and realize that it’s a concert is something that was played out nearly 8,000 times in a half-hour performance. People kept getting caught in this weird digital event. What’s important about that is that it’s the difference between being in a car and driving and getting rear-ended by someone, and thinking, “Hey, someone hit my car,” and “Hey, someone hit me.” You actually think the latter, though they actually hit your car. I think that the concert made that clear with the mobile phone.48

Another extensively documented aspect of Dialtones is its explanation and reproduction of performance instructions, in two forms. First, the “Final Report” offers musical transcriptions of 84 separate ringtones, in very small print, selected from the more than 100 composed for the work by Scott Gibbons and Gregory Shakar. “The ringtone melodies,” Levin et al. note, “were collected into approximately twenty thematic and textural groupings, with colorful nicknames like ‘drones’, ‘bugs’, ‘twinkly’, etc.”49 Gazing upon this catalog of ringtones is somewhat dizzying, but even from a cursory inspection one can ascertain a few points. In line with the statement above, the ringtones can be grouped into clear categories, some using slow whole notes as drones, some featuring rapid ornamental and arpeggiated figures serving as effects, and still others producing a rhythmicized beat or groove of various types; similarly, the metronome marking or BPM given for each ringtone can vary widely, ranging from markings around 20–30 to more than 250. Underlying these differences are the ubiquity of 4/4 meter, suggesting a broader rhythmic regularity in
the music—the implications of which become clearer below. Second, the report also includes a performance score for the first and third movements of the piece, presenting unexplained (but mostly readily interpretable) categories like “regular rings,” “pulse,” “bugs,” “chordy,” “drones,” “casio,” etc., and presenting cues for categories (e.g., Q, W, Z, E and 9, 2, S) on a time chart with visual representations of the textural shifts and general flow of the piece. The image roughly confirms the claims, made elsewhere in the report, that “within each of the three movements, the composition is structured as a sequence of sound-textures” and “there are about fifteen sound-textures in all, each approximately two minutes long.”

Listening to the performance of Dialtones on the Staalplaat recording confirms and clarifies some of the impressions and descriptions given above. It begins with the sound of a single cell phone ringer, drawing laughs from the audience. With the commencement of the first section, we hear the growth of phone ringer and ringtone textures that are reminiscent of forest soundscapes, replete with imitations of birds and insects. Around 1:23, the textures shift as drones appear, simultaneously recalling organs, synthesizers, and cicadas; within the texture, the Nokia Tune is sometimes present. Around 3:19, the music shifts into a kind of minimalist, pseudo-Baroque arpeggio texture, which intensifies with the addition of more loops for some time. The music grows more dissonant as the section continues, and a new ostinato pattern ultimately appears (5:30), then is accompanied by a looping, arpeggiated figure (7:10) that continues to the end of the section. Section II also begins with a gag, with “soloist” Gibbons clearly dialing a number, evoking laughs. After a series of repeated note figures (0:13–0:47) and arpeggiated triads (0:47–1:35), a bird like-melody anticipates an atonal, mostly octatonic ostinato (beginning in proper at 1:56), on top of which numerous bird-like ringtones and others are superimposed. Eventually drumming sounds (around 4:00), created by the phone’s tapping against an amplified pad on a table, providing an electronic-sounding but also vaguely African dance-beat to accompany the proceedings. A new ostinato appears (5:16), this one tonal, with birdsong melodies and fragments of Bach ringtone references superimposed on the ostinato. Cicada/organ-like drones appear (6:33–7:12) to transition the music into section III. Ten minutes in length, section III builds on the drones, with low humming drones appearing as accompanying material. New Philip Glass-like ostinati appear periodically, accompanying increasingly growling, industrial low sounds—these too draw laughs, initially sounding elephant-like, but quickly come to resemble jackhammers and other construction equipment. The music intensifies to a significant
pitch around 7:00–8:00, with the music then receding into a final set of superimposed ostinati recalling earlier ones used in the piece. The music decays for the next two minutes, ending with a single, non-melodic phone ringer—and, hence, returning to the sound that inaugurated the entire affair.

We can interpret the visual, sonic, and technical references of Dialtones in three ways.

First, the music in combination with the visual effects seems to evoke a kind of atomized connectedness associated with global digital communications. The lights which cause areas with ringing phones to light up and the mirror reflecting the lights activate the otherwise inactive grid, resembling both some kind of illuminated microchip and a time-lapsed apartment building, in which lights go on and off during the night according to a semi-random logic. At this level, the music seems to be about connectedness, communicating the notion that we as participants are part of a bigger global phenomenon around us—and the participants holding their cell phones up like lighters at rock concerts only underscores this sense.\(^5\) Musically, the dominance of grooves in a largely quadratic syntax—which make the arrhythmic sections seem like effects or unsettled moments that click into place once the groove enters—also provides a sense of rhythmic organization and entrainment to a series of bodies largely encouraged to stay still and keep quiet, a sonic sense of unison reinforced by the piece’s tonal center of A-880.\(^5\) Although moments of recognition and communication between audience and artist did take place, by and large audience members held their phones up for performance by someone else. The frequent description of the audience as an “orchestra”\(^5\) is, in this context, misleading—the kind of push-and-pull between individual and collective agencies was largely absent here, or rather, the agencies-in-fusion were those of the artists and the phones themselves; instead of instruments performed by individual musicians, audience members held their phones as puppets whose invisible strings would be pulled, magically, at a distance. Hence, one might suggest that the connectedness produced by the work is strikingly alienated, if also potentially mystified.

Second, the sonic references seem to evoke a narrative pattern that switches between the “natural” sounds of birds and insects; “human” sounds of ringers, phone dialing, drumming, and heavy machinery; and the “reflective” sounds of minimalist, minor-mode or modal ostinatos that provide an air of pseudo-profundity to the music. From this view, the music seems to be a high-frequency, video-game-like tone painting of the
history of human development and human society’s evolving relationship with the natural world—but evoked as if starting from the daydream of a ringing or dialing phone. The work proceeds by portraying the intensifying conflicts between nature and human society, the potential catastrophes of which are hinted at, but never represented, toward the end of the piece. Such a message recalls that of another minimalist masterpiece, Godfrey Reggio and Philip Glass’ 1982 film *Koyaanisqatsi*. Borrowing its title from a Hopi word meaning “life out of control,” the film’s time-lapse images of nature and human society, taken and edited by Reggio, provide testimony of rampant global development and its untold ecological damage. The film image is perfectly juxtaposed with Glass’ repetitive score, which communicates profound stasis and monumentality at times and buzzing activity at others. Indeed, *Dialtones* might be viewed as a contemporary re-composition or re-imagination of that earlier work—but in this case, Glass’ medieval and Wagnerian minimalist grooves are replaced by loops of beeping timbres produced by cell phone ringtones and dialing tones, evoking video-game tunes and electronic dance musics (such as minimal techno). And for the later work’s historical moment—which was that of the monophonic ringtone—such a revisiting of the Glass-Reggio collaboration seems to have been particularly apt, given the way that cell phone ring-signals and monophonic ringtones have become almost “naturalized” in modernity. In writing corporate research reports over-emphasizing the natural qualities of cell phones, cultural studies scholars like Sadie Plant have helped to make the cell phone seem like a natural phenomenon, arguing that ringing cell phones are like a form of “electronic birdsong.” And with the previously mentioned reports that birds have learned to imitate ringtones and that birdsongs are popular as ringtones, the actual conflicts between nature and capitalist technology are yet further mystified.

Third, the technical setup of the piece hints at a particularly ominous aspect of cellular technology. The fact that every person’s phone is pre-registered in a database, with many but not all phones being reprogrammed with new ringtones, paints an image of a society constantly under surveillance, with each individual citizen’s behavior being dictated by a hegemonic force—and the apparent freedom of some to retain their message is contrasted with the fact that not all participants maintain the “integrity” of their original voices. With profitability and policing going hand in hand in mobile telephony, the piece’s intensification toward the end signals both the ever-greater expansion of a society of surveillance and the paranoia that the awareness of such a society engenders—itsel
exacerbated by the tinny, if shimmering timbres of the massed cell phones, in a kind of hallucinated social tinnitus. Yet the overall effect is contemplative, retreating away from the precipice of chaos and back to the daydream occasioned by the single ringing cell phone. When combined with the (mostly) comfortable musical materials that animate its musical narrative, it remains unclear whether it ought to be read as a social critique of mobile telephony and the ringtone, or if it is meant to simply aesthetically “ratify” its existence in a constructed “sacred” space—with the ambiguity perhaps being the work’s primary strength.

Although the messages of Dialtones might, in some ways, seem profound and compellingly contradictory, its means also might be seen as inflated, gimmicky, and highly contingent upon corporate and arts-foundation sponsorship. More modest cell phone and ringtone works have been created that are often able to project equally powerful ideas and aesthetic experiences while still remaining relatively independent of the advertising role that big budget works must often play. Special mention must be made of Allison Craighead and Jon Thomson, whose independent online store produced some of the earliest atonal ringtones and perhaps the first silent ringtone—a conceptualist gesture that also anticipated a now commonplace method of avoiding specific callers.

One work by Craighead and Thomson elegantly investigates the ideologies of the cell phone in ways similar to Dialtones and other interactive ringtone works. Visitors to their 2000 installation Telephony are encouraged to physically dial the numbers of Nokia cell phones arranged in a grid on the wall, or to call these phones on the wall from their own mobile phones. As the phones are dialed, they are programmed to dial each other in turn, and a massed texture built from the familiar Nokia Tune results. In addition, elevator-style ambient music based on the Nokia Tune accompanies the phones, adding a strikingly New Age touch to the experience. Finally, a real-audio link to the US Naval Observatory’s Master Clock periodically reads off the precise hour and minute of Eastern Standard Time. The result, I would argue, communicates both the sense of the enclosed space created by the cell phone, in which phone users become almost completely autonomous from their surroundings, and, ironically, a military-ready awareness of information that each bubble inhabitant seems to need. Emphasizing the (false) experience of autonomy over the message of alienated connectedness in Dialtones, Telephony thus communicates the militarized paranoia of the inhabitant of a cell phone bubble with a detachment that elegantly plays with some of the same ideas found in Levin’s piece.
Of course, the differential effects of *Dialtones* and *Telephony* are due in part to their differences at the basic level of artistic form. *Dialtones* is a musical performance piece, whereas *Telephony* is a sound-art installation. Levin himself has pointed out this basic distinction in cell-phone-based artworks. For present purposes, we might subdivide his distinction into ringtone-performance works versus ringtone installations. The former might seem to overlap somewhat with the ringtone compositions using cell phones (especially the “medley” approach) described above—*Dialtones* is in many ways composed and scored rather traditionally and is, after all, self-characterized as a “telesymphony.” Indeed, if *Handywolke* and the Nokia tree for the Hanover Exposition can be seen as more typical ringtone installations, the concert-like qualities of ringtone-performance works would lend themselves to descriptions as symphonies. For example, Simon Turner and Marcus Moore produced their corny, pun-laden *SIMphone-ya (New Ring Cycle)* for the 2002 Cheltenham Music Festival. An “interactive symphony written for the ring tones of 30 mobile phones,” it was apparently composed in four movements, in one of which “all of the audience members were invited to turn on their mobile phones,” thus both recalling *Dialtones* and anticipating Baker’s *Concertino*. Nonetheless, works that overlap between performances and installations still use the label “symphony,” perhaps as a marker of aesthetic legitimacy, ambition, or both. Specifically, the Danish singer Tobias Trier created his *MobilSymfoni* in 2001 for the Aarhus Festival, which involved “twenty mobile phones . . . suspended from a ceiling,” which “were caused to ring by a live performer, who dialed them up using another four phones below.”

A similar hybrid work that avoids the “symphony” label, *Wählt die Signale! Ein Radiokonzert für 144 Handys* (Dial the Signals! A Radio Concert for 144 Mobile Phones), was an installation at the Hamburg Kunsthalle in 2003, accessible for 12-hours only and billed as a “concert.” Ligna, a “free radio group . . . of media theorists and radio artists Ole Frahm, Michael Hüners and Torsten Michelsen,” began working in 1995 and produced the work as one of two separate entries for the award competition of transmediale, a yearly media art festival based at the Berlin Academy of Arts. A complex undertaking involving a radio station, radios, and radio listeners to Freies Sender Kombinat (FSK), in addition to the mobile phones, *Wählt die Signale!* involved the composition of new individual ringtones by Röhm, who based them on the spectral content or overtone series of the ambient noise (a 52-hertz = G♯ hum) in the Kunsthalle passageway in which the phones were located, arranged on a platform in a 12 × 12 square. Each phone had its own number, which was given at the FSK.
website. Callers could call during the 12-hour active window for the installation (or “performance”), during which calls to the mobiles generated the entirety of the music. The video and audio of the ringing mobiles were broadcast out via Internet and the audio alone by radio, as well as directly to special locations in Hamburg, Karlsruhe, and Maastricht; the online representation also presented a grid-like display showing which phone was ringing at what time (the grid here being reminiscent of Dialtones). As Frauke Behrendt notes in response to a CD of five-minute snippets of the piece released by Ligna/Röhlm, the effect “is best described as a minimalist carpet of sound. The composed ringtones are not reminiscent of the ringing of telephones, they aren’t shrill or ‘annoying.’ The combination of 144 tones produces consistently new textures, which are reminiscent of ambient music.”

