Design and the Elastic Mind

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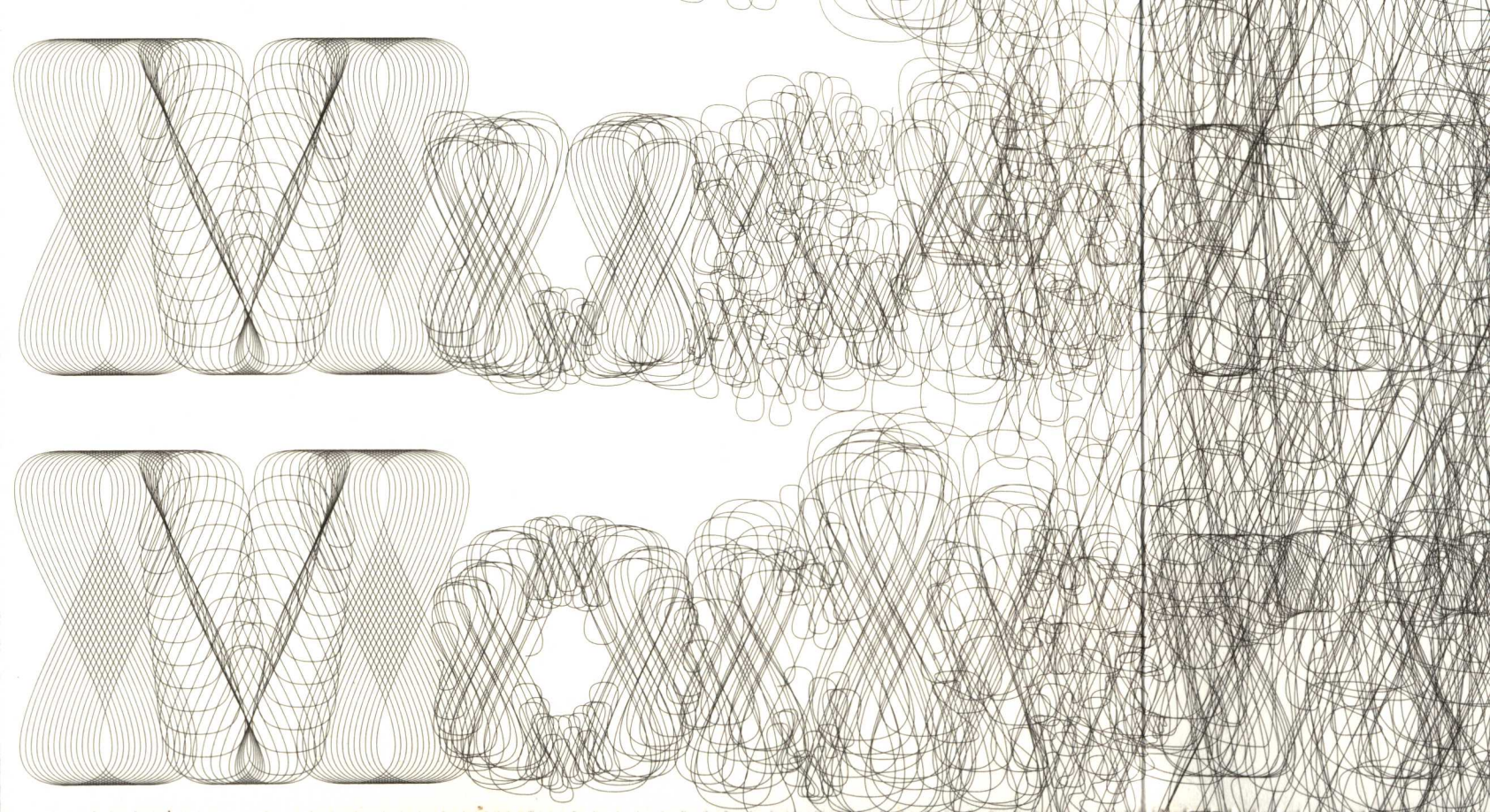

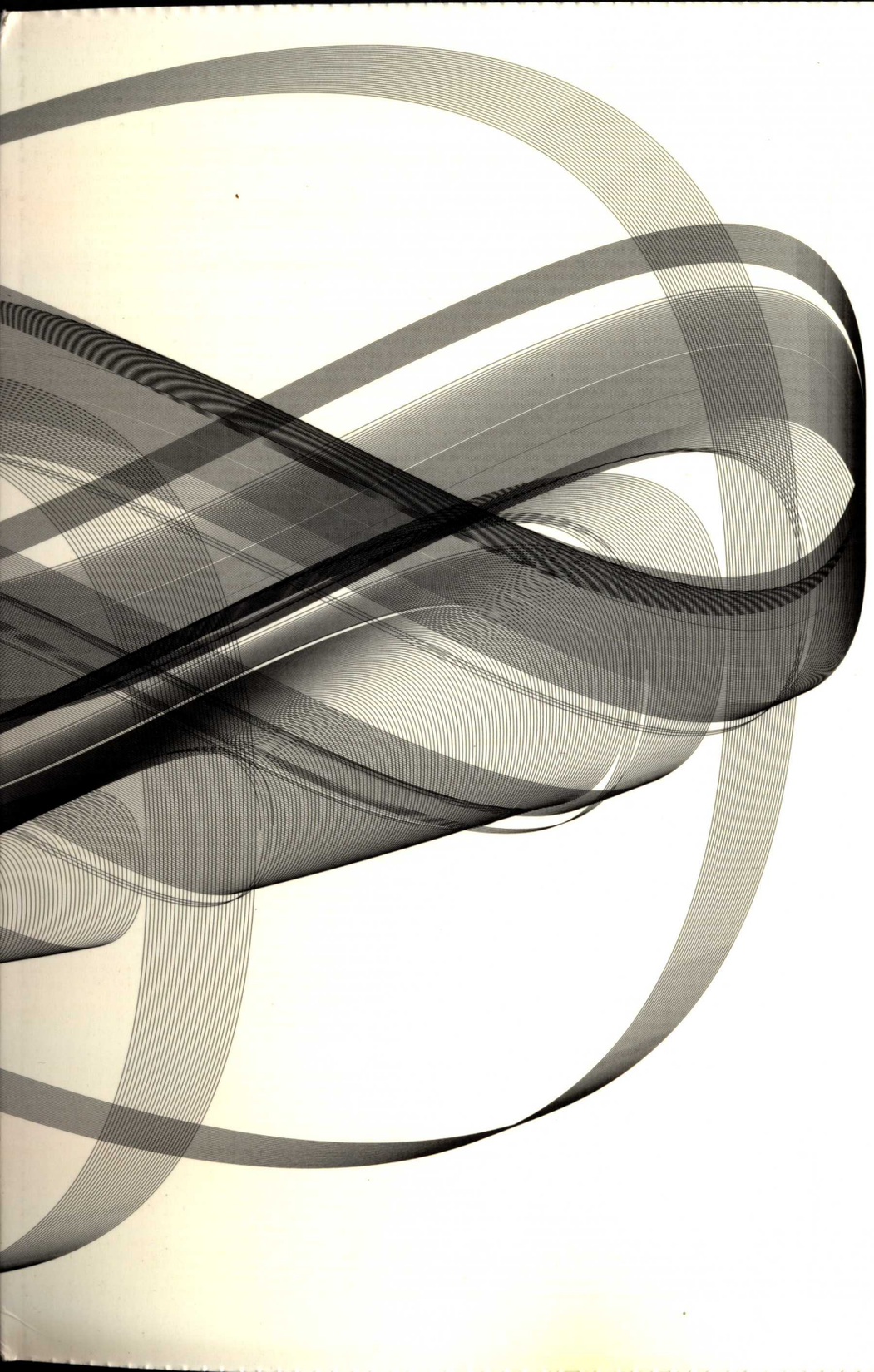

Design and the Elastic Mind

The Museum of Modern Art, New York

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All Together Now!

Paola Antonelli

Troika. **SMS Guerrilla Projector.** Prototype. 2003. Aluminum, 13 3/4 × 3 7/8 × 3 7/8" (35 × 10 × 10 cm)

The SMS gun enables covert acts of very public communication, from your phone to the world.

Communities, as they used to be called before the term became frayed by overuse, today are groups whose homogeneity is no longer easily described by historical definers of age, gender, race, class, region, or religion, but rather by a shared interest or passion. Design supports them by providing the modeling data, the language, and the objects that give access to connective networks. Designers create computers, mobile communicators, cell phones, and the interfaces that run on these and other devices—on the objects that will give us access to functions, to information, and to other people like us. Since these objects will be used by a wide cross section of people with different knowledge and customs, designers' attention is focused on traits common to as many cultures as possible, such as instinctive gestures (the interfaces of the Nintendo Wii and Apple iPhones, for instance) or recognizable images (such as the ideograms used in the interface of the project One Laptop per Child or in the toolbars of most computer programs). Paradoxically, the use of archetypes and attention to the spiritual and sensual dimension of life are both a welcome respite from the fast pace of progress and fundamental features of the most technologically and intellectually advanced forms of design.[1]

One of the most compelling phenomena in the evolution of society is what has happened to the balance between the individual and the collective spheres. The concept of privacy has mutated to signify not seclusion but a selective way to make contact with other human beings, with the rest of the world, and with ourselves. Not only has the idea of privacy shifted, but so has the idea of individuality. A famous 1993 New Yorker cartoon by Peter Steiner showed one pooch in front of a computer explaining to another, "On the Internet, nobody knows you're a dog." And nobody knows I'm a woman, you're a man, she's sixty-two, they are CIA agents or terrorists, and he's a sexual predator: Through screen names and virtual alter egos, we build parallel-universe relationships that are sometimes more engaging or dangerous than the ones we can have as our real selves. In the physical world, all the while, individuals are able to build force fields that help isolate them within a crowd by using small devices such as an iPod or a BlackBerry, harvesting energy by carrying a backpack covered with solar cells, and soon even modulating a personal climate control by means of smart materials.[2] As avatars and ghosts, we are followed by private cones—protective spaces of silence, anonymity, and invisibility—so we can selflessly plunge into the ocean of "collective genius" while jealously protecting our personal territory.[3]

To cope with this helter-skelter, objects have had to become lighter and more elastic. The new category of objects designed to provide access to networks and services are meant, as John Thackara states, to be used, not owned.[4] From the appearance of services

Constantin Boym and Laurene Leon Boym. Boym Partners, Inc. **Babel Blocks.** 2007. Wood, 6 × 1 1/2 × 3" (15 1/4 × 3.8 × 7.6 cm)

A collection of wooden figures that represent New York City's cultural and religious diversity, Babel Blocks are a message of tolerance and understanding. The first collection is devoted to New York's Lower East Side, and each character has a name and a MySpace page.

The Family Planning Association of Hong Kong. Tak Tak Sexual Education Dolls. 1997. Cotton, 23 × 10 × 5" (58.4 × 25.4 × 12.7 cm)

Where did children once come from? Educational tools from our recent past.

that allow subscribers to share cars and bikes for short-term rentals to the lively and engrossing debate about changing copyright laws or lifting them altogether,[5] open source—a reservoir of information and resources that anybody can use freely and that gets updated and improved by the same users, who give back according to their expertise and experience—has gone from militant ideology to accepted practice.

Humans are forever seeking a comfortable space to inhabit, from an ideal home to an ideal city. Today, the engine that drives our choice of a space to occupy is the search not only for security, protection, and privacy but also for connection. Sharing information and data, forming groups of interest, linking computers and people in wireless networks whose potency grows with the number of users, or collaborating openly on projects as disparate as software programs and charity drives has become the modus operandi at all levels of industrial development and income. There's no place like home, and in the networked age a familiar interface, with all its windows wide open, albeit protected by invisible gates, will do just fine.

The spaces that we find most comfortable are the ones that are designed to accommodate openness and human expansion, and their functionality lies in their capacity to initiate a chain reaction that transcends physical boundaries. The following portfolio explores the modulation of the relationship between individuals and groups by introducing the concept of Existenzmaximum and by examining the impact that virtual and real communities, ubiquitous connection, and the open-source movement are having on design and on the world.

Existenzmaximum

When it was introduced in 1978, the Walkman obliterated long-held beliefs about the human body and the space it inhabits. Its buttons and magnetic heads could magically switch on a portable, individual bubble, a personal environment customizable with the tune of a song. The Walkman marked the beginning of a revolution that has touched numerous facets of our existence, sparked by smaller and smaller electronic and digital devices that can expand one's private space well beyond the physical space occupied by one's public body.

This ongoing transformation is an unintended consequence of technology's leap toward portability and miniaturization. I call it Existenzmaximum (or, tenderly, XMX, not to be confused with the Windows utility),[6] a term coined in response to Existenzminimum, the early twentieth-century German architectural doctrine that defined a person's minimum needs in terms of space and consumption.[7] With a precision that was still Euclidean but that already announced fractal geometry's defiance of scale, these architects organized functions within rooms, rooms within dwellings, dwellings within buildings, buildings within quarters, and quarters within cities with lucidity and

purpose, in an attempt to create a more efficient and wholesome environment in which all human beings, at all levels in society, would thrive.

Over time, Existenzminimum grew to be formulaic and identified with a lower-quality version of high-density life, and it became unintentionally responsible for famously unlivable projects on the outskirts of cities worldwide. In gentler applications, this approach to designing and building became a standard recipe in the planning of private spaces for the lower and middle classes, and has survived even longer in the design of offices and other technical spaces. However, ideas popularized in the 1960s and early 1970s made this inert concept, like many others, burst at its seams: With the introduction of thermoplastic materials—which invited and demanded fluidity—and with the dynamic work of such diverse designers as Joe Colombo, the Archigram group, the Japanese Metabolists, and the Viennese collective Haus-Rucker-Co., to name just a few, came the revolutionary concept of expanding, growing, breathing, walking, and digesting structures and cities. At the same time, over the course of the twentieth century Existenzmaximum was preparing for its conquest with the introduction of new means of communication that rendered the home more permeable to the outside world, beginning with the telephone, then the radio, and eventually the television.[8] Existenzmaximum takes advantage of the advent of new organic metaphors, of the move from anthropometrics to biomorphism that happened when the 1:1 scale ratio of the human body could be transcended by means of miniaturization, portability, and, ultimately, wireless technology.

The move from minimum to maximum echoes the twentieth century's intellectual evolution from the dream of a better society based on objective, almost mathematical rules of distribution of space and resources to the idea of a self-organizing, bottom-up society in which individual initiative can shape a more just and efficient world. The two concepts have often been seen as conflicting, but there is a possibility that the newest advances of technology could offer a third way of approaching not only architecture but also social engagement. XMX begins with a small object that can be worn or carried, and which enables us to inhabit a comfortable space whose boundaries are protective rather than oppressive. While it lets the senses and the imagination roam free, it filters the outside world selectively. The object can block or produce only sound, or sound and vision, with more senses soon to come—videogames are already equipped with peripherals that integrate the sensorial experience with variations in temperature or even, provocatively, the experience of real pain (see p. 33), while targeted digital olfactory delivery systems are being studied by nearly every major fragrance corporation in the world. The era of Existenzmaximum is upon us, and BlackBerries, iPods,

Günther Zamp Kelp, Laurids Ortner, and Klaus Pinter. Haus-Rucker-Co. **Flyhead Helmet** from the **Environment Transformer project.** 1968. Polyethylene and aluminum, 12 7/8 × 15 3/4 × 11 1/2" (32.7 × 40 × 29.2 cm). Manufactured by Dovoplast, Austria (1968)

The design collective Haus-Rucker-Co. was among the first poets of Existenzmaximum.

Jarkko Saunamaki. Nokia Research Center, Nokia Design. **Nokia Morph flexible communication and sensing device.** Concept. 2007. Communication unit: 2 3/8 × 2 3/8 × 1/4" (6 × 6 × 0.6 cm); display unit: 7 3/8 × 4 1/2 × 1/4" (18.7 × 11.5 × 0.5 cm)

Tags and portable devices will make the world into a live information platform.

3G mobile phones, and Bluetooth headsets are just its first rudimentary manifestations.

The five senses, the delicious vulnerability of the body, and the intricacies of human interactions are welcome and necessary ingredients of technological progress. In fact, extreme technological innovations can even help us reconnect with some of the pillars of human nature. For instance, while the introduction of the telephone made long-distance communication possible, albeit only in the acoustic dimension, VOIP (Voice Over Internet Protocol) telephones coupled with cameras attached to computers have given us back the option of a face-to-face conversation. Beyond the five senses, the products of these innovations also recall the dense and magical objects of mythology, literature, and personal lore that transcend time and space and open hidden doors into lateral dimensions, from the philosopher's stone to the Holy Grail. However, the iPhone is not comparable to the Ark of the Covenant or Marcel Proust's madeleine; it is an attainable object that is devised by humans and highly dependent on the design of its interface. The interface is a home, and as such it is subject to the same very personal stylistic, architectural, and intellectual choices one would reserve for one's dwelling. Mittel-European modern or New England? Mac or PC?

