

New Age to New Edge

Orange Institute 2010



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In 1968, American counter-cultural pioneer and ecologist Stewart Brand persuaded NASA to release the first photo of Earth from outer space. Brand, the publisher of the Whole Earth Catalog, put it on the cover of the influential publication, now a collector's item. A half-century later, also from the Bay Area, Google added the place marker.



The Future of Change



We are no longer in the realm of the standard three-, five-, and ten-year forecast for corporate strategy departments. Our deepest conviction is that change is changing, and therefore, as members of organizations that have an impact on society, we have to become better at reading change. Call it 'change literacy.' Both as an executive working at a global communications provider, and as a daily participant in the innovation ecosystem of Silicon Valley, I believe that being able to discern change at all levels of society and culture is now critical. It is not enough to stick to one's own metier — in this case technology — we need to look at society and culture holistically.

Finally, we need to recognize the increasing influence by a multiplicity of information flows between people and organizations, as physical and communication networks become essential extensions of life.

This year, when we thought about the program for Silicon Valley we found ourselves drawn intensely to the work of several writers and thinkers who have taken a long perspective on the Valley. By long perspective we mean 50+ years, back to the roots of the PC industry and Internet in the counterculture-driven beat of the '60s, as John Markoff has done. This dramatically variable

perspective is also exemplified by Stewart Brand, probably the most famous leader and publisher in the 'first' green movement of the '60s — and whose original cover on his Whole Earth Catalog is the basis for this year's Silicon Valley catalog. Brand currently runs a foundation, The Long Now, dedicated to building a 10,000 year duty cycle. Other similarly spectacular time scales here in the Valley are represented by Ray Kurzweil and the Singularity foundation, with its own radical view of the next 50 years; and Kevin Kelly, whose book *What Technology Wants* is another long view of technology's evolution.

The last time this happened was in the 60's. That was the first time the democratization of computation, academics, gender — indeed consciousness — were on the march in a massive global wave of change. Change is on the march again, and the design of the Silicon Valley 2010 Orange Institute immersion and research publication is based on a holistic approach as well. In our discussions and in print we looked at 50-year cycles of change in the domains of Community, Corporeality, City, Computation and Creativity. Starting with the old "New Age."

The future is always very present in Silicon Valley, and at Silicon Valley Orange Institute 2010 we met and explored a new wave of innovative thinkers and entrepreneurs at the forefront of this rich continuum, so we could better appreciate the roots and motivations behind the advent of this "New Edge." Let me take this opportunity to thank our amazing faculty and committed and engaged community of global and local participants for their energy and imagination.

We were exposed to an avalanche of all sorts of unstructured data on the fixed and mobile web, and the power and value that can be derived in extracting meaning from these unthought of new flows in the new realm of BIG DATA. In a world where it has become worth keeping everything (as the cost of curation is greater than the cost of storage!) we were also exposed to better understanding the growing importance and impact of real time in a world where "real time is all the time," as Steve Rubel told us.

By taking a multi-disciplinary perspective, we hope to promote a literacy that will bring us all to a more complete view of change. As Kevin Kelly told us, "technology has its own agenda, technologies are inevitable."

That inevitability does not render us superfluous, but instead empowers us; as Kelly also reminds us in a note of optimism: "Humanity is our greatest invention and we are not done yet."

So, read this work — our collective work — as a work in progress....

Georges Nahon,
President, Orange Institute
November 2010



KLH Turntable (1967)



Mixr iPad App (2010)

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2. **Jean-Marc Bordes, Chief Operating Officer, Institut National de l'Audiovisuel** has also held positions at Hachette (now Lagardère media) and Pathé groups, working in Finance and Administration for the video division and responsible for acquisitions and business development.

3. **Menno Van Doorn, Director of the Research Institute for the Analysis of New Technology, Sogeti** has co-authored four books on technology and business, and is also the recipient of the 2007 Computable Award "IT Researcher of the Year" for research done in the field of open innovation and business transformation.

4. **Mark Frauenfelder, Editor in Chief, MAKE magazine** is a blogger, illustrator, journalist, and author. Frauenfelder is editor-in-chief of MAKE, a quarterly magazine focusing on DIY innovation, and co-editor of the collaborative weblog Boing Boing.

5. **John Hagel III, Co-chairman, Deloitte Center for the Edge** is author of a series of best-selling business books, and has thirty years' experience as a management consultant, author, speaker, and entrepreneur, specializing in helping companies improve performance by applying information technology to reshape business strategy.

6. **Dr. Tony Jebara, Associate Professor, Computer Science, Columbia University; Chief Scientist, Sense Networks** was named one of Esquire Magazine's Best and Brightest of 2008. He directs Columbia's Machine Learning Lab, and is co-founder of Sense Networks, a startup whose enterprise software computes user models from mobile data.

7. **Kevin Kelly, Editor-At-Large, Wired** conceived of the Whole Earth Catalogs of the late 1980s and helped to launch Wired Magazine, where he served as Executive Editor until 1999. His writing has appeared in The New York Times, The Economist, and Time.

8. **François Laburthe, Director of Operational Research & Innovation, Amadeus** focuses on software methods and algorithms related to decision support, data mining, pricing models and search technology. Previously, he was with Bouygues as head of the e-lab, the corporate operations' research laboratory.

9. **John Markoff, West Coast Correspondent, New York Times; Lecturer, Stanford University** covers technology and the computer industry for the New York Times, and has co-authored numerous books on tech culture, most recently *What the Dormouse Said: How the 60s Counterculture Shaped the Personal Computer*.

10. **Doug McCune, Principal Software Engineer, Universal Mind** brings his passion for Flex development to Universal Mind, where he specializes in geo-spatial data visualization.

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12. **Francesc Noguera, CIO, Universitat Oberta de Catalunya** brings over thirty years' experience in the creation and management of information systems for universities and businesses in Spain, Europe, and America.

13. **Samin Nosrat, Chef, Writer, Teacher** looks to tradition, culture, and history for inspiration. Trained at Chez Panisse restaurant, and then in Italy, Nosrat spent five years as the sous chef and "farmwife" at Eccolo in Berkeley before embarking on her own writing and teaching projects.

14. **Michael Nowak** is a PhD candidate at Stanford University. On and off since 2008, he has performed user experience research for Facebook.

15. **Molly Wright Steenson, PhD Candidate, Princeton University; Strategist & Researcher, Girlwonder Productions** examines how technology and interactivity fit into our cities and everyday lives. Steenson is currently a PhD candidate at Princeton University's School of Architecture, where her dissertation focuses on computing, architecture, Nicholas Negroponte, and Cedric Price.

16. **Llorenç Valverde, Vice President of Technology, Universitat Oberta de Catalunya** has advised the Majorcan government on new technologies, and is author of a number of articles on new relationships linking tech, culture, and education.

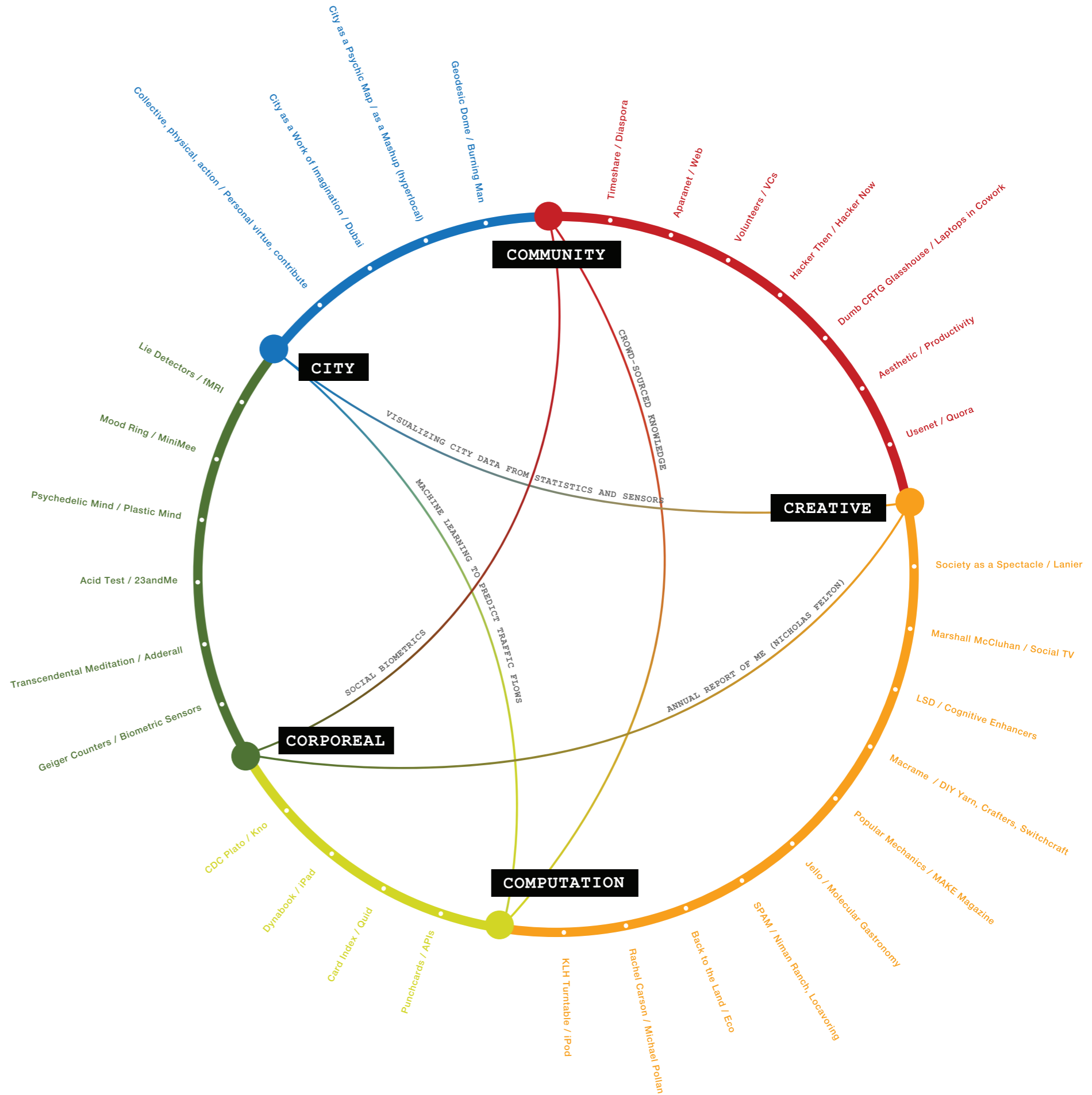
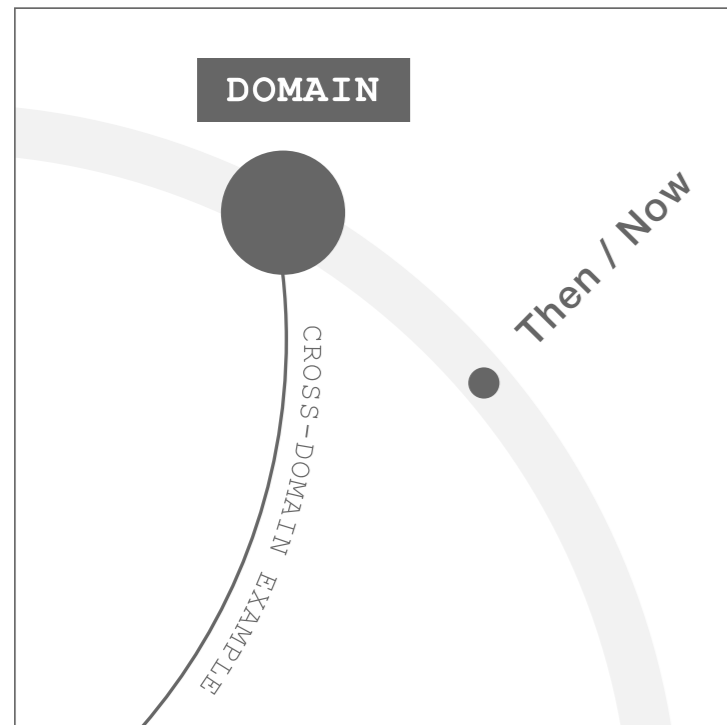
17. **Henri Verdier, Chairman, Cap Digital** is also the CEO of MFG R&D which develops innovative solutions for financial and economic issues. As an applied mathematics company, it also creates tools to analyze social networks and predict their dynamics.



New Age to New Edge

The Five Domains model shown here illustrates the areas of study covered by the Silicon Valley Orange Institute 2010 meeting and this research publication. While each domain is a distinct entity with its own connections between “then” (New Age) and “now” (New Edge), they are all interconnected and interdependent. The interior connections (the ‘star’) show examples of these interconnections, but the reader is encouraged to explore other possible interconnections as well.

KEY



community

from new age to new edge

Voluntary association of like-minded individuals to explore the power of new technology.

Anyone exposed to the highly-networked innovation culture of Silicon Valley recognizes this as the engine, driving startups and major platforms alike. The free availability of computer resources, be it cloud computing infrastructure or rich massive data sets tapped via APIs to create value via mashups, is a contemporary '2.0' method. This began in the 60's. The fabled Homebrew Computer Club created new forms of sharing expertise in Menlo Park, home to the People's Computer Center. In an environment of direct action (takeover of university buildings, sit-ins, 'elevating' the Pentagon by meditating), and an explosion of peer groups not recognized or suppressed (black power, gay liberation, gray panthers, etc.), alternative models of governance provided a context to the voluntary associations that would later be appropriated and funded by venture capitalists to become the powerhouses of the Valley. This also presaged the flows of tacit knowledge that John Hagel has coined "The New Edge" which can take the form of social media and shared user-generated content. Are today's meetups and networking events about to unlock similar liberations? Or do they represent massive devaluation of social ties?



The inherent notion of play in the geodesic domes of Burning Man is reminiscent of the artistic explorations of Buckminster Fuller's field experiments with geodesic domes decades earlier. Today, the adhoc city of Burning Man, with 50,000+ inhabitants, features hundreds of domes.

Two Labs, Two Theories, One Goal



JOHN MARKOFF

Before the arrival of the Xerox scientists and the Homebrew hobbyists, the technology underlying personal computing was being pursued at two government-funded research laboratories located on opposite sides of Stanford University. The two labs had been founded during the 60's, based on fundamentally different philosophies: Douglas Engelbart's Augmented Human Intel-

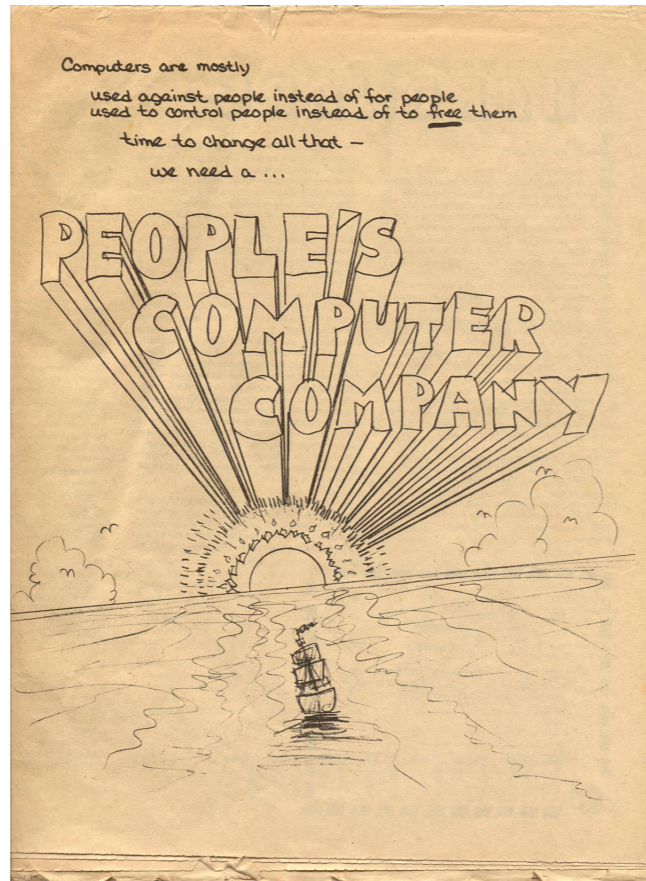
lect Research Center at Stanford Research Institute was dedicated to the concept that a powerful computing machine would be able to substantially increase the power of the human mind. In contrast, John McCarthy's Stanford Artificial Intelligence Laboratory began with the goal of creating a simulated human intelligence.

One group worked to augment the human mind; the other to replace it.

-John Markoff, excerpt from *What the Dormouse Said*

“One group worked to augment the human mind; the other to replace it.”

-John Markoff



Above: The People's Computer Company was started by Fred Moore in Menlo Park, CA. The poster proclaims "computers are mostly used against people instead of for people . . . time to change all that." This may have been the first cybercafe in the U.S.

Right: A time of great upheaval, the San Francisco Bay Area in the 1960s bore witness to disruptions centered around universities on both sides of the bay. In his talk at Orange Institute, John Markoff cited avoiding the military draft as a major factor in drawing talent to Stanford and UC Berkeley.

Upper Right: "Can You Pass the Acid Test?" is the rhetorical question asked by a poster announcing the Muir Beach Acid Test in 1965. LSD would be criminalized a year later.

Lower Right: Before Xerox PARC, Doug Engelbart's SRI Lab introduced innovations in workspace design such as this yoga workstation.