Be they installations, concerts, or hybrids of the two, the works described above remained comfortably ensconced in the worlds of gallery, festival, and institutionally located media art. But in view of the mobile phone’s very ubiquity, accumulating a critical mass of mobile phones to produce comparable effects is not dependent upon this kind of economic support. Indeed, a number of mass demonstrations of simultaneous playback of mobile phone ringtones have been organized for various purposes, including as part of participatory corporate sponsorship stunts (as in the Virgin event mentioned above), although such practices have also migrated into political demonstrations. But, it is also the case that relatively unofficial performance events adopted the practice as well—suggesting the ease with which a form can migrate between corporate, political, and aesthetic contexts. Drawing on the practice of “flash mobs” (impromptu and typically absurdist actions of loosely coordinated individuals, often linked by text messages, social networking sites, or other “new” communicative modalities), the New York-based performance group (or “prank collective”) Improv Everywhere—whose numerous stunts have involved masses of people performing spontaneous musicals in public places or riding on the subway without pants—appropriated the concept of the ringtone-performance work on February 18, 2006. Even calling it their “Cell Phone Symphony,” and contrasting it with Dialtones (deemed “A more sanctioned Cell Phone Symphony”), the group gathered 120 participants on a cold winter night near the Strand Bookstore, grouped into pairs, and then divided into two coordinated halves. Sixty participants entered the store and checked their phones (in backpacks or bags, etc.) in the store’s storage cubicles. Once those sixty participants were comfortably inside the store, the other sixty participants began to dial the phones, which had
been divided up in advance according to phone brands and set to default ringtones—the Nokia phones would play the Nokia tune, the Motorola phones would play the “Hello Moto” ringtone, and so on. “Agent Kula” served as the “conductor.” He led the performance, activating individual phone brands as sections, “like a symphony. Instead of the ‘string section,’ we would have the ‘Samsung section.’” Cycling through the different sections and ringtones—Nokia Tune, “Hello Moto,” “Snaggle,” Samsung, etc., before all of the phones were called—the performance seems to have lasted a few minutes at most, the employees and patrons of the store largely finding the whole event perplexing and amusing (although the store’s manager was extremely displeased and initially took to banning identified participants from the store). Drawing on the sonic familiarity of branded ringtones, the creation of textures based upon these turns the logic of symphonic “movements” and orchestral “sections” on its head, one-upping the cool irony of Telephony’s Nokia Tune wash. Although primitive in technique, this work may be the most viewed and heard ringtone performance on the planet, at least so far—the video documentation of the event has been viewed more than 3 million times on YouTube alone.68

Conclusion

The mass popularization of the cell phone symphony by Improv Everywhere and the fact that by 2006 sound-file ringtones had become mainstream seem, in many ways, to signal the last hurrah of the ringtone as aesthetic source material. The reason for this is relatively obvious: as the ringtone progressed from its monophonic to polyphonic and sound-file guises, it declined in sonic distinctiveness. The greater sonic fidelity of the sound-file ringtone relegates the sonic aspect of the cell phone to the same bin as other portable sound-file playing devices, such as the iPod. In contrast, the tinny, often harsh sound of the monophonic ringtone both generated a series of characteristic sounds, produced by individual phone models, and a number of branded melodies, sonic logos, and micro-compositions that would ultimately outlive their earlier incarnations as monophonic or polyphonic ringtones (the Nokia Tune being an excellent example). Indeed, almost all of the works described above seem to be dominated by the aesthetics of monophonic ringtones—using the Nokia Tune or the specific timbres of monophonic ringtones as their sonic basis. In the case of the exceptions, such as the Improv Everywhere “Cell Phone Symphony,” an aesthetic tradeoff was implicitly and perhaps unintentionally made in favor of formal simplicity, with copies of the same polyphonic
and polyphonic-derived sound-file ringtones producing out-of-phase textural blankets of sound entirely dependent upon these ringtones’ recognition in a public space. As Golan Levin put it rather compellingly, “presenting an ‘orchestra’ of phones became a less interesting proposition once any phone could sound like an orchestra.” In fact, one could claim that there were three phases of ringtone art corresponding to ringtone technologies. The first draws on the tinny sonic timbres and melodies of the monophonic ringtone, permitting mass playback and generating distinctive effects as well as being the butt of musical jokes. The second draws on, and even more frequently ridicules, the cheesy MIDI aesthetic of the polyphonic ringtone—now less likely to function in collective playback contexts except very simple ones (consider the hokey Ringtone Dancer, who dances in a ridiculous Mexican-wrestler-like outfit to a polyphonic ringtone dance-beat version of the main tune from Tchaikovsky’s Swan Lake, as indicative, if not necessarily paradigmatic). The third uses sound-file ringtones, now transformed into portable playback devices, with the media capabilities of mobile devices coming to the fore and the ringtone as joke or object of critique concomitantly receding.

What, then, has happened to the ringtone in the worlds of media art and contemporary classical composition? By and large, the second decade of the new millennium has witnessed the supersession of the ringtone, with two primary tendencies emerging. For media and sound artists, as well as composers gravitating to such work, the ringtone was, in retrospect, nothing but a way station on the road toward a more sophisticated portable media device capable of many new, converged possibilities, including locative media projects and new digital instruments (which nonetheless typically imitate other, more familiar instruments). For example, Ge Wang’s Mobile Phone Orchestra and the iPhone and Smartphone apps produced by his company Smule (including the musical instrument Ocarina, the music game Leaf Trombone, the Autotune app I Am T-Pain, and the auto-harmonizer Glee) have emerged from the world of academic computer music and, through clever pop-cultural references, have become mass sellers in a new app market. Additionally, the Mobile Music Workshop group, which has held numerous workshops on mobile media devices and art in Europe and North America, has promoted new mobile sound art projects, “challenging the common understanding of mobile music as ‘ringtones and i-pods.’” In contrast, contemporary classical composers have largely drifted away from the ringtone and, in a few cases, toward the remaining sonically distinctive aspects of mobile communications. Nathan Davis’ delicately minimal and well-received...
composition *Bells* (2011) features audience members’ mobile phones in tandem with a professional musical ensemble, but the audience members dial a pre-given number and press touch-tone codes to call up different sounds, including live processing of the performed musical instruments and archival recordings of “VLF (very low frequency) radio recordings of space, satellites, morse code, spy number stations, telephone sounds (sine tone pad combinations, ring back, etc.). And bells of course.” The role of bells as historical, one-way communication devices was mimicked in the work via the communications network, and the sonic degradation induced by that network in the dialed-up audio played back on audience members’ phones was central to the piece. In Davis’ words, “All these sounds work well in the 300–3000 Hz range of phone lines, and with the compression that is usually introduced. The distortion and filtering are part of the sound, and different phone speakers highlight or distort different frequencies differently.” Likewise, another composition from 2011, Steve Reich’s *WTC 9/11*, a string quartet premiered by the Kronos Quartet and based on the composer’s personal experience of the 2001 World Trade Center attacks, involved a tense phone call to his son, who was living very close to the World Trade Center. Reich’s composition begins with the analog sound of a disconnect signal—still heard on today’s phones, including mobile phones—the E/F half-step interval of which is then imitated and harmonized by the ensemble in a characteristically Reichian way, involving musical transcription and musicalization of “non-musical” sounds, and combined with documentary recordings of voices in the manner of *Different Trains* (1988) and *Three Tales* (2002). The speed of the disconnect tone’s repetitions additionally sets the tempo for the entirety of the piece.

To the extent that ringtones will persist in classical music and performance art, they will do so as a minority tendency. On the one hand, sound files have the capacity of reproducing older ringtone sonorities and so will make possible the continued existence of ringtone compositions time-stamped by a now-obsolete technology—indeed, recent performances of Baker’s *Concertino* have done this. Even a relatively modest local theater work such as Alan Berks’ *#Ringtone* (2009–10), in the Minneapolis-St. Paul theater scene, reproduces the sound of the monophonic Nokia Tune in its sound design, thereby preserving monophonic sonorities by audio file playback. Much rarer are efforts such as Teresa Foley’s Locally Toned community art project, which treats the ringtone as an opportunity for sonic documentation and portraiture and which makes its growing collection of sound-file ringtones freely and publicly available by website and
MMS. Foley’s incessant field recording of individuals’ or small groups’ self-designed ringtones seems to use the residual short duration of the ringtone itself as its primary aesthetic constraint, although repetitive and sometimes irritating sonorities that may function as effective signals are prevalent. Here, the ringtone performance or installation has transmuted—in part, I would argue, out of formal necessity, due to the presence of the sound file format—into an example of original ringtone composition (see chapter 7).
Let us compare the screen on which a film unfolds with the canvas of a painting. The painting invites the spectator to contemplation; before it the spectator can abandon himself to his associations. Before the movie frame he cannot do so. No sooner has his eye grasped a scene than it is already changed. It cannot be arrested.

WALTER BENJAMIN, THE WORK OF ART IN THE AGE OF MECHANICAL REPRODUCTION

From a lonely and troubled perch in Nazi Germany, Walter Benjamin, introvert, Jew, and intensely sensitive man of letters, emerged to become the greatest literary critic of that country, and, next to Karl Marx, the most cited name in modern critique. Perhaps his unconventional erudition revealed a larger landscape of past and future, because with nearly mystical prescience, he pitted prevailing nineteenth-century Romantic sensibilities against the brutal modernism of the twentieth: technology, and after his posthumous rediscovery, any humanities scholarship that read him never turned back.
Once Walter Benjamin’s thinking became the canonical portal between the worlds of what could be called post-Romantic modernism and postmodernism’s romance with the dual destiny of technology as both creative medium and aesthetic object, his position in theories of new-media art seemed suddenly embraced in the most universalistic and unproblematic way possible. By and by, scholarship came to acknowledge that all of his major writings from 1919 to 1931 culminate in the essay from which I take the epigraph above, one which has been read as a kind of biblical ontology of electronic media in relation to artistic production. And by extension, this essay consequently locates Benjamin at the ubiquitous beginning of all major discussions of visual interpretation in the age, after his own, of electronic, not just mechanical, reproduction. How can one argue, for example, against the propitiating presence that accompanies the primal act of art making, a force that, in its archaic form, conjoined for Benjamin soul and work into the ontological singularity, the aesthetic event horizon, the nucleus of creativity’s very power of transformation signaled by and caught within the emanation of its aura?

One might imagine that Benjamin was, of course, not endorsing art in any universal sense; that he was, instead, only evoking the fearsome rise of its primal desecration by the incursion of machinery into what cannot be produced by and contained within it. In that sense alone, but sufficiently it seems, his most famous essay staked not so much a position on the role of technology than a logic, ultimately reducible to the axiomatic inequality that creative production is nullified by technical reproduction. I provide the adverb here, “ultimately”, in reference to Benjamin’s allegiance to Marxism and its teleology, pointing as it does, like a polemical time machine to the notion that social forces will churn conflict into transformation, coalescing like an alchemical solve et coagula on the way to a final post-historical cadence: an endless moment of fulfilled ideals, of purity of knowledge, and of utopian existence in a classless society.

Despite this dreamy culmination, it is ironic that the post-historical Marxist imagination that inspired Benjamin relies on reasoning of a specifically temporal kind. This logic, introduced in the second section of this 1935 essay—and most relevant to what technological art can imply today—is evident in the argument that it is the temporal separation between the creation of a work
and the moment of its reception—_not_ the advent or manner of its reproducibility—that provides the basis for its aesthetic legitimacy.

In other words, in the authentic work of art, creation, purpose, production, and experience are to emerge simultaneously. Thus, works re-created (which is to say, _created anew_) by recording devices are ineligible for the same status as original art, since Benjamin connects temporality to aesthetic legitimacy: “[e]ven the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be. This unique existence of the work of art determined the history to which it was subject throughout the time of its existence.” The existence of the work is validated through a Geist-like spirit of presence addressed as its _aura_, a special kind of creation in whose specific conditions production and reproduction are mutually exclusive. Whatever else can be read from this essay, the possibility of _simultaneous_ creation and reproduction of art are inimical for Benjamin, and so, much new media scholarship, incorporating his thinking whole cloth, has often and unwittingly absorbed those very assumptions.

We could see how Benjamin would not wish to argue the mutual exclusion of creation and reproduction with too much bluntness. Rather, he would want to allow the argument to unfold gradually—gradually enough that it seems to turn on _originality_, rather than temporality. So he opens the second paragraph of that second section, with seeming consistency, claiming that “[t]he presence of the original is the prerequisite to the concept of authenticity.” And this originality is not the ontologically unconditional originality that we might imagine as the initial moment of creation in every artistic work. Rather, as with elsewhere in Benjamin, it is a qualified and rather specific kind of originality that excludes creation except by manual or organic means, so that “[t]he whole sphere of authenticity is outside technical—and, of course, not only technical—reproducibility.” Again, it is worth remembering that machinery is not, in his argument, the reason for de-legitimizations of art, it is, rather, the temporal distance between creation to experience, so that when the “cathedral leaves its locale to be received in the studio of a lover of art; the choral production, performed in an auditorium or in the open air, resounds in the drawing room,” the aura of its creative moment is also left behind, separating the artistic _essence_ from the audience’s _sense_.

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NON-LOCAL ENGAGEMENT 93
Thus are production and reproduction poised in antithesis, the work of art, anchored in a singular time and place of creation, is torn from that past by processes that impart only its appearance, not its soul. To accept this account of art in the contemporary moment of technology’s integration with all manner of social process is to read it not as an early critique of technologically mediated art but as its final epitaph. All art undergoing reproduction, we are led to infer, loses the ineffable legitimacy that originality, which is to say, creation in a moment of time to which direct experience had access, bestows. But would we not today speak of the work of art in the age of reproduction mechanisms, which is to say the artwork within the work of algorithms? What is the direct experience of an algorithmic work if not one distributed and equal across time and space?

When in the early 1970s Alan Sondheim wrote of the pluralism of the art of that decade, and when Dick Higgins wrote of the same regarding the art of a decade earlier, the foundation was laid for a time when creative production took new, multitudinous steps toward the idea of the distributed work of art. First, the new art emerged from a pluralism of media; next this pluralist practice led to the work of art as something simultaneously created in multiple places and times. So the pluralism of that time evolved into a profusion of media and practices resisting the labels that art criticism could make so apparent in previous chapters of art history. Today, for example, there is no strong prevalence of “label art,” no longer do we read of an Abstract Expressionism, a Pop Art, an Op Art, an Agitprop, or a Minimalism, there is rather the numerosity of methods and media, of departures from the idea of a single work born of a single moment out toward compound art born in an emergent manner, in several ways, with multiple inputs and forces, in what might best be called a distributed moment. It is not that the aura is nowhere, but rather that, like the algorithm, it is everywhere.

These developments, while intriguing, have not really surprised anyone who might have witnessed the displacement and evolution of singular narratives out to a range of new media forms and practices in the last 20 years. The rise of what we might call “narrative across media”—the distributed moment where art is no longer a singular act—represents the point where production and reproduction, the unique and distributed, the momentary and the evolutionary, contribute equally in the power of the creative act that
was for Benjamin located in a singular but transcendental source, one that conflated the idea of art’s origins with the original in art.

