

Panel: Design for Hackability

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PANEL SUMMARY

Design for hackability encourages designers and non-designers to critically and creatively explore interactivity, technology and media — to reclaim authorship and ownership of technologies and the social and cultural worlds in which we live. Hackability implies more than customization or adaptation — it calls for redefinition. In a world where technologies are increasingly mobile and invisible, designing for hackability means allowing and encouraging people to make technologies be what they want them to be. It cultivates reciprocity between users and designers and supports transparency and graceful responses to unanticipated uses. Before entering into a broader discussion with the audience, panelists will discuss tensions between people and artifacts, technology and play, the creative use of readily available resources, subverting traditional functions and uses of networks, and the everyday realities of corporate design practice. These discussions will be used to generate a design for hackability manifesto to guide further explorations in designing interactive systems.

Categories & Subject Descriptors: H.5.2 [User Interfaces]: *theory and methods, user centered design*; J.4 [Social and Behavioral Sciences]: *sociology*

General Terms: Design, Theory

INTRODUCTION

DIS2002 closed with Tom Moran's plenary session on everyday adaptive design, and this panel seeks to build on his points by re-positioning his design criteria within current critical research and design practices in wireless computing.

As computational objects become more pervasive or

ubiquitous, design theory and practice must account for its increasingly intimate involvement in the daily lives of diverse people. To this end, we are interested in design and social processes that are ethically, politically, economically and environmentally responsible. We are particularly interested in exploring the space in which technology, art, social and cultural studies come together to put creative power directly in the hands of non-designers.

This panel brings together an international and multi-disciplinary group of researchers and designers to explore what the next generation of design for interactive systems can be, both conceptually and technologically.

WHAT IS DESIGN FOR HACKABILITY?

Design for hackability is best described as critical and playful design practice inspired by historical and current hacker, net art, 'do-it-yourself' and 're-mix' cultures and practices.

Hacker cultures date back to 1920s amateur radio and 1950s model railroad enthusiasts; by the 1960s a hack referred to a technologically based prank or any clever technological solution. According to the Hacker Jargon File, hacking can also be understood as interacting with computers in playful and exploratory ways, as well as enjoying the "intellectual challenge of creatively overcoming or circumventing limitations." [1] By the 1970s, personal computing enthusiasts were working and gathering in garages around America, and a 1975 issue of the Homebrew Computer Club Newsletter sums up hacking culture at the time: "By sharing our experience and exchanging tips we advance the state of the art and make low cost home computing possible for more folks ... Computers are not magic. And it is important for the general public to begin to understand the limits of these machines and that humans are responsible for the programming." [2]

Hacker cultures, then and now, generally embody some combination of the following ethics: ensuring access to technology and knowledge about it; putting power in the hands of users; decentralizing control; protecting privacy; exceeding limitations; creating beauty; and doing no harm to people. One example of the hacker ethic can be seen in the work of MIT's Mitchel Resnick: his programmable bricks were commercialized as *LEGO Mindstorms*, programmed by individuals and user communities; and The Computer Clubhouse trains inner city youth to "become designers and creators — not just consumers — of computer-based products." [3] Hacker ethics are also behind the creation of most encryption methods used to secure online communications, and hacker cultures have been instrumental in creating and evolving many open source technologies as alternatives to proprietary software and examples of collaborative design.

Similar ethics and practices can also be found in punk rock 'do-it-yourself' (DIY) cultures. The general premise behind DIY is that if you do not like the way things are done, then you should do it yourself. DIY culture involves creating your own world amid the dominant culture, thereby putting power back in the hands of individuals. For example, 'zine (short for magazine) culture is based on self-publishing and the cultural production, rather than consumption, of media. Most recently, DIY 'zine cultural ethics can be seen in weblog or online journal communities. While 'zines often reassemble content from other sources — and in the process create something new — 're-mix' practices are most commonly associated with DJ cultures. Cutting up, editing and sampling music has been described as "the evolution of our ability as humans to process, manipulate, and make meanings out of an ever-increasing flow of information." [4] Like hacker and DIY ethics, remixing involves getting people the materials they need to manipulate or subvert technologies and media to their own needs and desires, to create their own messages and meanings. Further critical performances and practices can be found in net art cultures which use technology to create images and stories that challenge our understandings of technology and the world around us. For example, the Critical Art Ensemble has employed tactical media to raise awareness and stimulate public debate about new technologies, and rhizome.org supports the "creation, presentation, discussion and preservation of contemporary art that uses new technologies in significant ways."