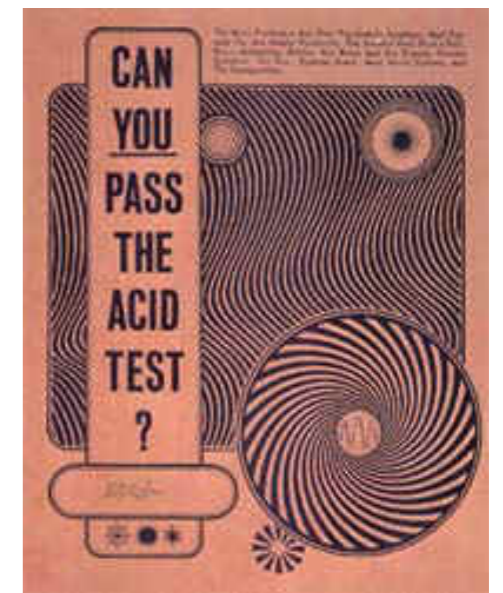
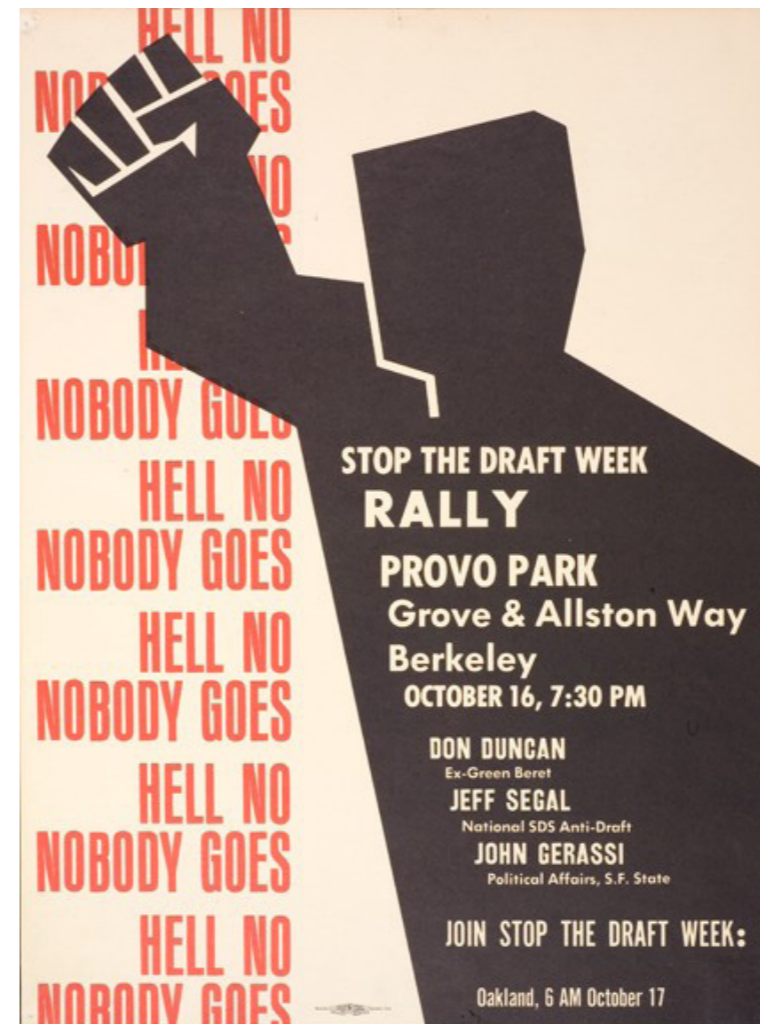
The Vietnam war, drugs, sexual liberation, women's liberation, the Black Panthers, the human-potential movement, the back-to-the-land movement—at the end of the 1960s, all of these were concentrating with wicked force on the San Francisco Peninsula. And in the midst of the chaos, Doug Engelbart felt that he was beginning to lose control of his vision, the Augmentation Framework.

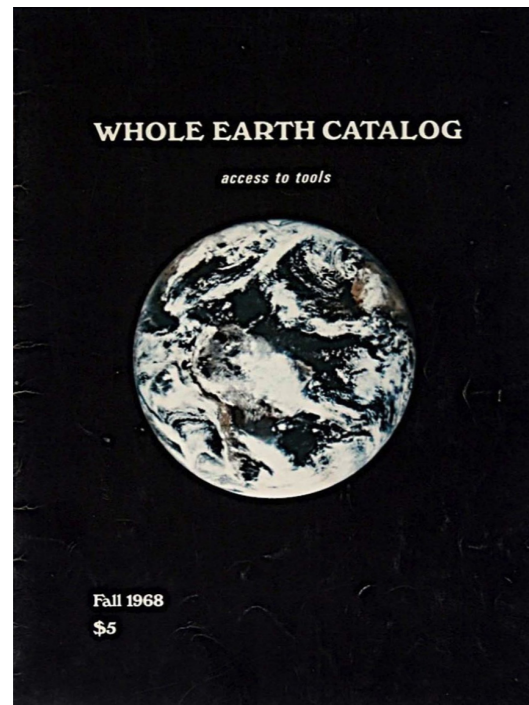
Everything seemed to be in dispute, even the name of the laboratory, which had for several years been the Augmented Human Intellect Research Center (AHIRC). Although it expressed Englebart's vision precisely, it seemed top-heavy to many of his young researchers. At his low "yoga" workstation, Bill Duvall began flying what amounted to a pirate flag by displaying an abbreviated ARC, for Augmentation Research Center.

-John Markoff, excerpt from *What the Dormouse Said*

“...at the end of the 1960s, all of these were concentrating with wicked force on the San Francisco Peninsula.”

-John Markoff





Whole Earth Catalog (1968)



Wired Magazine (2010)

Kevin Kelly on Virtual Commonwealth

I became fascinated by the challenge of picking the few tools that might elevate my spirit. In 1980 I freelanced for a publication (the Whole Earth Catalog) that used its own readers to select and recommend appropriate tools picked out of the ocean of self-serving manufactured stuff. In the 1970s and '80s, the Whole Earth Catalog was, in essence, a user-generated website before the web, before computers, employing only cheap newsprint. The audience were the authors. I was thrilled by the changes that simple, well-selected tools could provoke in people's lives.

At the age of 28, I started selling mail-order budget travel guides that published low-cost information on how to enter the technologically simple realms most of the planet lived in. My only two significant possessions at the time were a bike and sleeping bag, so I borrowed a friend's computer (an early Apple II) to automate my fledgling moonlight business, and I got a cheap telephone modem to transmit my

text to the printer. A fellow editor at the Whole Earth Catalog with an interest in computers slipped me a guest account that allowed me to remotely join an experimental teleconferencing system being run by a college professor at the New Jersey Institute of Technology. I soon found myself immersed in something altogether bigger and wilder: the frontier of an online community. It was a new continent more alien to me than Asia, and I began to report on it as if it were an exotic travel destination. To my immense surprise, I found that these high-tech computer networks were not deadening the souls of early users like me; they were filling our souls. There was something unexpectedly organic about these ecosystems of people and wires. Out of complete nothingness, we were barn-raising a virtual commonwealth. When the internet finally came along a few years later, it seemed almost Amish to me.

As computers moved to the center of our lives, I discovered something I had not

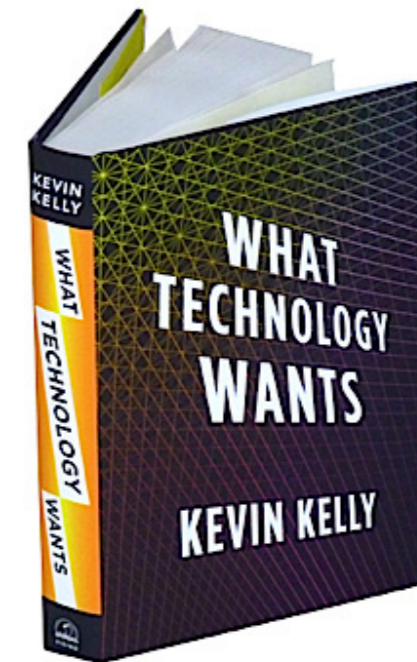
“I soon found myself immersed in something altogether bigger and wilder: the frontier of an online community. It was a new continent more alien to me than Asia...”

-Kevin Kelly

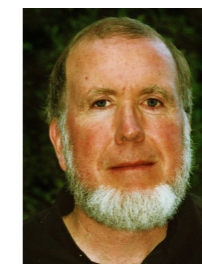
noticed about technology before. In addition to technology's ability to satisfy (and create) desires, and to occasionally save labor, it did something else. It brought new opportunities. Right before my eyes I saw online networks connect people with ideas, options, and other people they could not possibly have met otherwise. Online networks unleashed passions, compounded creativity, amplified generosity. At the very cultural moment when pundits declared that writing was dead, millions began writing online more than they ever had written before. Exactly when the experts declared people would only bowl alone, millions began to gather together in large numbers. Online they collaborated, cooperated, shared, and created in myriad unexpected ways. This was new to me. Cold silicon chips, long metal wires, and complicated high-voltage gear were nurturing our best efforts as humans. Once I noticed how online computers stirred the muses and multiplied possibilities, I realized that other technologies, such as automobiles, chain saws, biochemistry, and yes, even television, did the same in slightly different ways. For me, this gave a very different face to technology.

I was very active on early teleconference systems, and in 1984, based on my virtual online presence, I was hired by the Whole Earth Catalog to help edit the first consumer publication that reviewed personal computer software. (I believe I might have been the first person in the world hired online.) A few years later, I got involved in launching the first public gateway to the emerging internet, an online portal called the Well. In 1992, I helped found Wired magazine—the official bullhorn of digital culture—and curated its content for its first seven years. Ever since, I've hung out on the cusp of technological adoption. My friends now are the folks inventing supercomputers, genetic pharmaceuticals, search engines, nanotechnology, fiber-optic communications—everything that is new. I see the transforming power of technology everywhere I look.

-Kevin Kelly, excerpt from *What Technology Wants*



What Technology Wants is Kevin Kelly's most recent book about a provocative view of technology as a living, natural system.



KEVIN KELLY

“Out of complete nothingness, we were barn-raising a virtual commonwealth.”

John Hagel on Serendipitous Relationships

In this context, serendipitous encounters with people prove to be far more fruitful than an isolated encounter with new objects or data. We not only have the opportunity to access the tacit knowledge other people have gained from their experiences—and to share our own—but can begin to create relationships that may themselves spawn new tacit knowledge as we begin to collaborate on areas of shared interest. Serendipity becomes much more than a one-time encounter or an end in itself: It becomes the crucial means of access to rich flows of tacit knowledge both now and in the future.

From our perspective, attraction is particularly powerful when it leads to serendipitous encounters with people on the edge—and then to long-term relationships with them. This form of attraction offers privileged access to tacit knowledge and rare insight into new opportunities. It also lowers our risk. Think about it: If you're exploring a new territory—an edge—it's very helpful to learn from the experience of others in similar contexts. Serendipitous encounters thus help amplify our efforts by connecting us with our fellow explorers—exactly the people who can help us in our own explorations. Maybe—you've been hired as the "change agent" at a traditional corporation, with your role to help the company expand its understanding—and use—of social media. You're bringing the edge to the core. But to you, at least, the core in this case will, paradoxically, have "edgy" characteristics that will be new to you. How do they do things around here? How do decisions get made? How can you best build momentum toward the new? One way would be to look for external conferences attended by people who are exactly

in your situation: the "Change Agent Conference." That could help with the more generalized versions of your questions. Another way would be to draw toward you the "renegades" within the corporation who have, in their own roles, been trying to steer the corporation toward the new. It is likely they will have valuable tacit knowledge for you to learn from and questing dispositions that may help you on your own quest.

Simply by registering for a conference in a given area of interest, we are increasing the probability of a serendipitous encounter that will prove both relevant and valuable to us. We still cannot anticipate whom we will meet or what they will know, except in the broadest possible terms, but we have increased the probability of serendipity. We have filtered the population at large down to those most likely to share our interests and passions—and those most likely to carry the tacit knowledge we need and to need the tacit knowledge we carry. Even in the earliest examples of serendipity—the bibliophile entering an antiquarian bookshop—the beneficiary of a serendipitous encounter was shaping the probability of such an encounter by entering the bookshop in the first place. The likelihood of a serendipitous discovery of an unknown book would be materially lower if the bibliophile were in a butcher shop. This observation may seem self-evident, but there are lots of people who, despite having dropped their car keys in the dark parking lot, are still looking for them under the lamp.

All of which raises a primary point: Serendipity can be shaped, at least within limits. There will always be an element of luck and the unexpected, but our actions can materially alter

“Serendipitous encounters thus help amplify our efforts by connecting us with our fellow explorers — exactly the people who can help us in our own explorations.”

—John Hagel III

the probabilities of valuable encounters. Given these requirements for making attraction an effective form of discovering the things we didn't know we didn't know, a problem arises: How can we possibly have enough time to put this into practice? There are only twenty-four hours in the day. Worse yet, the more effective we are in attracting the attention of large groups of people, the more challenging it becomes as these people seek us out and want to interact with us. We can easily become overwhelmed with the throngs lined up at our door. We will be consumed in meetings and communication and never find the time to build on the new insights and knowledge we are encountering. How do we avoid getting so overwhelmed by what we've set in motion that, like Garbo, we only want to be left alone?

To master attraction, we need two elements to come together in a powerful and reinforcing way. First, we need amplifiers that can help us reach and connect to large groups of people around the globe that we do not yet know (and may not even be aware exist). These amplifiers relate to our choice of where to live, what gatherings we attend, how we conduct ourselves online, and what we do to draw the attention of others. Second, we need filters that can help us to increase the quality as well as the number of unexpected encounters and ensuing relationships that are truly the most relevant and valuable. These filtering techniques help separate the wheat from the chaff in our interactions with others and become even more crucial as we begin serendipitously drawing more people toward us. By simultaneously amplifying (to increase the sheer number of unexpected encounters) while filtering (to spend time only on those interactions that yield value to us and to others), we can shape serendipity in order to attract from the edges of our fast-moving world the people and knowledge we need in order to thrive.

—John Hagel III, excerpt from *The Power of Pull*

“...we need amplifiers that can help us reach and connect to large groups of people around the globe that we do not yet know.” —John Hagel III



John Hagel on serendipity as a strategy to get access to rich flows of tacit knowledge. By using amplifiers and filters, Hagel argues that we can master attraction and actually shape serendipity.

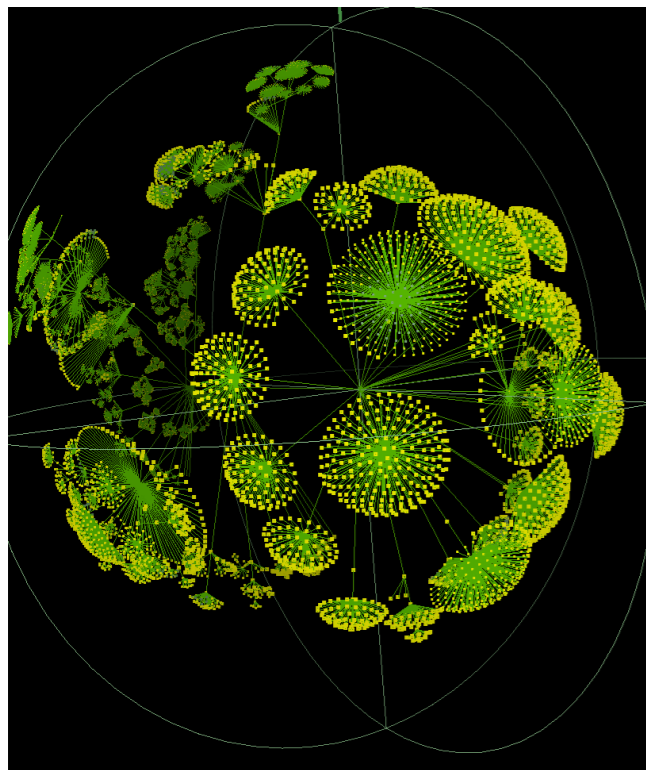
The Crisis Domain

MENNO VAN DOORN, DIRECTOR OF THE RESEARCH INSTITUTE FOR
THE ANALYSIS OF NEW TECHNOLOGY, SOGETI, SV '10

Add another C to the domain model: **Crisis**.
Technology is at the edge, and the crisis is giving us answers
about what to do with Technology.

The sum of the whole

The current economic crisis has been the biggest source of inspiration for me by far since I've been researching new technologies. What started with the collapse of banks in October 2008 leads to our new book on the current techno-economical shift? The shift represents new ways of collaboration, communities, the rise of the creative class, the globe not as a city but as a village, the corporeal in the sense that the individual is becoming the centre of everything, and the computation of big data. All are technological artifacts and consequences of the Internet age. They are driving the change to a new age with many edgy things, and the crisis is the intriguing link between them.



Above: The command center for one of the first Mercury satellite shots, 1961. This was the opening of then-President John F. Kennedy's challenge to put a man on the moon - in this case it was putting a chimp into space. Communications between monitoring stations was via Teletype machines.

Left: Image of planetary Internet routes via the Cooperative Association for Internet Data Analysis (CAIDA), and its Walrus tool, which it describes as "a tool for interactively visualizing large directed graphs in three-dimensional space."

“What’s showing at the edge of things is not technology, not economy, but a new value system.”

—Menno Van Doorn

The waves and tendencies of techno-economy

The world is changing in a probably not-very-well-understood way for many people. I'm not arguing that I have a better understanding of all the implications, but putting the crisis into the basket does seem to make sense. It all started with Nicolai Kondratieff and later Schumpeter and his creative destruction theory. Kondratieff took a picture of the economy like an Apollo picture of planet earth. His insights were not well received by the Russian authorities. They executed him for his conclusion that capitalism is like a living organism that survives by change and adaptation to its environment (like Gaia, the living planet, one could say). The tendencies lying underneath the survival of capitalism all have to do with big waves of installation and deployment of new technologies. It's McLuhan's truth — "First we shape our tools and then our tools shape us" — with a crisis in between.

The Apollo picture

All big Technologies of the industrial era — oil, railroads, steel, canals in England — have a track record in causing big economic crises. If this is the case, it implies that the big T of today is part of the sequel. The installation of a new technology normally takes about 30 years and is followed by a crisis, the frenzy situation we're in now. The deployment of technology also takes about thirty years, and that's what in front of us now.

Deployment of new technologies

Digging canals created a big hype in England in the late 18th century. People earned more money investing in canals than by holding a 'proper job.' We've all been there before. After 30 years of investment in an infrastructure there's almost enough of it and that's why there is a crisis. Today the Internet infrastructure has reached a point of completion. Society is connected. Focus will shift from digging canals to taking the infrastructure into production. We need to nurture the infrastructure and exploit it. As Wedgwood did in England, now is the time for all industries to do today. Change the models and make the paradigm work with the use of the creative class, giving a different look at cities, communities, computation, and the corporeal. Technology caused the current economic crisis, but that's not a bad thing. It's inevitable and it's part of progress.

Don't Be Evil

It looks like a big step from the title of the research that I've been working on to all the implications of the installation-crisis-deployment cycle. "Don't Be Evil" is how we coined the imperative of the new era, the new edge of the new age. One take on the title is that transparency is pushing organizations towards doing good. Web watchdogs are everywhere. Another take is that technologically we can do much better on many levels, but we seem to be stuck in an old system of thinking.

But as we open our eyes for the new possibilities the old ones seem to look evil: Not changing therefore becomes evil.

Intelligent comeback of the State

This is more theoretical. One piece of evidence that everybody will try harder to do better comes from the neo-Schumpeterians. They say that all the historical crises have led to fundamental improvements in society: The end of child labor and colonialism, new institutes like IMF and Worldbank, and introducing minimum wages. These improvements in the system arose from former crises. The Schumpeterians call it "The intelligent comeback of the state." Now, today, this is edgy, especially perhaps in the US with the Tea Party. Still, we should look at this comeback as a way that the State redefines why the State is there. They will look for a purpose, a need. What is the crisis telling them? And the answer might well be that the State should secure the economy in the long term--ensure that the economy will be everlasting.