And so the distributed moment in electronic art is a turning point from Benjamin, who has often been read, as I have said, with unreserved acceptance. The idea of an art aura is not one we need to accept in its initial 1935 spirit, but neither need we deny it outright because of the unusual nature of art in networked and postmodern times. Benjamin’s reference to an authentic art as a singular phenomenon—created once, experienced once—could be contrasted with the technological problem of art now experienced many times, to his critique of the phonograph and the cinematic projection. But art conceived/created pluralistically from the outset? This is much harder to dismiss as inauthentic.

And there is no shortage of possibilities for art of this type, since so many electronic devices foster creativity through networked genesis. This conceptual distribution of the creative act, for example, in media technology’s own capabilities with mobility of

**FIGURE 36** Golan Levin, Dialtones, A Telesymphony, 2001. Detail, pre-performance mobile phone ringtone programming [“instruments tuning?”].
signals, is one that the mobile phone addresses. Correspondingly, this is the formulation evoked in one installation by Golan Levin, one of the most important electronic artists of the last two decades. A case of this dispersal, simultaneous in time, Levin’s work derives from the live idea of a symphonic concert that Benjamin would have found utterly legitimate. In *Dialtones, A Telesymphony*, the audience in a performance hall gathers to experience the usual kind of musical composition that one might see in a chamber work in a recital hall anywhere in the world. But here, there are no visible musical instruments. In fact, these come with the audience, whose mobile phones, prior to the performance, were individually configured with specific ringtones, each comprising one part of the musical work, so that in the simultaneous aggregate, any melody or harmonic grouping can be activated by the stage performers—essentially in the role of conductors. That is, their computer systems dial the programmed phones in a sequence that (b)rings the work to life through a distributed simultaneity that has many points of origin and playback.

![Image of Golan Levin's installation](image.png)

**Figure 37** Golan Levin, *Dialtones, A Telesymphony*, 2001. *Installation View. Image courtesy of the artist.*
This work illustrates one of several possible permutations of the pluralism to which I referred earlier. In one form, as Levin’s work explores, the distributed moment emerges through the co-ordinated participation of numerous media devices and persons gathered in the same time and place. In another possibility, the opposite variation is possible, and Christian Nold’s series of *Emotion Maps* addresses it. In the *Paris Emotion Map*, for instance, a group of participants agrees to wear a bio-mapping system that continuously records emotional state, time of day, and geographical location. After some urban wandering, the participants write a series of annotations for the experiences associated with the most salient physiological responses recorded by the mapping system. These annotations, each pinpointed on a map to the location where their experiences took place, become an art document, an existential palimpsest of collective experience, extended over several weeks, and unified into a narrative whose authorship is a pluralistic summation of media and moments. Nearly 200 geo-impressions were recorded, ranging from the mundane to the startling:

*accident, but not dead*

*Mosque – surprising*

*Tents of a group of African people were all eating together in the street. The atmosphere was like a squat*

*Still in the 11 arrondissement – I always thought I was going into the 20th*

*Little white statue – Garazette – all painted white. Lots of work material round here*

*Almost got run over – I was hungry*

*beautiful white lilac tree*

*followed a big black cat*

*very good smell of the blossoming trees*
GALLERIES

The Almost Anonymous of the Digital Art World

Kyle Chayka | April 19, 2013

“F.A.T. Gold” installation view (Photo by author)

The acronym stands for Free Art & Technology, which is as good a tag as any for the cross-platform, multi-media shenanigans of the collective’s 25 members, who range from 4chan creator Christopher “moot” Poole, Buzzfeed co-founder Jonah Peretti, and director of Carnegie Mellon’s STUDIO for Creative Inquiry Golan Levin, to a phalanx of artists like Kyle McDonald, Aram Bartholl, and Evan Roth. They position themselves at the intersection of open source and pop culture, as one infographic on their lens flare and faux-metal effect-covered website announces. They are “dedicated to enriching the public domain one muthafuckin LOL at a time,” they write. It might help to think of the gang as the Anonymous of the digital art world, except not so anonymous.
F.A.T. Lab doesn’t create art in the sense of fellow collective Bruce High Quality Foundation, so much as engineer tools and experiences that break down the normal boundaries of our technology-enabled culture. One can’t slot them into an easy designation; it’s better to just describe what the gang has done, as featured in this show curated with a brash sense of fun and play by 319 Scholes curatorial director Lindsay Howard. Kyle McDonald hacked into the computers on display in an Apple store and recorded images of the people looking at them in his piece “People Staring at Computers,” which later caused FBI agents to raid his apartment. Tobias Leingruber created an ID card system dependent not on any government but the identity currency of choice today: our Facebook profiles. Graffiti artist KATSU tagged Eyebeam’s façade with a fire extinguisher, accidentally splashing some of the pigment on Paula Cooper gallery — a perfect example of F.A.T.’s IRL trolling practices.

F.A.T. Lab comes out of an interesting aesthetic moment, when marathon hacking sessions (“hackathons”) which feature artists have not only become common but are approaching cliché, big brands work with artists to create advertising experiences, and the landscape of the
internet has edged even closer to becoming a multimedia playground for users of any orientation or skill level. Yet F.A.T. Lab manages to retain its sense of edgy fun and constant surprise simply by not really giving a fuck — they just create, insistently and addictively. They make fun of Google, staging a Street View car in a fake accident in “Fuck Google.” They bring street artists and computer hackers together (again see the infographic) by creating Graffiti Markup Language, a visual lexicon of graffiti strokes. They have no idols and no limits, but they’re also not into showing off (unlike the art world’s traditional *enfant terrible* types, Dash Snow and Dan Colen).
Part of F.A.T. Lab’s appeal is the fact that they work behind this collective name, a strategy that is more common for artists working in the digital space than, say, painters or sculptors. Anonymity is easier when working online, where the artist can use an avatar. Working in a collective also destabilizes authorship when the works are presented often credit-less on the open internet, leading to a sense that projects are more collaborative and ego-less, with an inherent air of improvisation and cross-pollination. Such is also the case with Computers Club, which includes artists like Nicolas Sassoon and Petra Cortright, creative open-source software creations like openFrameworks, and the endless stream of digital image-making presented by The Jogging. F.A.T. Lab’s popular success presents a hopeful move toward artists becoming active participants in global culture, high and low.
“sexcutrix as La Fornarina, Raphael (1518)” from “Webcam Venus” (Image via ffff.at)

Not that there aren’t downsides to the exhibition. It has to be said that there’s a frat-house sensibility at work in F.A.T. Gold likely due to the fact that crew is majority male, a disparity that especially plagues technology-based art. Addie Wagenknecht and Pablo Garcia’s “Webcam Venus,” in which erotic cam-girls (and guys) are asked to pose mimicking iconic works of classical art, provides a counterpoint — the piece ennobles webcam performance, bringing a critical timelessness to a very contemporary online medium and pointing out the possible exploitation inherent in the Old Master paintings. Though the work here is more critical than many flashy new media projects, at times the art also doesn’t go very deep. Posing in your own fake TED talk in Roth’s “Pirate TED” is viral and funny, sure, but it’s a one-liner.

Yet the careening creativity and play of F.A.T. Gold makes it an unqualified breath of fresh air in an insular art world. It’s no coincidence that the Lab was also founded at Eyebeam — the space provides a rare, fertile ground for experimentation and the collision of media and personalities. Venues like Eyebeam and groups like F.A.T. Lab, content to remain outside of the constant debilitating debates over auction prices, commercial gallery expansions, and micro-celebrity personality clashes, keep hope alive in art’s ability to impact the world at large.

F.A.T. Gold runs at Eyebeam (540 West 12st Street, Chelsea, Manhattan) through April 20.
F.A.T.'s Free Universal Construction Kit (Photo by author)
GOLAN LEVIN  
Virtual Research Fellow  

Golan Levin seeks to shape culture through the design of open systems that awaken people to their potential as creative agents. He is currently an Associate Professor of Art at Carnegie Mellon University, with courtesy appointments in Design and Computer Science; there, he teaches computation arts and researches new intersections of machine code and visual culture.

Since 2009 he has also served as Director of the Frank-Ratchye STUDIO for Creative Inquiry, an arts-research laboratory dedicated to supporting atypical, interdisciplinary and inter-institutional projects at the intersection of arts, sciences and technology.

http://www.flong.com
a file format suitable for robotic CAD/CAM machining. The result is a small Processing utility that converts GML into DXF and CSV. After tinkering around for a while we developed a pipeline for converting the GML/DXF strokes from \#000000book.com into machining paths for the dFAB’s ABB IRB-4400, an eight foot tall industrial robot arm. One of our first tags, was made from GML produced by TEMPT1 (Tony Quan), a graffiti writer with Lou Gehrig’s disease who produced the GML recording with the FAT Lab’s well-known EyeWriter software. Although there’s been a lot of data loss and translation along the way, it’s not completely unreasonable to think of the Robotagger as a prosthesis for Tony. I hope we can pursue this possibility a little further. Speaking of future directions, there are lots of interesting research topics latent here in automated calligraphy. We were astonished to realize just how important the force-feedback of pressure is to the visual quality of the drawings. We shattered a marker and sent ink everywhere when our estimate of the Z-plane turned out to be off by a quarter-inch. Moreover, we’re interested in exploring robotic performances of higher-dimensional gesture data, such as that produced by Wacom tablets, which provides high-resolution information about the pressure, azimuth and elevation (yaw and pitch) of the tagger’s stylus. Watch this space – I’ll be developing some tools to help the next version of GML encode this information.

The Robotagger is a collaboration of Jeremy Ficca’s dFAB at CMU; the STUDIO for Creative Inquiry at Carnegie Mellon, which I direct; and the FAT Lab’s GML initiative. We used the Sharpie Magnum and the wonderful 2-inch Montana Hardcore markers, which (AFAIK) are the largest magic markers in commercial production.
Infviz Graffiti is an adjustable lasercut stencil pattern for pie-chart graffiti. The project addresses a lack of tools for the high-speed reproduction of info graphic messages in and around urban surfaces, and allows for quick tagging of pertinent data. It is ideal for “locative info graphics” or “situated visualization” – when the content of a visualization-graffiti is highly coupled to the specific location at which it has been deployed.

The pattern includes a complete set of re-arrangeable letters and numbers. Changing the stencil’s message and pie-chart percentage is straightforward.

The stencil has a few noteworthy design features:
- The letters are designed to be held in place with adhesive tape.
The F.A.T. Lab is pleased to present QR_STENCILER, a free, fully-automated utility which converts QR codes into vector-based stencil patterns suitable for laser-cutting. Additionally, we present QR_HOBO_CODES, a series of one hundred QR stencil designs which, covertly marked in urban spaces, may be used to warn people about danger or clue them into good situations. The QR_STENCILER and the QR_HOBO_CODES join the Adjustable Pie Chart Stencil in our suite of homebrew "infoviz graffiti" tools for locative and situated information display. The QR_STENCILER loads QR code image files, and exports vector-based PDF stencils.

About the Project

QR codes are a form of two-dimensional barcode which are widely used to convey URLs and other short texts through camera-based smartphones. A variety of free tools exist to generate QR codes (such as the Google Charts API) and to read them (such as TapMedia's free QR Reader for iPhone app). Our QR_STENCILER is a Java-based software utility which loads a user-specified QR code image — from which it then generates a lasercutter-ready, topologically correct stencil .PDF. As Fred
Ever wanted to connect your Legos and Tinkertoys together? Now you can – and much more. Announcing the Free Universal Construction Kit: a set of adapters for complete interoperability between 10 popular construction toys.
The Free Universal Construction Kit

Overview

F.A.T. Lab and Sy-Lab are pleased to present the Free Universal Construction Kit: a matrix of nearly 80 adapter bricks that enable complete interoperability between ten popular children’s construction toys. By allowing any piece to join to any other, the Kit encourages totally new forms of intercourse between otherwise closed systems – enabling radically hybrid constructive play, the creation of previously impossible designs, and ultimately, more creative opportunities for kids. As with other grassroots interoperability remedies, the Free Universal Construction Kit implements proprietary protocols in order to provide a public service unmet – or unmeetable – by corporate interests.

The Free Universal Construction Kit offers adapters between Lego, Duplo, Fischertechnik, Gears! Gears! Gears!, K’Nex, Krinkles (Bristle Blocks), Lincoln Logs, Tinkertoys, Zome, and Zoob. Our adapters can be downloaded from Thingiverse.com and other sharing sites as a set of 3D models in .STL format, suitable for reproduction by personal manufacturing devices like the Makerbot (an inexpensive, open-source 3D printer).

Motivation

Our kids are already doing it! And when we were growing up, ourselves, we did it too – or we tried to, anyway. Connecting our toys together. Because: what if we want to make a construction which is half-Tinkertoys, half-K’Nex? Why shouldn’t we be able to? We dreamed about this possibility years ago, when we were small, and we knew then, as we know now, that we’d need some adapters to help. The advent of low-cost 3D printing has made such adapters possible, and with it, a vast new set of combinatorial possibilities for children’s creative construction toys.

Opening doors to new creative worlds is one major reason we created the Free Universal Construction Kit. Another is that we believe expertise shouldn’t be disposable – and that childrens’ hard-won creative fluency with their toys shouldn’t become obsolete each Christmas. By allowing different toy systems to work together, the Free Universal Construction Kit makes possible new forms of “forward compatibility”, extending the value of these systems across the life of a child. Thus, with the Kit’s adapters, playsets like Krinkles (often enjoyed by toddlers) can still retain their use-value for older children using Lego, and for even older tweens using Zome.
The Free Universal Construction Kit

The Kit offers a “best of all worlds” approach to play and learning that combines the advantages of each toy system. We selected construction sets for inclusion based on their significant level of market penetration, as well as for the diversity of features they brought to the Kit’s collection. Some of the supported construction systems, for example, offer great mechanical strength, or the ability to build at large scales; others offer the means to design kinetic movements; and still others permit the creation of a wide range of crystallographic geometries and symmetries. Using these classic toys as a foundation, the Free Universal Construction Kit offers a “meta-mashup system” ideally provisioned for the creation of transgressive architecture and chimeric readymades.

Finally, in producing the Free Universal Construction Kit, we hope to demonstrate a model of reverse engineering as a civic activity: a creative process in which anyone can develop the necessary pieces to bridge the limitations presented by mass-produced commercial artifacts. We hope that the Kit will not only prompt people to create new designs, but more importantly, to reflect on our relationship with material mass-culture – and the rapidly-evolving ways in which we can better adapt it to our imaginations.