Design for hackability draws on all these cultural practices and values. It encourages designers and non-designers to critically and creatively explore technology and media, to reclaim authorship and ownership of new and existing technologies, and of the social and cultural worlds in which we live. Hackability implies more than simple customization or adaptation — it calls for redefinition. Design for hackability involves creating spaces for play where people are never forced to adapt to technology. It

involves recognizing and working with tensions between people and artifacts. It also subverts the traditional functions and uses of networks. In a world where technologies are increasingly mobile and invisible, design for hackability means allowing and encouraging people to work with resources at hand and to make technologies be what they want them to be. It cultivates reciprocity between users and designers and supports transparency and graceful responses to unanticipated uses.

Setting the stage with academic analysis, artistic expression, and corporate realities, we invite people to further explore with us what it means to design interactive systems that are creative as well as socially and culturally responsible — to explore what design for hackability might involve and how it may inspire our design objectives and processes.

PANELIST POSITIONS

Jonah Brucker-Cohen, Trinity College Dublin, Ireland

My research focus is on subverting existing relationships to human/networked interfaces by building real-world inputs to networks, redefining how information is used and disseminated, and shifting virtual processes into physical forms through networked devices and experiences. My process embraces a playful approach to changing people's notions of how networks are used and function. This is expressed through hacking and changing their fundamental properties, questioning their everyday use, and re-appropriating the language of networks in popular culture.

Some examples of my projects that address this approach include:

- **Wifi-Hog**: a tactical media tool for disrupting the claim of ownership to public wireless networks
- **SimpleTEXT**: a mobile phone enabled performance that allows for collaborative use of mobile devices
- **UMBRELLA.net**: a platform for 'coincidence of need' networks that only form when a specific need or condition is met.

These projects are examples of hacking conventional uses of networks to obtain both tactical and sociable results. My interpretation of design for hackability is of an open system that allows for maximum interaction and involvement while simultaneously attempting to challenge accepted forms of use of such a system. This represents a catch-22 of interaction design where the designer gives up control of their system to people using it by making it easily accessible and open. A hackable system also deconstructs the fundamental assumptions of how technology should or could exist from a user standpoint. Some examples include

reducing a device's functionality to reveals its true strengths, augmenting a traditional type of interaction to yield unexpected results, and networking individual actions into collective ones to open new communication channels among strangers. These approaches ultimately lead to the breakdown of technological imperialism, where barriers for entry are reduced and playful renderings are valued above functionality.

Jonah Brucker-Cohen works as a Research Fellow in the Human Connectedness Group at Media Lab Europe in Dublin, Ireland, and is a Ph.D. candidate in the Networks and Telecommunications Research Group (NTRG) at Trinity College Dublin.

Lalya Gaye, Viktoria Insitute, Sweden

My research explores how ubiquitous computing can trigger new aesthetic practices by enabling people to transform their everyday life into a raw material for creation and personal expression.

The projects I work on investigate different aspects of this theme:

- Sonic City [5]: the urban environment becomes an interface for real-time electronic music making as you are walking through a city
- Context Photography [6]: the digital still camera is modified to capture and translate the invisible context of a scene visually, as you are taking a picture
- -Tejp [7]: explores various means of creating and accessing location-based personal annotations in public space through direct physical interaction, focusing on expressivity and subtle embedding in physical space and social contexts.

Besides enabling new types of personal creativity and expression, each project reflects the notion of hacking everyday life: people using Ubiquitous Computing to enable whatever everyday resource is available at hand to participate in their aesthetic practice. Available at hand not only means found and repurposed, but also incorporated into the on-going creative act right away, as these resources present themselves to the hacker, and on the spot, in their natural context: a situated bricolage of one's everyday, that happens and is experienced 'right here, right now.'