Here, There, and Everywhere

A pillar of Existenzmaximum is wireless technology, mobile phones in particular. People need to move unhindered, through highway tollbooths and airport check-in counters alike, and to carry their network with them at all times. These days mobile phones are not a communication alternative but rather the standard, and they are no longer simply telephones but communication and interaction enablers. They have an enormous impact on the way we live and how we relate to each other. Different parts of the world take advantage of them in different ways—the United States being among the most rudimentary, unimaginative, and latest adopters. In most of the world, the competition among companies is not focused on the lowest incidence of dropped calls, as it is here, but on the accessibility of sophisticated services for paying for car parking, sodas, and bus rides and even making charity donations, and for banking, accessing home security systems, locating other mobile phones by GPS, reserving books in libraries, and much more. According to a 2007 study commissioned by the Japanese mobile communications company NTT DoCoMo, there are 2.5 billion mobile service subscribers in the world, and soon eighty-five percent of the world's population will use cell phones, including the inhabitants of parts of the globe that have never been linked by landlines.[9] Wireless carriers do not see themselves merely as communication or information technology companies but as lifestyle providers.

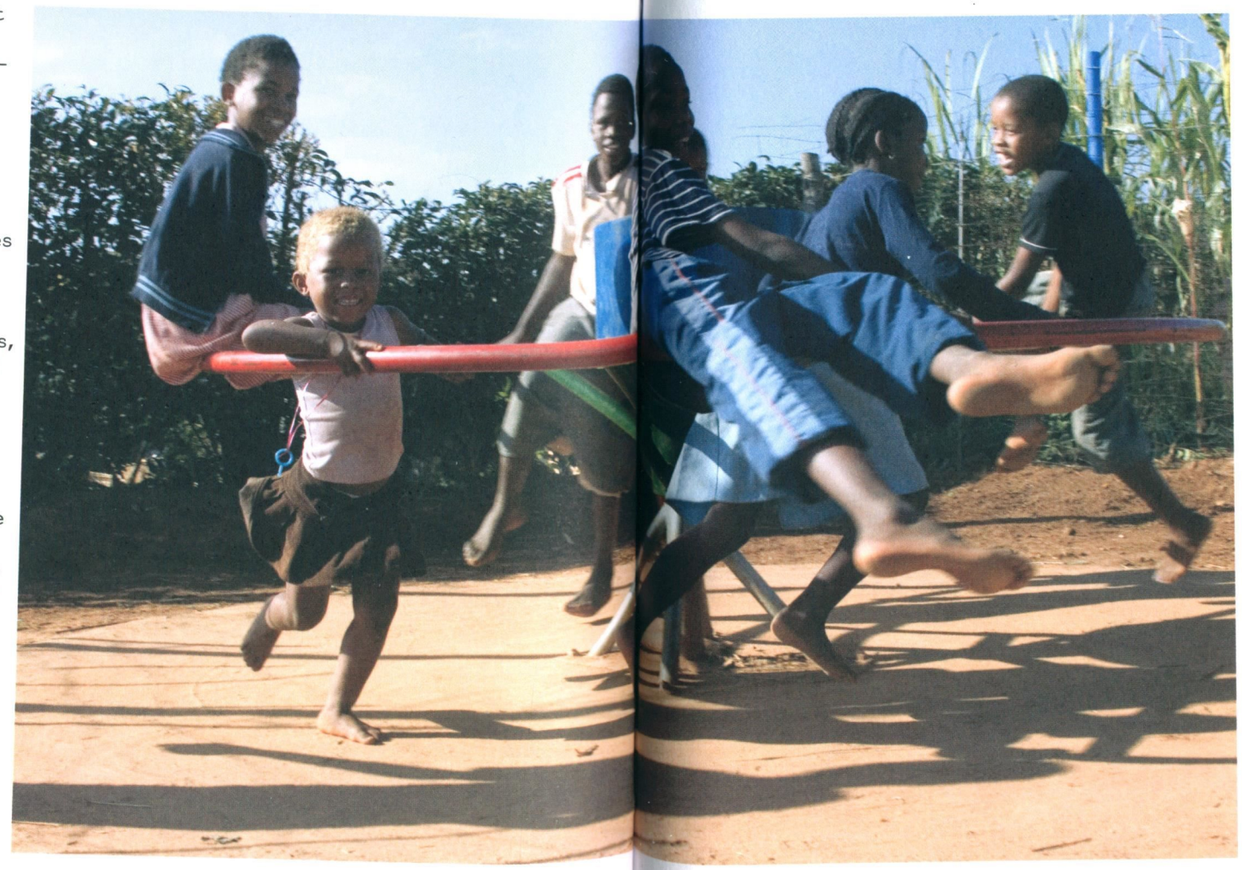
The research departments of these companies

employ some of the world's brightest minds in an effort to anticipate the future of human communication. In addition to NTT DoCoMo's prolific Mobile Society Research Institute, which produced the extensive report on mobile living referenced above, anthropologist Jan Chipchase at Nokia has conducted a study of how people carry their phones and Stefana Broadbent, who leads the User Adoption Lab at Swisscom, has been considering the "usage patterns associated with different communication technologies,"[10] shedding light on people's use of the different options at their disposal. Interestingly, Broadbent discovered that the dream of convergence of all types of communication within one device is far from real, and that people instead use e-mail, mobile phones, fixed lines, Instant Messaging (IM), and Short Message Service (SMS) in different ways and for different purposes.[11]

The NTT DoCoMo research in particular, with its wide angle, concludes that wireless technology has penetrated all aspects of life, creating an "informative, connected, culturally innovative, participative, and converging society."[12] A bit self-serving in its optimism, perhaps, the NTT DoCoMo study nonetheless convincingly outlines numerous positive effects that mobile phones have already had on the collective sphere. First comes the faster distribution of information, as SMS is more effective and quicker than e-mail messages, especially when it comes to emergency advisories and messages of social urgency.[13]

As often happens with the introduction of new technologies, mobile phones are responsible for other cultural phenomena, from the creation of the signature abbreviated language used in text messages and 3GP videos to the introduction of mobile phone novels (in China) and even SMS prayers (in India). Moreover, the research highlights how mobile phones help to build activist societies with common interests, ranging from dating clubs to groups engaged in social causes, which use mobiles not only to exchange information but also to send financial contributions and set up help lines. Individuals use their power to gain access to a universe of social engagement.

When it comes to the individual sphere, mobile phones embody a new notion of privacy, helping people manage their lives and relationships with technology as a filter and dedicate more and better-quality time for traditional and humane communication. Researcher Kate Fox compares mobile phones to the small-town garden fences that define territory while inviting friendly communication and "fluid connectivity."[14] Moreover, they allow women more freedom to work by enabling a "remote control" connection with children, the elderly, and other household responsibilities, especially in more conservative societies where such duties are considered their exclusive responsibility. Mobile phones are a boon for teenagers in cultures where they could not date without parents' approval.



PlayPumps International. **PlayPumps play-powered water system.** 1994–ongoing. Galvanized steel, plastic, and concrete, water storage tank tower: 25' (762 cm) height; merry-go-round: 32" × 9' 10" (75 × 300 cm) diam.

Unity also makes people stronger in the physical world.

In more permissive countries, they are quintessential self-definers.[15] A mobile phone is akin to a watch or a private diary, a name necklace or a pet, a weapon or a coquettish fan, a no-trespassing sign or a secret passageway to the rest of the world. It is a meaningful object that has to work extremely well and be stylistically distinctive. Its interface has to be clear and innovative, and since its navigation is akin to movement through the spaces of a networked city, it requires a design approach that embraces it as a product, a graphic display, and an architecture that can be explored and inhabited.

The Common Good

On any given day of your life, try to recount the times you have read or heard expressions like "collective intelligence," "collective genius," or "connected intelligence" and paraphrases or alliterations thereof.[16] The enthusiasm for the spontaneous coming together of productive and well-intentioned minds is announced in works such as James Surowiecki's Wisdom of Crowds, Judith Donath's "Public Displays of Connection," and Smart Mobs, by Howard Rheingold, whose blog declares his interest in "mobile communication, pervasive computing, wireless networks, collective action."[17] All of these manifestations can be traced back to the idea of open source, and are symptomatic of the current interest in a multinodal and decentralized distribution of knowledge and of the simple belief that an ocean of minds is better than one.

The open-source phenomenon, which has its roots in the world of computer software, has now embraced the whole spectrum of human production, from music to movies (see p. 166), car design (p. 167), and the building and occupation of alternative worlds (p. 175).[18] Its success has surprised cultural commentators because of its apparently harmonious, self-organizing structure. Illustrious examples and enthusiastic testimonials are brought by luminaries of different fields, such as engineer Cecil Balmond and the firm that employs him, Arup, and physicist Neil Gershenfeld, the director of MIT's Center for Bits and Atoms and founder of the Fab Lab initiative.[19] Mind you, sometimes the source is not completely open: Discographic and pharmaceutical companies in particular do not always see eye-to-eye with their enthusiastic samplers, and we have known since Plato that democracy is not always the best governing model for humankind. Well-publicized disputes and improprieties abound in Wikipedia, yet, perhaps because they celebrate every person's contribution, "wikis" remain one of the most referenced examples of the power of open source, for good or for bad.[20] Google Earth, although not literally open source, is nonetheless an open platform that people can use to passionately map and tag the world for everyone to see, while virtual universes such as Second Life allow people to design a new

world together—and then cordon it off to strangers. However, the case study that put open source on the cultural map was the Linux operating system,[21] and the most successful examples of its use are still software programs such as Mozilla's Firefox browser,[22] Ben Fry and Casey Reas's graphic design program Processing, several applications of which are shown in this volume, and the sophisticated object-modeling program Unified Modeling Language.[23]

In the design of objects, the concept of open source walks hand in hand with the progress of rapid manufacturing (RM) techniques. By transmitting data directly from a computer file to the manufacturing machine, RM allows for countless modifications of the original design. In the 1980s, when it was introduced, RM produced friable sculpted foam models. Today, RM machines take seven days to print a solid chair, but in a few years they will take seven hours, and in a few more, seven minutes. It is plausible to think that in the future anyone will be able to access via the Internet the matrix design of a chair, a radiator, or even a car, and customize it, though still within set parameters dictated by functionality, safety, and branding. This will transform design, production, distribution, and shopping in radical ways.

The difference between prototype and mass production will become moot, as every object will be at the same time a prototype and an element of a diversified series. Some designers will choose to retain their traditional role and delete the original file after a few prints or keep control over most of the variables, but others will instead graduate to a new position as design tutors. They will be working not on single objects but instead on whole families of objects and on design systems. Manufacturers will host forums in which they will communicate with and learn from their customers, perhaps even redrawing their business plans based on such exchanges. Some might invest in chains of RM stores where customers' orders are printed on demand, thus eliminating the need for trucking and warehousing. This approach would eliminate the waste of resources and space, but unfortunately also eliminate end-of-season sales.

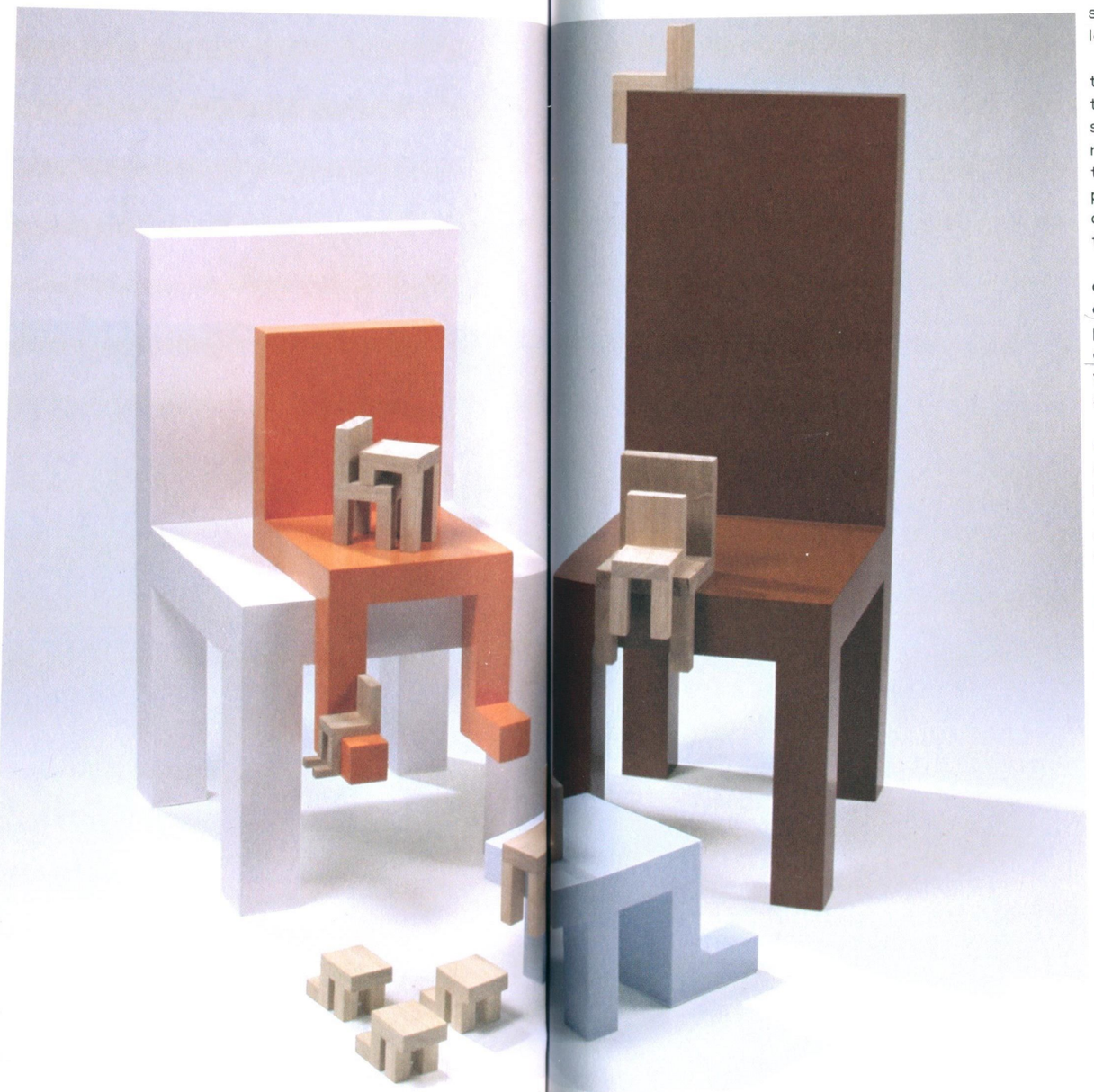
A New Etiquette

Prototype and series, individual and collective, single object and families of objects: In order to take full advantage of what the future holds, the connected world will need to develop a set of rules that will ensure respect and trust between individuals and among groups. Left to their own devices, humans and companies tend to be rude and territorial. Here are just a few examples of obstacles in the way of true collective thought and action, to set our minds in motion.

First, a very mundane example of one versus many. Existenzmaximum promises to help ease the strain caused by the increasing density of cities: Lost in their metaphysical individual universes, people are

Lucas Maassen. Untitled Nations. **Sitting Chairs.** 2004. MDF and solid oak, various dimensions

Designers will work not on single objects, but rather on families of objects.



less mindful of physical overlaps on a train, in an open office, or in a queue. In an ideal XMX world, my space does not end where yours begins, but rather the two can coexist and overlap. However, the Existenzmaximum object par excellence, the mobile phone, has broken this idyll. Mobile conversations can be in-your-ears acts of defiance akin to boom boxes of times past, and they have prompted innovative solutions such as quiet cars on trains. While waiting for a new book of manners, fight back with a more powerful XMX device, such as first-rate noise-canceling headsets. Don't leave home without them.

Second, the thorny issue of patent holders versus the world. Two parties face each other, one holding the position that patents and copyrights are necessary to guarantee funding and motivation for research and development—of medications, music, technology, even naming—the other stating that patents and copyrights stifle creativity and economic development and the public domain is a better place for the future of the world to be.

Last but not least, the case of country versus country. Different standards of measurement, broadcasting, and communication are the last vestiges of protectionism, symbols of a world that is not yet completely open source. While cultural diversity is vital to an open-source world, communication standards are the basis of the new global etiquette.

If these obstacles can be overcome, perhaps we will witness design from the bottom up on a massive scale. This has already begun as an outlaw phenomenon, with a few early adopters hacking into their devices —DVD players for example—to make them universally compatible. As the numbers of such individuals grow, we will reach a critical mass that will topple the few unreasonable techno-walls still in place. For the first time in history, a crowd of billions of individuals will be able to unite the power of common sense and the imaginative vision of personal initiative with the most advanced principles of design wisdom.

Notes

1.
Some experiments dealing with social behavior, memory, and loss, such as Synnøve Fredericks's and IDEO's brushes with new etiquette (pp. 170–71) and Michele Gauler's and Auger/Loizeau's work on death (pp. 184–85), are particularly touching and emblematic.

2.
Architect and engineer Michele Addington, faculty at the Yale School of Architecture, is experimenting with the use of smart materials and microelectromechanical systems (MEMS) that will attune buildings and spaces to their environments and will help them modulate the energy they need at any given moment.

3.
In the May 2007 issue of Atlantic Monthly, James Fallows highlights the fact that computers are still often called "personal," but in reality they are used mostly to work with other people. Fallows, "Group Therapy", Atlantic Monthly, (May 2007): pp. 136–37.