Download

The Free Universal Construction Kit 3D models are freely available in .STL format from three locations:
- Individual adapters from the Free Universal Construction Kit may be downloaded from Thingiverse.com – the world’s foremost website dedicated to the free sharing and remixing of user-created digital design files.
- The complete Free Universal Construction Kit can also be downloaded in its entirety, as a 29MB .zip archive from the F.A.T. Lab web site, here: <http://media.ffff.at/free-universal-construction-kit/free-universal-construction-kit.zip> Note: all units are in inches.
- We expect the Kit to be available shortly from The Pirate Bay, as a torrent in TPB’s new “physibles” (physical downloadable) channel.

In addition to the Kit itself, we also offer for download this attractive B1 poster (4.5MB PDF, in two versions: gray background / white background).
The Free Universal Construction Kit

FREE UNIVERSAL CONSTRUCTION KIT

Duplo®
Fischertechnik®
K'Nex®
Krinkles®
Lego®
Lincoln Logs®
Tinkertoys®
ZomeTool®
Zoober®
The Free Universal Construction Kit

FREE UNIVERSAL CONSTRUCTION KIT

The F.A.T. Manual and sy-lab present the Free Universal Construction Kit, a collection of standard bricks that enable complete interoperability between most popular children's construction toys. By allowing any piece to fit in any other, the F.U.C.K. system ensures that children can utilize all available components of their favorite brands without having to purchase additional sets. The kit includes instructions for creating a variety of structures using different techniques. For more information, visit http://www.free-universal-construction-kit.com.
We (F.A.T. Lab and Sy-Lab) neither sell nor distribute physical copies of the Free Universal Construction Kit. Please do not ask us to do so. Individuals seeking their own physical copies of the Kit, in whole or in part, are encouraged to download our files and reproduce them with open-hardware desktop 3D printers like the Makerbot, RepRap, Ultimaker, or Printrbot. Alternatively, copies for private use may be available from a personal fabrication service bureau; for awesome service, international/anywhere shipping and quick turnaround, we highly recommend Ponoko.com for personalized 3D printing in a wide variety of materials. Shapeways and QuickParts are good, too. You may also find a 3D printer in the architecture, industrial design, and/or mechanical engineering departments of your local university. Please note that our license for the Free Universal Construction Kit prohibits commercial use of these designs in mass production; note, however that we encourage individuals to contract with fabrication service bureaus for the creation of personal copies. For more information, see our license and disclaimers, below.

Implementation

The Free Universal Construction Kit comprises nearly 80 two-way adapters. These allow each of the different construction toys (Lego, Tinkertoys, Fischertechnik etc.) to interface with any of the other supported systems. Prior to modeling, the dimensions of the various toy connectors were reverse-engineered with an optical comparator fitted with a digital read-out accurate to less than one ten-thousandth of an inch (0.0001 in., or 2.54 microns). The resulting precision ensures that the Free Universal Construction Kit “actually works”, enabling tight snap-fits between custom and commercial components.

In addition to its many one-to-one adapters, the Free Universal Construction Kit also includes a special fist-sized Universal Adapter Brick which provides connectivity between all of the supported construction systems:

Producing physical prints from our provided 3D models prompts certain fabrication considerations. According to Wikipedia, the precision of Lego pieces is less than 10 microns. As of early 2012, however, standard Makerbot printers have an XY resolution of 100 microns (0.1mm) and a default layer thickness of 360 microns (0.36mm). We thus caution that fabrication of the Free Universal Construction Kit with current (2012-era) solutions for DIY 3D printing, such as the Makerbot, Printrbot or RepRap, may lack the precision required for reliable or satisfactory coupling with standard commercial pieces. A great deal depends on how well-tuned the printer is; thus, your mileage may vary. In any case, we expect this situation will improve gradually, but inexorably, in tandem with improvements to these vibrantly evolving fabrication platforms. The artist’s proof shown here was
The Free Universal Construction Kit

created in a UV-cured white resin using a commercial-grade Objet ("polyjet") 3D printer, which has a horizontal resolution of 42 microns, and a layer thickness of 16 microns. Ponoko.com and other private fabrication services offer printing from Objet machines and other high-resolution devices.

Legal and Commercial Implications

Consider the frustrating experience of purchasing a new computer (a Mac, say) and discovering that it will not play your aunt’s Windows Media video of your little cousins. Likewise, imagine your aunt’s corresponding annoyance when she finds that her PC will not play the Apple Quicktime video you sent her of your cats. This humiliating little episode isn’t an accident; it’s just a skirmish in a never-ending battle between giant commercial entities, played out, thousands of times every day, in exactly such micro-punishments to customers like you. If you’re well-informed, you may happen to know about VLC – a free, open-source video player, developed by independent hackers as a grassroots remedy for exactly this problem. Until the advent of ubiquitous 3D printing, software remedies like VLC weren’t readily available for hardware products, like toys. That’s changing. Today’s manufacturers have little or no intrinsic motivation to make their products compatible with anyone else’s. Indeed – despite obvious benefits to users everywhere – the implementation of cross-brand interoperability can be nearly impossible, given the tangled restrictions of patents, design rights, and trademarks involved in doing so. So we stepped up. The Free Universal Construction Kit is the VLC of children’s playsets.

As we can see from the example above, interoperability is a question of power and market dominance. Most market leaders regard interoperability as an anti-competitive nuisance, a regulatory check on their ambition, or a concession to the whining of lesser players. Quite simply, interoperability is the request of the disenfranchised. And which end-user, in so many ways, is less enfranchised than a preliterate child?

The simple fact is that no toy company would ever make the Free Universal Construction Kit. Instead, each construction toy wants (and indeed, pretends) to be your only playset. Within this worldview, the other manufacturers’ construction sets are just so many elephants in the room, competing for your attention on the shelves of Toys-R-Us. No longer. The Free Universal Construction Kit presents what no manufacturer could: a remedy providing extensible, post-facto syntactic interoperability for construction toys. Let the fun begin!

Some may express concern that the Free Universal Construction Kit infringes such corporate prerogatives as copyright, design right, trade dress, trademarks or patents of the supported toy systems. We encourage those eager to enforce these rights to please think of the children
The Free Universal Construction Kit

(or perhaps the Streisand effect) – and we assert that the home printing of the Free Universal Construction Kit constitutes protected fair use. Simon Bradshaw et al., writing in “The Intellectual Property Implications of Low-Cost 3D Printing”, conclude that the public is legally allowed to make 3D prints that mate with proprietary parts, especially in cases (the “Must Fit Exception”) where a piece’s shape “is determined by the need to connect to or fit into or around another product”: “Even where a registered design is copied via a 3D printer this would not be an infringement if it were done ‘privately and for purposes which are not commercial’. Both criteria must be met; it is insufficient that copying is not done for profit. Purely personal use of a 3D printer to make items will thus not infringe a registered design.” In fact, the Free Universal Construction Kit deliberately avoids patent infringement. Part of our strategy for doing so is our choice to support older (“classic”) playsets: of the ten toy systems supported by the Kit, eight are no longer protected by active (20-year) patents. To take a few examples: Lego was patented in 1958; Lincoln Logs, in 1920; and Tinkertoys, in 1932. There are, however, two instances in which toy systems nominally supported by the Kit are still protected (as of this writing) by active patents: Zoob (patented 1996) and ZomeTool (patented 2002). For the Zoob and Zome systems, please note that we have delayed the release of pertinent adapter models until December 2016 and November 2022, respectively.

The Free Universal Construction Kit is simply one “toy” illustration of a coming grassroots revolution, in which everyday people can – with desktop tools – overcome arbitrary restrictions in mass-manufactured physical culture. The burgeoning possibility of freely shared downloadable adapters has significant implications for industries where the attempt to create “technological lock-in” is a common business practice.

For more on this subject, and the legal horizons of reproducing commercial products with home fabrication systems, please see:

- Ross, Valerie. “Can You Patent a Shape? 3D Printing on Collision Course
The Free Universal Construction Kit


In addition to the writers above, we tip our hats to Thingiverse user Zydac, whose related project (a Duplo-to-Brio track adapter) [1] led us to these legal writings; to Andrew Plumb (Clothbot) who has probed the legal and practical implications of Lego-compatible bricks [2] for some time; and to Daan van den Berg, who has explored [3] 3D-printed remixes of branded forms as a mode of critical artistic practice.

License and Disclaimers

The Free Universal Construction Kit and its associated media are licensed under and subject to the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License (http://creativecommons.org/licenses/by-nc-sa/3.0/legalcode). The official URL for the Free Universal Construction Kit is http://www.fff4tt.at/free-universal-construction-kit. You are free to copy, distribute and transmit the Kit, and to remix and/or adapt the Kit; in doing so, you must attribute the Kit to “F.A.T. Lab and Sy-Lab”, and include a link to the project using the URL above. We especially welcome extensions to the Kit which provide compatibility with as-yet-unsupported play systems. Please note that extensions to the Kit require the same or similar license. You may not use the Kit in commercial mass production; however, we permit individuals to contract with fabrication service bureaus (e.g. Ponoko, Shapeways, etc.) for personal copies.

Lego®, Duplo®, Fischertechnik®, Gears! Gears! Gears! Gears!®, K’Nex®, Krinkles®, Bristle Blocks®, Lincoln Logs®, Tinkertoys®, Zome®, ZomeTool® and Zoob® are trademarks of their respective owners. The Free Universal Construction Kit is not associated or affiliated with, or endorsed, sponsored, certified or approved by, any of the foregoing owners or their respective products.
The Free Universal Construction Kit

We are not a commercial company; we are artists, hackers and activists. The Kit is not a product; it is a provocation. F.A.T. Lab and Sy-Lab, in cooperation with Adapterz LLC, (1) perform solely the service of publishing the Free Universal Construction Kit, (2) do not participate in any production, public manufacture or sale of the items displayed here, and (3) offer no opinion, warranty or representation as to the safety, quality or functionality of the Kit. The F.A.T. Lab, Sy-Lab and Adapterz LLC therefore offer no warranty of any kind, express or implied.


Warning: Choking Hazard!
Small parts. Not for children under 3 years.

Credits, Contact and Acknowledgements
For press or other inquiries about the Free Universal Construction Kit, please contact info@adapterz.org. The Kit was conceived and developed by the F.A.T. (Free Art and Technology) Lab in collaboration with Sy-Lab, and is represented, for legal purposes, by Adapterz, LLC. The Kit’s “advertisement” video was created by Riley Harmon.
The creators express gratitude to: our families; our lawyers; the children appearing in our demonstration video, and their families; Jean Aw, Eric Brockmeyer, David Familian, Andy Flowers, Michael Joaquin Grey, Mark Gross, Riley Harmon, Marcie and Lawrence Hayhurst, Allie Oswell, Eric Paulos, Bre Pettis, Kent Sheely, Michael Weinberg, and the STUDIO for Creative Inquiry. The Kit files are sportingly hosted by Thingiverse.com.

Notes

cautious approach, limited to producing online projects. And the market, which had appeared ready to snap up these tasty new morsels, turned sluggish too.

But to return to the exhibitions, the events from 2002 to 2009 that involved a New Media Art component essentially appear to follow three different models. The first could be dubbed the “ivory tower” approach: basically, albeit a few years on, taking up the model of the major exhibition exploring the artistic use of the new technologies. Like in *Bitstreams*, the theme, if there is one, is purely incidental: wrapping paper to dress up a recycled gift. In actual fact the model had not changed since the period of *Mediascape*: presenting a mixed bag of artworks with little in common apart from the increasingly ambiguous label of New Media Art, or digital art. Replicating this model could lead to exhibitions of interest, well curated and even useful from an educational point of view. The problem is that whatever you do to dress it up, the concept basically boils down to Pollack’s laconic observation: these days artists, like everyone else, use computers. And while the aspiration was to achieve institutional legitimacy, the inevitable effect was basically confining it to a ghetto; a golden prison, but a prison nonetheless.

The second model could be couched in terms of the oft-debated “workplace quotas”. Despite the ironic description, this is a basically positive model: New Media Art starting to appear, in small doses, in themed contemporary art shows. This is the approach that was attempted in *010101*, but without the technophile superstructure. In 2003, for example, the Künstlerhaus Wien in Vienna staged a show entitled *Abstraction Now* (curated by Norbert Pfaffenbergichler and Sandro Droschl). As the title says, this was a major overview of the state of abstract art, and it featured a good number of artists who work with software and the web, from Jodi to Marius Watz, Golan Levin and Casey Reas.

The third model, that of the “discreet guest”, is the one adopted
Inside Microsoft Research’s First Artist-In-Residence Program

An exclusive first look at what happens when you give an artist unrestricted access to Microsoft’s researchers and technology.

BY MARK WILSON | 5 MINUTE READ

You may not know the name James George, but you probably recognize his art. Working out of Golan Levin’s lab at Carnegie Mellon alongside Jonathan Miniard, he created some of the most stunning digital portraiture of our era—which then became a documentary—using little more than a Microsoft Kinect and a stock dSLR camera.

Recently, George was invited to become Microsoft Research’s first-ever artist-in-residence. And so for the past three months, he’s had full access to Redmond’s stuff and technologies to create whatever he’d like for Studio 99, a creative space within Microsoft that was created about a year ago to inspire the merging of art and research within the company’s most experimental arm.

“I had a moment a week in where I felt like a kid in a candy store,” George tells Co.Design, "that feeling of overwhelming happiness of all the possibility, and also the knowledge that if I ate all of the candy, I’d feel sick.”

What he created were three pieces using Microsoft technologies in inspired ways. The first is called Grip, a two-column video display capturing a pair of people in various 3-D poses, choreographed by Alex Goetz. George was inspired by a photography rig found inside the lab of Microsoft research scientist Charles Loop. The rig combines the images from eight 2-D cameras to build a stereo-length 3-D silhouette in real time. With a little coaxing, Loop agreed to help George build a rig that was five times bigger and capable of tracking two full-sized humans.

The result is essentially a 3-D version of human shadows. It’s haunting, subtly anthropomorphic, and unabashedly digital.

“It feels like seeing yourself for the first time,” George says of the work. “We’re always defining ourselves through portraiture that reflects the technology at the time. We’re continuing to excavate and define what the future might look like.”