Whether directly manipulated physical artifacts and environments, exploited interaction possibilities or subverted everyday activities, the hacking of these resources complicates their meaning and how we approach them while still preserving their primary nature and function. The immediacy of their availability and the potentials and

constraints they present, forces the hacker to improvise on the spot in order to overcome and exploit their heterogeneity (sometimes unpredictability) in a way that compliments her creative act. Designing for this kind of hackability implies considering aspects of urgency, contextuality and heterogeneity, but also of subtlety, personal meaning, and embodiment.

Lalya Gaye works as a researcher at the Future Applications Lab, Viktoria Institute in Göteborg, Sweden, and is a Ph.D. candidate in Informatics at the University of Göteborg. Her background is in Engineering Physics and Electroacoustics (University of Geneva, Switzerland, and Royal Institute of Technology, Stockholm, Sweden).

Elizabeth Goodman, Consultant, USA

As a creative response to the status quo, hacking does not depend on the permission or support of designers. Indeed, certain kinds of hacking — as when early hackers fed punch cards into mainframes — derive their satisfaction from their very difficulty or rebellion. Hackability is contextual; it is not inherent in artifacts but rather arises from tensions between specific artifacts and specific groups of people. To effectively design for hackability, we must critically engage with the social pressures that drive people to do-it-themselves.

I am developing FIASCO, a location-based game, with Michele Chang of Intel's People and Practices Research Group. FIASCO is a game of physical action with virtual consequences. Using New York City as a game board and networked telecommunications systems as dice, players conquer street corners on a virtual map by performing and documenting game moves ('stunts') at the corresponding physical locations. Other players judge the stunts' wit and daring, with winners the kingpins of the virtual streets.

FIASCO is an experiment in producing hackability through playful competition and limited functionality. Though we include all functions necessary for play, the game interface provides no solutions to the difficulties of coordinating and documenting group activities. We have deliberately avoided mechanisms for validating game moves or punishing spoilers. Because community acclaim selects the winners, FIASCO reflects multiple and mutable notions of elegance and creativity. FIASCO rewards players who successfully game the city and the system. For us as designers, FIASCO is an experiment in loss of control. Though we created the game, we cannot prevent players from redefining its nature, mores, or values. Indeed, we hope to learn from them.

Elizabeth Goodman is an independent researcher and consultant on public social interactions and pervasive gaming.

Dan Hill, BBC Radio & Music Interactive, UK

My work focuses on introducing ideas of adaptation and hackability into the everyday practice of professional design within a large media organization whilst my personal weblog, cityofsound.com, has initiated many discussions around design and adaptation. Taking Tom Moran's DIS2002 keynote as a starting point, my presentation at AIGA Experience Design London in late-2002 concerned "Designing for Adaptation," and I've since led many discussion around adaptation and hackability, often relating to interaction with music and radio experiences via web-based and personal mobile devices, drawing lessons from architecture and urban history into the realm of social software, product design, and interface design.

For this session, I'll be talking about the creative and cultural possibilities and difficulties of incorporating adaptation and hackability into professional design and media organizations. In line with this, I'll be drawing from an essentially craft-based perspective of urban design and architecture, agile software methodologies, game design, iterative web design, and vernacular design. Critical perspectives create a back story for the work, but the work itself is driven by the pragmatic everyday concerns of getting quality design work done to tight deadlines and within complex, compromised environments. Putting "creative power directly in the hands of non-designers" is a difficult sell to both designers and brand-owners! I'll share a few ideas as to how it might be done.

These will include:

- detailing just what kind of components to build in order to enable adaptation and hackability;
- how to integrate design disciplines with software engineering to form truly multidisciplinary teams, such that certain principles cross-pollinate, from loosely-couple architectures through modular and interoperable systems to assessing systems over time;

- how to open up the practice of what we do such that amateur designers and non-designers can engage with and build around it.

Dan Hill works as Technology and Design Manager at BBC Radio and Music Interactive, London, England. His academic background includes a BSc in Computer Science and MA in digital cities, cultural industries, and urban regeneration. He has been working as a professional designer with the Internet since 1994. He is currently running the team responsible for designing and building the BBC's radio and music-based interactive offerings across web, digital TV, and mobile platforms.

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