4.
John Thackara, In the Bubble: Designing in a Complex World (Cambridge, Mass.: MIT Press, 2005), pp. 81–121. In his introduction to the book, Thackara states: "Objects, as a rule, play a supporting role....The design focus is overwhelmingly on services and systems, not on things" (p. 4).

5.
The debate over copyright is an ongoing saga that pitches those who argue that copyright is necessary to guarantee authors' control over their work against those who consider it an obstacle to a free and fruitful exchange of ideas. Creative Commons (creativecommons.org), a leading organization fighting for a radical reform of copyright mores, is a nonprofit that offers an alternative to copyright by letting "authors, scientists, artists, and educators easily mark their creative work with the freedoms they want it to carry." You can use it to change your copyright terms from "all rights reserved" to "some rights reserved." Creative Commons licenses can be found in work by musicians David Byrne and Brian Eno and writer James Boyle. For more on copyright, see also Lawrence Lessig, The Future of Ideas: The Fate of the Commons in a Connected World (New York: Random House, 2001).

6.
Paola Antonelli, "Existenzmaximum," Big Magazine 24 (2001): pp. 32–35.

7.
For an in-depth treatment of this topic, see Internationale Kongresse für Neues Bauen/Städt. Hochbauamt Frankfurt/M. (1930): Die Wohnung für das Existenzminimum. Frankfurt/M: Englert & Schlosser.

8.
In 1927, German philosopher Martin Heidegger in his major work Sein und Zeit (translated in 1962 as Being and Time) reflected on the disruptive consequences of the introduction of the radio, which, he said, would eliminate "the time of situated history."

9.
Mobile Government Consortium International, "Positive Contributions of Mobile Phones to Society," research report for the Mobile Society Research Institute, NTT DoCoMo, Inc., February 28, 2007. According to Japan's Corporate News and Marketwatch, NTT DoCoMo, with 51 million subscribers and 56 percent of the market, is the largest wireless communication company in Japan. A few interesting facts from the study: In São Paulo in 2006 there were more mobile phones than either landlines or Internet connections; the same thing was true in China in 2003. India is one of the fastest-growing markets: Now landlines are for the rich and cell phones for the common people, such as milkmen and vegetable vendors and all the other workers who have traditionally been mobile and are now freed from spatial constraints. Lithuania, with a population of 3.4 million, boasts 3.7 million mobile phones with an amazing spread of services provided, including banking, car parking payment, home security, and mobile locator, and with 98 percent of the country covered. In Korea, more than 81 percent of the population has access to multimedia mobile communication services, and these services have contributed to the development of both individual initiative and collective engagement, as well as the government-supported idea of a ubiquitous network covering the whole territory—called u-Korea.

10.
"Home Truths About Telecoms," Technology Quarterly, special section in The Economist, June 9, 2007, p. 16.

11.
"The fixed-line phone 'is the collective channel, a shared organizational tool'....Mobile calls are for last-minute planning.... Texting is for 'intimacy, emotions, and efficiency.' E-mail is for administration and to exchange pictures, documents, and music. Instant-messaging (IM) and voice-over-Internet calls are 'continuous channels,' open in the background while people do other things." Ibid.

Sebastien Noel. Troika. Exploded Monologues wearable voice-amplifier device. 2003. Aluminum and electronic components, 37 3/8 × 37 3/8 × 19 3/4" (95 × 95 × 50 cm)

12.
"Positive Contributions of Mobile Phones to Society," p. 2.

13.
Following the catastrophic tsunami in December 2004, India, Indonesia, Sri Lanka, and Thailand have begun to set up an SMS warning system, and SMS has also been used to spread information about SARS and AIDS, social equality, and political candidates, as well as to bridge geographic gaps created by war.

14.
Kate Fox, "Society: The New Garden Fence," in The Mobile Life Report 2006. How Mobile Phones Change the Way We Live (London: The Carphone Warehouse, 2006).

15.
Teenagers in England consider cell phones and SMS more important than the Internet, and from the ring tones to the hardware and interface and even the accessories available, every choice is a statement of style and an expression of identity.

16.
"Collective intelligence" can be described as the wisdom and perceptiveness that comes from the coexistence and collaboration of many individuals. It seemingly has a mind of its own and is often more precise and efficient than individual intelligence. Among the texts that consider this topic are Peter Russell's The Global Brain (Los Angeles: J.P. Tarcher, 1983), Tom Atlee's The Tao of Democracy: Using Co-Intelligence to Create a World That Works for All (Cranston, R.I.: The Writers' Collective, 1993), and Pierre Lévy's L'Intelligence collective: Pour une anthropologie du cyberespace (Paris: La Découverte, 1994). Steven Johnson's Emergence: The Connected Lives of Ants, Brains, Cities, and Software (New York: Scribner, 2002) is an engrossing read on "connected intelligence."

17.
James Surowiecki, The Wisdom of Crowds (New York: Doubleday, 2004). In her article, Donath explores "the social implications of the public display of one's social network" in social sites on the Internet; Judith Donath, "Public Displays of Connection," BT Technology Journal 22, no. 4 (October 2004): pp. 71–82. Howard Rheingold, Smart Mobs: The Next Social Revolution (New York: Perseus Books Group, 2002); Rheingold's blog is www.smartmobs.com.

18.
As a strategy to improve source software by making it legible and available to members of user groups, open source harks back to the 1950s and to IBM's SHARE group. The term was coined by Christine Peterson of the Foresight Institute, at a meeting with Eric Raymond, Larry Augustin, and a few others, in Silicon Valley in 1998, and canonized a few weeks later at the O'Reilly freeware summit, where people proposed names, voted, and agreed to abide by the results.

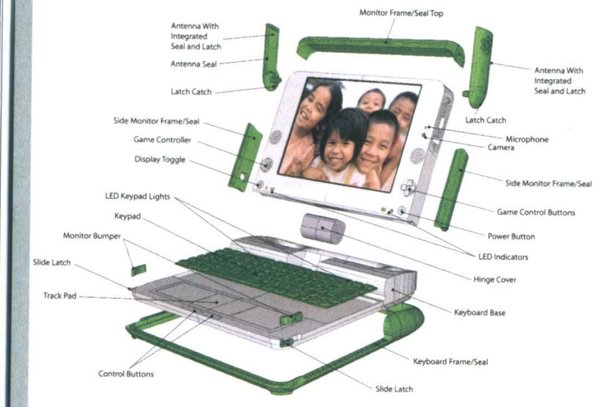
19.
Balmond's and Arup's embrace of open collaboration as vital to both creativity and engineering precision is well portrayed in David Owen's article "The Anti-Gravity Men," New Yorker, June 25, 2007, p. 72. Fab Labs, popping up all over the world and already open in India, Norway, Ghana, and Costa Rica, are educational offsprings of the Center for Bits and Atoms where pupils can learn practical engineering with the support of the appropriate software and hardware, including precision tooling and rapid manufacturing machines, and apply it to everyday problems.

20.
A "wiki" is a Web site that can be visited and easily edited by anyone via a Web browser. People contribute by adding to or amending previously written entries, creating a layered system of edits that visualization expert Martin Wattenberg, in his project History Flow (p. 138), with Fernanda Bertini Viégas, renders almost like a formation of geological sediment.

21.
Linux is an operating system that was created by Finnish student Linus Torvalds. His work began in 1991, and the first version of the software was released in 1994. The kernel of the Linux system "is developed and released under the GNU (acronym for "GNU's Not Unix") General Public License and its source code is freely available to everyone," the Linux Web site says. Because it is adaptable and flexible, Linux, now in version 2.6, is at the basis of innumerable computer systems all over the world.

22.
Mozilla, involved in the creation of Mosaic, continues its fundamental role in the history of open source. Its most used program is the Firefox Web browser, but several other programs are also available for free download.

23.
The program is also supported by the nonprofit organization Object Management Group.



Nicholas Negroponte (American, born 1943), Rebecca Allen (American, born 1953), Mary Lou Jepsen (American, born 1965), Mark Foster (American, born 1960), Michail Bletsas (Greek, born 1967), and V. Michael Bove (American, born 1960) of One Laptop per Child (USA, est. 2005)
Yves Béhar (Swiss, born 1967) and Bret Recor (American, born 1974) of fuseproject (USA, est. 1999)
Jacques Gagné (Canadian, born 1959) of Gecko Design (USA, est. 1996)
Colin Bulthaup (American, born 1976) of Squid Labs (USA, est. 2004)
John Hutchinson (South African, born 1952) of Freeplay Energy Plc. (South Africa, est. 1996)
Quanta (Taiwan, est. 1988)

XO Laptop from the **One Laptop per Child (OLPC) project** 2005–ongoing
PC/ABS plastic and rubber, 9 1/2 × 9 × 1 1/8" (24.2 × 22.8 × 3 cm)
Manufactured by Quanta, Taiwan (2007)

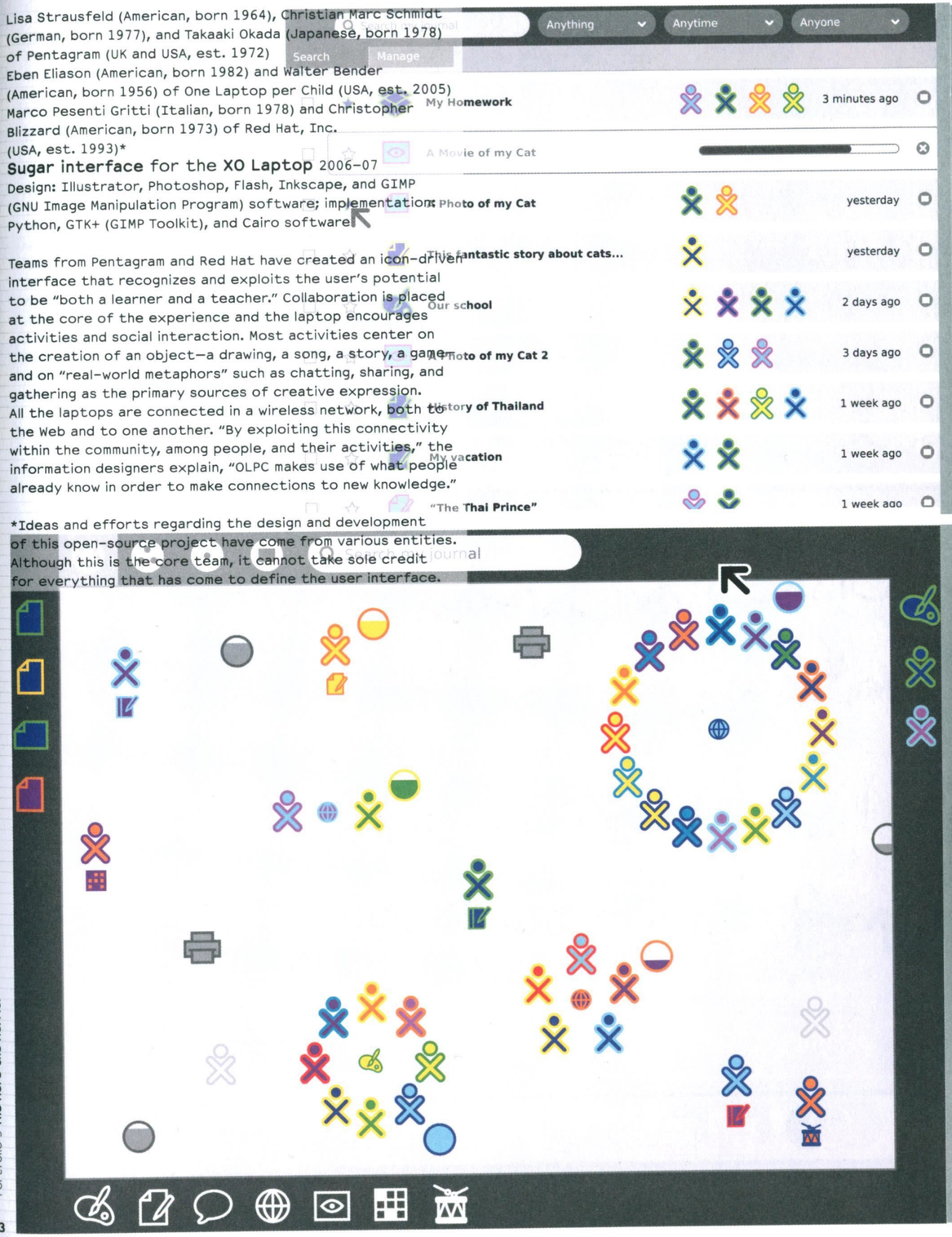
The XO Laptop, previously known as the $100 Laptop, is a computer conceived for children all over the globe. One Laptop per Child (OLPC), a nonprofit program begun at the MIT Media Lab that gathers an extraordinary group of experts and innovators in product and interface design, manufacturing, and engineering, was sparked by the realization of the educational impact that computers have on students in developing countries. Fuseproject integrated the XO Laptop within a compact, durable geometry. "XO is the size of a textbook and lighter than a lunchbox," the designers explain. Many features serve at least two purposes: wireless-access antennas double as covers for the USB ports, the handle serves as an attachment for a strap, and the protective bumper also seals to protect from dust. The screen has both a full-color mode and a reflective high-resolution mode that is readable in bright sunlight. A wide track pad doubles as a drawing/writing tablet. The computer can be recharged by human-powered devices such as a yoyo-like pull cord, in case electricity is not available. Governments purchase the computers and distribute them for free to their schools.

Lisa Strausfeld (American, born 1964), Christian Marc Schmidt (German, born 1977), and Takaaki Okada (Japanese, born 1978) of Pentagram (UK and USA, est. 1972)
Eben Eliason (American, born 1982) and Walter Bender (American, born 1956) of One Laptop per Child (USA, est. 2005)
Marco Pesenti Gritti (Italian, born 1978) and Christopher Blizzard (American, born 1973) of Red Hat, Inc. (USA, est. 1993)*

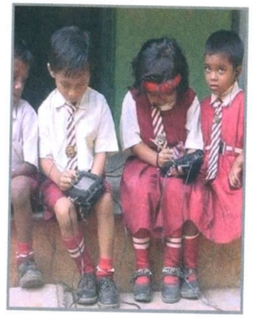
Sugar interface for the **XO Laptop** 2006–07
Design: Illustrator, Photoshop, Flash, Inkscape, and GIMP (GNU Image Manipulation Program) software; implementation: Python, GTK+ (GIMP Toolkit), and Cairo software

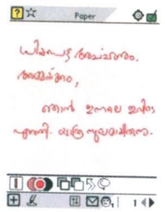
Teams from Pentagram and Red Hat have created an icon-driven interface that recognizes and exploits the user's potential to be "both a learner and a teacher." Collaboration is placed at the core of the experience and the laptop encourages activities and social interaction. Most activities center on the creation of an object—a drawing, a song, a story, a game—and on "real-world metaphors" such as chatting, sharing, and gathering as the primary sources of creative expression. All the laptops are connected in a wireless network, both to the Web and to one another. "By exploiting this connectivity within the community, among people, and their activities," the information designers explain, "OLPC makes use of what people already know in order to make connections to new knowledge."

*Ideas and efforts regarding the design and development of this open-source project have come from various entities. Although this is the core team, it cannot take sole credit for everything that has come to define the user interface.



Multilingual Interface ?
JUST WRITE !





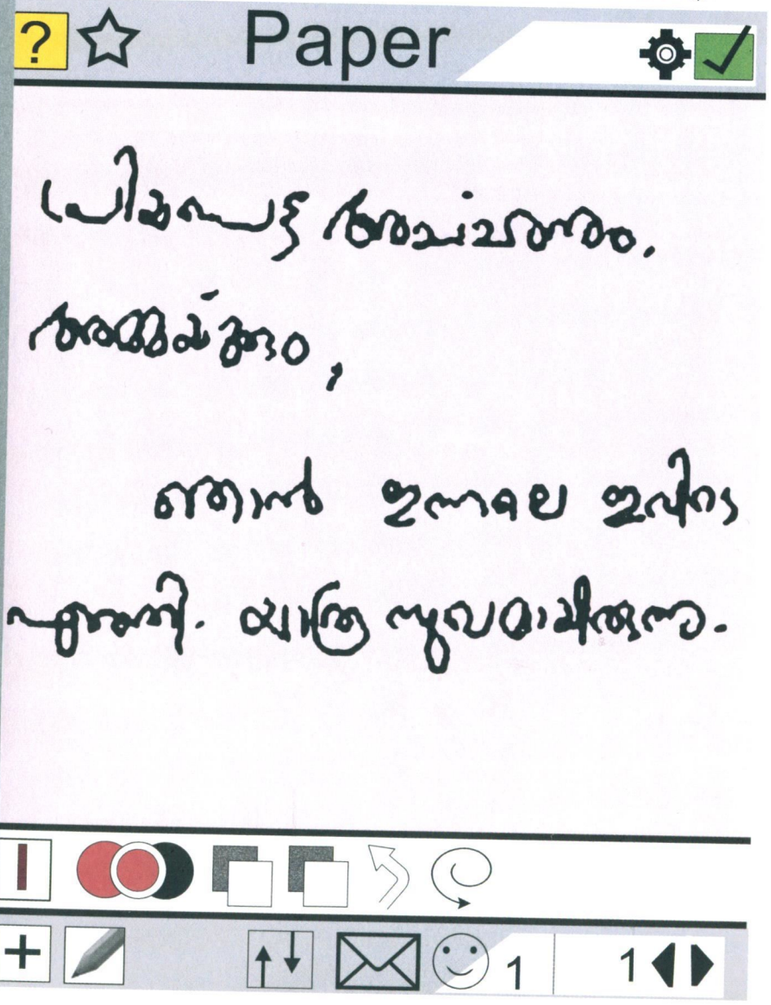
Handwritting interface for primary education

Picopeta Simputer October 2003

Designers wish to prevent diversity of language, illiteracy, or lack of resources from becoming impediments to connecting with the global network of knowledge and exchange.