A second project, called Wall Querries, takes the images that Bing produces in response to a query and turns them into a mosaic, 9-ego’’ mural. Everything in this mural is the result of typing the word “squares” into the search engine. The images are organized partly by color, and partly by an algorithm George developed to help the final piece look more natural than your standard segmentated image grid. (George actually arranged the squares by hand at first, leaning from his own aesthetic preferences, before programming a quantifiable recipe for this algorithm.)

“Standing far from it, you see these washes of color, and then you get closer, and it’s complete chaos, as if the Internet threw up on the wall,” George says.

“I would like people to reach the point of also considering what’s not in the image,” he adds. “The inferences and biases of people building search algorithms are excluding things. There are levels of interpretation going on, and that’s a level of awareness we need to have.”

George’s third project makes an even bigger statement on the companies’ and the brands’ behind the Internet. Again, using images generated in Bing, George makes a composite of people who’ve had companies like Microsoft, Dell, or Intel inked on their body. This fusion of technology and flesh elicits an immediate, visceral reaction.

“I think your immediate response is that person is going to live longer than the relevance of that brand,” George says. “One of the best images, a guy pointing to his stomach that reads ‘MySpace, a place for friends.’ It was obviously taken with a digital camera from around that era.”

Good thing, George says, that Microsoft has a “sense of humor about everything.” In fact, that sensibility is exactly what enables something like an artist-in-residence program in the first place—which will in turn help Microsoft foster an internal culture of creativity needed to compete in today’s liberal-arts-centric world of tech.

You get closer, and it’s complete chaos, as if the Internet threw up on the wall.

Microsoft senior research designer Asa Roseway says that she was thrilled with James’s interaction with Charlie and the Bing team. “He’s revealed a way for them to look at their work through a new lens,” she says. “We were using James as our guinea pig because we wanted to understand how someone like him functions in an environment like this. But I think we’re really really open to bringing in different types. We could bring a fashion designer in and look at the question of wearables, or a poet to come in and look at the question of language analysis.”

Microsoft says it is now toying with expanding Studio 99’s artist-in-residence program following this successful first run.
GOLAN LEVIN

museums / January 29, 2013 / Comments Off on Golan Levin / Uncategorized

[Show as slideshow]

Essay authored by N. Elizabeth Schlatter, curator

As a viewer who is decades older than the age group represented in Golan Levin’s The Dumpster, I find that reading beyond a small sampling of posts in the work is a somewhat painful experience. Once the initial responses of empathy ["Poor girl"] or shock ["What a jerk"], or dismay over the mangled use of the English language aside, I feel a bit numb and awkwardly embarrassed for the posters. It is painful in the same manner as watching a bad acting performance — the sincere intent to communicate is present but it is impossible to get past the melodrama.

However, the elegance of the design of The Dumpster ameliorates the titness of the work’s content. The piece presents a visualization of 20,000 posts by teenagers culled from blogs in 2005, in which the authors state that they have broken up or been dumped by their romantic interests. Each post can be accessed via date and gender, and they are arranged on the screen based on similarity in content and authorship. For example, two adjacent posts might read:

- I broke up with Jordan and feel sooooo bad. I still really like him and I hate not being wit him. It’s like, you never know how much you wanna be with someone until you’re no longer with them. Then it hits…
- well today i broke up with Justin cuz i do nt want a bf right no..but yeah thatz life! hez a nice guy jus i do nt want a b! okay yeah! anyway I think mand3r3z mad at me idk y though hopfully shes …

In his artist statement about the project, Levin clarifies that one of the goals of the work is not just to cynically highlight the omnipresence of romantic dissolve, but to reassure the authors that "pain which they might believe no one else could possibly understand is actually quite similar (and sometimes seemingly identical) to that of other people." ¹ In the next paragraph, Levin clarifies that this uniformity of the expression of pain might actually be due to the limits of the English language, which not only constricts verbal expression according to existing vocabulary and patterns but actually shapes how we understand our feelings. ²
In his essay about *The Dumpster*, scholar Lev Manovich calls the piece a “social data browser,” that “allows you to navigate between the intimate details of people’s experiences and the larger social groupings. The particular and the general are presented simultaneously, without one being sacrificed to the other.” 3 Both Manovich and Levin describe the work as a group portrait, although Levin clarifies it as also a “technologically enabled assemblage of self-portraits.” 4

After delving into the posts, I kept thinking, now this is a group portrait that Andy Warhol would adore. *The Dumpster* is a bit like his paintings of Coca-Cola bottles and Campbell’s soup cans. Just like rendered objects in Warhol's works are similar yet just slightly different, thanks to the imperfections of his screenprinting process, the posts in *The Dumpster* are analogous yet reveal the warts and other imperfections that the Pop artist loved to highlight. Aside from proving yet again his now over-used “famous for 15 minutes” proclamation, which seems to have been manifested by blogs, YouTube, and other social media, Warhol would no doubt appreciate any artwork that manages to concurrently highlight and de-personalized the most personal of experiences — a romantic break up.

The bridge between the social and the intimate that Manovich stresses to differentiate *The Dumpster* from representational artforms of the past, such as paintings of individuals or groups, is constructed out of thousands of very thin reeds. After all, how can a single post, composed presumably in a moment laden with extreme emotion (hatred, sadness, revengefulness, shame, etc.), possibly convey the full complexity of one's personality and character? The collective presentation of such posts, of these sincere but overwrought articulations authored by a group that age-wise is perhaps the most earnest and vulnerable to histrionic self-expression, is inherently painful for a viewer not simply because the subject is painful but because the communications are so fleeting and raw. *The Dumpster* is a heartbreaking portrait of the heartbroken.

**Experience The Dumpster**

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**Biography**

Golan Levin (American, born 1973) received a B.A. from MIT and an M.A. from the MIT Media Laboratory. His work has been included in exhibitions at the Whitney Museum of American Art, the New Museum of Contemporary Art and the Museum of Modern Art, all in New York; the Ars Electronica Center Festival, Linz, Austria (multiple presentations); The Museum of Contemporary Art in Taipei, Taiwan; among other venues. Recent solo exhibitions have been held at bitforms Gallery, New York; Kiasma Art Center, Helsinki; Pittsburgh Center for the Arts, Pittsburgh; and the Beall Center for Art and Technology, Irvine, California. He has been awarded the Prix Ars Electronica Honorable Mention (2002, 2004, 2009); a Creative Capital Foundation Artist’s Grant (2006); a Webby Award (2007); and a Pennsylvania Council on the Arts Fellowship (2008). Levin is currently Director of the Frank-Ratchye STUDIO for Creative Inquiry and is Associate Professor of Electronic Time-Based Art at Carnegie Mellon University.

**Notes:**

1. See “Artist Statement” tab on The Dumpster
2. Ibid. On this topic Levin writes, “This is at its root a Whorfian linguistic conjecture: Our pain may be unique, but because we all use (astonishingly) similar language to describe it, our understanding of our own emotions is attenuated and conformed accordingly.” See Wikipedia entry on linguistic relativity and the Sapir-Whorf hypothesis. http://en.wikipedia.org/wiki/Linguistic_relativity
4. See “Artist Statement” tab on “The Dumpster”
Le temps de l’ingénierie critique

« Le monde de l’art nous fait passer actuellement des messages : plus le monde est codé, plus il est difficile à décrypter. Le monde des technos devient plus opaque à mesure que les infrastructures techniques deviennent plus invisibles. L’informatique enrage désolidarise l’infrastructure, la « brique et le mortier ». » Un récent sondage de Citrix montrait que 51 % des Américains pensent que le mauvais temps peut avoir un effet sur l’informatique en nuage… Preuve que nous avons du mal à comprendre les transformations en cours.

Demain, nos villes seront entièrement gérées par des machines, sans que nous sachions très bien comment. Danja Vasiliev et Julian Oliver, membres du collectif artistique berlinois Weise 7 ont imaginé des Hommes en gris (vidéo), des hommes qui captent et récoltent les données qu’ils échangent nos ordinateurs avec les routeurs des hotspots Wi-Fi que nous utilisons, récompensés en 2010 à Ars Electronica. Un dispositif déroutant, qui interroge en profondeur nos pratiques, comme le soulignait Marie Lechner à l’époque pour Libération.

Les Men in Grey (MIG) opèrent dans cette zone grise, de plus en plus ambiguë, entre ce qui est considéré comme privé et ce qui relève de l’espace public à l’ère de l’informatique ubiquiste.

Image : photographie de la vidéo Men in Grey 2.

Vous êtes dans la rue ou dans un café, en train de consulter un site web sur votre ordinateur portable ou votre smartphone, de poster des statuts sur Facebook, de partager une photo coquille ou de vous envoyer des mots doux par tchat, pensant être à l’abri des regards, et voilà que vous entendez une synthèse vocale claironnant à la face du monde ce que vous venez de chuchoter sur votre clavier. La voix mécanique qui émane de curieuses mallettes portées par les deux Men in Grey annonce surcroît le numéro IP de votre machine, tandis que votre message s’affiche en toutes lettres sur les écrans incrustés de leurs attachés-cases.

Ces opérateurs aux allures de bureaucrates s’interposent dans le trafic sans fil non sécurisé et prennent le contrôle du réseau. Agissant comme des routeurs (cei élément intermédiaire dans un réseau qui assure le transit des paquets de données), ils interceptent, manipulent et rendent visibles les flux de données immatérielles qui se baladent dans l’ether. Parfois sur écrans géants, comme c’était le cas au Media Facades festival cet automne. « Manifestation de l’irréalité générée par le réseau », les Men in Grey sont une apparition inquiétante à l’ère des mises sur écoutes gouvernementales, des espions Facebook, des caches Google, du filtrage sur Internet. « Nous sommes la manifestation directe du stress généré par le réseau […] Nous capturons et reconstructions ce qui est caché dans l’air. Nous sommes des prises, révélant les peurs du réseau citoyen, ses doutes, ses désillusions, ses désirs et ses mensonges », écrivent les auteurs sur un site web noir aux allures conspirationnistes.

L’art est toujours en avance

En 2004, Éléonore Helilo et Joachim Montessuis avaient avec MUSH (Multi-User Sensorial Hallucination, vidéo) imaginé un spectacle d’art médiatique utilisant un dispositif proche de la Wimote, avant qu’elle n’ait existé. En 2005, Olen Levin avait ainsi publié un article évoquant plusieurs installations artistiques comme autant de prolifiques à ce qui est devenu depuis notre vie quotidienne numérique. L’art est souvent en avance par rapport aux réalisations techniques… À moins que ce ne soit les sociétés technologiques qui finissent par intégrer l’art à leurs outils, ironise Honor Harger.


« Les artistes comme les auteurs de SF connaissent bien le langage des nouveaux médias tel que défini par Lev Manovich. Comme les ingénieurs, les artistes s’impliquent dans des études sur les implications des technologies. Souvent, ils aboutissent aux mêmes conclusions qu’eux, mais pas au même moment. C’est en cela que l’art médiatique est souvent un bon vecteur pour détecter les signaux faibles qui nous attendent dans le domaine des technologies. »
Ce projet très perturbant pour ceux qui en étaient les victimes, puisqu’il montrait combien les réseaux dans lesquels nous avons toute confiance peuvent être fragilisés a été prolongé en 2011 par le projet Newsweek, qui permettait d’accéder à ce que laissait les gens depuis leurs ordinateurs et de proposer en cache l’information à laquelle ils accédaient rédactionnellement. Cet « ajusteur d’information » qu’évoquait très récemment l’émission Tracks d’Arte permet de prendre le contrôle de copie des plus grands sites de presse sur un hotspot local. Deux projets qui attirent l’attention sur le rôle de l’infrastructure du réseau, qui posent la question de qui la contrôle et de comment nous pouvons être manipulés.

Les membres du collectif Weise 7 sont également à l’origine du Manifeste de l’ingénierie critique qui veut observer l’espace entre la production et la consommation des technologies. Dans une récente interview Julian Oliver explique que nous sommes devenus incapables de décrire notre environnement. Pour lui, il est temps d’intervenir sur les infrastructures cachées et opaques qui impactent profondément nos vies.

Dans la nouvelle esthétique, cette esthétique du numérique qui investit le rêve, James Bridle (voir son intervention à Lift 2012) explique que les programmeurs écrivent et construisent désormais les systèmes qui définissent notre réalité.

Autre exemple qu’égrenée Honor Harger : la grenade de la transparence, imaginée par Julian Oliver (2012) – encore lui ! –, est une grenade pour lutter contre le manque de transparence des entreprises et des gouvernements. Elle capture les flux des réseaux pour les expédier vers des serveurs dédiés et les rendre transparents, accessibles à tous, comme autant de Wikileaks en puissance. City CPU de Gordan Savicic, qui tente de lire la ville de Shenzhen comme un processeur est un autre exemple d’installation qui essaye de décrire notre environnement numérique pour nous permettre d’agir dessus.

L’art médiatique ne s’arrête pas au numérique !

Mais la technologie ne signifie pas seulement le numérique. Pour le physicien Dyson Freeman, la biologie est la science dominante et l’art de demain sera celui de la conception des génomes. « À l’avenir, la nouvelle génération d’artistes écrira des génomes d’une manière aussi fluide que Blake ou Byron évoquaient des vers », expliquait-il dans la New York Review of Books en 2009. Les artistes de demain créeront de nouvelles plantes ou de nouveaux animaux, imaginait le physicien… Or, c’est déjà le cas, rappelle Honor Harger.

Alba (GF Bunny), le lapin fluorescent d’Eduardo Kac est né 8 ans avant les propos de Dyson. Pour Kac, cette création était un projet d’art transgénique pour créer du commentaire social. Le Victimless Leather Jacket (2004), cette veste en cuir fabriquée depuis des cellules de souris, développée par le Tissue Culture and art project (et qu’évoquaient déjà pour nous Régine Debatty en 2006) utilisait déjà l’art pour nous faire réagir aux nouvelles formes de créations biologiques. Le projet de Cuisine désincarcérée (2003) produit par le même collectif consistait à produire un steak à partir de cellules d’un animal qui n’était pas encore né.