The end game

Something essential, something much more important than economic growth, is the continuation of the economy itself, the continuation of our planet. I'm not arguing that we should save the planet. The planet can take care for herself. Mother Gaia will survive our species, don't worry about that. But if we continue what we've been doing, if we think that we should bring the old economy back on its feet again, then we're wrong, deadly wrong. It will take 70 years, maybe a hundred, before we've consumed the planet and the economy itself: This is the new challenge that we're facing, and there is no historical comparison. The 100 years of extreme economic growth that we've seen is unprecedented. In no period in history, even in the Roman empire, have we seen millions and millions of people living a wealthy life. Compared to King Arthur, we're all kings now. But our kingdom is under attack.

Back to the 5 c's

This is the biggest challenge. So what should we do about it? We should start using the cognitive surplus, communities, computation power and solve the issue. We all want to do better and Obama is right, yes we can do better. By doing good we can do extremely well. Google is walking this talk. Passionate people like Samin Nosrat from the slow food movement are doing it. What's showing at the edge of things is not technology, not economy, but a new value system. That's the shift we're really in.



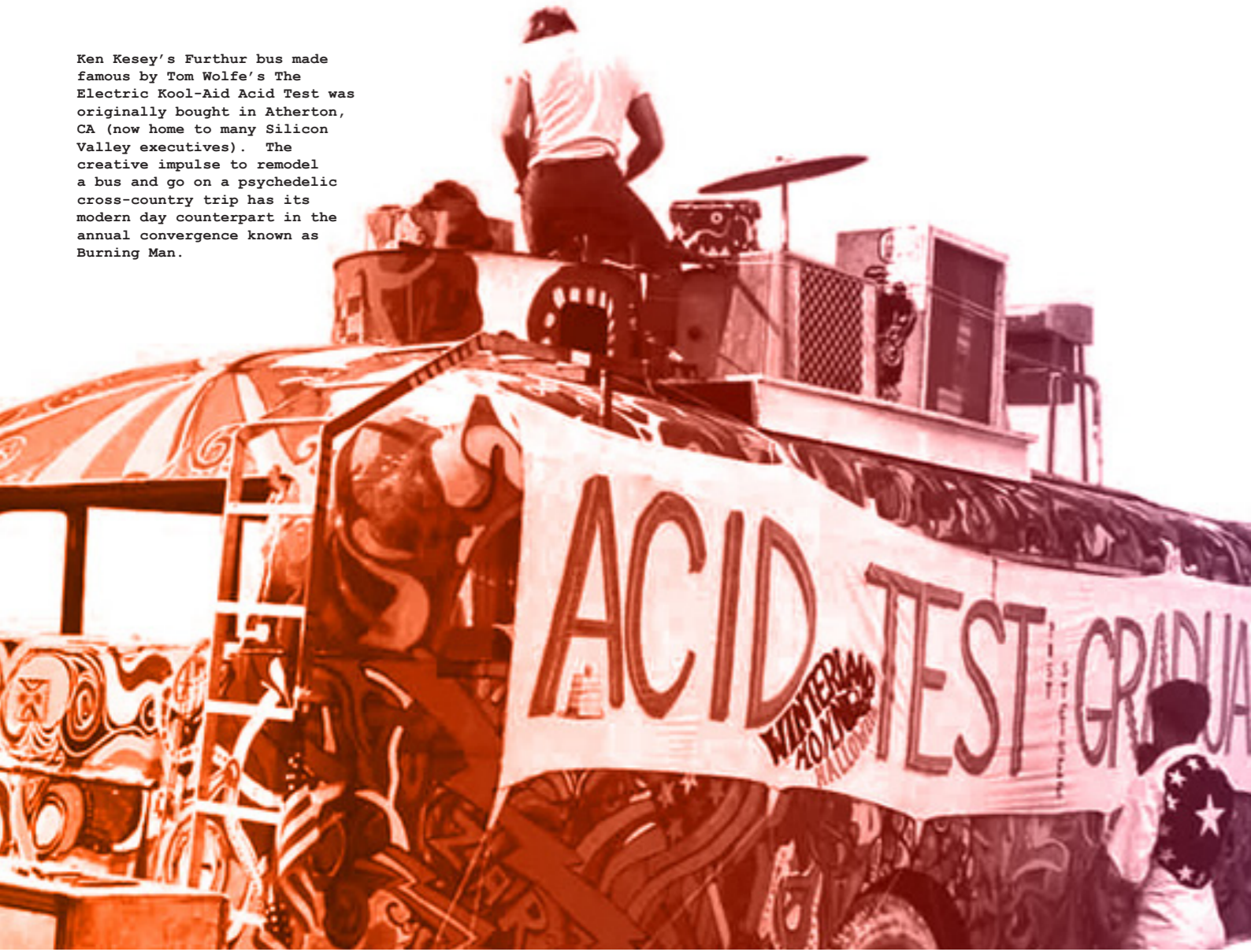
MENNO VAN DOORN

creative

let it flow

“Tune in, turn on, drop out,” the bywords for a cultural revolution in the 60’s—and an accurate description of the changes sweeping outward from Silicon Valley today. From the cybernetics-inflected feedback experiments that drove everything, from the human potential movement to the early experimentation with camcorders and personal journalism, to today’s micro-blogging and social media replete with retweets and viral video, we are more tuned-in than ever. We are obsessed with provenance and craft, whether it’s DIY everything or where our food comes from. Turning on has evolved from direct chemical alteration of consciousness to the very public elevation of awareness via crowdsourcing methods and collective co-creation and annotation. As for dropping out, venture capitalist John Doerr’s famous predilection for Harvard or Stanford geeks who didn’t finish school because they were busy inventing Google or Facebook says it all. Creativity as the sustained attack on the status quo has been a vital thread in the Bay Area ever since Engelbart’s explorations of computing as an augmentation of human intellect. Its manifestations today as a massive democratization of individual generative activity, adhoc and improvisational, and backed by enormous free computational power, are still unfolding. What happens to mass culture when the reach is massive for everyone and anyone?

Ken Kesey’s Furthur bus made famous by Tom Wolfe’s *The Electric Kool-Aid Acid Test* was originally bought in Atherton, CA (now home to many Silicon Valley executives). The creative impulse to remodel a bus and go on a psychedelic cross-country trip has its modern day counterpart in the annual convergence known as Burning Man.



“That generation has bred a new rock concerned only with now, not with nostalgia. **It provides marches for their protest, lullabies for their dreams, ballads for their girls, and, most of all, anthems to their freedom.** It is the first music born in the age of instant communication. And it is the most popular music of all time. Outliving big beat’s thump thump, the new rock is an eclectic cornucopia. You never know what will pour out of it next — rhythm & blues, folk, jazz, country & western, even the eerie synthesized squeals of Stockhausen. The harmonics of today make the rock n’ roll of the early 1950’s sound as if they were Neanderthals working it out on hollow trees.”

—Robin Richman, LIFE “The New Rock” June 28, 1968

The New Open Talent

DIONI NESPRAL, INNOVATION MANAGER, EVERIS, SV '10



“Ideas come, go out, get reinforced externally, and return into the organization to be led by people who extend this knowledge horizontally.”

Data as revolution of the traditional knowledge.

The flow of data of any kind is probably one of the most important social revolution processes of recent times. Data is everywhere. And if information is power, knowledge and analysis of this data will be critical for leadership in the new context we are all headed towards.

Connecting nodes of talent.

In the past 5 years networks of all kinds have increasingly connected millions of people via APIs and semantic linkages from evolving search algorithms at breakneck speed. As a result, communities interact in a multicultural and multi-functional way, often in a highly automated fashion that users themselves don't always comprehend. The user's discrete data, once it is shared and contextualized via this interconnection, results in exponential knowledge. All this from the interaction of users who share common objectives,

using digital tools that are simple and fast.

No wonder that for business managers this new connected and unlimited structure causes confusion. Trapped in a legacy knowledge and IT construct marked by sequential logic, management finds itself competing in a new board game where the pieces are transformed, roles are redefined (consumers become creators, producers become consumers), and organized according to timescales and contexts of specific situations not within their control. Everything is changing at the maximum network speed, due to power laws which depend on the amplitude of nodes external to the organization.

The promotion of knowledge in organizations.

Companies are feeling the impact of this switch in its knowledge management structures. Within these companies, some are impacted negatively, some positively. In a hyper-

connected society with a total access to information anywhere, the talent within the organization starts to engage in this new paradigm, share knowledge and expertise in other faster places, beyond the firewalls of the enterprise. Why? Because the conversations are more intense and more enriched, due to the contributions of many different brains. Today, where thousands of excellent papers and speeches are available to everyone, and those are interconnected with each other, focused on specific themes, commented on, labeled with indicators of attention, the experience outside the enterprise can certainly be more extraordinary than inside.

Business organizations need to begin to move quickly and face these changes within their internal community of talent, which increasingly uses tools similar to those that exist outside the borders of the company. This imperative, problematically, does not immediately offer better knowledge management



In 2009, Orange San Francisco Center produced a report on the Porous Enterprise, calling for companies to open their walls to flows of external data, as symbolized in this architectural rendering.

regime — transformation will not occur simply by surfing the data within these new communities. Managers will need to focus not only on the what is out there, but start to articulate the how and especially the why these new clouds of social knowledge are relevant to their business. Understanding this can be a crucial element to empower the members of this social revolution.

Internal Talent, Externally Connected.

It is not to merely 'recruit and retain' internal talent. In today's connected and globalized world, talent has many faces and variation. More importantly the mission of talent is changing: talent is not just one that brings distinction to the traditional business of the company, as expressed by the motto "create value for my company." Within the socially-connected organization it should be more possible than ever before to serendipitously identify talent that could lead new businesses or adapt to

different roles on an agile basis. Indeed, companies that continue to try and manage this talent under traditional criteria will be at an increasingly competitive disadvantage. The open talent, the connected talent, is a powerful new reality, trying to limit it within the company is a wrong bet.

The new internal talent needs open and special highways. This is not a question of simply bridging isolated roads within the organization, but opening up outside connectivity for talent to flow out, allowing it to develop under the umbrella of the new open corporate culture. It's about connecting external data with internal ideas. It is a two-way road with multiple connections.

This implies a massive structural and cultural change in organizations. Ideas come, go out, get reinforced externally, and return into the organization to be led by people who extend this knowledge horizontally. Communities of talent connect to new nodes that will grow

and innovate in an exciting and dynamic ecosystem that networks organizations and stakeholders together.

Traditional knowledge management structures have failed to produce the desired innovation effect. We also know that the transformation of internal talent into 'networked talent' is the profound transformation in the workplace today. This secular and sweeping transformation of talent's work practices, not their output, will yield a much greater innovation payoff.

The goal is to generate a new culture, a new way to manage the relationship between people within and without the organization. Increasing market leadership depends on changing to embrace and engage an environment of ideas, talent and knowledge available 24/7 from a network full of data circulating in real-time at incredible speed. This is a real challenge. Those organizations that are joining this new dimension, will lead the future changes.

DIY Innovation

MARK FRAUENFELDER, EDITOR IN CHIEF, MAKE MAGAZINE



MARK FRAUENFELDER

In its recent report on the Millennial Generation, the Hartman Group market research firm found that adults under the age of 30 — a generation raised by parents who welcomed and acted on their childrens' opinions — have grown up considering themselves to be “co-creators” who “customize a lifestyle on their own terms,” enroll in “hip craft/sewing class at an urban sewing shop, read MAKE magazine and attend one of their events.”

These young people are leading a growing movement of DIYers who are rediscovering the joy and satisfaction of do-it-yourself living in an age where everything from meals to prefab

housing can be ordered with the click of a mousebutton. They have discovered the deep satisfaction of being involved in the creation of their clothes, furniture, food, shelter, vehicles, energy, and musical instruments.

This new breed of makers — grandchildren of suburban pipe smokers who built motorized go-karts in their garages and converted their basements into wood-paneled leisure centers — has been fueled by a web-based community of homebrewing, Dremel-wielding, circuit-tweaking, do-it-yourselfers whose economy is driven more by bragging rights than by money (although a few makers have gone on to form companies based on their kitchen table inventions).

Google makes it easy for these makers to connect with people who've made cool things — headphone amplifiers in mint tins, MP3 players in Pez dispensers, cheap video camera

stabilizers built from steel pipe and exercise weights, parabolic solar collectors that can incinerate a Twinkie in the twinkling of an eye — and have set up web site to show them off. A Google search on DIY turns up over 40 million hits — there's an awful lot of stuff being made in basements, backyards, and garages.

Not only is the Web a prime source for DIY project instructions, it's also the go-to place for raw materials. On auction and swap sites like eBay, Craig's List, and Freecycle, hundreds of thousands of people have cataloged their cast-offs, making them easy to find. The result: an endless supply of spare parts that would have taken months of sifting through junkyards to locate. Need a source of tritium (a radioactive substance that's illegal to possess in the United States), or a colorimeter spectrophotometer (used to measure a substance's light absorption), or a centrifuge that holds 15 test tubes? You can get any of them on eBay, typically for less than the cost of shipping a new one to your home workshop. Freecycle is even cheaper than eBay — everything listed there, such as “two large sheets of translucent plastic 8 ft x 4 ft. 1/8” thick,” is yours for the taking, provided you go to the person's house and haul it away. 1970s transistor stereo equipment, manufactured in the window of time between vacuum tubes and integrated circuits, are eagerly snapped up and disassembled by makers, who extract the precious through-hole electronic components that form the basis of many homebrew projects.

Who are these new makers? Ken Gracey, who runs Parallax, a microcontroller kit company, says many of them are the geeks who washed up on the shores of the unemployed after the Dotcom Crash. When the Internet bubble burst, orders began pouring in for Parallax's microcontroller modules, called BASIC Stamps. Jobless net nerds began using BASIC stamps to start self-funded electronics companies, or to avoid dwelling on obliterated stock options.

A microcontroller is the tiny brain that controls your coffee maker, your alarm clock, and your kids' Furby. Typically, you need an expensive machine and some serious coding chops to program a microcontroller; but with a BASIC stamp or an Arduino, makers can program these matchbook sized workhorses to make everything from warhead control systems to heart monitors that dial the phone when its user dies (so a cryonics company can pick up the body and submerge it in a tank of liquid nitrogen, to be unfrozen and brought back to life when the technology is ready). Microcontrollers have been used to develop lighting systems for commercial airplanes, automated palette stackers, woodchippers, intelligent doggie doors, remote control glider photography, self balancing robots, and motorcycle signal switch timers.

The new wave of makers bodes well for the economy at large, says Gracey. “People have seen manufacturing jobs flee to Asia, but there's definitely a resurgence in building and making things here. As everything becomes global, our country is going to have to fight to remain creative and productive, and it will start with the hobbyists.”



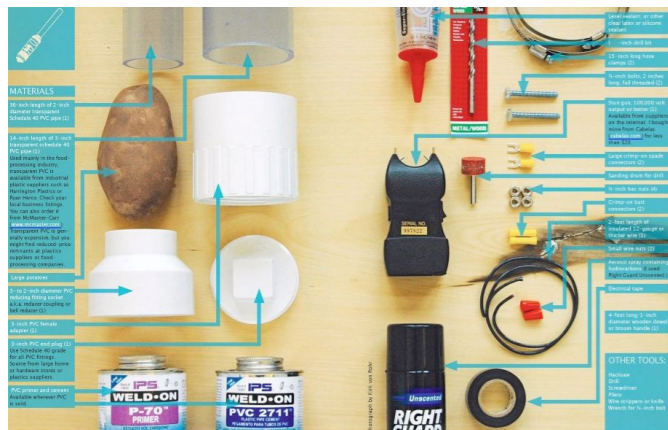
CREDIT: MARK FRAUENFELDER



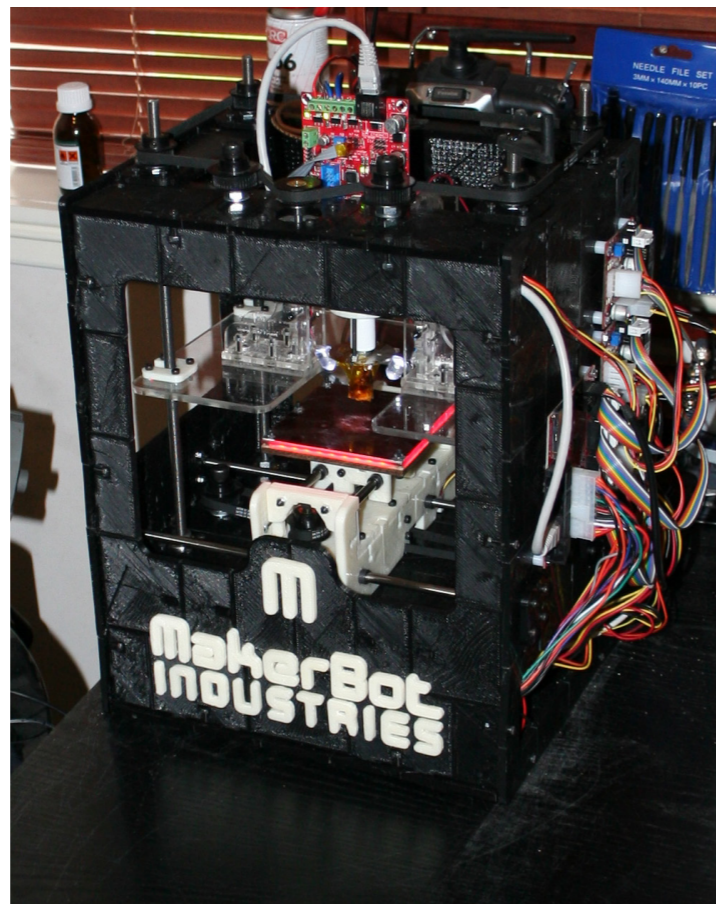
CREDIT: MARK FRAUENFELDER

Top: The cover of a 1961 issue of “Popular Mechanics.” Includes instructions on how to make your own sidewalk car.

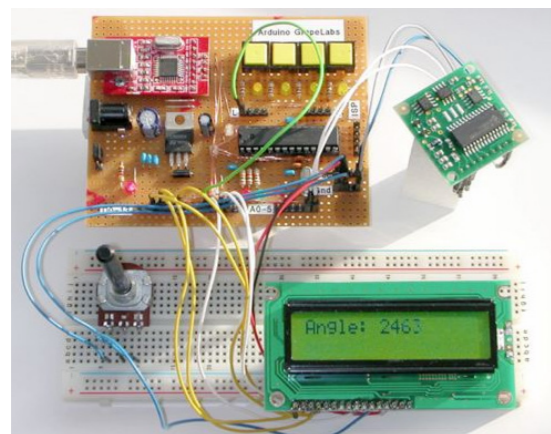
Bottom: Today's makers are fueled by a web-based community of homebrewers.