P. R. Subramanya (Indian, born 1969), Swami Manohar (Indian, born 1960), K. S. Vivek (Indian, born 1975), and V. Vinay (Indian, born 1964)
PicoPeta Simputers Pvt. Ltd. (India, est. 2001)
Interface for Amida Simputer 2004
Linux and OpenAlchemy software, 5 5/8 × 2 7/8 × 7/8" (14.2 × 7.2 × 2 cm)
Manufactured by Bharat Electronics Limited, India (2004)

The Amida Simputer is a low-cost handheld computer designed for use in developing countries and other environments where personal computers are not readily available. "The word 'Simputer,'" its creators explain, "is an acronym for 'simple, inexpensive, and multilingual people's computer.'" By providing multiple user-interface options, including handwriting recognition, multilingual text, audio, and images, Simputer strives for universal accessibility.

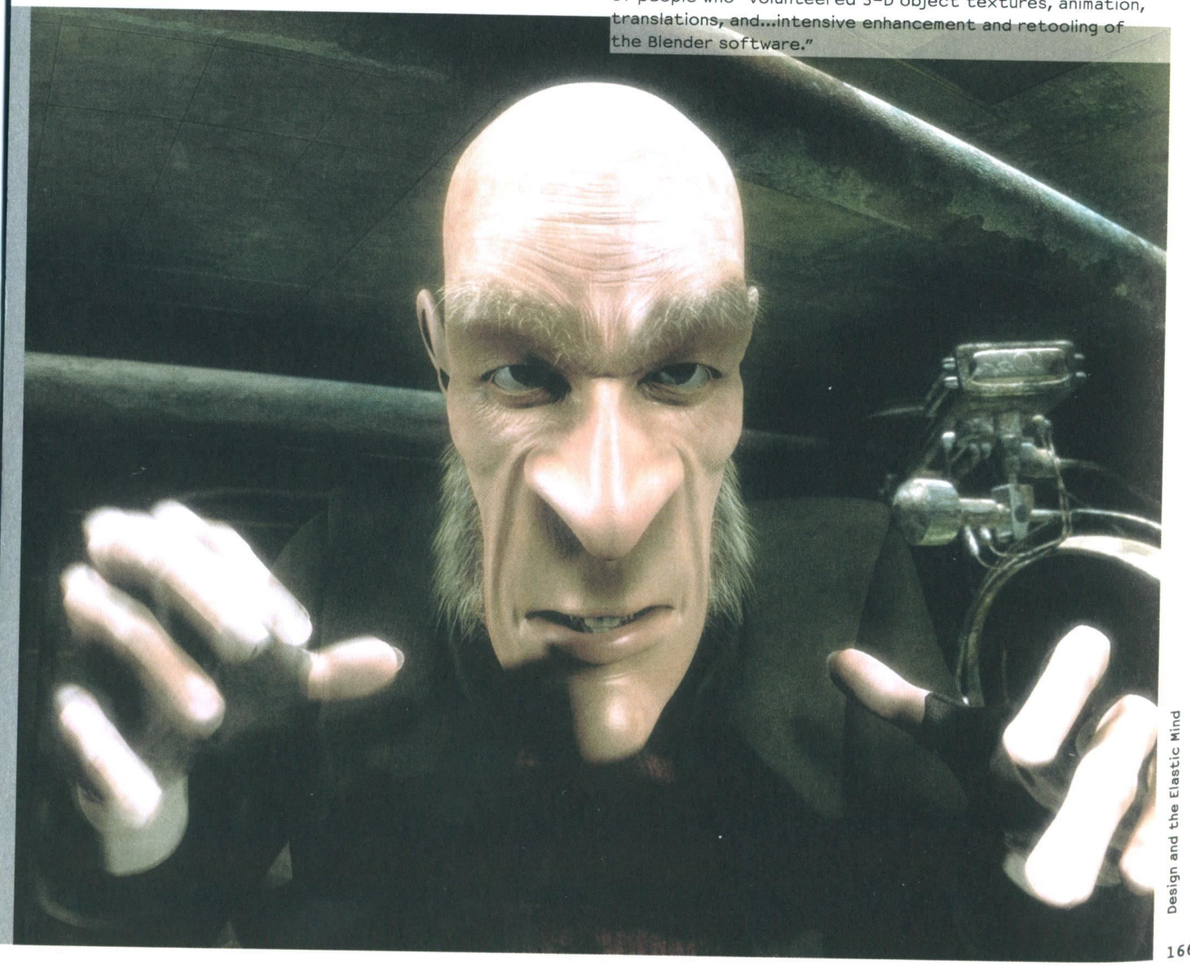


Chris Vanstone (British, born 1977) and Mickaël Charbonnel (French, born 1977) of Human Beans (UK, est. 2001)
What's Cooking Grandma? 2006
www.humanbeans.net/whatscookinggrandma
HTML, Dreamweaver, Photoshop, and Illustrator software

With proportions given in pinches, dashes, and handfuls, grandma's recipes are almost impossible to transcribe. Instead, Human Beans proposes to collect videos of women cooking in their own kitchens so that one can appreciate not only the process but also the story behind each recipe. The What's Cooking Grandma? Web site brings together grandmothers from around the world and centuries of cooking experience, preserving traditions and oral histories. Each video clip has an emotional, cultural, and historic value. The project will take on even more meaning as great-grandchildren and beyond will be able to learn directly from women whom they might never have met, and serves as an example of the Internet working "as a collective memory and a keeper of family records, allowing grandma to reach across many generations."

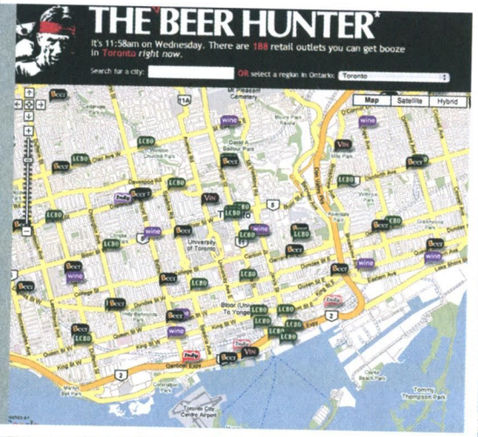
Elephants Dream 2005–06
Producer: Ton Roosendaal (Dutch, born 1960);
director: Bassam Kurdali (American, born Syria 1973);
art director: Andreas Goralczyk (German, born 1985);
lead artists: Matt Ebb (Australian, born 1979), Bastian Salmela (Finnish, born 1974), and Lee Salvemini (Australian, born 1986)
Blender Foundation (The Netherlands, est. 2002)
The Netherlands Media Art Institute (The Netherlands, est. 1978)
Blender, GIMP, and Inkscape software

Elephants Dream, a 3-D open-source movie, "tells the story of Emo and Proog, two people with different visions of the surreal world, full of strange mechanical creatures and technological landscapes, in which they live." Along with all its component files, the film has been released under the Creative Commons "some rights reserved" license, which "allows individuals and companies to redistribute, publish, screen, learn from, copy, edit, re-create, and even sell their own animations based on the original data files used to create the movie," explains the movie's producer. Moreover, Elephants Dream has established the viability of the open-source model even in a production environment by benefiting from the collaboration of hundreds of people who "volunteered 3-D object textures, animation, translations, and...intensive enhancement and retooling of the Blender software."

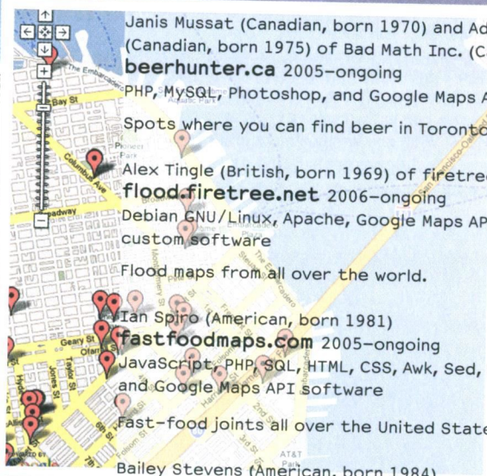


The Netherlands Society for Nature and Environment (The Netherlands, est. 1972), Delft University of Technology (The Netherlands, est. 1842), Eindhoven University of Technology (The Netherlands, est. 1956), and University of Twente (The Netherlands, est. 1961)
c,mm,n open-source car Prototype. 2006–07
Aluminum chassis and Xenoy iQ, Lexan, and HPPC thermoplastics, 59" × 69" × 12' 6" (150 × 175 × 380 cm)
Exterior: Remco Timmer (Dutch, born 1982); interior: Neele Kistemaker (Dutch, born 1980) and Caroline Klop (Dutch, born 1982); branding: Jacco Lammers (Dutch, born 1981)
Engineering: Gilbert Peters (Dutch, born 1981), Martin Leegwater (Dutch, born 1983), Niels Scheffer (Dutch, born 1981), Stefan van Loenhout (Dutch, born 1982), Bart de Vries (Dutch, born 1983), Gert Jan Endeman (Dutch, born 1982), Jeroen Terlouw (Dutch, born 1982), Jos Thalen (Dutch, born 1984), and Lucien De Baere (Dutch, born 1981)

C,mm,n (say it out loud and in one breath and you will understand both the name and the philosophy of the project) is "an open-source platform in which the car is further refined by students of three Dutch universities with any enthusiasts interested in the future of the automobile." Constantly being developed and improved to keep pace with our demands for smarter, more sustainable products, c,mm,n runs on fuel cells powered by ecologically produced hydrogen and also uses other strategies, such as regenerative braking, to further its energy efficiency. The car is the focus of a networked community that empowers consumers, giving them control over the quality and sustainability of their means of transportation.



Much contemporary production is the result of the synthesis of different sources. In Jamaican reggae culture, mashups are elaborations of existing tunes remastered with different words and covered by different musicians with distinctive styles and arrangements. Web mashups are applications that combine different sources into a single platform, making them one face of collaborative design on the Internet. Examples using Google Maps are perhaps the most well known, complete with the familiar red markers—defined as pushpins, upside-down teardrops, or even apostrophes—that people use to tag their maps and share their world, their passions, and their knowledge. In other cases, mashups may be coordinated by public authorities and used to spread practical information about subjects ranging from crime rates to sex offenders' domiciles.



Janis Mussat (Canadian, born 1970) and Adam Putter (Canadian, born 1975) of Bad Math Inc. (Canada, est. 2001)
beerhunter.ca 2005–ongoing
PHP, MySQL, Photoshop, and Google Maps API software

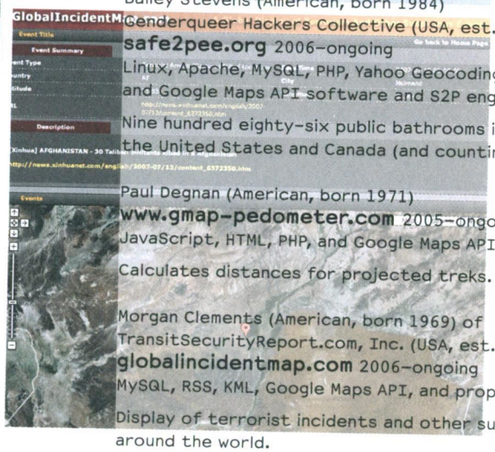
Spots where you can find beer in Toronto in real time.

Alex Tingle (British, born 1969) of firetree.net (UK, est. 2002)
flood.firetree.net 2006–ongoing
Debian GNU/Linux, Apache, Google Maps API, and Flood Maps custom software

Flood maps from all over the world.

Ian Spiro (American, born 1981)
fastfoodmaps.com 2005–ongoing
JavaScript, PHP, SQL, HTML, CSS, Awk, Sed, Bash, Illustrator, and Google Maps API software

Fast-food joints all over the United States.



Bailey Stevens (American, born 1984)
Genderqueer Hackers Collective (USA, est. 2006)
safe2pee.org 2006–ongoing
Linux, Apache, MySQL, PHP, Yahoo Geocoding API, Phoogle, and Google Maps API software and S2P engine

Nine hundred eighty-six public bathrooms in 296 cities in the United States and Canada (and counting).

Paul Degnan (American, born 1971)
www.gmap-pedometer.com 2005–ongoing
JavaScript, HTML, PHP, and Google Maps API software

Calculates distances for projected treks.

Morgan Clements (American, born 1969) of TransitSecurityReport.com, Inc. (USA, est. 2006)
globalincidentmap.com 2006–ongoing
MySQL, RSS, KML, Google Maps API, and proprietary software

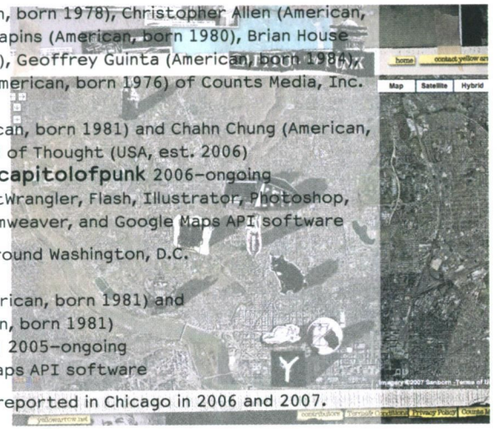
Display of terrorist incidents and other suspicious events around the world.

David Troy (American, born 1971) of Popvox LLC (USA, est. 2004)
twittervision.com 2007–ongoing
JavaScript, Ruby On Rails, MySQL, and Google Maps API software

A mapped version of twitter.com, a site where people from all over the world send pictures and state what they are doing at that precise moment.

Kara Oehler (American, born 1978), Christopher Allen (American, born 1980), Jesse Shapins (American, born 1980), Brian House (American, born 1979), Geoffrey Guinta (American, born 1981), and Nathan Phillips (American, born 1976) of Counts Media, Inc. (USA, est. 2004)
Kapono Chung (American, born 1981) and Chahn Chung (American, born 1977) of School of Thought (USA, est. 2006)
yellowarrow.net/capitolofpunk 2006–ongoing
PHP, JavaScript, TextWrangler, Flash, Illustrator, Photoshop, After Effects, Dreamweaver, and Google Maps API software

Punk history sites around Washington, D.C.



Adrian Holovaty (American, born 1981) and Wilson Miner (American, born 1981)
chicagocrime.org 2005–ongoing
Django and Google Maps API software

Database of crimes reported in Chicago in 2006 and 2007.

David McNamara (Irish, born 1980) of mackers.com (Ireland, est. 1999)
dartmaps.mackers.com 2005–ongoing
PHP, XML, HTML, JavaScript, CSS, and Google Maps API software

Real-time location of all the trains in Dublin's suburban rail network (DART).

Robert Jan de Heer (Dutch, born 1972) of J3Trust B.V. (The Netherlands, est. 2006)
misdaadkaart.nl 2006–ongoing
PHP, MySQL, Linux, and Google Maps API software

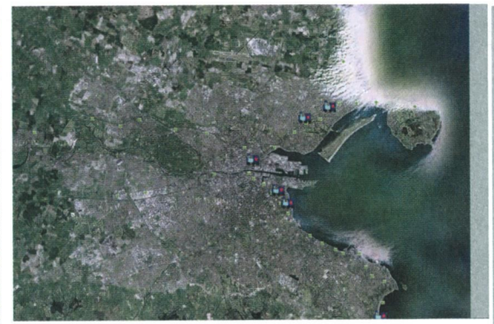
Real-time crime information in The Netherlands, organized by street.

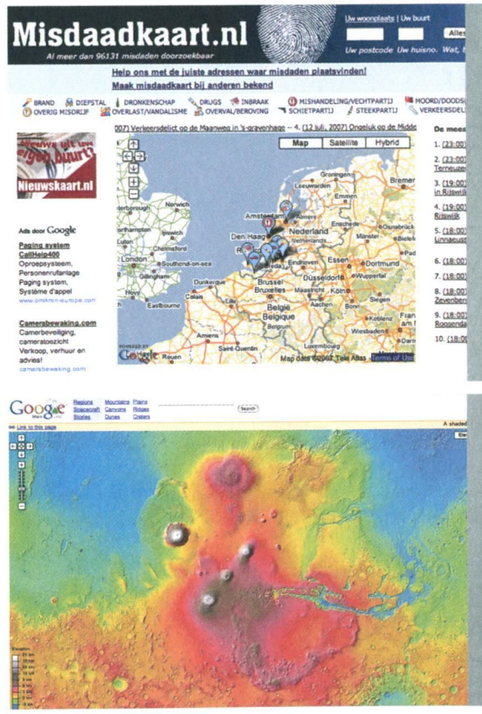
Noel Gorelick (American, born 1968) and Michael Weiss-Malik (American, born 1978)
Mars Space Flight Facility, Arizona State University (USA, est. 1990)
Google, Inc. (USA, est. 1998)
www.google.com/mars 2005–ongoing
ImageMagick, DaVinci, Google Earth Fusion, and Google Maps API software

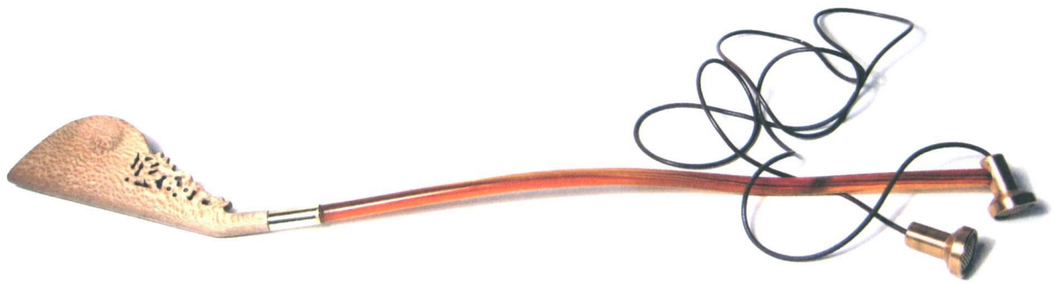
There is not much tagging on Mars (yet), but we could not resist featuring one of the most exciting new entries.