Lighthouse a conduit l’année dernière un Laboratory Life à Brighton qui a invité pendant deux semaines des artistes et biologistes pour créer des œuvres depuis la biologie comme la le textile infectieux d’Anna Dumiri ou un tatouage composé d’encres et de cendres d’un mort pour créer un souvenir en forme de tatouage sur le corps de ses petits enfants… « L’art médiatique ne travaille pas seulement la matière numérique », estime Honor Harger, « mais également la biologie, la physique, la nanotechnologie, l’astrophysique… »

Et Honor Harger d’évoquer pêle-mêle Brillant Noise, un film composé d’archives brutes provenant des satellites de la NASA ; la clinique de santé environnementale de Nathalie Jeremijenko (Wikipedia) qui tente de comprendre la dépendance de notre santé à nos environnements locaux ; le Super K Sonic Boom de Nelly Ben Hayoun qui se veut une expérience physique pour comprendre le fonctionnement de neutrinos ; le solar sinter de Markus Kayser, une imprimante 3D qui utilise l’énergie solaire et le sable du désert pour créer de nouveaux objets ; la nano peinture de Frederik de Wilde s’intéresse à une forme de peinture nanométrique qui devient par essence invisible, montrant de l’art qui ne peut être vu… ; la radio biologique du chercheur et artiste Joe Davis (Wikipedia) consiste en une radio qui fonctionne depuis des organismes vivants ; Protei de Cesar Harada est une flotte de bateaux robots open source imaginée pour capturer les hydrocarbures dégazés dans les océans ; la radio Tempête de Bengt Sjöblom est un récepteur radio conçu pour ignorer les signaux transmis intentionnellement pour en révéler d’autres… Et la liste de projets artistiques étonnants aurait pu être plus longue encore.

Définitivement, les artistes se préoccupent beaucoup d’éthique et leurs projets sont là pour poser des questions éthiques, souligne pour conclure Honor Harger. Quand le collectif Critical Art Ensemble travaille sur le bioterrorisme, c’est assurément pour nous aider à en tirer les leçons. Ceux qui travaillent avec des éléments dangereux sont toujours ceux qui sont les plus conscients des problèmes de sécurité. Leur travail permet à la fois de repousser les limites de ce qu’on peut faire avec l’ensemble de ces matériaux tout en pointant du doigt leurs risques et leurs potentiels.

Hubert Guillaud
A l’occasion de la 5e édition de Lift France, qui aura lieu les 15 et 16 octobre à Marseille sur le thème « Produire Autrement » (programme, inscription), InternetActu, partenaire de l’événement, revient sur les précédentes éditions de Lift et fera gagner la semaine prochaine 3 invitations. Pour cela, suivez notre fil Twitter.
STREET ART ET WEB EN ÉTROITE CONNEXION

Par Marie Lechner (http://www.liberation.fr/auteur/1990-marie-lechner/)
6 septembre 2013 à 19:06

La frontière s’estompe entre artistes urbains et numériques, dont les pratiques se complètent et se répondent de plus en plus. Un dialogue fructueux entre deux contre-cultures qui partagent une même revendication de l’espace public.

La jeune génération baigne, elle, depuis toujours dans la marmite technologique et le Web est sa deuxième maison. Les pratiques *online* et *offline* ont désormais tendance à converger, à se répondre ou à se compléter l’une l’autre, à mesure qu’Internet quitte l’écran et que la ville elle-même devient l’interface. Le street art partage un certain nombre de points communs avec les contre-cultures du Net : revendication de l’espace public, critique de sa privatisation, pratique à la frontière de la légalité, rejet du droit d’auteur, gratuité, anonymat, facilité de création et de partage.

**Du graffiti au **GIF-iti**

Pour les artistes urbains, la Toile est devenue un showroom permanent, permettant d’exposer leurs éphémères faits d’armes à une audience planétaire, au point que la trace électronique devient aussi importante que le graffiti in situ. Face à ce constat un peu déprimant, Insa, graffiti artiste londonien, a radicalisé la tendance en inventant un graffiti fait pour être vu exclusivement sur le Web sous la forme d’un GIF animé. Il le baptise le « *GIF-iti*(http://gif-iti.tumblr.com) », contraction de GIF - format fétiche du folklore digital - et de graffiti. Emboîtant le pas de Blu (le grapheur italien auteur de somptueuses animations(http://vimeo.com/13085676#at=0) peintes patiemment sur les murs des villes), Insa peint et repeint les façades avec de légères modifications. Puis les photographie, image par image, avant d’en faire une boucle animée qu’il poste sur son site. Il a passé ainsi une semaine à suer sous le soleil de Los Angeles pour repeindre un bâtiment de fond en combles plusieurs fois d’affilée. Un travail titanesque qui finit systématiquement en un GIF animé de 600 pixels de large.

C’était le cas de l’un de ses récents projets, en collaboration avec Stanley Donwood, auteur de la pochette d’Atoms for Peace (le nouveau groupe de Thom Yorke). Insa anime les scènes en noir et blanc dépeignant la destruction d’Hollywood sous une pluie de météorites sur les façades de XL Recordings à Los Angeles. Les gigantesques peintures murales ne prennent vie que lorsqu’elles sont mises en ligne. Un effort qui paraît disproportionné, mais « *l’œuvre sera vue par des centaines de milliers d’internautes, et pas seulement les quelque milliers de promeneurs qui longent le mur avant qu’il ne soit repeint*, dit-il dans une interview au blog *The Creators Project*. Pour l’artiste britannique, qui faisait du graff avant l’ère Banksy, c’est aussi une
manière de protester contre la marchandisation du street art qui a migré des murs lépreux de la ville à ceux immaculés des galeries. «Le graffiti était une forme artistique libre dont tout le monde pouvait profiter, mais il a été transformé en bien de consommation, vendu au plus offrant. Mes GIF-itis ne peuvent être accrochés au mur d’une galerie. Une fois téléchargés, ils sont libres de voyager et d’être vus par le plus grand nombre.»


Quant au Berlinois Aram Bartholl (http://datenform.de/)(2), dans Are You Human(http://datenform.de/areyouhuman.html), il dissémine au milieu des tags de la ville des "Captcha", ces suites de lettres et chiffres aléatoires générées automatiquement et difficiles à déchiffrer, utilisées sur le Web pour vérifier que vous êtes un humain et non un script automatique. Comme les "Captcha", les tags sont une forme de langage codé, compréhensible par les seuls initiés. Issu des arts numériques, Bartholl s’emploie à rematérialiser les bits en atomes, en faisant migrer par exemple des signes familiers du Web dans l’espace des villes, comme planter en leur centre le marqueur géant de Google Maps. Une manière de questionner les frictions entre espace informationnel numérique et espace public, à une époque où la perception de la ville est de plus en plus influencée par les services de géolocalisation.

La ville elle-même est désormais recouverte de multiples couches d’informations invisibles auxquelles on se connecte via son smartphone. N’importe qui peut, à l’aide d’une application adéquate, «taguer» des commentaires sur un restaurant, épingler un mot à l’endroit d’un premier baiser, une photo souvenir ou une vidéo… Au XIXe siècle déjà, les hobos, travailleurs migrants aux Etats-Unis, laissaient sur le pavé des messages dessinés à la craie ou au charbon, destinés à ceux qui suivaient leurs pas. Ils avaient développé leurs propres hiéroglyphes codés, pour signaler une gentille dame, un chien méchant ou un endroit peu sûr. L’artiste numérique Golan Levin a réactualisé cette signalétique(http://fffff.at/qr-stenciler-and-qr-hobo-codes/) à l’ère du nomadisme 2.0 en mettant au point une série de pochoirs permettant de dessiner des QR codes (codes-barres en 2D) indiquant toutes sortes d’informations pratiques décryptables à l’aide de n’importe quel téléphone portable : un propriétaire désagréable, des caméras de surveillance ou encore un bon café.
Les œuvres du Berlinois Sweza se dissimulent également derrière des QR codes. Avec lui, le street art devient interactif et nécessite un smartphone pour y jouer. Ainsi de son cimetière des graffitis, Graffyard. Sweza les photographie avant leur disparition, puis colle un QR code à l'endroit exact où ils se trouvaient afin que le promeneur qui le scanne puisse voir le graffiti effacé, comme un voyage dans le temps. Ces codes, qui sont censés fournir des suppléments d'informations aux consommateurs, pullulent sur les publicités que Sweza s'amuse à hacker, substituant aux codes commerciaux ses propres codes humoristiques. Intéressé par ces signes abstraits qui permettent de lier espaces virtuel et réel, il les a également intégrés dans un autre symbole de la culture hip-hop, le ghetto-blaster («QRadio»), où le QR code renvoie vers une cassette diffusant sa playlist.

**Une déesse virtuelle de la démocratie place Tiananmen**

Mais ces QR codes sont déjà un peu old school face à la réalité augmentée, qui est, elle, totalement invisible à l'œil nu. A moins d'être pourvu des Googles Glasses ou, à défaut, d'un smartphone géolocalisé doté d'une application spécifique (genre Layar), impossible de lire ces données subliminales disposées dans votre périmètre, surimposées dans l'espace physique. Un collectif international d'artistes, Manifest.AR(http://manifestarblog.wordpress.com/), a choisi d'occuper cet entre-deux, cette «substratosphère» entre online et offline ainsi qu'il la qualifie, posant des images fantomatiques ou déployant des architectures imaginaires sur le monde réel. Ces «tagueurs d’espaces» ont ainsi installé sur la place Tiananmen une version virtuelle de la statue de la déesse de la démocratie érigée par les étudiants révoltés en 1989. La statue de la démocratie a également été implantée place Tahrir au Caire. A Paris, ce sont des fûts de déchets toxiques que John Craig Freeman a entassés près de Beaubourg, de la tour Eiffel et du Louvre, déversant sa décharge dans les pays carburant à l’atome. A Lausanne, Lalie S. Pascual a elle installé une station de métro fantôme qui permet de se téléporter dans une autre ville, et Mark Swarek a invité les gens à une «occupation augmentée» du district financier de New York.

SMSlingshot de VR/Urban

De la même manière que les graffitis visent à modifier notre regard blasé sur l’environnement urbain, ces interventions sont une manière de « réclamer les rues » (« Reclaim the Streets ») des villes, mais aussi de « réclamer les écrans » (« Reclaim the Screens »). L’espace public se recouvre d’écrans publicitaires numériques, et il devient difficile de rivaliser avec ces enseignes lumineuses. Dans ce combat de David contre Goliat, le collectif VR/Urban fourbit les armes avec son « SMSlingshot » [http://www.vrurban.org/smslingshot.html](http://www.vrurban.org/smslingshot.html), un lance-pierre qui permet d'éclabousser les murs de la ville de SMS. Les messages peuvent être tapés sur le mini-clavier qui équipe la fronde en bois. Une fois le message rédigé, il suffit de viser l’endroit où l’on veut l’envoyer, de tirer bien fort sur l’élastique et le texte apparaît dans une tâche colorée. Une arme qu’ils ont mise entre les mains des passants, notamment ceux de la place Tahrir. Les éphémères éclaboussures de lumière, au même titre que les tags en réalité augmentée, ne salissent pas les murs, et sont par conséquent plus faciles à accepter que les dégueulises de peinture, ce qui amoindrit la radicalité véhiculée par ce geste frondeur.


« Ce que je préfère dans le graffiti, c’est le tag. C’est la forme la plus pure de graffiti, la plus abondante, mais aussi la plus mal-aimée », dit l’artiste hacker américain qui se passionne pour ces calligraphies, signatures express griffonnées sur les murs. Et plus précisément pour ce qu’on ne voit pas, c’est-à-dire le geste furtif du tagueur qu’il s’est mis en tête de capturer. Evan Roth [http://www.evan-roth.com](http://www.evan-roth.com) développe la première version de « Graffiti Analysis », son analyseur de mouvements, en 2004. Il repère des tags familiers sur ses trajets et demande aux graffeurs de reproduire leur signature avec un marqueur surmonté d’une lumière, tracée par une caméra. Un logiciel de son cru récupère, analyse et enregistre les données de mouvement, archivées dans une base libre et ouverte à tous. Les graffeurs sont invités à partager leur style manuel, ce
qu’ont déjà fait plusieurs stars comme Seen, Twist, Amaze et JonOne. Lors d’événements ou d’opérations guérilla avec groupe électrogène et projecteur, ces tags lumineux géants s’écrittent sur les murs entourés d’une nuée de particules qui pulsent en fonction des sons environnants et de l’architecture des façades.

La prophétie de Warhol

Dans un guide (http://www.instructables.com/id/How-To-Start-Your-Own-Graffiti-Research-Lab%22%3Ehttp://www.instructables.com/id/How-To-Start-Your-Own-Graffiti-Research-Lab%22%3E), Roth, qui en est depuis désengagé, invite hackers et tagueurs à s’unir. Les rues et le Net regorgent d’opportunités pour les petits gens d’altérer le cours des systèmes dominants. Les hackers ont assemblé l’Internet en partageant les idées, et les writers ont hacké un système de transport de milliards de dollars pour faire voyager leur art autour de la ville gratuitement. Désobéissance créative, open source, partage des connaissances sont invoqués, ce qu’il résume dans la formule : « Pas de brevet, pas de copyright... Juste la gloire. »


On peut néanmoins se demander si l’électrograffiti conserve le pouvoir de subversion de son illustre prédécesseur, lui-même largement récupéré par la publicité et entaché par sa compromission avec le marché. « Quand vous n’endommagez rien, vous intéressez un public beaucoup plus large. Vous parvenez à capturer l’attention des gens qui sont contre le vandalisme. […] Notre travail consiste à fabriquer des outils qui permettront aux citoyens d’avoir une voix face aux annonceurs », estime Roth, qui présente son travail en ce moment à la galerie de l’école Parsons à Paris, qui vient d’ouvrir ses portes (4).