CREDIT: MARK FRAUENFELDER



CREDIT: MARK FRAUENFELDER



CREDIT: MARK FRAUENFELDER

Top Left: A spread from MAKE Magazine, with instructions on how to make your own high-powered potato cannon.

Bottom Left: Microcontrollers were typically expensive to produce but today's DIY-ers, using an Arduino, have programmed them for projects that require physical computing.

Left: A self-replicating 3D printer composed of 150 separate pieces.

Community & Food

SAMIN NOSRAT, CHEF, WRITER, TEACHER

IN THE MONTHS FOLLOWING THE AUGUST 2009 CLOSING OF ECCOLO, THE BERKELEY, CALIFORNIA RESTAURANT WHOSE KITCHEN I RAN FOR FIVE YEARS, THE CHEF AND OWNER CHRISTOPHER LEE AND I RECEIVED NEARLY CONSTANT REQUESTS FROM OUR REGULAR CUSTOMERS TO OPEN ANOTHER RESTAURANT WHERE THEY COULD COME EAT THE FOODS THEY SO LOVED.

Thrust blindly into the world of freelancing, I felt liberated at first, returning to the Chez Panisse kitchen where I'd been trained as a cook to fill in here and there, dedicating more time to writing, and finally creating the teaching curriculum I'd been thinking about for years. The idea of being bound to another restaurant, devoting every bit of myself for nearly 80 hours a week to a lifestyle that could never promise to sustain me financially or emotionally was not only depressing, but highly unlikely.

By December, Chris and I missed cooking for folks who could really appreciate and understand the care we put into our work, from rolling, stuffing and folding tortellini by hand to following centuries of tradition set in place by the mamans of Southwest France each time we'd assemble a cassoulet toulousain. We desperately wanted to find a way to cook our favorite foods and share the fruits of our craft without committing to a brutal restaurant lifestyle, but didn't know where to begin.

Once we conceded that our love for our work outweighed the desire to make much money, we had an idea: we'd rent a friend's catering kitchen and make the sausages, cassoulet and

tortellini that were the holiday touchstones on our December menus at Eccolo. Using the 1,200-name email list we'd saved from the restaurant, we'd let people know we were cooking again and offer them the opportunity to place an order for the holidays. We constructed an order form using Google Docs, updated our statuses on Facebook and Twitter, and sent out a mass email not knowing what kind of response to expect.

Chris and I guessed that between us, we'd be able to make about a hundred pounds of elegant boudin blanc sausage and a couple dozen cassoulets, traditional terra cotta dishes layered with rich duck confit, garlic sausages, braised bacon, white beans, bread crumbs and a flavorful stock, all made by hand from scratch. Putting the word out on the internet worked—the orders streamed in and we quickly sold out. We spent three days making and packaging the food in brown butcher paper and our signature red and white twine, then met folks to distribute it all on the morning before Christmas Eve.

We'd thought of this as a one-time thing, but when the emails, phone calls, and Facebook comments didn't stop, we knew we were onto something. Two weeks later, we came up with a



CREDIT: MELISSA SCHNEIDER



CREDIT: MARK GORDON

Christopher Lee and Samin Nosrat's Pop-Up General Store was founded on the principles of sustainability, community, and good food.

name for our indefinable project: Pop-Up General Store, specific enough to conjure a sense of nostalgia and hint at the ephemeral nature of the thing, but vague enough to let us grow in any direction we might be drawn to in the future. We signed up for an email newsletter account and started popping up every couple of weeks.

People couldn't get enough. No matter what we tried, we couldn't make enough food to meet the demand, so Chris and I turned to some of our friends and colleagues, cooks we'd known for a decade or more, and invited them to join us with their specialties. Soon we were offering handmade caramels, gyoza, jams, Oaxacan mole, English muffins, ice cream, artisan breads, and traditional pickles, all made by professional cooks who, having worked alongside us at Chez Panisse and Eccolo, are guided by the same principles of sustainability and

uncompromising standards as we are.

Our mailing list continued to grow. Sales rose. No matter how much food we made, it was never enough. Then, the press got a hold of us.

The day after a feature ran on Pop-Up General Store in the San Francisco Chronicle in May, not five months after we'd handed out two dozen Christmas cassoulets, our mailing list jumped to 4,500 names. Less than a year after our first Pop-Up, we have over 8,000 addresses on the list, and have been featured in nearly every major local and regional newspaper and magazine as well as on NPR Marketplace and in the New York Times Magazine. When social media consultant Adam Metz tracked us down to use our story as a case study in his upcoming book, *The Social Customer*, he decided to title that chapter "The Accidental Grocery Store" and pointed out that we're on pace to do

a million dollars in sales this year.

Though we are still tinkering with the formula to increase our marginal profits, I'm acutely aware that the growth, media attention and success we're experiencing is the stuff investors and businesspeople dream of. It's especially shocking to have the Pop-Up thrive so fantastically on the heels of the failure of a restaurant where we cooked exactly the same foods.

We did everything we could to try to keep from closing Eccolo; the Pop-Up attracts success without me even trying. What's the difference? I've spent the past ten months examining the Pop-Up General Store phenomenon from every angle, and I think it all comes down to one thing — connection.

Every step along the way of this project, there has been a focus on human connection, friendship, and support. Perhaps naively, before

considering finances, critical or media attention, and even my own plans for the future, I have approached Pop-Up General Store as a way to do the work I love, which is creating community around food.

The Pop-Up may have been named in January 2010, but it was born eleven years ago when Chris first took me on as his intern at Chez Panisse and brought me into a kitchen where relationships with purveyors and deep respect for pristine ingredients are emphasized. It grew in leaps and bounds for five years at Eccolo, when we cooked together daily, trained cooks in the same tradition in which we'd been reared, and cultivated a community of customers who loved our food. Several factors come into play when we consider taking on a new vendor at the Pop-Up, but above all else, we are guided by our relationships; the better we know

someone, the more times we've tasted her food and seen her work under pressure, the better we can judge how she will represent herself and us as our collaborator.

Perhaps even more importantly, though, is the transparency of this food business model and the way it fosters a new type of connection between cook and diner. Traditionally, professional cooks are considered socially inept misfits, unable to communicate with regular folks and hidden behind closed doors. By design, the vendors at each Pop-Up are the cooks and artisans who dream up, produce, and hand pack the foods themselves. Purchasing a pound of sausage is no longer only a financial transaction, but also a chance for customers to inquire about that article of mine they read last week, or compliment Chris's last batch of boudin, or even to let us know when they didn't

like something very much. It's not the content of these conversations that matters as much as the simple fact that they are happening, over and over. As these connections are made, humanity is established between the cooks and diners, and this is priceless.

Once the customer associates a face, a story, a warm experience with a name it means so much more. That's when the email newsletter becomes something that gets reliably clicked open, when the positive Facebook feedback rolls in, when the number of hits on the website spikes and the pre-order online sales increase. The synthesis of Pop-Up General Store has been fully reliant on the intersection of social networks and a faltering economic climate, but its success lies in the solid foundation of the personal relationships on which it is built.

Shoppers are able to communicate and interact directly with chefs and purveyors of artisanal foods at the Pop-Up General Store.



CREDIT: MARK GORDON



CREDIT: MARK GORDON



CREDIT: MARK GORDON

Vendors of poultry, preserves, produce, sausages, coffee, olive oil, bread, and pastries stand behind their products displayed out in the open for shoppers to taste, touch, and discover.



SAMIN NOSRAT

“Perhaps even more importantly...is the transparency of this food business model and the way it fosters a new type of connection between cook and diner.”



day 1 The two Johns – Markoff (*New York Times*) and Hagel (*The Power of Pull*) captivate the Orange Institute community, and then graciously sign books for the members. We are off to an exciting start.



day 3 We conclude on the campus of Stanford University, with a talk from a partner of Google Ventures. In a sunny spot outside the Faculty Club, the community celebrates its journey.



Orange Institute, Silicon Valley 2010



day 2 Another author talk by the founder of Wired, Kevin Kelly, and a demo from Orange San Francisco. The community is bonding.



CREDITS: DANIEL KOKIN

computation

big data and hive mind

THEN Computers were invisible: large, powerful, and distant, perceived as the instruments of Big Brother, accessed through shared terminals and intermediaries. Only in a few locations – university towns – could individuals play with computers. Data was hard: boxes of cards, pallets of tape. Some researchers spoke of augmenting intelligence, or that intelligence could become automated, when fed enough data.

NOW Computers are still invisible, but in new ways: our personal devices connecting to distributed cloud computing, to smart grids, to open databases of photographs, sensor data, and satellite images. Effects of our augmented data surround us: predictive analytics and behavioral targeting give suggestions that move from intelligent to unbelievable within one search session. The science of correlating more and more data is creating billions/trillions of edges between data sets; this New Edge model reveals connections between us in ways never before imaginable.

Have we met Big Brother's sibling and is it us?

The Columbia University Computer Center in 1965: Mike Barrett, the first Computer Center Operations Manager, at the console of the IBM 7094, the senior partner of the 7094/7040 Directly Coupled System (DCS or DCMUP). To the right is the operator's card reader. Tape drives in center. The cabinets against the left wall are full of core memory. Disks and various control units are behind the tape drives.

Before PC's, The Tablet (1977)

Imagine having your own self-contained knowledge manipulator in a portable package the size and shape of an ordinary notebook. Suppose it had enough power to outrace your senses of sight and hearing, enough capacity to store for later retrieval thousands of page-equivalents of reference materials, poems, letters, recipes, records, drawings, animations, musical scores, waveforms, dynamic simulations, and anything else you would like to remember and change.

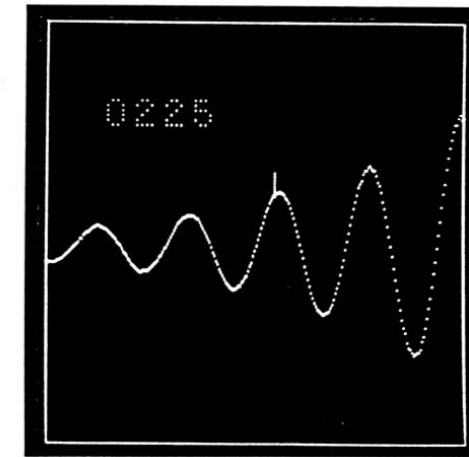
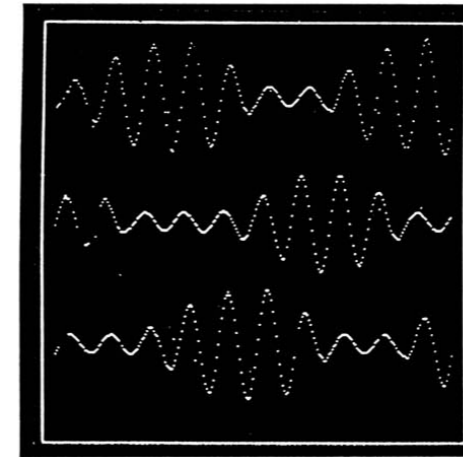
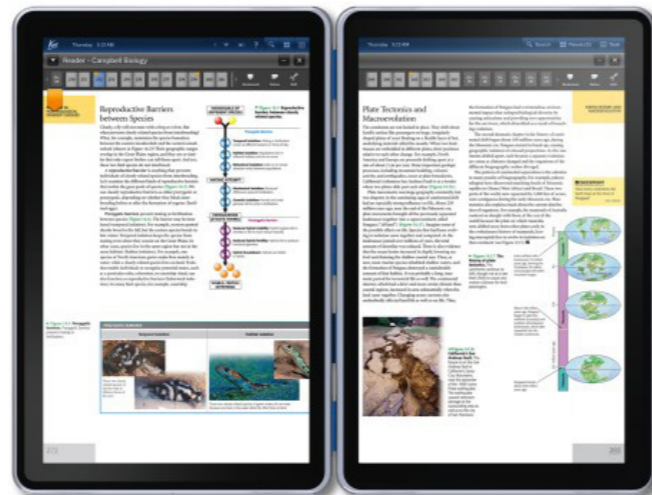
We envision a device as small and portable as possible which could both take in and give out information in quantities approaching that of human sensory systems. Visual output should be, at the least, of higher quality than what can be obtained from newsprint. Audio output should adhere to similar high-fidelity standards. There should be no discernible pause between cause and effect. One of the metaphors we used when designing such a system was that of a musical instrument, such as a flute, which is owned by its user and responds instantly and consistently to its owner's wishes. Imagine the absurdity of a one-second delay between blowing a note and hearing it! These "civilized" desires for flexibility, resolution, and response lead to the conclusion that a user of a dynamic personal medium needs several hundred times as much power as the average adult now typically enjoys from timeshared computing. This means that we should either build a new resource several hundred times the capacity of current machines and share it (very difficult and expensive), or we should investigate the possibility of giving each person his own powerful machine. We chose the second approach.

From Alan Kay, Adele Goldberg, Personal Dynamic Media, originally published in Computer, 10(3):31-41. March 1977.

“These ‘civilized’ desires for flexibility, resolution, and response lead to the conclusion that a user of a dynamic personal medium needs several hundred times as much power as the average adult now typically enjoys from time-shared computing.”

-Alan Kay & Adele Goldberg

The Kno is a digital textbook and educational tablet designed especially for learning.



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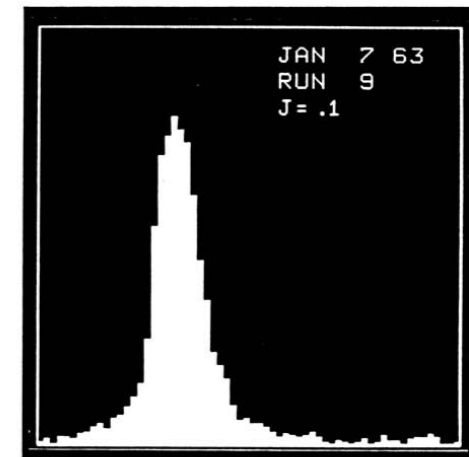
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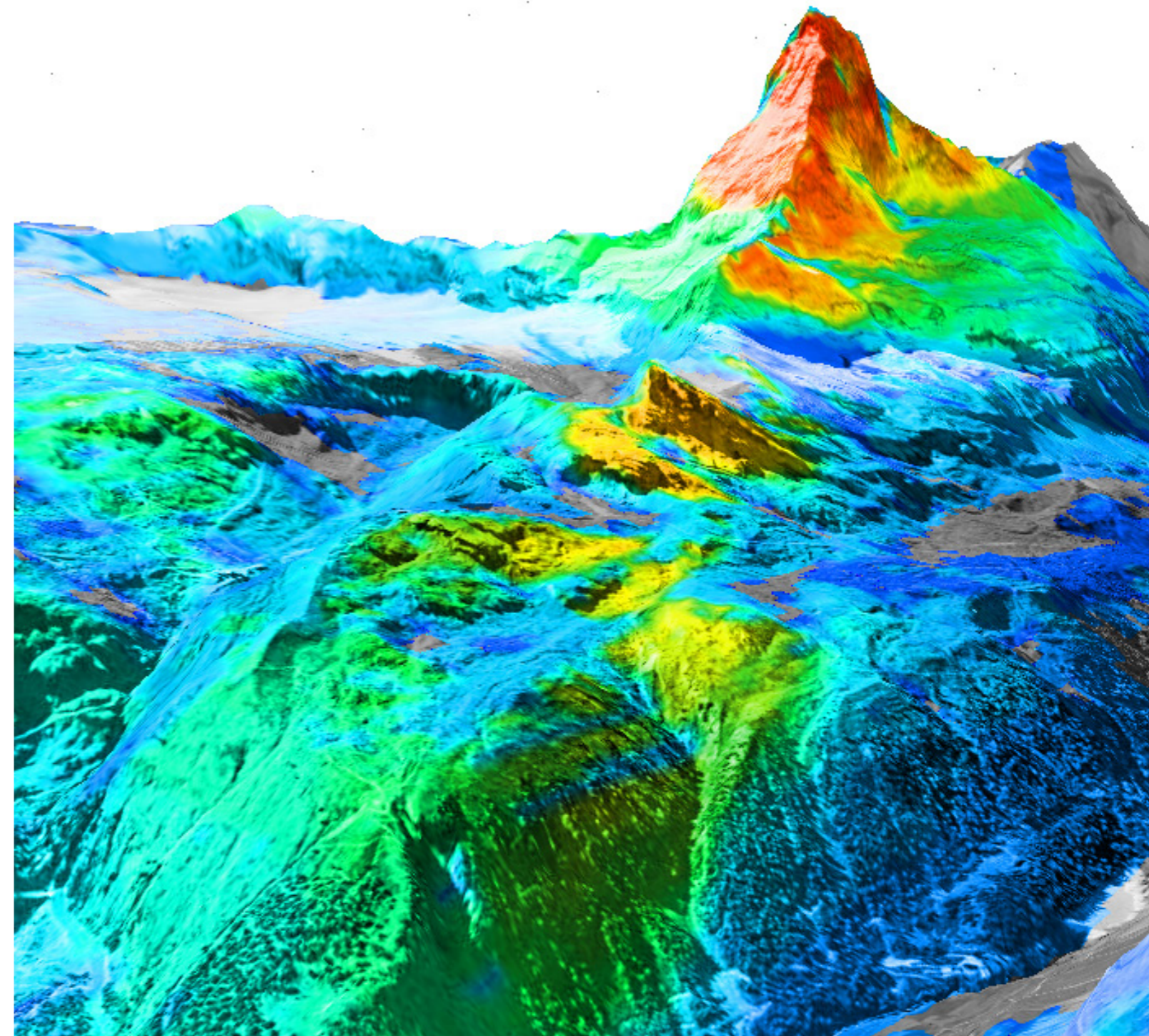
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Photos of the LINC (Laboratory Instrument Computer) CRT-display, 1963. The LINC is one of the most significant machines in the history of computing. It was on the LINC that for the first time a whole computer (not just a time-slot, or batch job) was dedicated to a single person. While only about fifty were built, and they were used strictly by research institutions, the experience of using the LINC was by the mid 1960s, a portent of what people were to find in the microcomputing and personal computing revolution ten years in the future.



Pictured on the cover of Byte magazine, an early personal computer publication, is one of the first Altair PCs. Bill Gates' operating system for this machine became a piece of controversial shareware at the Homebrew Computer Club.



A synthesis of 100 aligned photos, shared on Flickr, with the intensity of the heat-map weighted to reflect social remarks made by observers.