David Troy (American, born 1971) of Popvox LLC (USA, est. 2004)
flickrvision.com 2007–ongoing
JavaScript, Ruby On Rails, MySQL, and Google Maps API software

A mapped version of Flickr, the photo-sharing Web site.





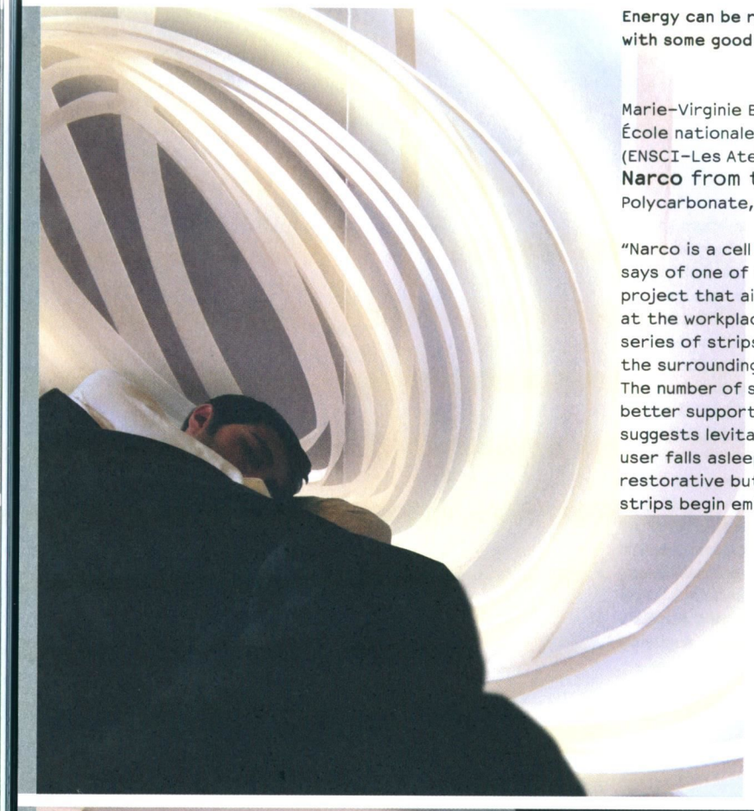


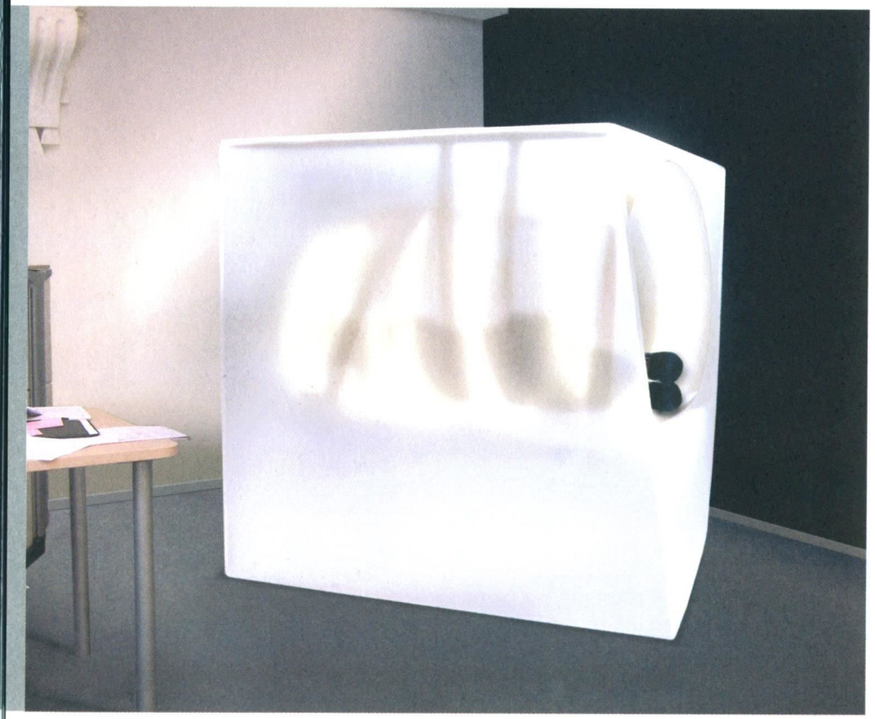
Synnøve Fredericks (British, born 1983)
Central Saint Martins College of Art and Design (UK, est. 1989)
Doffing Headphones Concept. 2006
Bluetooth-powered headphones, brass, faux tortoise shell, and hand-carved English holly wood, earpiece: 13 3/8 × 1/2" (35 × 1.4 cm) diam.; handle: 3 3/8 × 1 1/8 × 3/8" (8.5 × 3 × 1 cm)

New technologies such as cell phones and portable music players, which immerse users in an inner world, demand their own code of etiquette. With this in mind, designer Synnøve Fredericks created the Doffing Headphones, inspired by two episodes: an article in The Chap—a British magazine that proposes a return to a dandified way of life—protesting the decline of manners, and a mobile clubbing event in Liverpool Street station in London. Mobile clubbing happens when "a group of people gather with their personal stereos to listen to their own choice of music, while dancing with their friends" who are also listening to their preferred tunes. Watching the participants interact, Fredericks "noticed they would take one earpiece off if they were greeting someone but didn't want to stop, and both if they were stopping for conversation." This mimics the tradition of hat-doffing, where a gentleman would lift his hat and replace it when greeting someone in the street, or remove it completely when stopping for a conversation, especially in front of a lady. The Doffing Headphones call upon the traditions and social graces of the top hat to create a code of manners for the users of an everyday technology.

Crispin Jones (British, born 1974), Graham Pullin (British, born 1964), Matthew Hunter (British, born 1970), and Anton Schubert (British, born 1968)
IDEO London (UK, est. 1971)
SoMo3 Musical Mobile from the **Social Mobiles project** Model. 2002
Limewood, steel, ABS plastic, and GSM phone, 11 3/4 × 2 3/8 × 7/8" (30 × 6 × 2 cm)

The Social Mobiles project consists of "five phones that modify their users' behavior in different ways in order to make it less disruptive," explain the designers. The handsets have not been conceived as actual products but rather as sparks for further discussion about the social impact of mobile phones. SoMo1 delivers an electric shock whose intensity varies depending on how loudly the person at the other end of the line is speaking. It is intended for "repeat offenders who persistently disturb others with their intrusive conversations." SoMo2 allows the person receiving a call in a quiet place to converse without any words but rather with highly expressive individualized sounds. The SoMo3 musical phone (featured here) requires its user "to 'play' the melody of the telephone number he wishes to call. The public performance that dialing demands acts as a litmus test of whether or not it is appropriate to make a call." With SoMo4, "the user knocks on his phone to communicate the urgency of the call. Given time people would learn to recognize each other's knocking mannerisms." The SoMo5 catapult mobile can be used to launch sound bombs into other people's annoying phone conversations—no doubt a product many people have dreamed of using on more than one occasion.





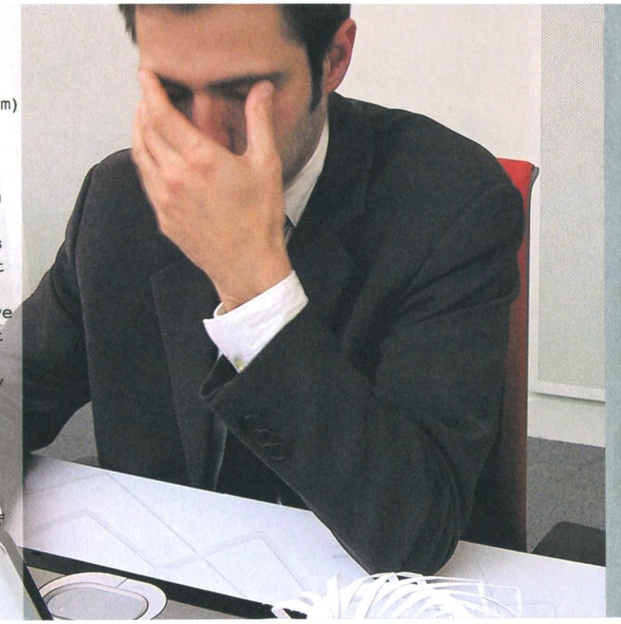
Energy can be renewed biologically within the individual with some good old-fashioned sleep.

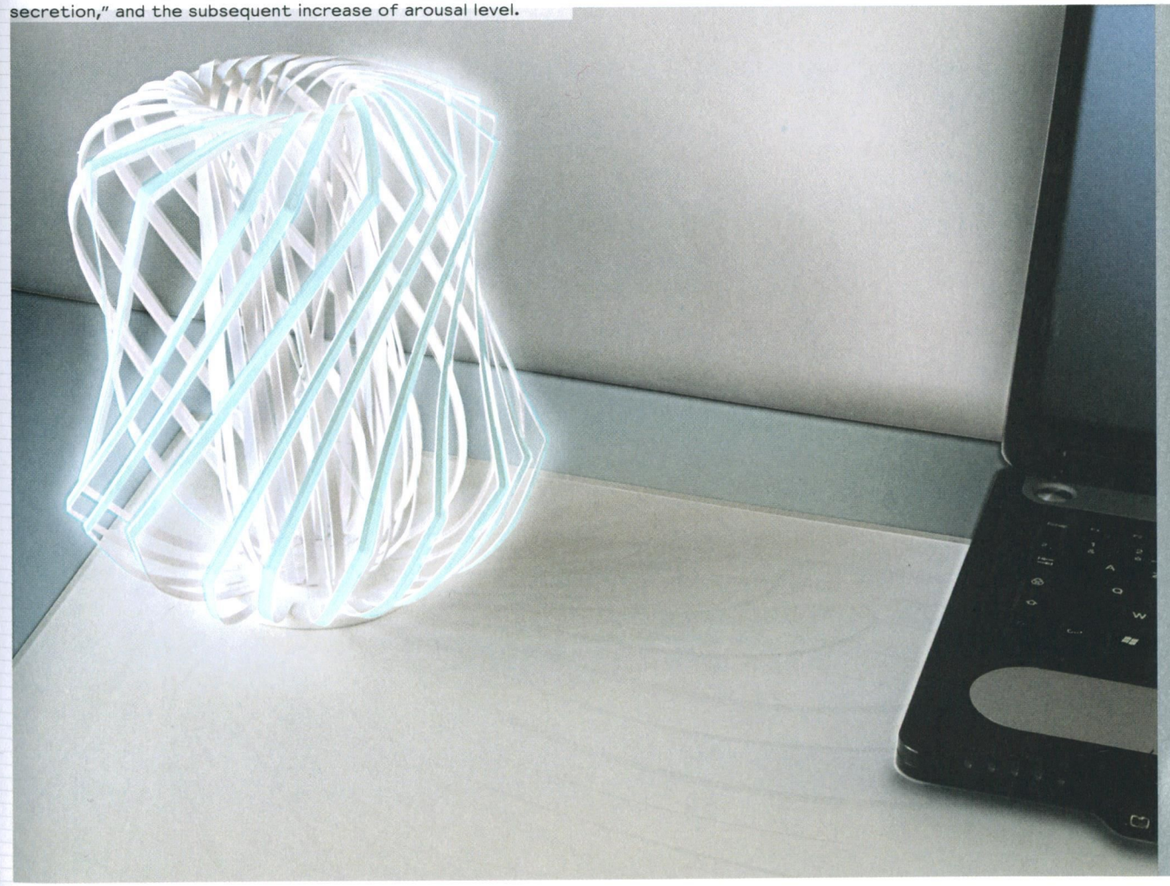
Marie-Virginie Berbet (French, born 1979)
École nationale supérieure de création industrielle
(ENSCI-Les Ateliers) (France, est. 1982)
Narco from the **Analeptic project** Prototype. 2006
Polycarbonate, 70 7/8 × 47 1/4 × 63" (180 × 120 × 160 cm)

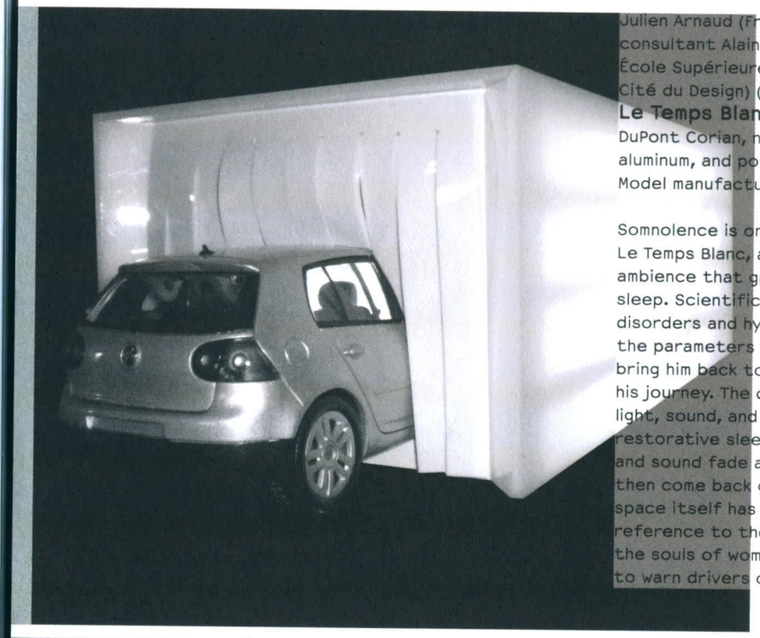
"Narco is a cell for napping," designer Marie-Virginie Berbet says of one of two devices she created for Analeptic, her project that aims to guarantee optimal physiological conditions at the workplace. The interior of the cocoon consists of a series of strips that offer sound and visual insulation from the surroundings without creating a feeling of claustrophobia. The number of strips increases around the sleeper's head for better support and insulation while the hammocklike position suggests levitation. The cell detects the exact moment the user falls asleep, and ten minutes later—enough time to be restorative but right before deep sleep sets in—the cocoon's strips begin emitting a soft light to gently awaken him or her.

Marie-Virginie Berbet (French, born 1979)
École nationale supérieure de création industrielle
(ENSCI-Les Ateliers) (France, est. 1982)
Cyclo from the **Analeptic project** Prototype. 2006
Injected polymethyl methacrylate, lamp: 8 × 6 1/4" (20 × 16 cm) diam.; desk blotter: 31 1/2 × 23 5/8" (80 × 60 cm)

Cyclo, the second part of Marie-Virginie Berbet's Analeptic project, is a rotating light consisting of "a desk blotter with behavioral and physiological sensors that detect the user's arousal level" and a rotating light with interdependent strips that switch on and off in sequence. The intensity of the light and the speed of the switching and rotation vary according to the user's stimulation and activity levels, from hyperactive to tired, in an effort to detect the extreme behaviors that keep the vicious circle of stress and exhaustion going. At normal levels, "the light turns slowly, passing imperceptibly from one strip to the next." When hyperactivity is high, "the light turns fast and generates shadows on the desk-blotter." When this happens, Cyclo progressively slows down, inducing the user to do the same and relax. If the person is instead sleepy and fatigued, "the light stops turning. Its intensity rises in the front strips to provide a screen of blue light, which has stimulating effects. Following the latest advances in phototherapy, the light emitted (446–477nm) is centered in the blue wavelength, specifically responsible for the biological effects of light: the blocking of melatonin secretion," and the subsequent increase of arousal level.