L.S.D de Benjamin Gaulon

A l’occasion du festival Mal au pixel, en novembre 2012 à Paris, Gaulon, armé d’un récepteur vidéo tel un L.S.D de Benjamin Gaulon, a réalisé une soucoupe des temps modernes, tentait d’intercepter les images des caméras de surveillance sans fil (2,4 GHz (http://www.recyclism.com/twopointfour_v1.php)), produit électronique bon marché utilisé par les écouteurs ou les particuliers. Sur le moniteur s’affiche une image neigeuse, qui devient plus nette à mesure qu’il s’approche du signal : un intérieur d’appartement avec des hommes en train de repasser. Plus loin, c’est un couloir désert qui se dessine… Via ce petit jeu de passe-muraille, consistant à regarder ce que regardent les caméras, Gaulon tente de sensibiliser le public en organisant des promenades à la recherche de ces signaux. « La plupart des gens qui les utilisent pensent sécuriser leur domicile, ils ne se rendent pas compte qu’ils diffusent leur signal dans la rue. N’importe qui à l’extérieur peut le recevoir. Ce n’est pas très différent de Facebook, où les gens déballent leur vie en ligne. » Gaulon cartographie leurs emplacements, il réalise des boîtiers, qu’il fixe dans la rue pour révéler la présence de ces caméras et en exposer les vues au public.
Clés USB cimentées dans les murs
Caméra, géolocalisation, capteurs, reconnaissance faciale... Le passant devient aussi traçable dans la ville que sur la Toile. Dernier bastion de liberté, le Web est comme les villes en voie de privatisation et sous haute surveillance. En réaction, Aram Bartholl a conçu le projet « Dead Drops(http://deaddrops.com/fr/) », un réseau peer to peer de partage de fichiers, mais au lieu de se déployer en ligne, il se manifeste en dur dans l'espace public sous la forme de clés USB cimentées dans les murs où chacun peut déposer ou télécharger des fichiers en tout anonymat, en y branchant simplement son ordinateur portable. Depuis, des Dead Drops ont poussé dans les murs des villes du monde entier, se propagant comme une mauvaise herbe. A Toulouse, le collectif la Moustacherie a utilisé le dispositif pour y organiser une exposition de rue.

Avec « Street Ghosts(http://streetghosts.net/) », Paolo Cirio s'inquiète, lui, de la mise en données du monde par Google, notamment par son service de cartographie panoptique Street View. Le hacker italien a choisi 80 silhouettes de par le monde, au hasard de Google Street View, pour en faire des répliques à taille réelle sur des posters qu’il colle sur les murs des villes à l’endroit exact où l’objectif de la voiture Google les a saisies, silhouettes fantomatiques interrogant la frontière entre privé et public et l’appropriation abusive d’informations privées par les mastodontes du Net, les quatre chevaliers de l’infocylape, Apple, Google, Facebook et Amazon. « Être sur Street View est bien pire que d’être sur un poster dans la rue, qui n’est pas permanent et peut toujours être retiré, estime l’artiste. Alors que nos fantômes vont hanté pour toujours les serveurs de Facebook, Google ou Twitter, toute l’info que nous laissons sur le Net est stockée et commercialisée. »

En exfiltrant ces silhouettes et en les dévirtualisant, il remet ces questions dérangeantes sur la place publique. « La notion de ce qui est public a beaucoup changé, les gens ne se préoccupent plus tellement de l’espace physique. Tous ont les yeux braqués sur les écrans de leur smartphone quand ils marchent dans les rues, déclarait Paolo Cirio à Libération(http://www.liberation.fr/medias/2012/10/31/captures-fantomes_857392). Mon projet est devenu populaire et provocant, non parce que j’ai mis ces images dans les rues, où on les remarque à peine, mais parce que les images des interventions publiques ont été repostées online. »
This game is a movie: 'New Cinema' explores the altered future of film

Artists and directors conspire in the space between film and video games

by Joshua Kopstein  |  Feb 8, 2013, 1:44pm EST

Peter Jackson's high frame rate Hobbit and the second coming of 3D have probably been the most publicized attempts to revive the stagnating movie industry. But elsewhere, the future of cinema seems to be converging on something more closely resembling a video game as artists, hackers, and filmmakers process the language of film through the lens of code.

Last week an experimental program in New York City called New Cinema shared a tiny glimpse of what that might look like. The works-in-progress are the results of a hackathon from last December organized by The Creators Project and NYC's Eyebeam art and technology lab in collaboration with Framestore, the
Oscar-winning visual effects studio behind films like *Children of Men* and *Where The Wild Things Are*. And each one, however small, seems to hint at some larger idea about how interactive software could dramatically alter — maybe even outright replace — cinematic storytelling as we currently know it.

It’s true that the idea of interactive cinema has been around — Radúz Činčera's *Kinoautomat* famously debuted at the Montreal World's Fair in 1967, if you want to go all the way back. So why "New Cinema?" Participating artist Brian Chasalow admits that like "New Aesthetic," it’s one of those regrettably pretentious placeholders used for lack of a better term.

"IF YOU PAINT, YOU’RE A PAINTER. IF YOU PROGRAM AND DO ART, YOU’RE A NEW MEDIA ARTIST."

"Calling something "new" adds a certain valuation or quality to whatever word comes next," he lamented to a crowd at Eyebeam last week. "It's a difficult time for artists who are in this field because they don’t know what to call themselves. If you paint, you’re a painter. If you program and do art, you're a New Media Artist. We put ourselves in the category because it’s easier — because we have to — to make other people understand what it is that we do."
Chasalow and collaborator Anton Marini were showing off what you might describe as the software equivalent of a cinematic close-up. Conceived with the help of *Another Earth* director Mike Cahill, "In Opsis" renders an interactive landscape from footage of a subject's eye, captured at 3072 x 1307 resolution at around 200 - 300 frames per second. The images run through software written by media artist Golan Levin, which scans for unique features in each iris (identified by tall white lines), then are brought into the Unity game engine to build a terrain map which can be navigated with mouse gestures.

"We Make The Weather," a sound-reactive piece by Sofy Yuditsky, Karolina Sobecka, and Greg Borenstein, portrays a scene with a grayscale CG model of a woman walking across a bridge, where the size of the bridge and the movement of the surrounding water are controlled by breathing into a microphone. The group says it was partly inspired by the events of Hurricane Sandy, which [nearly destroyed the digital archive](https://www.theverge.com/2013/2/8/3967762/new-cinema-explores-the-space-between-interactive-movies-videogames) at Eyebeam just a few months prior.

A more lighthearted entry, "Face Dance" uses facial mapping to do Michael Jackson dance moves — a kind of interactive music video headed up by *Catfish* directors Ariel Schulman and Henry Joost, Lauren McCarthy, Aaron Meyers, and James George, one of the artists behind *Clouds*, the [interactive documentary](https://www.theverge.com/2013/2/8/3967762/new-cinema-explores-the-space-between-interactive-movies-videogames).
shot on Kinect. The software has to be "trained" to work with individual faces before they can execute the moves, which the group says it motion-captured from a professional Michael Jackson impersonator.

Other projects seemed to focus on developing other cinematic techniques, tropes, and ideas — like exposition. "We struggled a lot with what is a video game and what is interactive cinema," said Ramsey Nasser, an Eyebeam resident who worked on "Before the Flood," a kind of on-rails shooter minus the shooting that treks through a computer-generated cave. As the camera slowly floats through the space, motion-tracking tech provided by Google (running on a "magical Google laptop" Nasser says they weren't allowed to touch) allows participants to discover secret cave paintings (made by another Eyebeam resident, Nick Fox-Gieg) by moving their bodies inside a marked-off area to adjust the position of light sources.

David Miller of Framestore explains: "Often in a film you're given a montage to show you what happened and why things have happened. So we started looking at the idea of what if the viewer was in control of the backstory; what if the viewer could discover things as they went through a narrative." Miller says much of this is new to him, being as how his work usually exists as a series of pre-rendered sequences — a rare collaboration between traditional filmmaking and software storytelling.

There's been some dialogue between those two disciplines this week. At the DICE media summit, J.J. Abrams and Valve boss Gabe Newell talked about playing in each other's gardens, hinting at an upcoming Half-Life or Portal movie, as well as a game produced by Abrams' Bad Robot studio. Heavy Rain and Indigo Prophecy director David Cage suggested that an even closer collaboration between game designers and veteran filmmakers could give birth to another medium entirely.

"New Cinema" seems to exist somewhere within that grey area — even if no one knows exactly what it is yet.
Every museum has a store, that’s a given. But not every museum devotes its retail space to exhibits. The Exploratorium at Pier 15 has a store that’s just like the iconic San Francisco museum conceptually, architecturally, and in its product offerings.

Working with Napa Valley based Shopworks Design, the Exploratorium Retail Development team opened two integrated store spaces evocative of the authentic laboratory feel that has always characterized the Exploratorium. The main store, at 2,800 square feet, faces on the Embarcadero and is open to pedestrian traffic from the street or from inside the iconic Pier 15 bulkhead. Another smaller store, at 1,000 square feet, is located inside, deeper in the heart of the Exploratorium.

The Exploratorium’s exhibit workshop, where all of the exhibits are developed, built, and tested, inspired the new store design. In fact, the exhibits have been built into the Store – a place for visitors to continue to play, observe and discover while they shop. Look for a large interactive triple vortex exhibit right in the middle of the main store, or the classic Illusions Vases Or Faces, Mirror Maze, and Color Words (where the dissonance between saying a color word like blue and the competing actual color of the word in red can cause cognitive problems in six languages).

One engineering and design marvel is Scrapples, a store fixture by artist Gold Levin that actually converts from a wooden product market cart into a popular interactive sound piece. The main store also features an Anti-O-Mat – a vending machine that dispenses original art works for $5 a pop.

Merchandise fixtures are made of wood and metal. They were conceived to be flexible both in terms of the types of products they house and their ability to move around the museum to support special programs such as book signings and outdoor science festivals. That rough-and-ready functional feel carries through in the standard book carts, nail bins, architectural hanging flasks and view tables that are all used to display merchandise. Concrete floors, simple lighting and natural materials also extend the workshop experience into the Store.
Interview: Japanese poetry, Snake games, and the gesture looping inspirations of Blek

by John Polson on 12/24/13 10:33:00 am

Kunabi Brother has described its iPad puzzle game Blek as "an open-ended experience with singular game mechanics and deep, bauhaus-informed design."

Indeed Blek’s simplicity begets its complexity: players can only make one drawing that will repeat infinitely until it either touches all the colored objects or bumps into a black object, with extra challenges stacking in over 60 levels.

The player-scribbles that come to life to clear the level have enchanted critics across the Internet and earned the duo over 10,000 units in sales.

As the dev-brothers Denis and Davor Mikan scramble to finish their refitted iPhone port, due out in January 7, the have taken the time to discuss with me about the inspiration behind their fascinating game, which is their first attempt at game development.

What does “Blek” mean?
Denis: We have been told that it means “ink” in Icelandic.

What’s the inspiration behind Blek?
Denis: Although most of our knowledge and inspiration comes from outside the world of game design, we have been impressed and influenced by several game creators too, especially by the work of Zach Gage (SpellTower), Patrick Smith (WindoSii) and thatgamecompany (Journey).

For Blek we simply started thinking about a way to translate the classic game Snake to a touchscreen device. And at the same time my brother was reading a book by the Japanese poet Matsuo Bashō, which contains prints of ink drawings and calligraphy.

Do you recall the book?
Davor: The original title is “Oku no hosomichi”.

What is the outside inspiration?
Davor: There are many. The German composer Helmut Lachenmann is one of the first I think of. Occasionally he writes about his work and some of his writings have been published in a book called “Musik als existenzielle Erfahrung”. Not sure if it has been translated into English yet. His thinking and his composition methods are very interesting and can be applied to other art forms too. Partially, at least.

Also, while working on Blek I was reading Kandinsky’s book “Point and Line to Plane”. I think he wrote it in the period when he was teaching at Bauhaus.

Tell us more about yourselves.
Denis: My brother - he is the creative force behind Blek - and I made everything, from the first concept to the marketing and presswork. Nadja, our friend, is administrating and editing our Facebook site. It has to be said that Blek is our very first game. We are brothers and we have never worked together before, so creating something as a duo was our main goal. We both have a background in programming, but work in other fields also. My brother’s main occupation is music, he creates software algorithms for composition and sound transformation. His music is published by the media-label Crónica. I work as programmer and I have written and published many short stories and one novel "Emili".

Did sibling rivalry ever occur? How did you learn to work together?
Denis: I never felt something like rivalry, but the truth is that working together is actually a long learning process. And it's still going on.
Why did you try to make a game in the first place?

Davor: Like my brother already said, we have never worked together before, and we wanted to give it a go for a long time.

In the past I used to make little flash games from time to time. Those were freelance jobs, done solely for money. I saw some potential in creating digital toys, but I could not convince the clients, the creative directors and the project managers to take risks. Once I told Denis about that, he simply asked me: “Why don’t we make a game on our own then?”

Though this is their first developed game, they have always been interested in gaming, with Denis here playing the Amstrad CPC6446 over two decades ago.

When did the a-ha moment hit when you thought of having a recursive motion be the key mechanic?

Davor: Somehow, the thoughts about the Snake and the Japanese drawings I was looking at just fused in my mind without effort on my side. My background is in music, and in digital music, looping through waves is one of the most common concepts. Gesture looping is something I often use in order to transform sound in real-time. So algorithms like these are just part of my “vocabulary”. But it’s nothing we invented. To my knowledge, Golan Levin was the first one who came up with gesture-looping - long time before the iPhone even existed. In digital music we often use graphic-tablets as instruments.

What went into how you designed the levels?

Davor: Ok. This is where I tried to do something interesting. And while I did use things well known from literature, and probably common in game design, too (progression, simple arcs and a little teasing...), my main focus was on some ideas and thoughts that originated in arts long time ago. They were constantly developed further and further, and are still very present (in contemporary music at least). Those thoughts could be summarized with the words “reflection” and “self-awareness”. Of course, a design approach based on these ideas is very likely to collide with those based on flow-theory and with the attempts to get people caught in loops. In fact, it is often opposed to those. And this is where some player may get confused.

Now, I really would like to explain this better, but it is a very complex subject and my English is rather simple. So for now, I will say that instead of forcing the players into a certain mood or state of mind, with the design I tried to create a space in which they could ideally make an experience that would have some kind of meaning to them. And meaning to me can mean pretty much anything beyond pure absorption of lifetime.

Further I did not try to teach the people how to “beat the game”, but to suggest that there are many approaches and that a good “meta strategy” could be not to rely on a previously elaborated methods but to often change the strategy by altering the way they look at the system/game. This is probably a risky way to go with the design, since people, when asked to perform such a complicated thing, may get frustrated at times. But when it works, I believe that players were given a way to create some tiny peace of meaning for them. And this is the best I can do for now.
Has the game been a financial success to allow you to make more games?
Denis: Yes, definitely. We didn't know anything about marketing, sales, numbers and that sort of stuff, but our first target was to sell 10,000 copies for iOS & Android; to get enough money and encouragement to continue. We will meet that target very soon with the iPad version only, so, yes, it's a big financial success for us.