Big Data in the Big City

“In particular, the real world footprints a user generates can be much more informative than just the digital footprints alone.”

-Tony Jebara



DR. TONY JEBARA
ASSOCIATE PROFESSOR, COMPUTER SCIENCE, COLUMBIA UNIVERSITY
CHIEF SCIENTIST, SENSE NETWORKS

In the online and desktop world, modeling users' browsing history, search and activity is invaluable as a way of personalizing the user's experience, be it by providing collaborative filtering or by targeting the right types of advertising. Today, however, as mobile devices become the interface of choice for most people, two new sources of data about the user await to be harnessed--communication history and location history-- which can greatly complement browsing history and download history.

Sense Networks specializes in modeling the totality of a user's mobile data which often is stored in the form of call detail records (CDR) by the majority of operators worldwide. While browsing and download history has been leveraged in the past, the ability to merge location and communication history is a technical challenge but finally provides the operators with a full 360 degree view of the user. Not only can we model how users interact in the online world, we can today also model what they are doing in the real world. In particular, the real world footprints

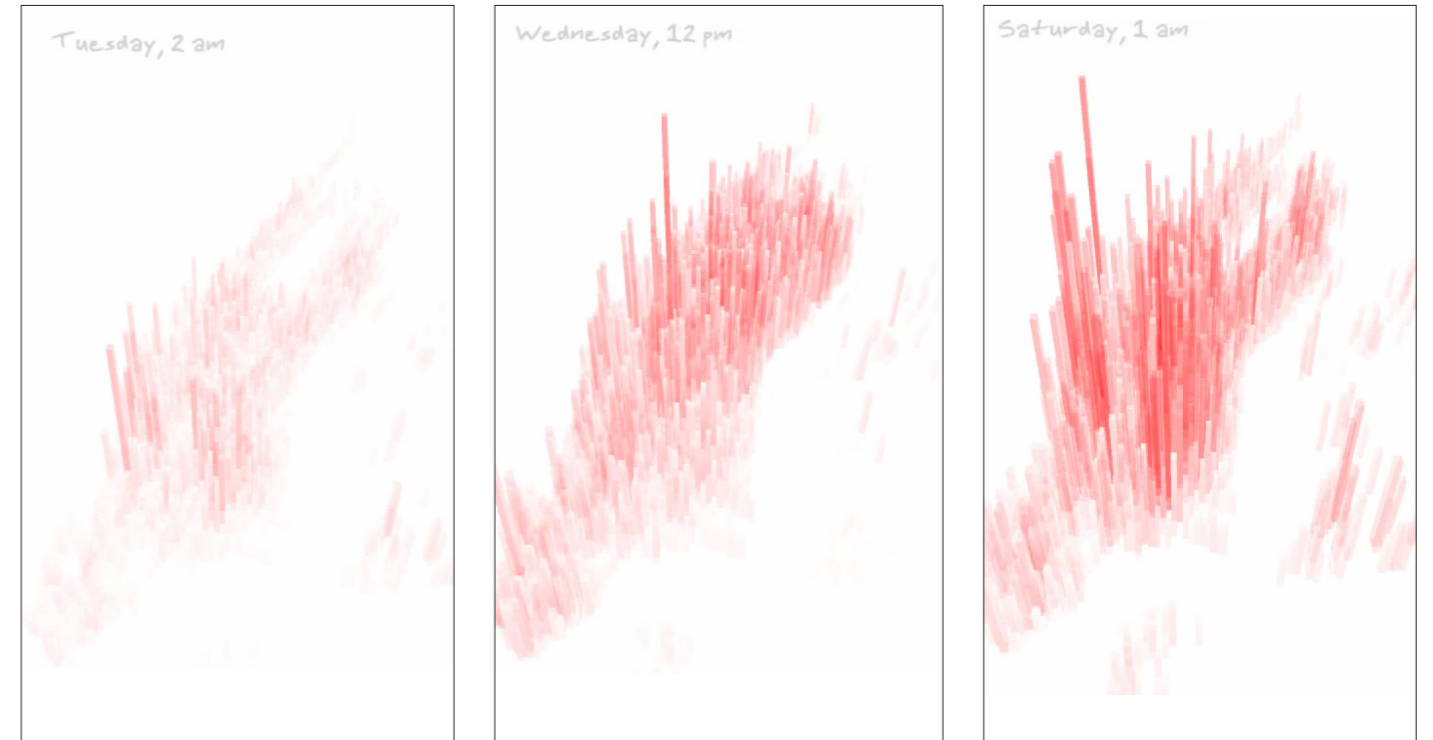
a user generates can be much more informative than just the digital footprints alone.

Through a proprietary machine learning system called Macrosense, Sense Networks computes behavioral features from communication, location and mobile activity to form the so-called Lifestyle matrix. This is a statistical summary of each user's behavior and how it compares to others.

From historic data, the Lifestyle matrix stores the probabilities a user will call other users, will visit various businesses (such as coffee shops) and will visit certain websites for every hour of the week. Through this Lifestyle matrix, it is possible to make accurate and automatic predictions about who the user is (are they a student or a business traveler, how old are they and what is their approximate

income?). The Lifestyle matrix makes it also possible to predict what business opportunities a user will respond to (are they interested in a coupon for a nearby pizza store or a promotion for a new smart phone device?).

Citysense, a mobile application, shows the overall activity level of the city, top activity hotspots, and places with unexpectedly high activity, all in real-time.



Sense Networks allows capture of people's geolocation traces across Manhattan over different dayparts of the week and visualizes them over the urban grid (shown: still images from a data animation).

CREDIT: TONY JEBARA

Welcome to Cognitive Capitalism

HENRI VERDIER, CHAIRMAN, CAP DIGITAL
SV '09, TOKYO '10, SV '10



HENRI VERDIER

21 July 1969: Armstrong walks on the Moon.
29 October 1969: UCLA sends Stanford University the first Arpanet message... which is just the letters "L-O" because the system crashes immediately. Two promising counter-cultures, ecology and the digital world, are born.

Both of these counter-cultures found their home in Silicon Valley, where they led to a series of technological and social innovations which have produced

a second Industrial Revolution, far more radical than original coal and steel revolution.

We spent three intense days exploring how this counterculture of permanent re-invention has been transformed while transforming the world, from Arpanet to Big Data and from hippies to post-humanism.

These transformations are so radical and so diverse while still giving a subtle impression of coherence that they raise the question of whether they have a deeper structure: a transformation of the very nature of capitalism.

In France, this theory has been explored by economists like Yann

Moulier-Boutang and philosophers like Bernard Stiegler, who have analyzed the birth of a new form of capitalism, cognitive capitalism.

The original industrialization of capitalism entailed mechanizing and dramatically increasing physical strength. Once industry had captured or replaced human physical strength, it aimed to incorporate as much thought as possible into the process of production. This explains the importance of intellectual property and the conflicts which have surrounded it ever since the old model began to falter. It led to a form of protest based on power struggles, with workers'



Essential to agricultural production due to their role in pollination, the emergence of Colony Collapse Disorder on several continents in 2007 has scientists racing to understand the rapid extinction of bee colonies. In October 2010, important clues have been found.

coalitions pitted against the might of capitalism.

The increase in productivity and abundance of material goods produced by this stage of capitalism nearly pushed the system to its utmost limits by saturating the market. At the end of the cycle, companies had to learn to work on consumers' desires and create a consumer society, largely based on advertising and mass media. Avant-gardists, alternative movements and counter-cultures were thus a natural source of dissent from this type of production, particularly in California during the 1970s.

It should be noted that this form of capitalism is not yet very efficient. It sells technologies, but is far from able to exploit all of the value created by their use. Some observers have compared it to beekeepers, who only sell the honey and wax produced by their bees which produce 350 times more value just by pollinating plants. Like bees, we consume a little, but at the same time we create an infinite amount of value, whether or not it is exploited.

The second phase of industrialization, which began with the birth of digital technologies, mechanizes intelligence by codifying logical, symbolic and economic functions, all at an ever-decreasing cost. The issue is no longer incorporating knowledge into machines but rather stimulating and capturing the cre-

ativity of the largest possible ecosystem, which involves the users themselves. This means that the real challenge is becoming one of the platforms that this creativity builds on. Therein lies the conquest of Apple, Google, and Facebook. Companies no longer seek to capture, use and exchange employees' production capacities, but rather the cognitive power of all the users of a technology, and as we move towards putting all users' data exhaust online, their lives, too may come into play.

As the prophets of the "new economy" predicted, this movement is shaking up the economy by replacing standardized, mechanical mass production with personalized, customized production involving the beneficiaries of the value created. It goes well beyond the bounds of traditional forms of value creation; the rapid circulation of things and ideas, co-production of value with users, free contributions, the concurrence of multiple types of innovation and hackability are all integral parts of the value of new services.

The importance of the counter-culture in this creative dynamic raises an interesting question – what forms of dissent will arise in this new industrial logic?

Three strategies of resistance to the new situation now seem to be emerging:

a. Contesting the practice of selling things which should not have a market value. The process of civilization is, by its very nature, a process of separating that which has a market value, i.e. the possibility of equivalencies and exchanges, from that which does not have a market value and thus cannot be bought and sold, because it is sacred or intimate or structurally antagonistic. Attributing a market value to things which did not previously have one is not always a sign of progress, and the practice is opposed by a great many groups, including the degrowth and deep-ecology movements and non-monetary exchange systems.

b. Guerillas fighting against the new monopolies which attempt to appropriate creativity and freeze it in order to turn a profit: the open-source movement, hackers, freeware activists, the FabLab movement, etc.

c. A still-nascent movement which seeks to take back the value created by citizens themselves, like bees seeking to be paid for their pollination work.

The important point here is not to figure out if these movements are right or wrong, nor if they will win the day, but rather to understand that these conflicts are a powerful driving force behind innovation, and that they surely have new lessons for the creation and exploitation of value.

Big Data: The Race Is On

FRANÇOIS LABURTHE, DIRECTOR OF OPERATIONAL RESEARCH & INNOVATION, AMADEUS TOKYO '10, SV '10

Everyone of us produces data with every single act of our lives. New data when we buy, when we tweet, when we blog, when we read, when we click, even when we hesitate and don't click after all. And with new devices, there's even more new data when we move, when we jog, when we sleep, when we eat. Our world has turned into an immense body that continuously sweats data.

Each system participating in the long chain that keeps us all connected continuously produces minuscule information about the network and us. These atoms of information, collected one after the other, make thin threads of data. And like footprints in winter, where snow can precisely mold the shape of a shoe, these threads draw the contour of our acts so precisely that they can tell a long story about our lives.

It may seem a paradox to see such rich and deep stories emerge from minuscule traces produced by technical systems. But, just like evolution was able to grow massively sophisticated organs like

human brains from basic chemical interactions, we can build up detailed profiles, histories, personal preferences and affinities, group behaviors, trends and fashion and so much more from basic system logs.

We simply don't have the three billion years or so that nature gave to evolve living organisms. The race is on between organizations to build this great web of data, to navigate it in real time, in order to understand important drivers of our society: brand perception, product appeal, customer satisfaction, drivers to purchase, influence of individuals, and everything else that contributes to the instant state of mind of a customer, a citizen, a person.

In this race, success will come to organizations which continuously learn deep and relevant information for each customer, each product, each partner, each influencer that they are connected to.

Sweet business honey will only come to those who implement data hives.

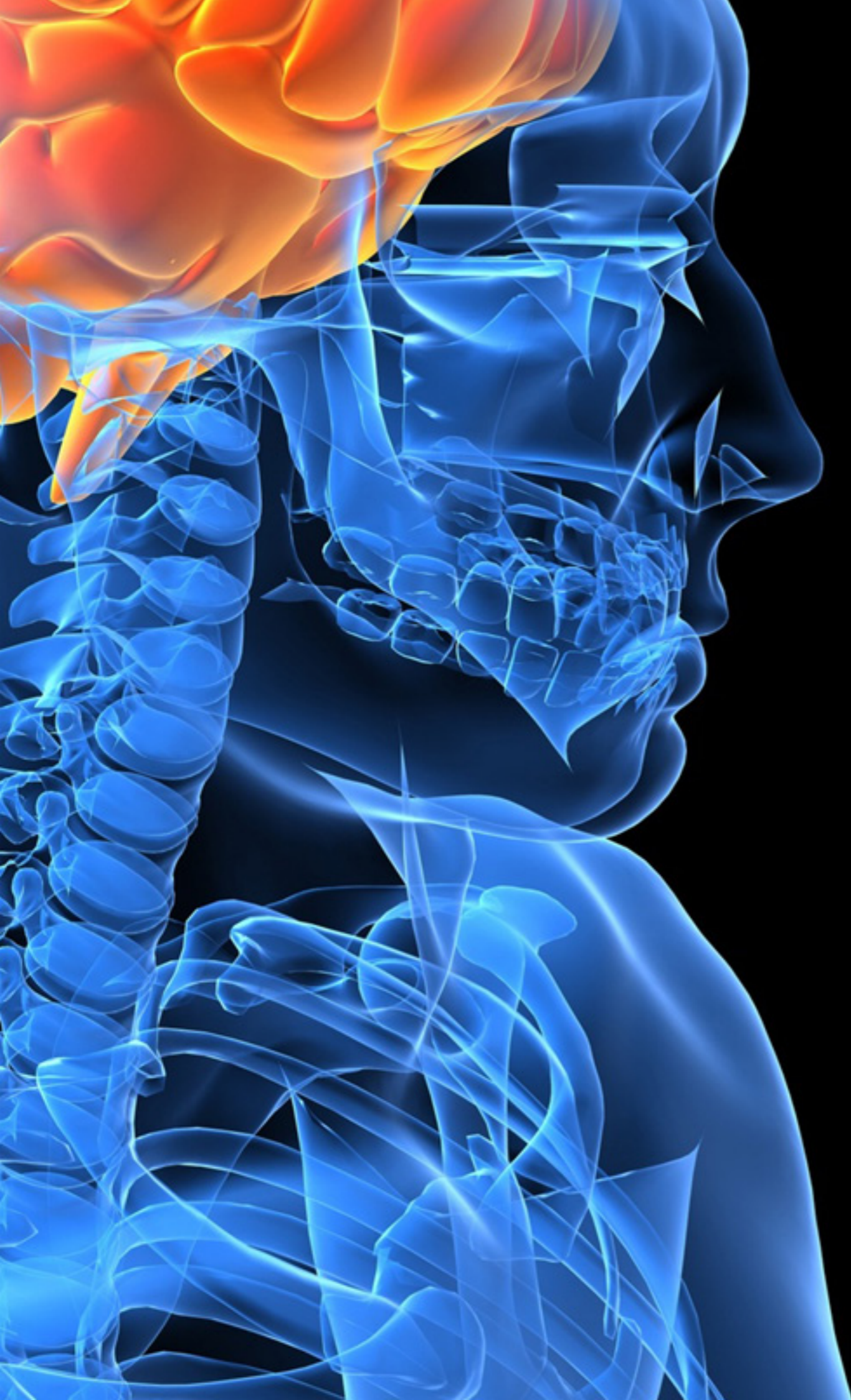


Photographer Rachel Sussman documents the oldest living things on earth. *Lichen R. Geographicum* #0808-04a05 (≈ 3,000 years old; alannngorsuaq, Greenland)



FRANÇOIS LABURTHE

“Our world has turned into an immense body that continuously sweats data.”



corporeal

my body electric 2.0

THEN We understood ourselves with words: spoken to psychiatrists, recorded on the first low-cost video technologies. We improved ourselves without words: TM, LSD & psychedelics, Be-ins and other personal and collective methods for reflection and discovery of a Fundamental Self.

NOW The new therapy is also without words, but there are a lot more pictures. From Rorschach tests to today's fMRI machines, and by crowd-sourced data sharing. Via personal genomics we can track what came to us from our parents—our genetics—but also from our parents' and grandparents' experiences—our epigenetics. Via sensor-based personal data-mining we can compare with others, and via remote presence tools we can extend ourselves using microphones and video, just as the Franksters did on Ken Kesey's bus (see Mike Nowack's essay on 'Better Living Through Monitoring'). This new quest for greater transparency of an Instrumented Self increasingly is a connected model, amplified through our multiple networks.

Will greater availability of data about us impact our sense of self and identity?

SURREALISTIC PILLLOW



The title of John Markoff's seminal book, *What the Dormouse Said*, comes from the lyrics of Jefferson Airplane's debut album, *Surrealistic Pillow*, which marked the explosion of the San Francisco acid-rock scene.

The Dormouse Speaks (1968)

But straight or stoned, Marshall McLuhan would dig White Rabbit by that stewardess on the Jefferson Airplane, Grace Slick:

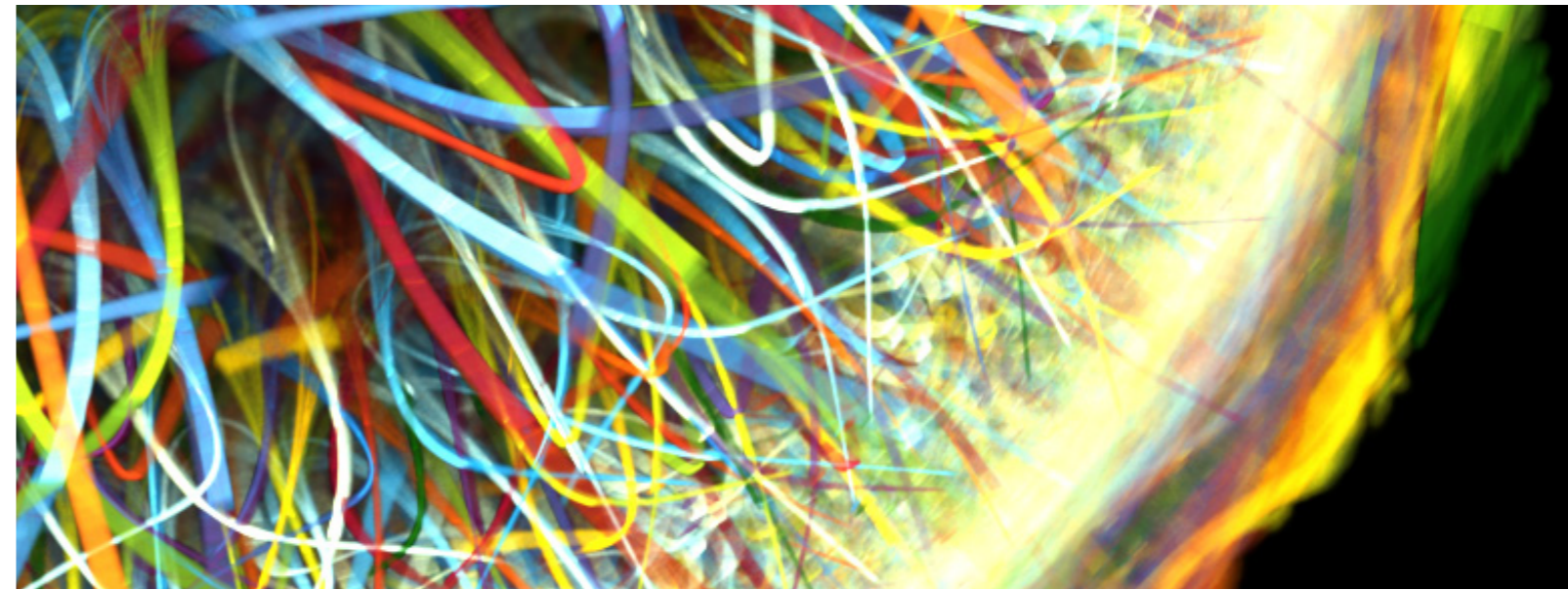
One pill makes you larger
And one pill makes you small
And the ones that mother gives you
Don't do anything at all
Go ask Alice
When she's ten feet tall

Alice in Wonderland makes a natural rock song. It masquerades as an innocent fairytale, brimming with charming babble. But beneath its cotton-candy surface lies a surreal cosmos of unfamiliar shapes, mysterious creatures and sinister magic. It is quite a trip. In one sense this dependence on jargon to convey meaning is one sign of a repressed culture. But it has also provided teen-agers everywhere with a solid sense of their own identity. When Grace Slick quotes the Dormouse's words, "Feed your head," she is really encouraging the youth of America to turn on – in all the senses of that phrase.