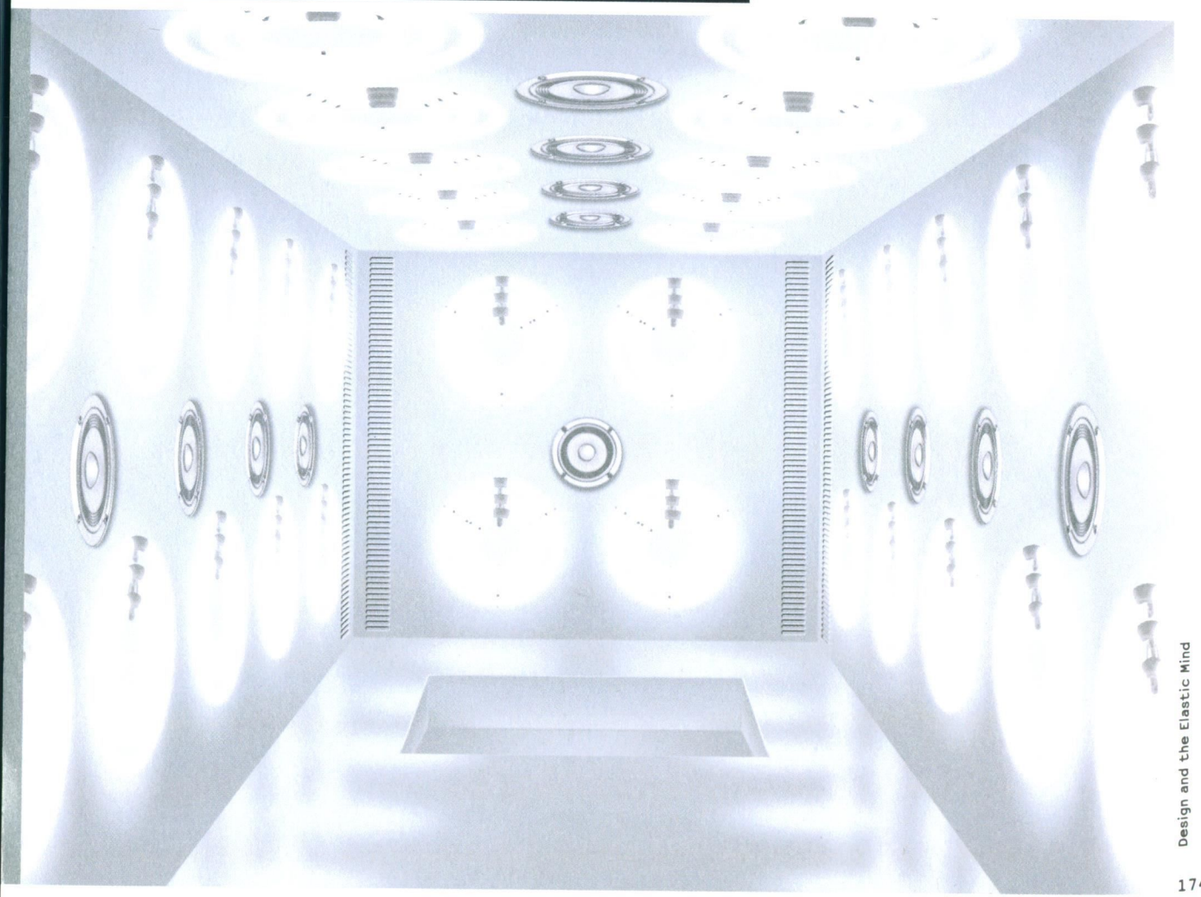






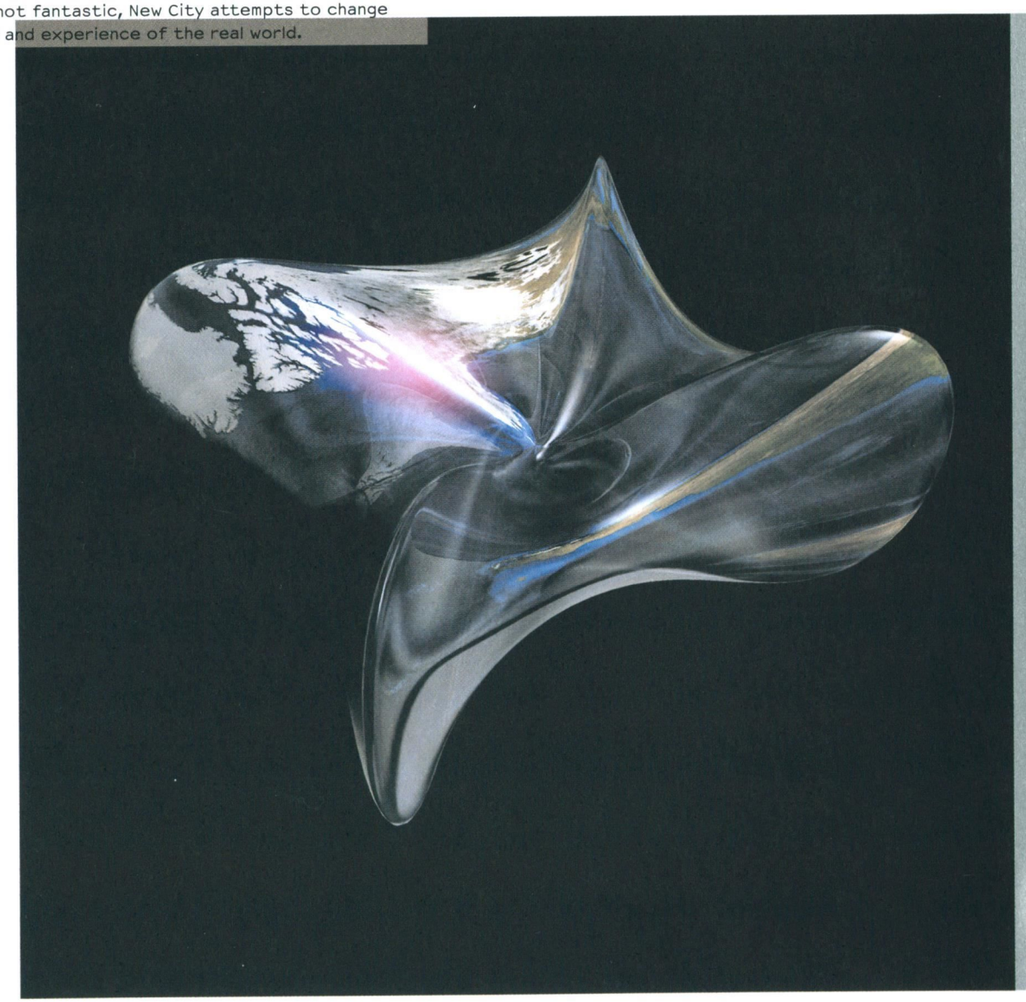
Julien Arnaud (French, born 1974) with scientific consultant Alain Nicolas (French, born 1965)
École Supérieure Art & Design Saint-Étienne (ESADSE/ Cité du Design) (France, est. 1857)
Le Temps Blanc Concept. 2006
DuPont Corian, neon tubes, speakers, soundproof foam, MDF, aluminum, and polyethylene, 15 3/4 × 8 × 6" (40 × 20 × 15 cm)
Model manufactured by Florian Mery, France (2006)

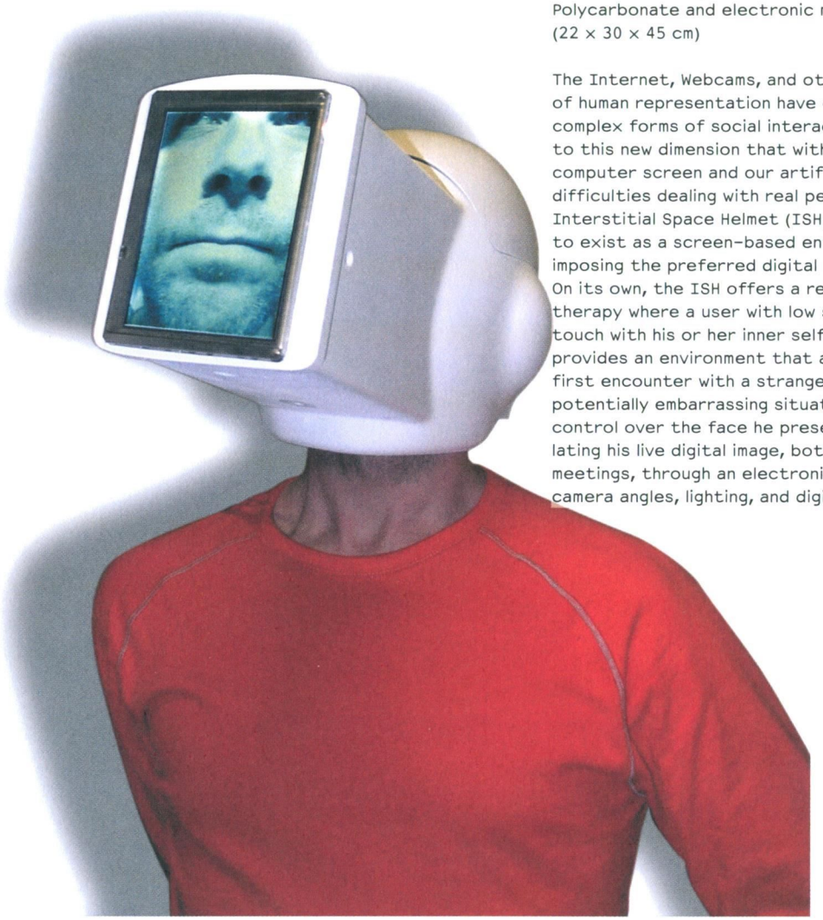
Somnolence is one of the foremost dangers on the road. Le Temps Blanc, a personal rest area, provides a controlled ambience that gradually leads the driver toward a refreshing sleep. Scientific consultant Alain Nicolas, a specialist in sleep disorders and hypnosis, helped designer Julien Arnaud define the parameters that take the user toward sleep and then bring him back to a waking phase so that he can continue with his journey. The driver pulls his car into a white box in which light, sound, and temperature are adjusted to guarantee a restorative sleep. During the twenty-minute sequence, light and sound fade away into complete darkness and silence, and then come back gradually to assure complete awakening. The space itself has been conceived as a ghostly apparition—a reference to the legend of the dames blanches (white ladies), the souls of women killed on the road that are said to appear to warn drivers of danger.



Peter Frankfurt (American, born 1958) of Imaginary Forces (USA, est. 1996)
Greg Lynn (American, born 1964) of Greg Lynn FORM (USA, est. 1994)
Alex McDowell (British, born 1955) of Matter Art and Science (USA, est. 2001)
New City Concept. 2008

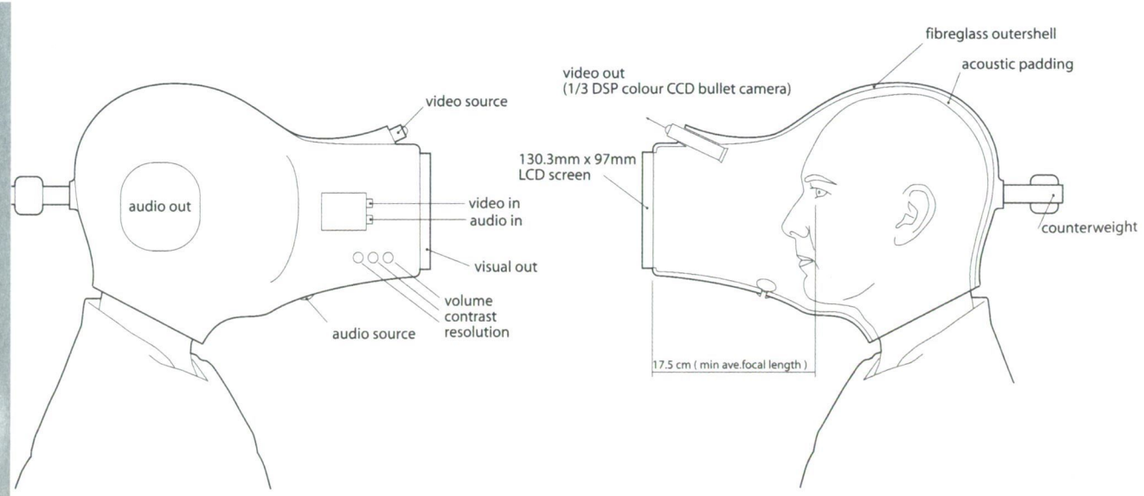
New City, like Second Life, Protosphere, OLIVE, the teen world Habbo, and Multiverse—which aspires to link them all—is a "real virtual place" to visit and explore. In this project, developed for Design and the Elastic Mind, the whole world is seen as a city and "the topology of the earth is mapped onto a folded virtual manifold," explain the designers. A dense, urban place of perpetual transformation and self-generation, New City develops a new model of urbanism in which "contemporary communication, lifestyle, and globalization are engaged into an ideal urban and architectural space of historical, economical, cultural, social, and intellectual interactions." Architecture is built to reflect the physical laws of a manifold city in motion. The movement and behavior of its population is reflected in the dynamic motion of the city in, around, and through itself. Immersive but not fantastic, New City attempts to change our perception and experience of the real world.





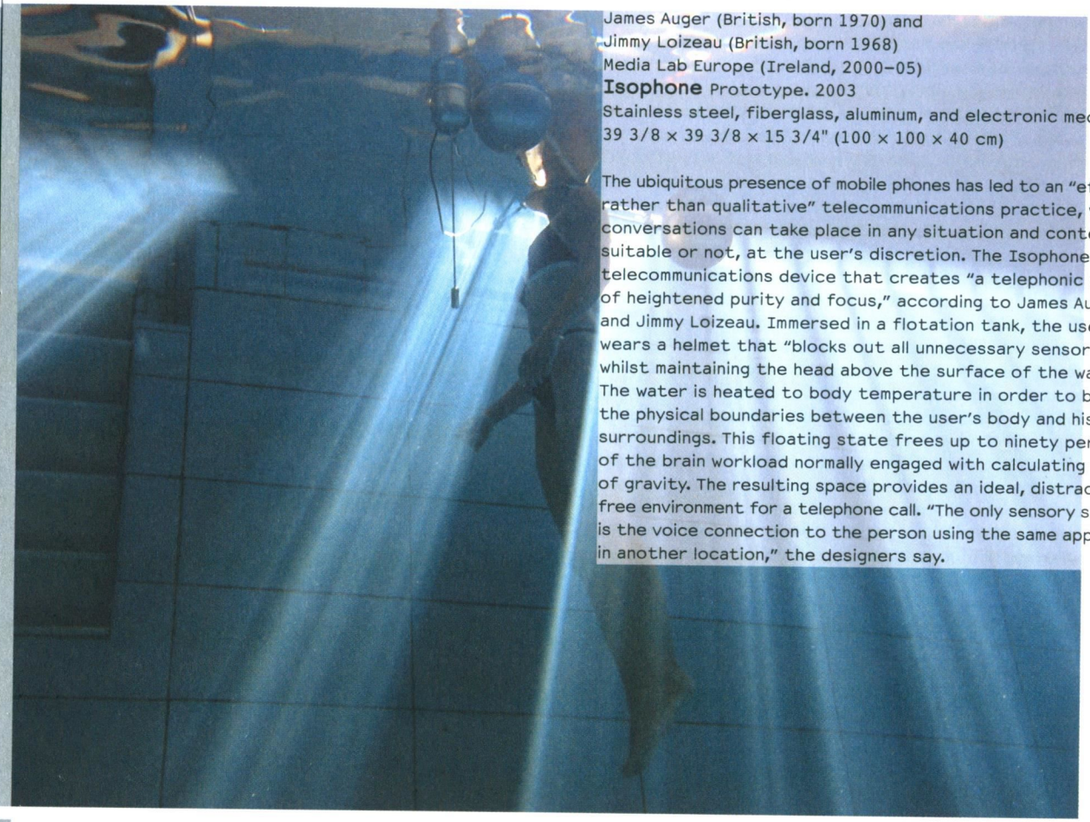
James Auger (British, born 1970) and
Jimmy Loizeau (British, born 1968)
Interstitial Space Helmet (ISH) Prototype. 2004
Polycarbonate and electronic media, 8 5/8 × 11 3/4 × 17 3/4" (22 × 30 × 45 cm)

The Internet, Webcams, and other forms of digital mediation of human representation have created new behaviors and complex forms of social interaction. We have become so used to this new dimension that without the safeguard of the computer screen and our artificial personae, we might have difficulties dealing with real people in the physical world. The Interstitial Space Helmet (ISH) makes it possible for the user to exist as a screen-based entity in the real world, superimposing the preferred digital form over an actual presence. On its own, the ISH offers a reflective space for meditative therapy where a user with low self-esteem can get back in touch with his or her inner self. With two or more users, it provides an environment that avoids the awkwardness of a first encounter with a stranger and helps in dealing with potentially embarrassing situations. The user can regain control over the face he presents to the world by "manipulating his live digital image, both in real and interstitial meetings, through an electronic filter offering different camera angles, lighting, and digital effects."