How will this drawing mechanic work on the much smaller phone versions?
Denis: Surprisingly well. Most of the levels had to be altered, some had to be changed drastically. But now it works great. And we will submit it to the App Store very soon.

Do you have any examples of earlier iterations of Blek?
Davor: We are very bad at archiving. Sorry.

Is there anything else you would you like to talk about regarding Blek?
Denis: I would like to say something about the indie game development scene, because without it, we wouldn't be able to bring Blek to so many people. As we've already mentioned, this is our first game and at the beginning we somehow felt like aliens. We didn't know what to expect from our colleague developers, press people and other experts.

And here came the big surprise. First of all, we've found a very lively Viennese scene that has been very supportive and encouraged us a lot. Same goes for the global scene: I mean, we came like from different spheres, but the scene was not inhospitable, to the contrary, everybody was curious to see what those two aliens were bringing in. That helped us a lot. And we came here to stay.

Does the Viennese scene have websites or forums to post games?
Denis: No, I don't know any. But there is a very cool place called Subotron in the center of the city; it's where video games developers often meet. Mike Rose from Gamasutra wrote a great article about the Subotron and the local Viennese developers a month ago "How the fall of Rockstar Vienna led to an indie uprising," so that's really a good starting point for everybody interested in this growing vivid gaming scene.

[Denis (left) and Davor, all grown up. Thanks for the interview, guys!]
ARS ELECTRONICA AT THE ITU IN BANGKOK

*THAT'S QUITE A* handsome — even definitive — set of tech-art installations. I wonder what the international telecommunications bureaucrats will make of those.


ARS ELECTRONICA LINZ MAKES A GUEST APPEARANCE IN BANGKOK

Ars Electronica Linz Makes a Guest Appearance in Bangkok
Linz Media Art Platform Presents an Exhibition at ITU 2013

(Linz, November 20, 2013) Since 1971, the ITU—International Telecommunication Union has regularly hosted conferences attended by experts from throughout the world and representing both the public and private sectors. Most recently, more than 3,000 heads of government and ministers, corporate CEOs, consultants, specialists in related academic fields, and UN agency officials convened in Dubai to give some thought to the future of the telecommunications industry. This year, ITU World is set for November 19-22 in Bangkok. For an on-site exhibition, Ars Electronica has been invited to contribute art installations that make some relevant, eye-opening statements.

Ars Electronica Linz Stages “The Lab”

Whether it’s the use of mobile devices, the so-called internet of things, or issues related to privacy and data security—the points of departure of all these artistic investigations are the latest technologies, the social upheavals they trigger, and their potential consequences for the telecommunications industry. “The Lab” demonstrates how very creative people are already using new technologies, and which applications might soon strike the fancy of mainstream masses too. Ars Electronica presents best-practice examples at the nexus of art, technology and society that reveal the emerging opportunities and looming risks facing protagonists in business, science, politics, art and societies worldwide. The focus is on new forms of communication and participation, new types of artists and scientific disciplines, uncommon alliances and business models with tremendous future promise. This will be a fascinating encounter with the enormous potential of technological innovations and the changed relations of power that will inevitably result from them.

The Lab / Works

Shadowgram is an innovative spin-off of so-called social brainstorming. It gets interesting things started by photographing a participant standing before an illuminated wall. The result is a striking silhouette that can be printed out as a sticker, which the participant then brings to life with a speech balloon (that can contain remarks and personal opinions about any particular subject) and attaches to a map. Grouped into predefined thematic clusters, the silhouettes and accompanying speech balloons speak loud and clear about current opinions and trends.

http://shelbytv/video/vimeo/4437372/ignite_eyeo2012-12-golan-levin-mov,
http://prix2012.aec.at/prixwinner/7444/

The Free Universal Construction Kit is not a product, but a provocation. It offers working adapters between Lego, Duplo, Fischertechnik, Gears! Gears! Gears!, K’Nex, Krinkles (Bristle Blocks), Lincoln Logs, Tinkertoys, Zone and Zoob—adapters that can be downloaded free from various sharing sites as a set of 3D models suitable for reproduction by personal manufacturing devices such as the Makerbot (an inexpensive, open-source 3D printer). In so doing, The Free Universal Construction Kit prompts consideration about intellectual property, open-source culture and reverse engineering as a mode of cultural practice.
Markus Kayser (DE): Solar Sinter Project

In a world increasingly concerned with questions of energy production and raw-material shortages, this project explores the potential of desert manufacturing, where energy and material are abundant. In this experiment, sunlight and sand are used as raw energy and material to produce glass objects using a 3D printing process that combines natural energy and material with high-tech production technology. Solar-sintering aims to raise questions about the future of manufacturing and triggers dreams of the full utilization of the production potential of the world's most efficient energy resource—the sun. While not providing definitive answers, this experiment aims to provide a point of departure for fresh thinking.

www.oribotics.net

Matthew Gardiner investigates aesthetic, biomechanical and morphological connections among nature, origami and robotics. The configuration of his patterns of folds—particularly the precise array of V-shaped valleys and Λ-shaped ridges—determines the mechanical design of his creations. In these structures that are the outcome of “nature’s origami,” thousands of folds occur in a few microseconds, and even a single folding error can have a devastating effect on an organism’s viability. Accordingly, the latest “Oribotics” generation features a polyester fabric membrane that can withstand millions of interaction sequences with hardly any wear and tear. Each Oribot is equipped with a proximity switch that registers any object in its immediate surroundings. If an installation visitor’s hand, for instance, approaches, the Oribot opens its flower-like structure, an operation in which 1,080 folds are in motion. All macro-interactions are network- & software-controlled. Each micro-interaction is forwarded to every other Oribot in the installation and thereby triggers more than 50,000 folds.

h.o: Kazamidori

“Kaz” (wind) “mi” (watch) “dori” (bird) is a Japanese expression for a weathervane. Kazamidori is a device to indicate the social wind of interests on the Internet. It works by using the social energy of web accesses to Ars Electronica. When somebody visits the Ars Electronica website, Kazamidori turns to point in the direction of the visitor.

g.tec: Brain Computer Interface
http://www.gtec.at/

Orthobionic® is the term coined at Ottobock to refer to the observation and analysis of bodily functions as a basis for the technical development of prosthetic and orthotic products. From knowledge about natural structures and processes, our engineers derive technical solutions designed with people in mind. The essence of Orthobionic® innovation is interdisciplinary collaboration among experts in technology and medicine. Technicians perform research on the human body to consider how medical findings and insights can be implemented in the form of machines. Orthobionic® is the scientific basis of Ottobock’s technological edge.

Paro
www.aist.go.jp

Paro is an animal-like robot that has been in use in Japan and Europe since 2003 for therapeutic purposes—for example, providing care to people with Alzheimer’s disease. Modeled on a baby seal, Paro registers environmental stimuli via two computers and five sensors that measure touch, light, sound, temperature and physical position. This enables it to interact with its human interlocutor. Paro is able to learn—it can recognize 50 different voices and responds to its name. The form of a baby seal was selected because most people have no preconceptions about how this creature behaves.

Martin Frey (DE): CabBoots (2005)
http://www.freyMartin.de/de/projekte/cabboots
German artist Martin Frey's “CabBoots” constitute an innovative pedestrian guidance system. The interface makes the communicated information palpable and intuitively understandable by applying it right to that part of the body that is most directly involved in walking: the foot. The point of departure of Martin Frey's considerations is the topography of a hiking path, which is typically trampled down in the middle and noticeably higher on either edge. Walking along such a trail, your feet come down upon flat ground only in the middle of the path. The upward curvature of the ground on the trail's outer edges produces a slight—and slightly uncomfortable—pronation of the foot. This is something that human beings intuitively avoid, so that we invariably seek out the middle of the path. This is where Martin Frey's “CabBoots” come in. They tilt the soles to the outside or inside and thus steer the wearer in a particular direction. In this way, virtual routes can be navigated without a map—or one's eyes, for that matter. The software for determining the walker's position and calculating the route is designed to run on mobile devices like a smartphone, iPhone or PDA that can communicate wirelessly with the CabBoots.

Dash Macdonald (GB): In Your Hands (2008)

The roller skates Dash MacDonald dashes about on aren't the kind you buy in stores. His skates can be remote controlled via radio and steered in any direction. In one of his “In Your Hands” performances, he literally turns over the controls to passers-by, who can then move him about like an action figure. With people faced by such temptation, it usually doesn't take long before the skates are being maneuvered into ever-more-absurd and impossible situations. Amidst the general mirth, most people fail to get the point Dash Macdonald is trying to make here: to find out how far people will go in amusing themselves at someone else's expense? “In Your Hands” was inspired by the Milgram and Stanford Prison experiments. “Impetus and Movement” presents a video of a performance.


www.shinsekai-th.com

For his “New World Transparent Specimens” Japanese artist Iori Tomita turned sea creatures into strangely fantastic specimens. As a student, he learned the technique of producing specimens for purposes of scientific analysis. The creatures' muscle tissue is made translucent by dissolving its natural proteins; thus, it takes laboratory techniques developed by scientists to reveal the precise forms created by nature. The body parts are then stained, whereby the harder and softer tissues (such as cartilage) are treated with different colors. Depending on the size of the organism, it can take up to six months to create a specimen. The way Iori Tomita works is an example of the interplay of art and science. Employing what is actually a method of scientific analysis, he creates bizarre sculptures that resist pigeonholing either as a work of art or as a scientific project.

Otto Bock (AT): Orthobionic

http://www.ottobock.at/cps/rde/xehg/ob_at_de/hs.xsl/8333.html

Ottobock's research & development mission is to come as close as possible to the consummate ideal: nature itself. Simply formulated questions yield technological challenges: How does a knee joint function? What stresses does a foot have to withstand on a daily basis? Which terms best describe the operation of the hand as a high-precision organ for grasping? The analysis of natural interrelationships inspires our R&D engineers to think innovatively and come up with novel solutions. In this endeavor, enhancing existing products is just as important as developing new technologies. The results have been a whole series of high-tech breakthroughs.

Neurowear (JP): NECOMIMI


Necomimi is world's first commercialized communication tool using brain wave. The headset can detect and interpret your brainwaves using a single sensor that rests on your forehead. Necomimi then translates the brainwave data into cat-like reactive movements that show how interested or relaxed you are in real time. When something catches your attention, the ears shoot straight up. When relaxed, the ears droop down. Necomimi uses EEG to show emotion from subconsciousness. Using Necomimi, the communication overcoming languages, ages, genders, or races, turns into reality. “Neurowear” is a team of creators based in Tokyo, focused on creating “communication for the near future”.

Belinda Cullen (GB), Jim Reeves (GB), Martin Riddiford (GB): GravityLight


GravityLight is a revolutionary and sustainable approach to generating power and light. It eliminate the need for kerosene lamps, offering huge health, economic and environmental benefits. It takes around three seconds to lift the weight that charges GravityLight, which will provide up to 30 minutes of constant light as the weight drops.
under the force of gravity. The weight is a bag (which doubles as the product packaging) that the user fills with 9 to 12.5kg of material (earth, rocks or sand). This connects to GravityLight via a plastic strap that passes through the generating mechanism. A series of gears and a generator inside translates this slow falling mass into electrical energy. The system can be varied to provide either task or ambient lighting, or both simultaneously at a lower level. It has terminals on the front to allow it to be used purely as a generator to top up batteries, or to power various low-voltage devices, such as FM radios. GravityLight has no batteries to run out, replace or dispose of and has no reliance on the external environment, time of day, season or weather. As there are no running costs after the initial low-cost purchase, GravityLight has the potential to help lift people who would otherwise spend a large proportion of their income on kerosene for lighting out of poverty.

Ars Electronica Solutions: Brain Battle
http://www.aec.at/solutions/brain-battle/

Brain Battle is an extraordinary form of interaction that makes a futuristic game controller available right now: the brain-computer interface. Players use the power of their thoughts to face off in the ultimate form of mental combat. An electroencephalogram (EEG) is something most of us associate with imaging in the medical field, but now this technology has been introduced into computer gaming. In Brain Battle, the aim is not only to control the course of the game via thoughts; the interface also enables players to use body language—for instance, tilting their head or facial expressions—as a form of interaction. This adds a fresh twist to classic computer games like Pong, Space Invaders and Pac-Man.

The Blind Robot

With The Blind Robot, the aim is to further understand the degrees of engagement, whether intellectual, emotional or physical, that are generated when a social robot intimately touches a person. Initially, The Blind Robot is a minimalistic piece of mechanical engineering. The rationale is to start from a recent known cultural artifact—the robot arm—and transform it from a high precision tool into a fragile, imprecise and emotionally loaded agent. The Blind Robot comprises a typical robotic arm equipped with an articulated hand. In this installation, visitors are invited to sit in the front of this machine and engage into a non-verbal dialogue with it. The robot delicately explores the body—mostly the face and upper body—of the visitor in a manner that recalls what blind people do to recognize a person or an object. On a nearby screen or projection the machine then produces a visual rendering of what its fingertips have “seen.”

Spaxels – Ars Electronica Quadcopter Swarm (2012)
http://www.aec.at/spaxels/

The Ars Electronica Quadcopter Swarm is a World-novelty in professional event & show business. It's a swarm of up to 50 LED-equipped quadcopters that fly in formation and perform cool feats of airborne choreography. The accompanying lighting and sound effects create an extraordinary aesthetic experience. The technology employed isn't all that's state-of-the-art; what wows viewers most of all is the performance's futuristic artistry, which thus lives up to the claim to excellence that has made a name for Ars Electronica worldwide.

Gustavo Valera (ES): 3D Printer

Gustavo Valera is part of the Ultra-Lab project. His specialty is fabrication technologies that enable the members of an entire community to produce and distribute things themselves. At the same time, this approach also generates knowledge that, in turn, flows back into the community.

Fraunhofer Heinrich Hertz Institute (DE): Visible Light Communication

Providing illumination isn't all that ceiling-mounted lighting fixtures can do; they're also able to quickly and securely deliver films in HD quality to any smartphone or laptop in the room! Visible Light Communication (VLC) is what makes it possible. The spectrum of potential applications is incredibly broad, ranging from hospital operating rooms where security has top priority, to trade shows and factory floors where radio transmission is often difficult.

Press Release “Ars Electronica Linz Makes a Guest Appearance in Bangkok” / PDF