-Richard Goldstein, "All Those Words" LIFE Magazine

Faster, Better, More Stressful

FRANCESC NOGUERA, CIO, UNIVERSITAT OBERTA
DE CATALUNYA, SV '09, BEIJING '10, SV '10



The Electric Sheep project is a community of 350,000 online developers who collectively co-create vibrant screen savers, so even when your computer is resting it's doing very complex stuff.



FRANCESC NOGUERA

The problem is the solution?

As the volume of managed data grows exponentially, the need to deal with unstructured information also increases. Some argue there is a cognitive surplus, others would retort we are under the equivalent of a cognitive tsunami.

Competitive intensity is also growing, and consequently, the need for innovation and differentiation in an increasingly global world-- one plunged into a deep economic crisis (among other crises)-- also increases. There are few who would argue that we are not in a time of unprecedented stress.

In such a scenario a critical factor (just one of many) is shortening response time: innovation, differentiation,

and selective analysis of the best sources of information and careful treatment of large volumes of data will improve our competitiveness.

Whether or not they were created to accelerate response time, there are many technologies that produce this effect. These technologies include:

- Acceleration of the development of applications based on SOA architecture (Service Oriented Architecture), which enables service reuse of what was previously developed and tested;
- Acceleration of the launch of certain applications that are available in SaaS (Software as a Service);
- Acceleration of the availability of infrastructure through Cloud Computing;
- Acceleration of voice and written communications using mobile phones;
- Acceleration of the general availabil-

ity of news, often in real time, by using Twitter, online newspapers, and related sites and services;

As a logical consequence the pace of our lives and our daily activities is also accelerating significantly. This is stressful for many people, intoxicating to others.

What is one of the main demands that is increasingly being requested from ICT users? They're asking for faster response times and data synthesis that are ever more precise, stratified, both econometric and qualitative.

It is clear that IT holds the answer to this request. But if we accept that ICT accelerates the pace of our lives, and also that competitive intensity will yield improvements to our quality of life (using ICT), then does it follow that our acceleration and stress problems are a function of the very solution we are providing?

Better Living Through Monitoring: Cybernetics, the Counterculture, and the Quantified Self

“...a longstanding intellectual tradition that conceives of monitoring technologies as both empowering for individuals and generative of communities.”

-Michael Nowak



MICHAEL NOWAK
DOCTORAL CANDIDATE, STANFORD UNIVERSITY

On a Wednesday night in a warehouse-turned-commune in San Francisco's SoMa district, a crowd gathered to drink, mingle, and show off their latest hacked-together efforts at technology-enabled self-experimentation. The meeting was a "show-and-tell" hosted by The Quantified Self, an organization started in 2007 by Kevin Kelly and Gary Wolf, two veterans of the Bay Area technology scene and alumni of the early years of Wired magazine. With Wolf and Kelly as co-emcees, a half-dozen volunteers stepped to the front of the room to share their personal experiences using technology to surface insights about their lives. The examples ranged from the plausibly mainstream (one presenter showed off an iPhone application that synched with his bathroom scale to chart his body fat over time) to the pretty-far-out-there (another had converted a microphone into a pressure sensor that he placed under his mattress to track his breathing patterns while he slept). The audience's questions tended to focus on the technical details of the projects; it was as much a celebration of personal-information geekery as a how-to workshop.

But at a deeper level, it was also a remarkable depiction of monitoring technologies – tools for converting ephemeral phenomena into storable, reproducible, and analyzable data – as sources of self-empowerment. In the popular imagination, such technologies are generally construed as means by which institutions exert power over individuals – witness the prominence of words like "Orwellian" and "Big Brother" in the public discourse. And, indeed, large institutions are certainly in the business of using technology to track people, whether it be governments eavesdropping on perceived threats with surveillance devices or corporations profiling customers with web-server data. While not denying this reality, the Quantified Self project consciously takes a different view, exploring potentials for the same technologies that foster individual rather than institutional power.

The idea, in short, is to democratize data-driven decision-making. Today's technologies give us access to vastly more hard data about who we are and what we do than ever before. Mobile computing devices, aided by off-the-shelf products



The concept of self-quantification has converged with the evolution of personal sensor technology and social media to create powerful models for self-improvement in public, as exemplified by this experimental project called Minimee. It publishes data from FitBit and other devices into a mobile app (screenshot of actual mobile app courtesy of Orange San Francisco).

“As artists began to explore ideas of universality and interconnectedness, they found a natural resonance with this cybernetic notion of the universality of information.”

-Michael Nowak

like RunKeeper and Nike Plus, allow us to keep increasingly complete records of our activities, while bioinformatic technologies such as 23andMe's personal genome sequencing service give us deeper insights into the most basic parts of our identities. According to the Quantified Self perspective, collecting and analyzing this information can reveal hidden patterns, the knowledge of which can help us lead happier, more fulfilling lives. As Wolf puts it, "If you want to replace the vagaries of intuition with something more reliable, you first need to gather data. Once you know the facts, you can live by them."

Beyond this promise of self-improvement, the Quantified Self community also offers a striking display of personal information made public. While little of the information shared is titillating, much of it does involve highly personal details about people's lives. Sharing this information in a public forum serves the practical purpose of providing concrete examples for fellow self-experimenters to follow. But it also highlights an underlying project of technology-enabled community-building: Central to the Quantified Self movement are gatherings in which individuals come together and use technology to reveal themselves to one another. Monitoring technologies thus serve the twin roles of enabling people to discover truths about themselves and to use those truths to form connections with the people around them.

What is surprising about these ideas is not their novelty but how deeply rooted they are in a longstanding intellectual tradition that conceives of monitoring technologies as both empowering for individuals and generative of communities. To a large degree, the origins of this line of thinking lie with Norbert Wiener, the M.I.T. mathematician who founded the field of cybernetics. According to Wiener and the cyberneticists, all purposeful action can be seen as an iterative process in which



Ant Farm Media Van 1975 - The art collective Ant Farm modified a van with special pods for shooting videotape from the vehicle, an early application of portable videocams to artistic production.

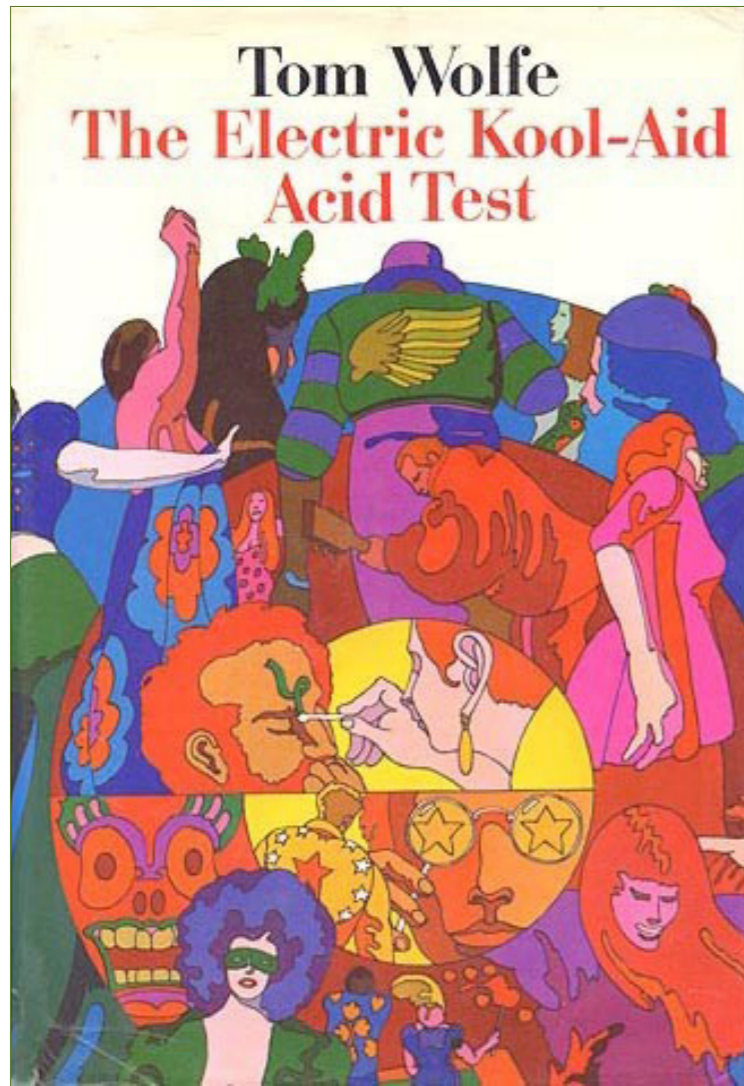
actors interact with their environments, monitor the results of those interactions, and modify subsequent behaviors in order to remain close to their desired state or path. This cycle, or feedback loop, is just as apt a model for simple machines as it is for humans: a thermostat monitors the air around it to maintain a consistent temperature in a building just as a driver monitors the position of the car to stay in a lane. A cybernetic perspective, then, tends to see monitoring technologies simply as components of feedback loops: by helping people gather information about the world around them, they allow people to better match their actions to their goals. From this viewpoint, the principal potential for monitoring technologies is not for one entity to control another, as in the Orwellian vision, but for an individual entity to better control itself.

A second significant contribution to this intellectual tradition was made by the counterculture of the 1960s. In his 2006 book, *From Counterculture to Cyberculture*, Fred Turner documents the central role that cybernetic ideas played in the shaping the hippie movement in the United States. A key implication of Wiener's ideas was that all people or things that made use of feedback loops were fundamentally united through the common denominator of information flows. As artists began to explore ideas of universality and interconnectedness, they found a natural resonance with this

cybernetic notion of the universality of information. Many began to incorporate feedback loops enabled by monitoring technologies into their work. For example, in a 1965 installation called "Who R U?," the art troupe USCO "had individuals placed in booths around a central auditorium, miked their conversations, and replayed them simultaneously in an eighteen-channel remix" (Turner, 51). The next year, at San Francisco's Trips Festival, "audience members painted in Day-Glo colors danced and watched their dancing rebroadcast live on a series of closed-circuit televisions" (Turner, 66).

Perhaps the archetypal example of this aestheticization of cybernetic ideas is that of Ken Kesey and the Merry Pranksters (cf. Turner, 59-68). As described in Tom Wolfe's *The Electric Kool-Aid Acid Test*, the psychedelic school bus on which the Pranksters staged their acid-laced road trip across America was essentially a giant recording and remixing device:

There were...microphones outside that would pick up sounds along the road and broadcast them inside the bus. There was also a sound system inside the bus so you could broadcast to one another over the roar of the engine and the road. You could also broadcast over a tape mechanism so that you said something, then heard your own voice a second later in variable lag and could rap off that if you wanted to.... There was going to be no goddamn sound on that



Tom Wolfe, now an elder statesman of American literature, established his career with a chronicle of counter-cultural exploits centered around Ken Kesey and his Merry Pranksters. As the book cover shows, it popularized the concept of Acid Tests, but more importantly, captured the self-documentation practices of the Pranksters that resonated with Warhol's famous dictum that everybody will have "15 minutes of fame." In our age of user-generated content on YouTube and Facebook this is as true now as it was then.

whole trip, outside the bus, inside the bus, or inside your own freaking larynx, that you couldn't tune in on and rap off of. (Wolfe, 68)

One goal of using these monitoring technologies was to invite a deeper appreciation of the oneness of nature by translating the world into the common medium of information. But the Pranksters and their counterculture brethren were additionally concerned with fostering a deep sense of community with one another. The ultimate goal was to achieve a state that the Pranksters called "intersubjectivity," a sense that one's consciousness "opened up and flowed together" with the others (Wolfe, 61). Recording and reprocessing their actions – in combination with hefty doses of mind-altering substances – helped achieve this state by connecting individuals through technology-mediated manifestations of their inner selves.

Of course, the Quantified Self's cybernetic orientation is more pragmatic than Wiener's philosophical musings, and its sense of spectacle is vastly downplayed relative to the Merry

Pranksters. But at a fundamental level, the Quantified Self uses contemporary monitoring technologies to implement both the cybernetic vision of self-empowerment and the countercultural project of community-building. Individuals use technology to capture information about themselves and their environments, which can then be incorporated into improved feedback loops for the purpose of building a better life. And by sharing the information they collect in a public forum, they promote the maintenance of a community of people around those ideas.

But even as the Quantified Self offers a sanguine vision of monitoring technologies as sources of self-empowerment, it also necessitates a consideration of the more problematic aspects of self-monitoring. Even when done for personal benefit, the process of converting transitory phenomena to persistent information exposes people to a greater risk of surveillance and control by external forces over the long term. Moreover, self-monitoring implicates a new set of questions about how we might

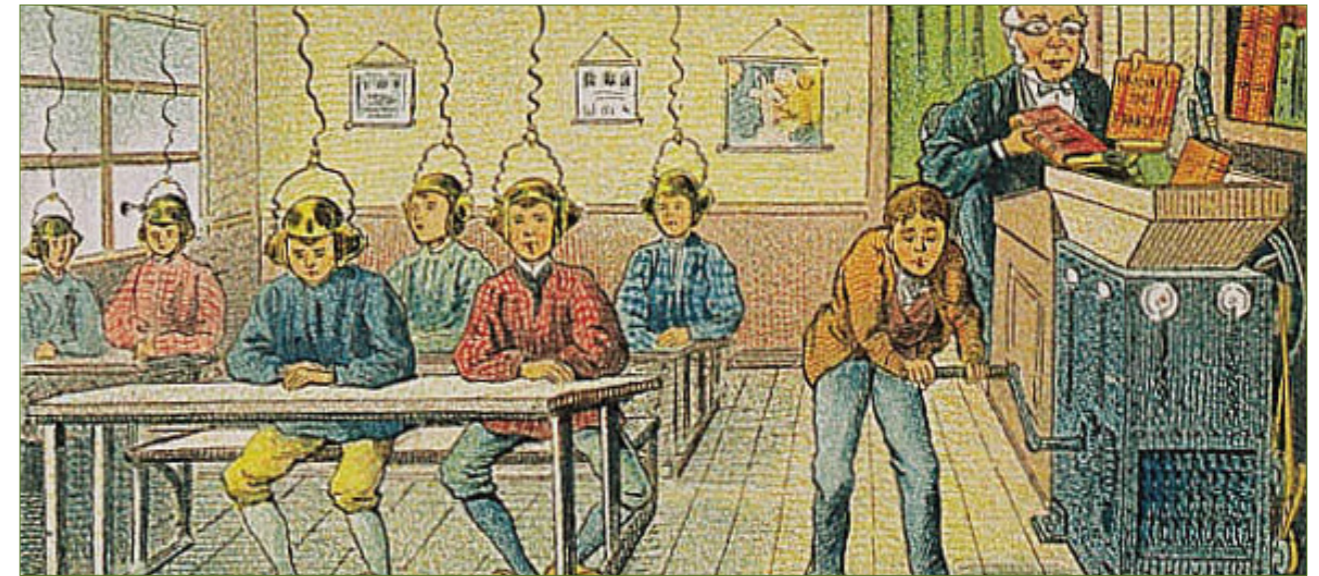
deal with knowing more about ourselves than we ever have before.

Alexandra Carmichael, a long-time member of the Quantified Self community, captured this latter concern in a poem called "Why I Stopped Tracking," which she posted on the official Quantified Self blog. In it, she called monitoring "an instrument of self-torture" and lamented an unhealthy obsession that drowned out her intuitions and lessened her sense of self-worth. Nonetheless, six weeks later, Carmichael accepted a position as the Quantified Self's director (and first official employee). By simultaneously rejecting and embracing the Quantified Self mission, Carmichael highlights a fundamental tension that is central to a future in which radically more information is available to us: Even as technologies have the utopian potential to free us from the bonds of our "vagaries of intuition," they force us into a more acute awareness of the inscrutable complexity of who we are as human beings.

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Enhancing Brain Devices

LLORENÇ VALVERDE, VP OF TECHNOLOGY, UNIVERSITAT OBERTA DE CATALUNYA, SV '10



In this engraving

from 1910, the author provides a vision of educational technology in 2000 (with the caption "En L'An 2000"). For me, it has some of the elements that motivate the work of Professor Greely, encouraging reflection on Greely's investigation into cognitive enhancements via drugs and devices. As this illustration shows, enhancements from the latter category of devices have long been envisioned and awaited. In the picture, the author proposes a technological gadget that automatically reads the enhancing devices par excellence, i.e. books. Students receive the sound through headphones so they can learn without apparent effort and in a passive way.