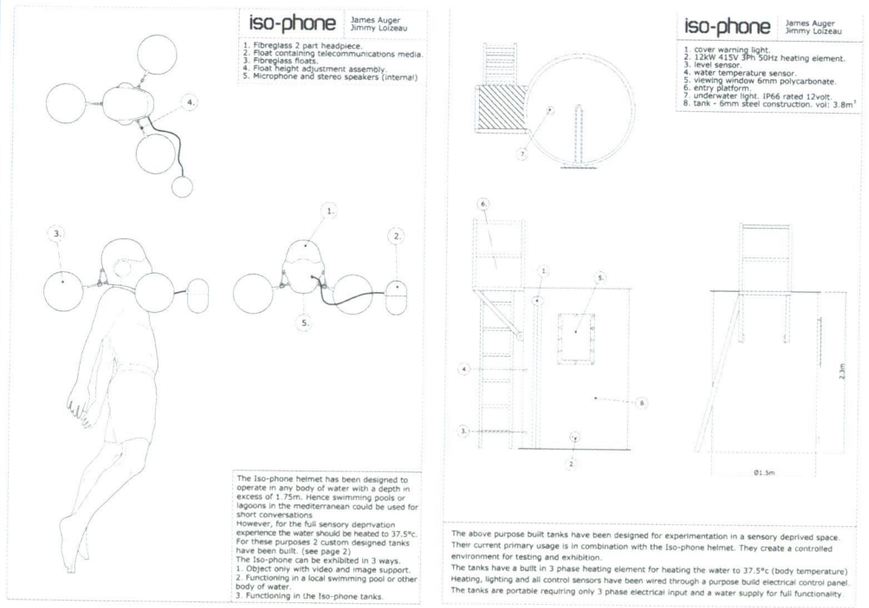
James Auger (British, born 1970) and
Jimmy Loizeau (British, born 1968)
Design Interactions Department (est. 1989),
Royal College of Art (UK, est. 1837)
Social Tele-presence Prototype. 2001
Acrylic plastic, aluminum, electronic media, Sony Glasstron glasses, video and R/C radio receivers, 15 3/4 × 19 3/4 × 31 1/2" (40 × 50 × 80 cm)

"Tele-presence can be defined as the experience of being fully present at a real (nonvirtual) location remote from one's own physical position by removing all visual and auditory senses from the body's location and having them operate in real time from somewhere else," according to designers James Auger and Jimmy Loizeau. Such technology is currently being used for military and exploratory purposes by making it possible to subsist in dangerous or inhospitable environments. Auger and Loizeau's project explores the application of tele-presence in a social context—for some a very inhospitable place indeed. Social Tele-presence consists of a small camera and a binaural microphone attached to the remote "rented" body or moving object. The user gets the images from the camera through a wireless connection and views them on a set of TV glasses. The body becomes a host; its senses are removed and it can only hear the voice instructions and follow the head movements of its user, translated in real time. This remote body could allow shy individuals to visit a sex club or go on blind dates, businesspeople to attend meetings remotely, and a disabled person to take a walk while remaining stationary, to name just a few examples.



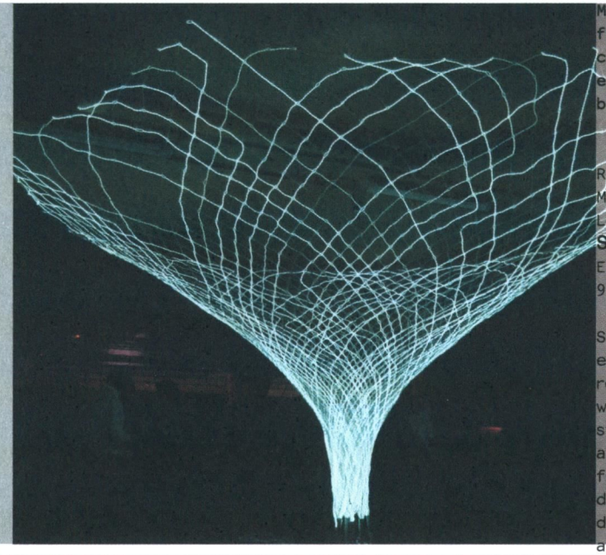
James Auger (British, born 1970) and
Jimmy Loizeau (British, born 1968)
Media Lab Europe (Ireland, 2000–05)
Isophone Prototype. 2003
Stainless steel, fiberglass, aluminum, and electronic media,
39 3/8 × 39 3/8 × 15 3/4" (100 × 100 × 40 cm)

The ubiquitous presence of mobile phones has led to an "efficient rather than qualitative" telecommunications practice, where conversations can take place in any situation and context, suitable or not, at the user's discretion. The Isophone is a telecommunications device that creates "a telephonic space of heightened purity and focus," according to James Auger and Jimmy Loizeau. Immersed in a flotation tank, the user wears a helmet that "blocks out all unnecessary sensory input whilst maintaining the head above the surface of the water." The water is heated to body temperature in order to blur the physical boundaries between the user's body and his or her surroundings. This floating state frees up to ninety percent of the brain workload normally engaged with calculating the law of gravity. The resulting space provides an ideal, distraction-free environment for a telephone call. "The only sensory stimulus is the voice connection to the person using the same apparatus in another location," the designers say.



Tim Edler (German, born 1965) and
Jan Edler (German, born 1970)
realities:united (Germany, est. 2000)
reinraus mobile balcony unit Prototype. 1993/2001
Steel, aluminum, Pevolon, vulcanized rubber, seat belt strap,
and rope, 47 1/4" × 59" × 8' 2 1/2" (120 × 150 × 250 cm)

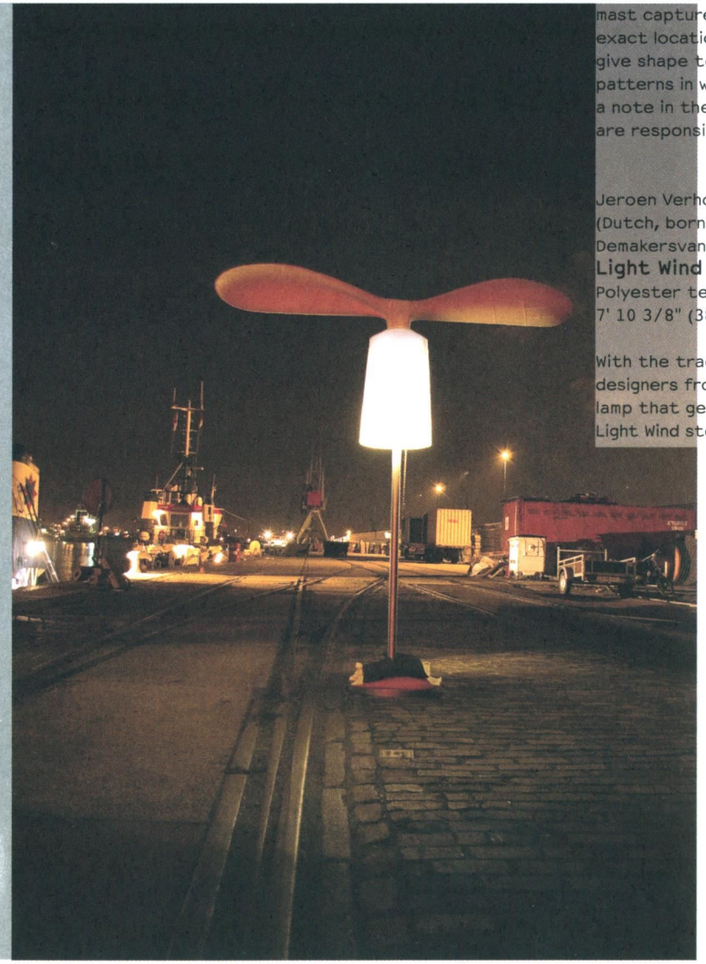
Realities:united's reinraus (meaning "clean room") is a prototype for a piece of furniture that exploits the space between buildings "to extend the living area in high-rise urban dwellings." It can be easily assembled and suspended from the supporting wall struts on standard windows. Conceived as a temporary attachment for individual use, reinraus is mounted from within the user's own apartment, placing it outside the legal sphere of the building owners, neighbors, and local authorities. With this project, the designers explore the middle ground between self and society, creating new border zones.



Many people today are aware of their impact on the earth's finite resources and of the need to offset it through conservation and personal responsibility. Local harvesting of energy from the sun or the wind is one way to alleviate our burden on the environment.

Rachel Wingfield (British, born 1978) and
Mathias Gmachl (Austrian, born 1974)
Loop.pH (UK, est. 2003)
Sonumbra 2006
Electroluminescent lace, camera, speakers, and software,
9' 10" × 16' 4 7/8" (300 × 500 cm) diam.

Sonumbra is "a sonic shade of light," the designers say, an exploration of the roles of new textiles and how they can respond to global ecological concerns. An architectural textile with embedded solar cells is stretched into "an umbrellalike structure fabricated from electroluminescent wires that form an animated lacelike membrane." By day, it offers shelter from the sun; by night, it sheds light using the energy collected during the daylight hours. The temporary installation has been designed to respond to the physical presence of people orbiting around the umbrella. "An omnidirectional camera installed in the mast captures all surrounding activity, translating each person's exact location into sound and light," and the visitors' movements give shape to "an atmosphere of musical rhythms and luminous patterns in which each individual person plays a role and becomes a note in the composition." The designers, from Loop.pH, also are responsible for the biology-inspired Biowall on page 119.

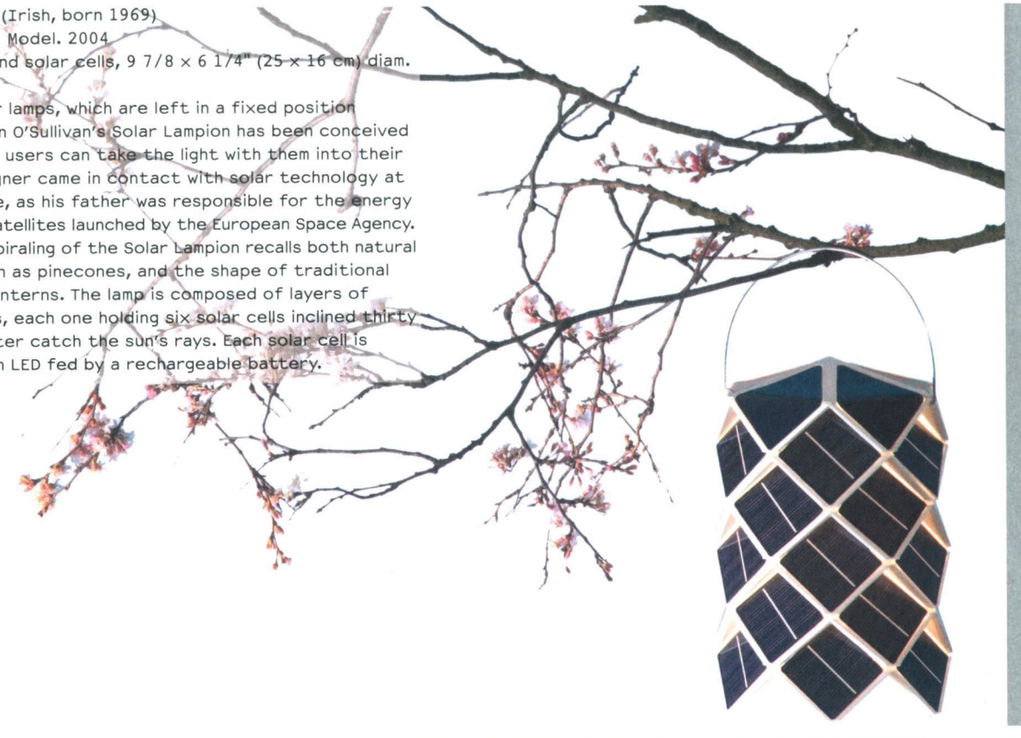


Jeroen Verhoeven (Dutch, born 1976), Joep Verhoeven
(Dutch, born 1976), and Judith de Graauw (Dutch, born 1976)
Demakersvan (The Netherlands, est. 2004)
Light Wind Prototype. 2006
Polyester textile, stainless steel, and wood, 15" × 7' ×
7' 10 3/8" (38 × 215 × 240 cm)

With the traditional windmills of their country in mind, the designers from the studio Demakersvan have created an outdoor lamp that generates its own energy. With every breeze the Light Wind stores energy, which is then used to produce light.

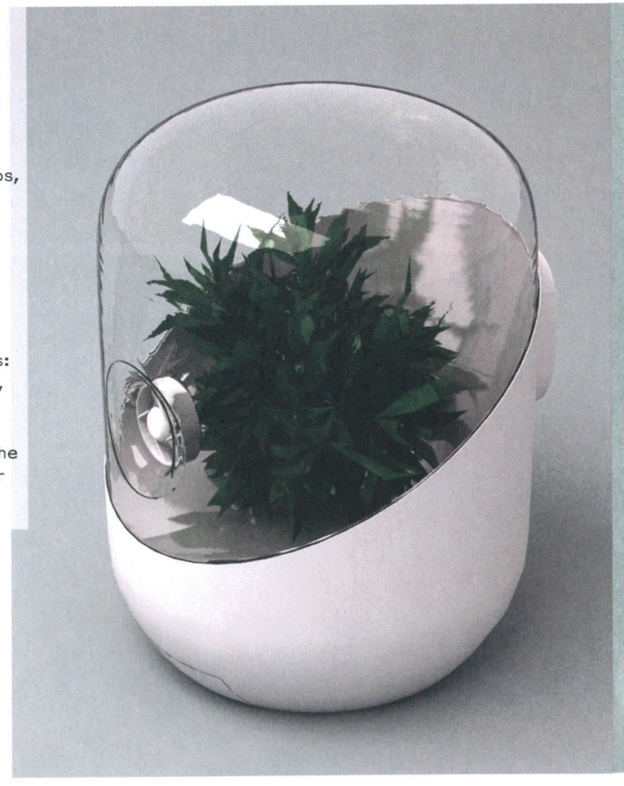
Damian O'Sullivan (Irish, born 1969)
Solar Lampion Model. 2004
Polycarbonate and solar cells, 9 7/8 × 6 1/4" (25 × 16 cm) diam.

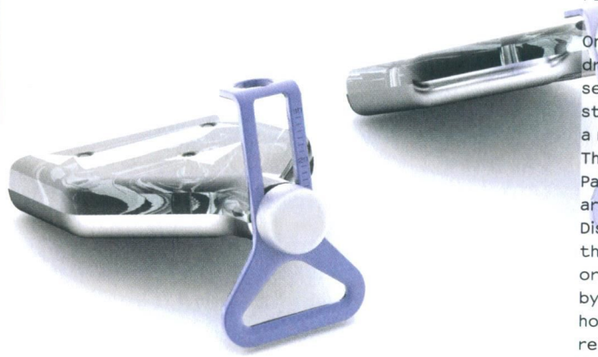
Unlike most solar lamps, which are left in a fixed position outdoors, Damian O'Sullivan's Solar Lampion has been conceived so that at night users can take the light with them into their homes. The designer came in contact with solar technology at a very young age, as his father was responsible for the energy supply for the satellites launched by the European Space Agency. The geometric spiraling of the Solar Lampion recalls both natural structures, such as pinecones, and the shape of traditional Chinese paper lanterns. The lamp is composed of layers of concentric rings, each one holding six solar cells inclined thirty degrees to better catch the sun's rays. Each solar cell is connected to an LED fed by a rechargeable battery.



Mathieu Lehanneur (French, born 1974)
Bel-Air organic air-filtering system
Prototype. 2007
Fans, Pyrex glass, aluminum, and plants, 14 1/2 × 16 1/8 ×
26 3/8" (37 × 41 × 67 cm)

Mathieu Lehanneur, attentive to the possibility of incorporating scientific discoveries into the most ordinary scenarios, explains that in the mid-1980s NASA identified the ability of certain plants—Gerbera, Philodendron, Spathiphyllum, and Chlorophytum are among the most effective—to absorb the toxins emitted by manufactured goods. A high level of toxic volatile compounds had been found in astronauts' tissues, demonstrating that the plastics and synthetic materials of the spacecraft were slowly poisoning their bodies. The same effect is being detected in our everyday living environments: the invisible emissions from paints, plastics, glues, insulation, and more continue for years after the substances are manufactured. Lehanneur defines Bel-Air as "a living filter" that utilizes greenery to absorb the toxic compounds in the air that surrounds us. The air circulates through the filter and is purified by the leaves and roots of the plant.



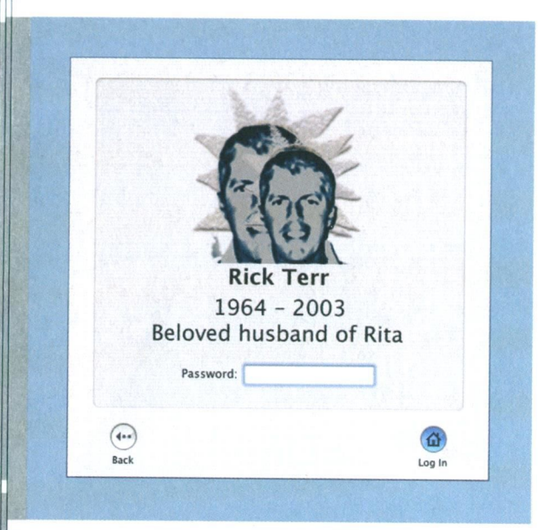


Alberto Meda (Italian, born 1945) and
Francisco Gómez Paz (Argentinean, born 1975)
Solar Bottle Prototype. 2006
PET plastic, 15 3/8 × 2 3/8 × 10 7/8" (39 × 6 × 27.7 cm)

One-sixth of the world's population has no access to safe drinking water. The water that is available is often subject to secondary contamination during collection, transport, and storage, leading to a high incidence of waterborne diseases, a major cause of death among children under the age of five. This reality led designers Alberto Meda and Francisco Gómez Paz to explore new ways to deliver more potable water to areas in need. The Solar Bottle employs the Solar Water Disinfection (SODIS) method, which uses UV-A radiation and the heat of solar energy to destroy the pathogenic microorganisms that cause waterborne illness. The system works by exposing untreated water to full sunlight for at least six hours in transparent plastic bottles, some enhanced with reflective surfaces such as corrugated iron sheets. The Solar Bottle "improves this method while integrating a transport solution," the designers explain. The molded PET plastic container has a transparent face for the collection of infrared rays and a reflective side to increase the temperature of the water. The integrated handle allows for angular regulation to sun exposure.