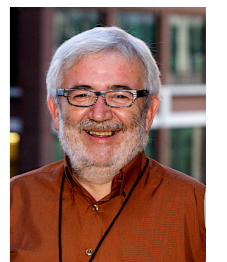
The artist, possibly unconsciously, predicts the existence of inequalities, which means that a single student is serving the machine without having the opportunity to have headphones like the others. But beyond this little detail, the image allows us

to visualize very well the need to devote attention to the use of these seemingly innocent brain-enhancing devices. In short, it is very difficult not to agree with one of the statements/conclusions of Professor Greely that, "Their appropriate use will depend on their safety and effectiveness, along with how we choose to use them and what steps we take to mitigate the challenges to fairness they may pose or the invasions of individual autonomy they may provoke."¹

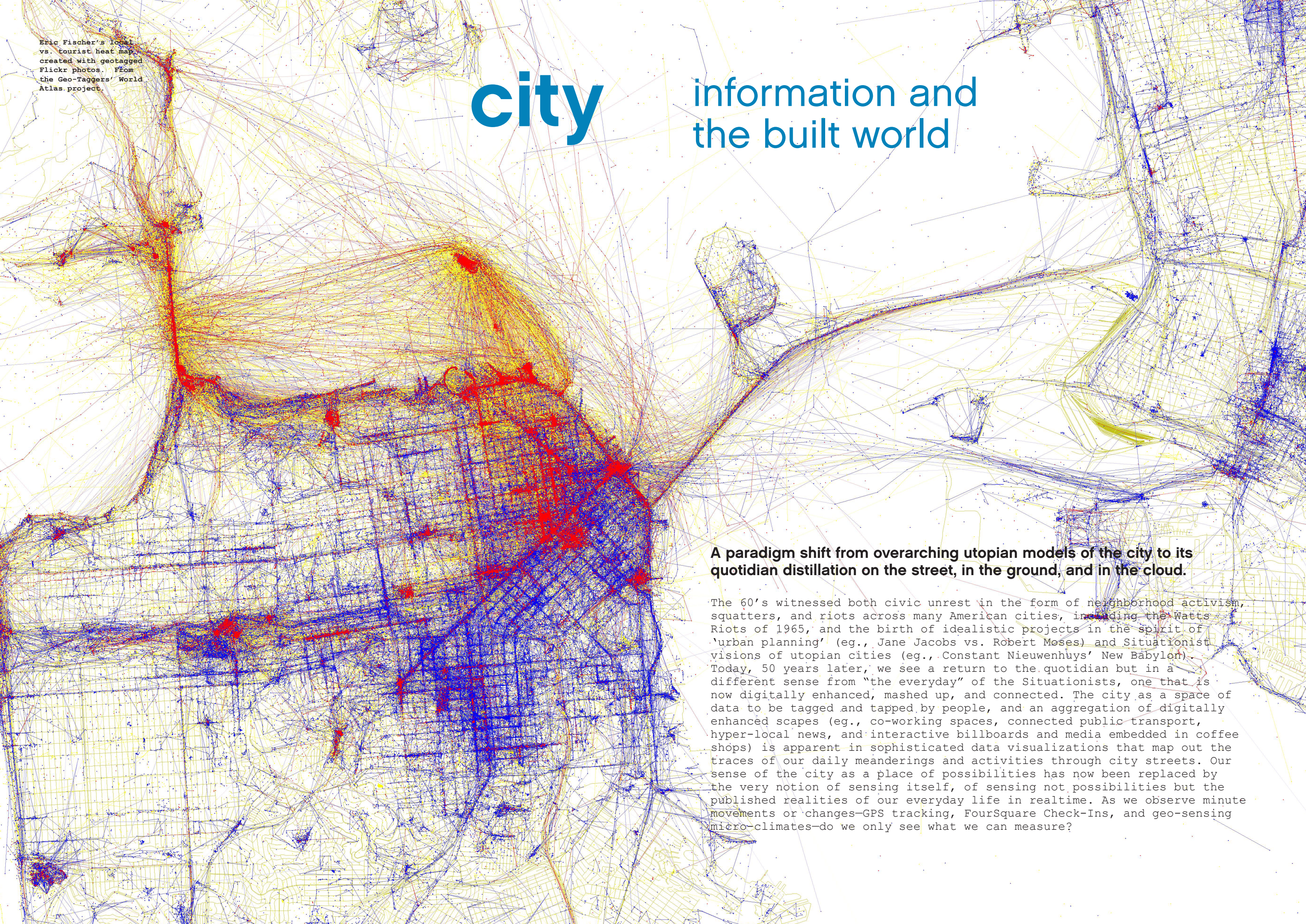
In fact, this is not an intrinsic necessity of such technologies, whether drugs or devices, since one of the main conclusions of that work can be found in Greek mythology in, for example, the episode of Prometheus giving fire to humans. The only problem is that, despite knowing that this reflection is necessary, all too often other considerations have guided the adoption of any technology — including cognitive enhancements —

and certainly ahead of the necessary reflection that adoption requires. As Greely concludes, "In order to maximize the benefits and minimize the harms of these new technologies, we will need to look at particular enhancements rationally and to adopt, ban, or regulate them carefully."² Yet others have warned that technological pace has made it more difficult to carve out time for reflection of the impact of these new technologies.³ And technology today is less passive, requiring us to continuously divide our attention amongst a series of tech-enabled activities. Ultimately what really enhances our brain function are both bursts of activity and moments of rest and recovery.

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LLORENÇ VALVERDE



Eric Fischer's local vs. tourist heat map created with geotagged Flickr photos. From the Geo-Taggers' World Atlas project.

city

information and the built world

A paradigm shift from overarching utopian models of the city to its quotidian distillation on the street, in the ground, and in the cloud.

The 60's witnessed both civic unrest in the form of neighborhood activism, squatters, and riots across many American cities, including the Watts Riots of 1965, and the birth of idealistic projects in the spirit of 'urban planning' (eg., Jane Jacobs vs. Robert Moses) and Situationist visions of utopian cities (eg., Constant Nieuwenhuys' New Babylon). Today, 50 years later, we see a return to the quotidian but in a different sense from "the everyday" of the Situationists, one that is now digitally enhanced, mashed up, and connected. The city as a space of data to be tagged and tapped by people, and an aggregation of digitally enhanced scapes (eg., co-working spaces, connected public transport, hyper-local news, and interactive billboards and media embedded in coffee shops) is apparent in sophisticated data visualizations that map out the traces of our daily meanderings and activities through city streets. Our sense of the city as a place of possibilities has now been replaced by the very notion of sensing itself, of sensing not possibilities but the published realities of our everyday life in realtime. As we observe minute movements or changes—GPS tracking, FourSquare Check-Ins, and geo-sensing micro-climates—do we only see what we can measure?

Urban Software: The Long View



MOLLY WRIGHT STEENSON, PHD CANDIDATE, PRINCETON UNIVERSITY'S SCHOOL OF ARCHITECTURE

Software exists to make sense of information in the world – including organic information. This cybernetic perspective, of a world constructed of information and feedback flows, does not stop with machines and people: it seeps into architecture and the design of cities. “By and large, these alterations have been internal, in the form of new procedures and ways of dealing with physical reality, rather than purely visual responses,” writes Burnham. It’s not just that which is read that concerns Burnham, but how the procedures and the societal changes instigated by information affect the day-to-day reality of physical inhabitation. It is the possibility of intelligence – of information being taken into account by urban systems and thus changing the interaction of a city’s residents.

The trope of an architecture that seeks, anticipates and reconfigures takes a different dimension with Cedric Price’s proposed Generator (1976–1979) project, a reconfigurable retreat centre constructed from 3.65 by 3.65 metre cubes, boardwalks, catwalks and screens placed on a grid and moved by crane. Price collaborated with architect-programmers John and Julia Frazer on a set of computer-aided design programs and sensors for Generator. “The whole intention of the project is to create an architecture sufficiently responsive to the making of a change of mind constructively pleasurable,” Price explained to the Frazers.⁵ They replied, “If you kick a system, the very least that you would expect it to do is kick you back.”⁶

They developed a set of programs that, among other things, designed “unsolicited plans and improvements” – if visitors did not request enough changes to the site, it would invoke a boredom program.⁷ By getting bored and designing its own configuration, wrote John Frazer, “the building can be described as being literally intelligent... [Generator] should have a mind of its own.”⁸

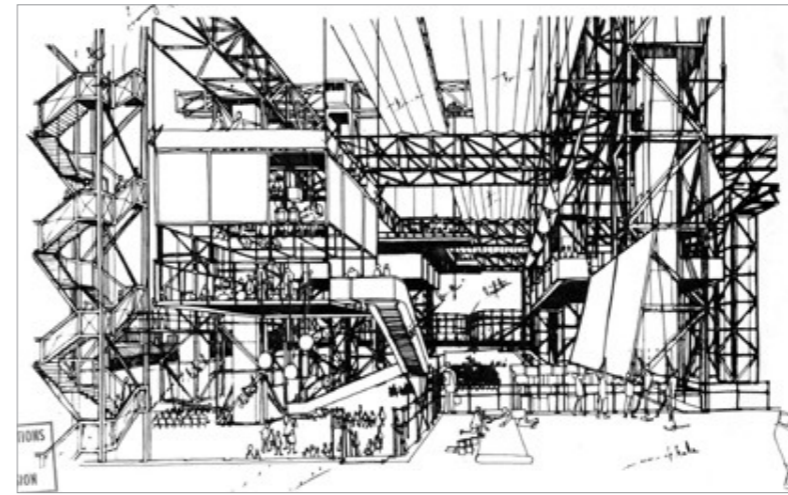
The concept of urban intelligence overlaid upon a city is much older than one might think. It originated in the 1830s in the symbiotic development of intercity railroad and electrical telegraph. The railroad made it possible to quickly deliver both passengers and written communication over long distances; the telegraph, whose wires followed rail lines, facilitated nearly instantaneous long-distance communication.⁹ The result was no less than the distribution of intelligence. In 1850, science writer Dionysius Lardner wrote, “The electric telegraph for the transmission of intelligence, in the most literal sense of the term, annihilates both space and time.”¹⁰ The telegraph, in Lardner’s view, rendered moot concepts of geography, distance, duration, and tempo. It altered all of the possibilities for connectivity and shifted society’s expectation for information. The diffusion of knowledge over space and time – the “transmission of intelligence” to which he refers – would cause “the increase of civilisation by intellectual means.”¹¹ The new mobility provided by communication was tantamount to the growth of intelligent society.

Telegraphy, in his view, was a system for distributing culture.

Intelligence in these urban systems is an active quality, not a passive one. It becomes active by distributing information and commands for interaction. This quality is central to what Lardner writes about the telegraph in 1850, just as it is fundamental to the idea of procedures in Burnham’s Notes on Art and Information Processing. Moreover, systems express disposition when they distribute intelligence. Seek surveilles – it looks for something unknown, something outside of the construction of the system, to challenge the interactions of its inhabitants. Generator takes the concept further, demanding change from its inhabitants; boredom generates a new set of interactions out of the user’s control. It kicks back, and in so doing, it expresses a mind of its own. The disposition is especially apparent at points of disconnection, such as the metaphorical “lack of adaptability” Negroponte and Groisser describe, or the boredom that Generator expresses.

Intelligent systems, in short, annihilate convention. They introduce a radical shift, whether in time and space, as with the telegraph, or in procedures and information – software and data – that Burnham described. If we magnify Ted Nelson’s statement, “Our bodies are hardware, our behaviour software,” how do our bodies meld with our cities, mediated by software? And just what might our cities learn from us?

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Cedric Price Fun Palace, the forerunner for the Pompidou Center.

“Our bodies
are hardware,
our behaviour
software.”

–Ted Nelson

Driving your phone: The crowdsourcing of traffic information

DR. ALEXANDRE BAYEN, ASSOCIATE PROFESSOR, SYSTEMS ENGINEERING, UC BERKELEY



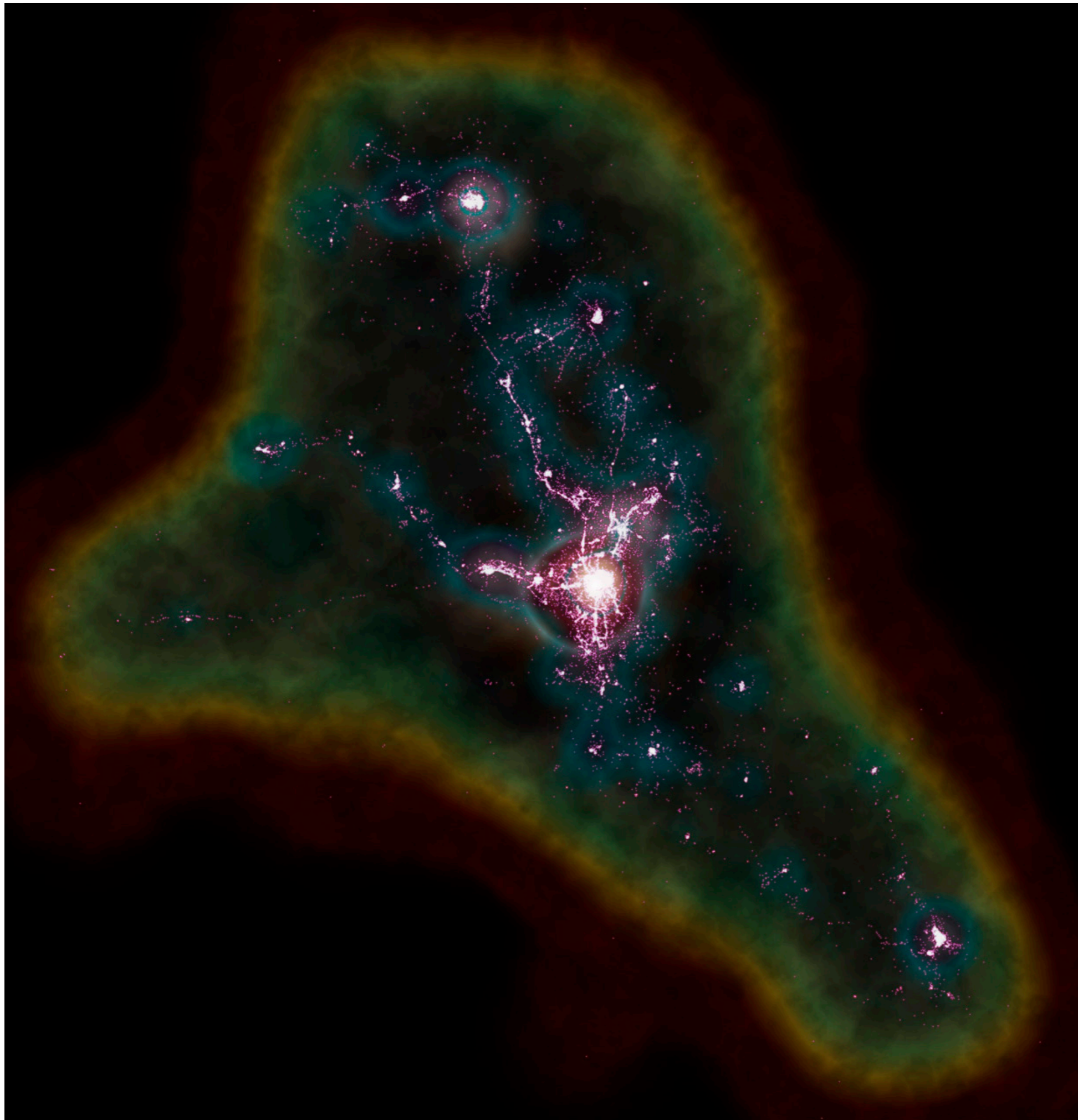
The convergence of communication and sensing on multimedia platforms such as smart-phones provides the engineering community with unprecedented monitoring capabilities. Traffic engineering was one of the first beneficiaries of this revolution, with the emergence of participatory sensing, which led to the progressive penetration of traffic information systems by probe data. Two years after the emergence of such systems, Google is one of the few companies which could hope one day to have enough apps on GPS enabled smartphones to provide crowdsourced traffic information at a global scale in the US.

In the mean time, this revolution was followed by another, in which users of mobile apps collaboratively contribute to the establishment of nextGen maps, entirely generated by users, with dynamic information. Soon, these information rich maps will include numerous other items,

such as weather, air pollution, riverflow, presence of crowds in specific areas, social networking updates, buses currently near you etc.

The science to create such maps, based on integration streaming data into physical models to describe the environment (traffic, meteorological, tides, crowd motion) is yet to be built, and involves the migration of traditional computing paradigms to the cloud, and the development of novel machine learning algorithms. These new paradigms will involve the expansion of crowdsourcing to data fusion at a global scale, moving beyond phone only, to integrate web based information, public records, dedicated sensing infrastructure, and user generated content.

Left: Paris Map from Stamen Design’s Prettymaps project—an interactive map of Paris composed of multiple freely available, community-generated data sources, and a new way to think about what kind of information can be delivered using maps. These sources include Flickr shapefiles, Natural Earth data of urban areas, and OpenStreetMap project data of roads, highways, and paths.



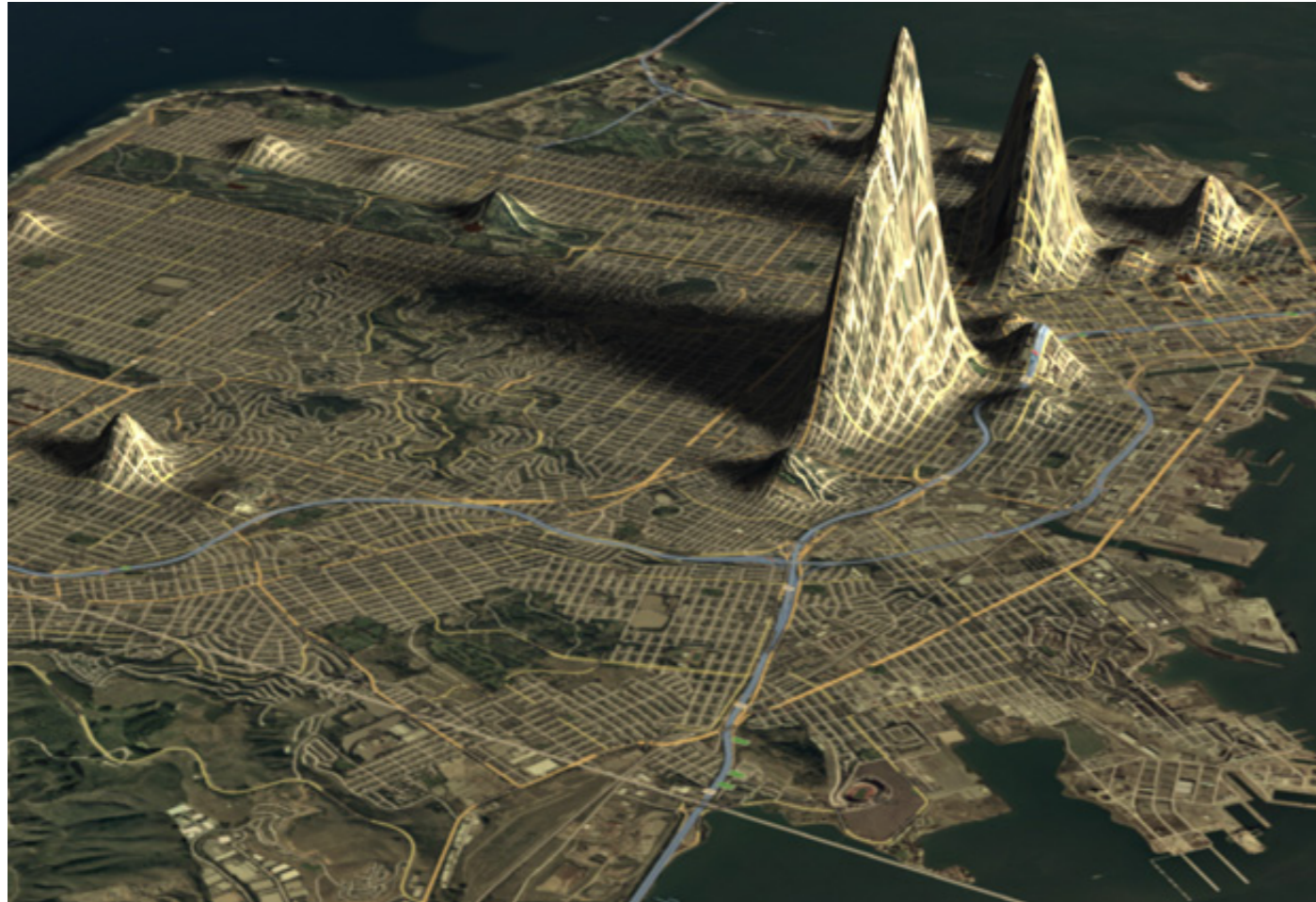
McCune's documentation of deaths in Iraq from Wikileaks data shows the casualties of war across a visual background modeled after Hubble telescope images of the galaxy.

Visualizing My City to Understand My World

DOUG MCCUNE, PRINCIPAL SOFTWARE ENGINEER, UNIVERSAL MIND

The city as an organism leaves behind trails of data. Every time someone assaults a fellow citizen, or buys a cup of coffee, or waits for a bus that's running late, there are records kept that document it all. The city is logging data to better serve the citizens, business are analyzing transaction data to explore buying trends, and even individual citizens have started saving their own data trails as they move through and interact with the city.

CREDIT: DOUG MCCUNE



CREDIT: DOUG MCCUNE

3D topographical map visualizing crime in San Francisco from the city's DataSF website. McCune's work focuses on the emotional impact of the visual translation of otherwise cold and impersonal data.

“The data from your city isn't abstract—it's the raw representation of how you experience urban life.”

—Doug McCune

There's a growing trend among cities in the United States, and around the world, to provide open access to their data repositories. Cities like Washington DC and New York have troves of data that is freely available for download. For example, every crime recorded in our nation's capital since 2006 can be downloaded instantly.

San Francisco launched its own data catalog, DataSF (www.datasf.org), in August 2009. It currently lists 179 datasets, including crime incidents, calls for service, and more esoteric data such as the species of every tree planted by the city. In addition to DataSF, California has a state-wide data initiative that contains data for the entire state, which can be found at data.ca.gov. Formalization of San Francisco's data policy is even the subject of proposed legislation with San Francisco ordinance 101155, which was recently proposed by the mayor and would establish guidelines for the release of the city's data to the public. We're only at the beginning of the open data movement; over the coming decade the amount of government data available to the public will increase exponentially.

In my work visualizing the data of San Francisco, I've begun exploring a concept I call dissonant visualization. If you ask the experts, data visualization is about communicating information as quickly and clearly as possible. We create charts because they explain the data more aptly than a sea of numbers on a page. We strive for clean maps that can be read easily without confusion. But in this quest for clarity and efficiency we can miss opportunities for impact. We might be able to comprehend numbers intellectually but the emotional weight of the data is often lost. Sometimes clarity can be substituted to produce an emotive punch to the gut.

Instead of dry, perfectly clear

visualizations, we can take a different approach and create visualizations that subconsciously confuse the user. We can create visualizations that use imagery the user is already familiar with and then flip the meaning of the image to contradict the viewer's original subconscious reading. When successful, this forces the viewer to read the image twice. The subconscious reading happens first, before the viewer can even think about it. The viewer instantly “understands” the image based on their intuition. But then the conscious reading of the image kicks in and the viewer does a double take. The viewer now truly understands what they are seeing, but the contradiction with their subconscious understanding is jarring. These visualizations pack such a punch because of that contradiction.

My work with dissonant visualization began with a series of maps of San Francisco that highlight the extreme hills of the city's landscape. San Francisco is known for its steep hills, but in my visualizations I swapped the crime rate for elevation. The product was a series of maps of different types of crime that show the unique peaks and valleys throughout the city. Each type of crime has a distinct elevation signature. The peak of prostitution, for example, is centered along Shotwell Street and casts the rest of the city in its shadow. Whereas vehicle theft is so spread out throughout the city that it almost forms a city-wide plateau.

In addition to using the aesthetic of topographic maps, I've also been working to recreate the aesthetic of space telescope images of galaxies. I've focused on taking the most disturbing data I can find and transforming it into beautiful images. The space images produced by the Hubble telescope fill me with awe and wonder, but the images I produce visualize death in war. Civilian deaths

in Iraq or troops killed in Afghanistan are recreated in beautiful forms. The result is another uneasy feeling of dissonance when your brain tries to reconcile the beauty you typically associate with the glorious vastness of space with the knowledge that you're actually looking at humans killing other humans.

I am also focusing on ways to integrate data visualization into our everyday lives. The data from your city isn't abstract – it's the raw representation of how you experience urban life. Crime data that catalogs muggings in your neighborhood represents your experience walking home from work every day. Or maybe you've learned to avoid certain blocks to steer clear of drug dealing. Or perhaps you make a point to avoid the potholes around the corner when you drive by. All these interactions with your urban landscape are captured in the data. This data isn't simply theoretical—it represents a concrete part of your life. I want to bring that data into our homes. I want to transform it from an abstract idea to a concrete physical object.

We're on the brink of a personal manufacturing revolution. Printers that can create physical 3D objects are now as cheap as laptop computers. The everyday artist, or programmer, or designer can easily turn ideas and code into physical objects. My first series of experiments with tangible data is a series of refrigerator magnets. Each magnet is a 3D map of a different type of crime in San Francisco. These maps let you run your finger over the different peaks to literally feel the distribution of crime throughout your city. In a way I interact with this data every day when I walk around my city. Now I get to interact with it on a different level every time I open my refrigerator.



DOUG MCCUNE

Fan photos from Notre Dame de Paris

Photo 27 of 41 Back to Profile · See All Photos

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Social States: The Future of Cities & Online Communities

JEAN-MARC BORDES, CHIEF OPERATING OFFICER, INSTITUT NATIONAL DE L'AUDIOVISUEL, SV '10



JEAN MARC BORDES

People on Facebook and other social networks now gather on the web, in virtual assemblies.

They gather there because they can easily share the same interest in a matter. They do so because they want to exchange more with certain others they like. And they gather there because they feel they have proximity with individuals that are close to them in spirit, or a way of life.

They are able to communicate through text messages and video chat. They can belong to many communities, have many different interests.

As long as they do not feel the urge to physically meet in the long term, they can live in different cities, different spots on the planet and physical contact between them is scarce.

However, when physical space is shared, using their geolocalized smartphones they are able to make their presence visible to any friends nearby.

But what would be the result if they decide to more definitively move and establish themselves physically as neighbors in the same City, in the same quarter? What if they opt out of present roots to find more important human links

in offline space?

Rather than tolerating neighbors with whom they have nothing in common, and do not share their culture, they may prefer to regroup in Villages where they can meet in person with people they have affinity with. In their social clubs they can reshape the world and build new areas; and they will probably need less and less of a political central State to govern them, preferring to grant authority to their local representatives. This regain of Communitarism can lead to a profound reshaping of our cities.

Or is it the opposite? Because they have this virtual link, they will not have any urge to move, feeling safe because of their web connection, and preferring to keep their homes at a distance prioritizing history and their roots, and refusing to be emigrants.

In the old times the Church was a kind of insurance: belonging to a church was a way to get work, to belong to a Community and be helped in case of necessity as well as to help others. People were living around the Church. This solidarity is seldom seen nowadays, and in many countries Church is bypassed.

Are the new links through social networks strong enough to establish a new form of solidarity between people? Is Facebook the new-era Church?

Above: Even Notre Dame has a Facebook page.

The stream



thekulway @Hagel The West focuses too much on product and technology innovation and not on institutional innovation **#oinstitute**

Kul Wadwha, Managine Director, Wikimedia



BrunoAidan Anybots commercialize physical robotic avatars that can be used as remote employees! **#oinstitute** <http://yfrog.com/6rdr9nj>

Bruno Aidan, Head of Research of Applications, Alcatel - Lucent Bell Labs



mennovandoorn Never seen Kelly talk with so much energy: What technology wants at **#oinstitute**

Menno Van Doorn, Director of the Research Institute for the Analysis of New Technology, Sogeti



HenriVerdier Henry Greely about **#neuroethics**. Every device you use, everything you read change the physical structure of your Brain **#oinstitute**

Henri Verdier, Chairman, Cap Digital



tinio Gr8 session by **#oinstitute** this afternoon. 'Sense + The City' topic explored by M. Steenson D. McCune T. Jebara & A. Bayen. Thz 4 invite **@map650**

Aurelio Tinio, Software Engineer, Bay Citizen



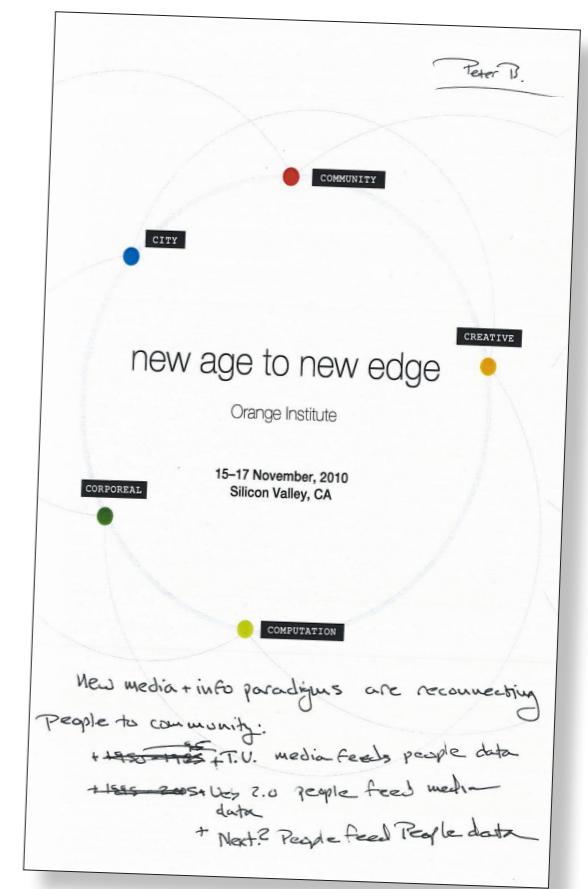
HenriVerdier #oinstitute Great speech by **@maximolly** about the architecture of information as information. 'the show and tell is the City itself'

Henri Verdier, Chairman, Cap Digital



pascale Closing keynote for **#oinstitute**, **@weschan** is ROCKING it!!! Fascinating story about the origin of google analytics

Pascale Diaine, Evangelist, Orange Labs SF



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Acknowledgments

First we’d like to thank the two thinkers who gave us the fundamental framing for this year’s immersion, the New Age and the New Edge – John Markoff and John Hagel III, respectively. John Markoff’s work was a founding inspiration, and our excitement in connecting it to the visionary thinking of John Hagel grew daily as we built out the structure of the program. We’d also like to thank these two authors as well as Kevin Kelly not only for their intellectual contributions but their very personal contribution in the form of taking the time to individually meet with every member of the community and sign copies of their respective books.

Speaking of books, we’d also like to acknowledge the early encouragement and guidance of Stanford professor Fred Turner, whose own contribution to the literature, From Counterculture to Cyberculture helped illuminate the journey, and whose conversations with us helped us to connect the dots. Two men emerged from these conversations, both of them icons in the history of counter and cyber culture: Stewart Brand and Alan Kay. Both helped spark the revolutionary changes we examined, and both were very gracious in their words of encouragement to our team – their supportive words meant a lot to us at a formative stage in shaping the program.

The community behind Silicon Valley Institute 2010 promotion were both recipients and contributors to the initiative. We’d like to especially thank Kul Wadhwa of Wikimedia Foundation for his inspirational opening talk that linked the past and present, and showed all of the class ways to take the experience and apply it in a transformational manner to our daily work. In this vein, we also express our appreciation to Beatrice Mandine from Orange for her initiative in bringing influential journalists into the discussion not only as observers but as active participants.

The faculty we assembled is a reflection of the deep ecosystem connectivity that has been built over the years by the Orange San Francisco team. We’d like to especially thank Asha Vellaikal and Shishir Garg for their assistance in introducing us to amazing presenters, and to Asha and the talented Virginie De Bel-Air for their demos of work in progress. Speaking of the ecosystem, we’d like to extend our thanks to Martin Dragomirecky, MBA, Wharton, for his gracious and generous hosting of the promotion at the beautiful Wharton facility. Also we’d like to thank the talented Daniel Kokin for his wonderful photography.

Ideas take root in our brains only if they are expressed forcefully both in words and visuals. We’d like to thank our incoming multimedia intern Obreanna McReynolds and her predecessor Maria lu for making these ideas live. Working with Orange San Francisco’s Knowledge Transfer team of Pascale Diaine, Mark Plakias, and Natalie Quizon, Maria and Obreanna framed the work you hold in your hands with clarity and imagination. We are also fortunate to have the assistance of knowledge sommelier Kathyryn Myronuk in curating the inputs of both faculty and our members. And of last but not least, we thank all our members who joined in the conversation and contributed their essays for this publication – we are thrilled that with your contributions this truly is a global colloquium of engaged participants focused on a common goal.

Finally we would like to thank Stephane Richard, the CEO of Orange/France Telecom, whose supportive and encouraging welcome started off this year’s edition of Orange Institute Silicon Valley. Your words set us in a great direction, so, *merci!*

typography

Helvetica Neue

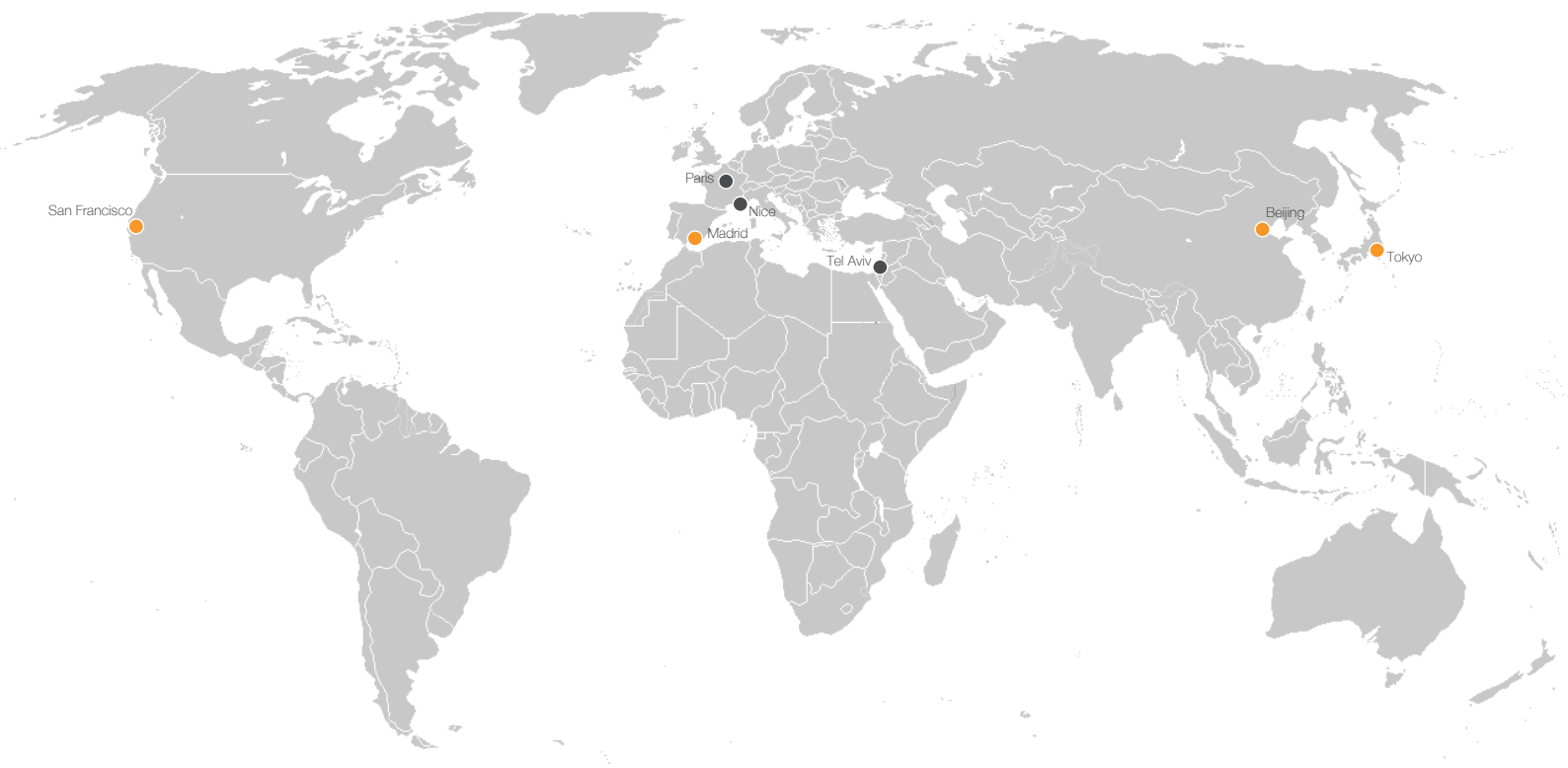
Helvetica had a significant influence in design in the 1960s—its clean sans-serif shapes were adored by advertisers, but its corporate and government roots were reviled by anti-war protestors. The juxtaposition of those sentiments creates a disruptive space that echoes the collection of content in this book. Helvetica Neue is a new variation on Helvetica.

Courier New

Courier is a monospaced slab-serif typeface designed in the 1950s to resemble the output from a typewriter. The typewriter was the mechanical word processor of choice in the 1960’s, and this typeface was chosen to reflect that era. Courier New is a recent variant of Courier.

Chalet

Chalet is a modern typeface with a retro vibe. It’s rounded geometric letters nod to Swiss minimalism. Designed by House Industries.



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