Sheila Kennedy (American, born 1959), Sloan Kulper (American, born 1980), Jason O'Mara (American, born 1983), Patricia Gruits (American, born 1983), and Casey Smith (American, born 1972)
KVA MATx (USA, est. 2000)
Portable Light Prototype. 2004–ongoing
PET plastic, aluminized antimicrobial nonwoven textile, copper indium gallium deselenide nano-solar cells, high-brightness LEDs, microprocessor, cotton, and acrylic and wool yarns, folded: 7 × 16" (17.8 × 40.6 cm); unfolded: 24 × 36" (61 × 91.4 cm)

In order to provide "off-grid, renewable electrical power" to the large number of people who do not have access to energy sources, the KVA MATx team, an interdisciplinary design practice at Kennedy & Violich Architecture, focused on integrating solar nanotechnology and soft optics into textiles. Their Portable Light is a renewable, self-sufficient, and sustainable source of power, and unlike traditional silicon-based solar panels it can be easily folded and transported. Moreover, the textile "can be integrated by local cultures using traditional weaving and sewing technologies in an open-source model." The use of familiar materials creates "the opportunity for greater levels of cultural acceptance of this technology," particularly by developing countries' most important resource, women. According to the designers, "Each Portable Light unit generates about one hundred lumens of white light, enough to read by and do domestic tasks, and generates two watts of electrical power. Individual units may be grouped to work together to create up to five hundred lumens of light, and power can be pooled up to twelve volts to charge medical equipment and laptops."



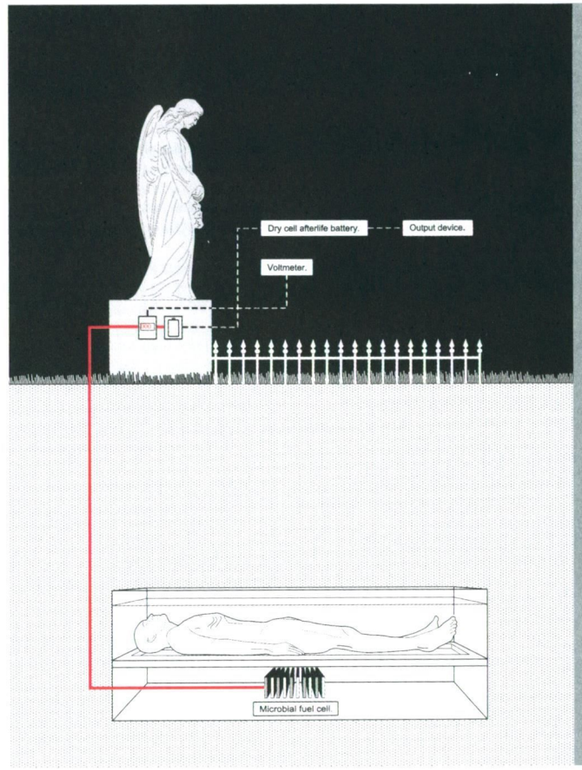
The more we live at different scales and in different dimensions, the more our roots become emotionally and psychologically important. That is why so many excellent designers are focusing on the ineluctable qualities that we carry with us through our dimensional journeys—our feelings, emotions, and our memories of ourselves and of the people we love. These last two projects deal with the final frontier—death—and update our coping mechanisms to fit the current technological zeitgeist.

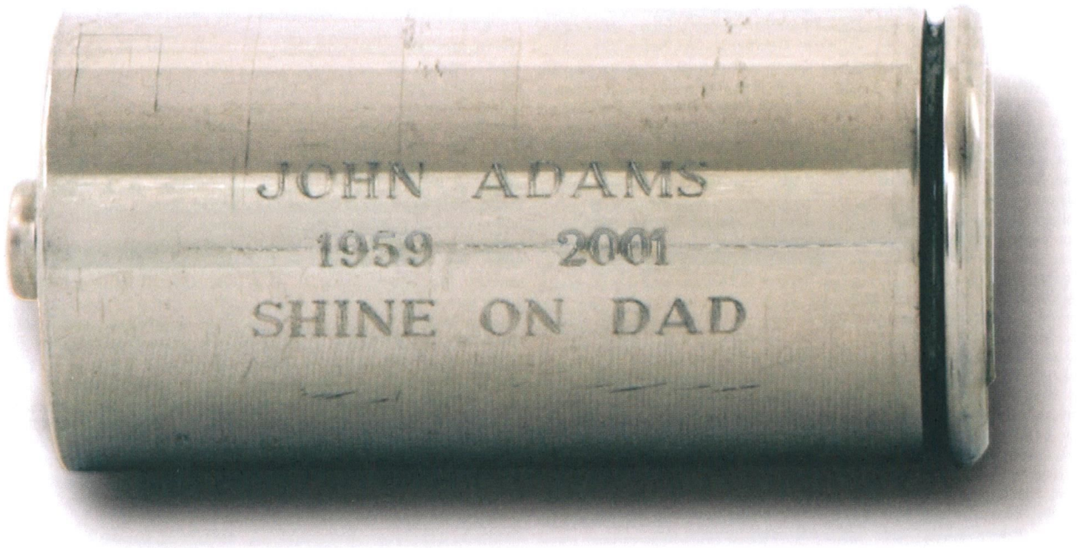
Michele Gauler (German, born 1973)
Design Interactions Department (est. 1989),
Royal College of Art (UK, est. 1837)
Digital Remains Prototype. 2006
Aluminum, wood, acrylic, and electronic media,
8' 9" × 6' 6 3/4" × 6' 6 3/4" (270 × 200 × 200 cm)

We are no longer simply products of our physical environment. Our world is in our computers, portable media players, and wireless handheld devices; our data is stored on remote networks, creating digital archives of entire generations of people. Designer Michele Gauler raises the question of what happens to all of this information when we pass away—mydeath-space versus myspace. In a time when our data is stored in a virtual space, "physical access keys to these data would become objects of remembrance," she postulates. By means of a beautiful, personalized data storage artifact equipped with a Bluetooth connection, Digital Remains "allows us to log on to the digital remains of a person and receive their data on our own digital devices." Search algorithms dig through a deceased person's data, pulling out personal traces most likely relevant to us, like a photograph from a holiday spent together or a favorite piece of music, evoking the presence of the deceased. "New technologies bring new ways of mourning," Gauler says.

James Auger (British, born 1970) and
Jimmy Loizeau (British, born 1968)
Design Interactions Department (est. 1989),
Royal College of Art (UK, est. 1837)
Philips Design (The Netherlands, est. 1891)
Microbial Fuel Cell from the **AfterLife project**
Concept. 2001–ongoing
Polycarbonate and aluminum, 6' 8" × 22" × 18"
(203.2 × 55.9 × 45.7 cm)

James Auger and Jimmy Loizeau have envisioned a "technologically mediated service providing an expression of life after death for those who are spiritually disconnected or demand tangible evidence." The AfterLife Microbial Fuel Cell is charged with the decomposed gastric acids of the deceased. The battery can be engraved with an epitaph and can power a full range of electronic products, like a flashlight ("Shine on Dad") or even a vibrator. "As our lives are increasingly mediated by technological interventions, the AfterLife project raises the issue of our increasing faith in technology and our decreasing belief in organized religion," the designers say. "This electronic state may be interpreted as a form of regeneration," providing the skeptic with a "proof of life after biological expiration."





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Design and the Elastic Mind celebrates the endless and restless curiosity of human beings and praises design as an expression of creativity and an affirmation of life. For this reason, I would like to dedicate this book and this show to the late Herbert Muschamp, who certainly knew what I am talking about.

Paola Antonelli
Senior Curator, Department of Architecture and Design

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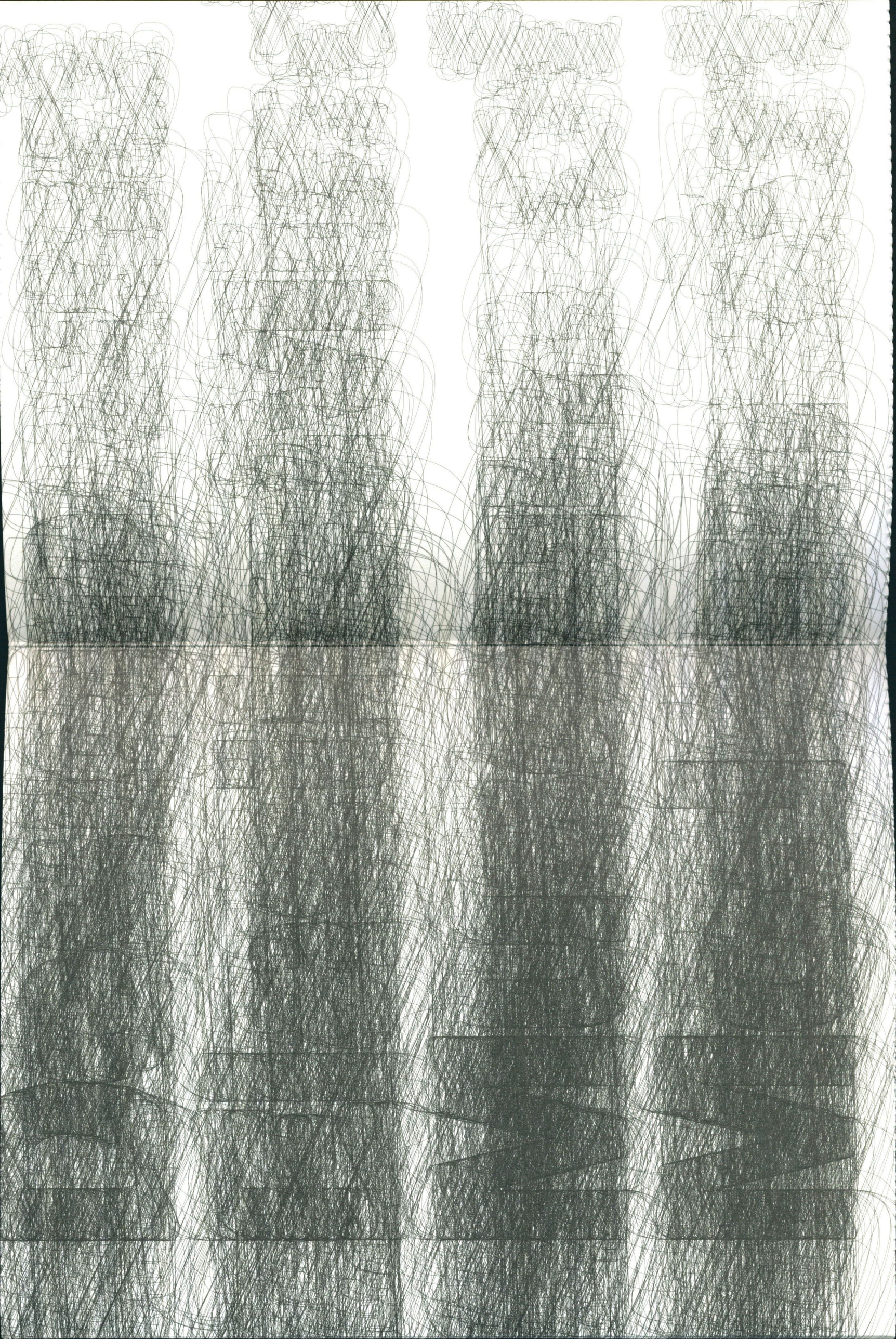

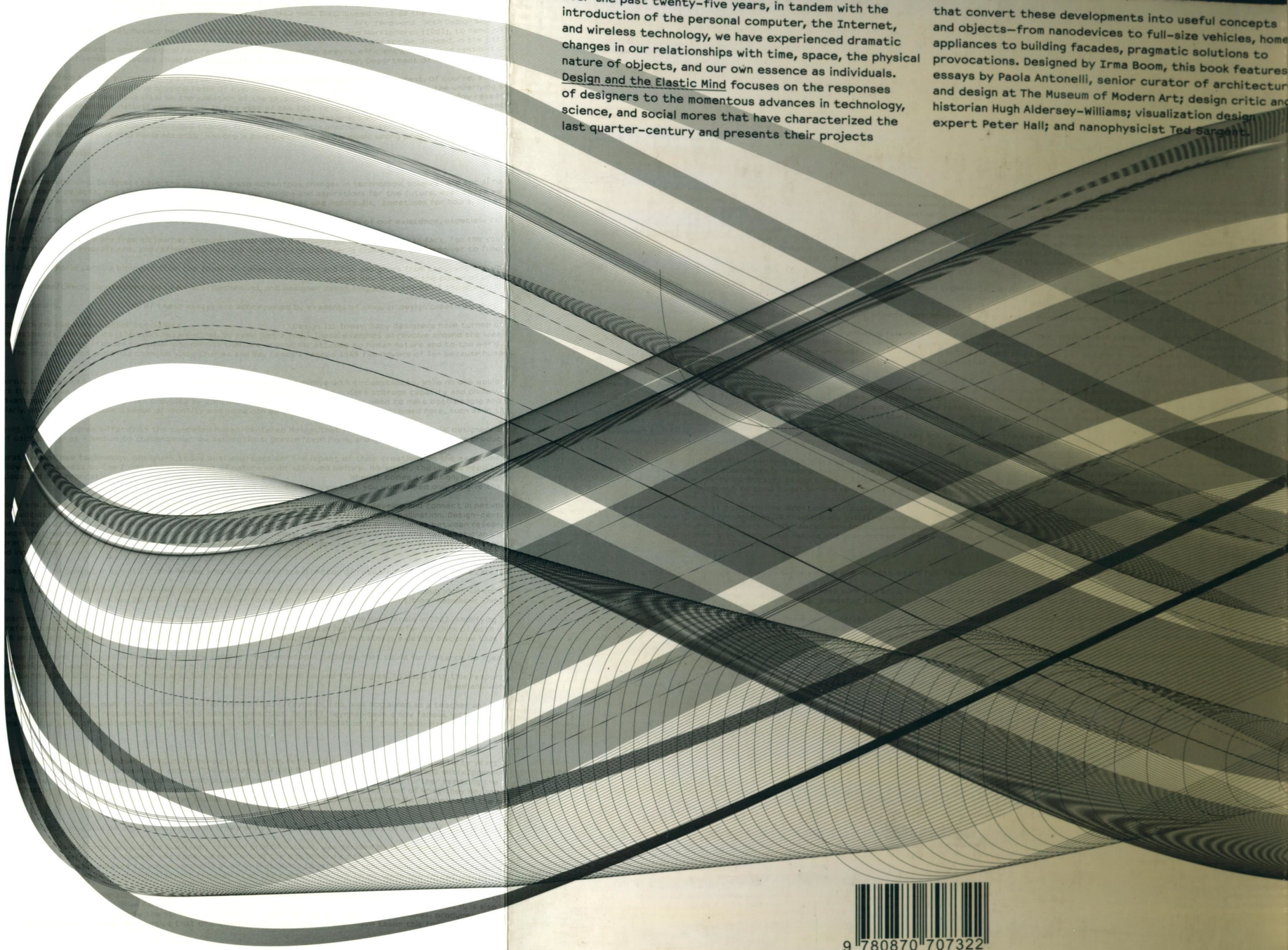

Over the past twenty-five years, in tandem with the introduction of the personal computer, the Internet, and wireless technology, we have experienced dramatic changes in our relationships with time, space, the physical nature of objects, and our own essence as individuals. Design and the Elastic Mind focuses on the responses of designers to the momentous advances in technology, science, and social mores that have characterized the last quarter-century and presents their projects that convert these developments into useful concepts and objects—from nanodevices to full-size vehicles, home appliances to building facades, pragmatic solutions to provocations. Designed by Irma Boom, this book features essays by Paola Antonelli, senior curator of architectur and design at The Museum of Modern Art; design critic and historian Hugh Aldersey-Williams; visualization design expert Peter Hall; and nanophysicist Ted Sargent.

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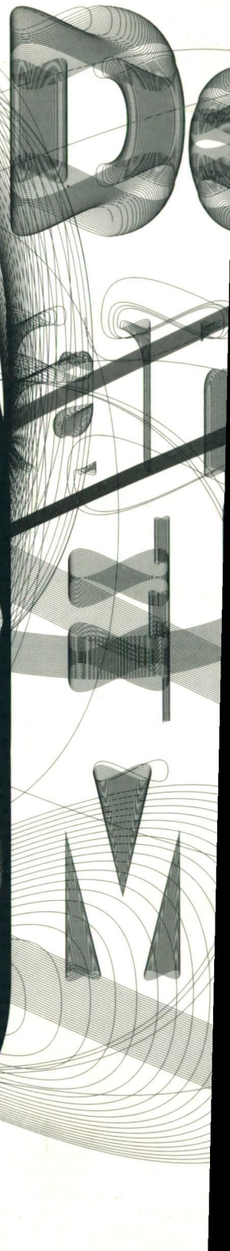
Antonelli

Design and the Elastic Mind

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