

# the future of **persuasion**

Why “persuasion” can’t be a dirty word p 1



What your digital trails will say about **you**

p 5



24/7 support—and inescapable **peer pressure**

p 7

When **machines know more** than we do!

p 9

Knocking down **barriers to action, now!**

p 12

Turning to this page is worth 5 points

p 14

You’re not crazy, that ad does look like you

p 16

Feeling good? Awe-some! Here’s how to **share it**

p 18



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Force / design / defense

The 6 strategies that could **save your life!** p 21

The future of philanthropy? p 22

Your crash course on persuasive technologies p 25

Advertising goes undercover! p 29

The road to genuine healthy living? p 32

The future of learning! p 37

Politics and persuasion in the 21st century p 40

Now what? Action principles for your organization! p 43

More from the experts! p 49

About the ...

## Institute for the Future

The Institute for the Future (ITF) is an independent, nonprofit strategic research group with more than 40 years of forecasting experience. The core of our work is identifying emerging trends and discontinuities that will transform global society and the global marketplace. We provide our members with insights into business strategy, design process, innovation, and social dilemmas. Our research spans a broad territory of deeply transformative trends, from health and health care to technology, the workplace, and human identity. The Institute for the Future is located in Palo Alto, California.

## Technology Horizons Program

The Technology Horizons Program combines a deep understanding of technology and societal forces to identify and evaluate discontinuities and innovations in the next three to ten years. Our approach to technology forecasting is unique—we put people at the center of our forecasts. Understanding humans as consumers, workers, householders, and community members allows ITF to help companies look beyond technical feasibility to identify the value in new technologies, forecast adoption and diffusion patterns, and discover new market opportunities and threats.

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### ACKNOWLEDGEMENTS

#### THE TECHNOLOGY HORIZONS TEAM

**Lyn Jeffery**, Program Director

**Mathias Crawford**, Research Manager

**Jake Dunagan**, Research Director

**Mike Liebhold**, Distinguished Fellow

**David Pescovitz**, Research Director

**Jason Tester**, Research and Design Manager

#### ADDITIONAL CONTRIBUTIONS

**Vivian Distler**, Research Manager, Health Horizons Program

**Jean Hagan**, Creative Director

**Robin Bogott, Karin Lubeck, Jody Radzik**, Design and Layout

**Lisa Mumbach**, Production Editor



# Contents

HUMANITY AT A CROSSROADS .....	1
THE REMAKING OF PERSUASION: SEVEN FORCES AT PLAY .....	5
<b>Force One:</b> Digital Mirrors .....	5
<b>Force Two:</b> Network on My Shoulder .....	7
<b>Force Three:</b> Telepathic Technologies .....	9
<b>Force Four:</b> No-Click World.....	12
<b>Force Five:</b> Epic Win.....	14
<b>Force Six:</b> Amplified Imagination.....	16
<b>Force Seven:</b> Awe-gmented Reality.....	18
PERSUASIVE DESIGN/PERSUASIVE DEFENSE .....	21
PERSUADING PEOPLE TO CARE: THE LOVELAND PROJECT.....	22
TECHNICAL FOUNDATIONS: COMBINATORIAL EFFECTS FOR AMPLIFIED PERSUASION .....	25
Worldwide webs of semantically linked people, data and things.....	25
Super-charged human-machine interactions .....	26
Immersive media venues.....	27
APPLICATIONS: MARKETS, HEALTH, LEARNING, GOVERNANCE .....	29
<b>Markets:</b> Advertising Everywhere and Nowhere.....	29
<b>Health:</b> Targeting Well-Being.....	32
<b>Learning:</b> 21st Century Know-How .....	37
<b>Governance:</b> Persuading Up, Persuading Down.....	40
PRAXIS: PRINCIPLES FOR PERSUASIVE ORGANIZATIONS .....	43
APPENDIX: HEAR MORE FROM THE EXPERTS .....	49
ENDNOTES .....	53



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# Humanity at a Crossroads:

## The poles of power and persuasion

Main Entry: **per·suade**

Pronunciation: \pər-'swād\

Etymology: Latin persuadēre, from per- thoroughly +suadēre to advise, urge

Date: 15th century

1: to move by argument, entreaty, or expostulation to a belief, position, or course of action

2: to plead with: URGE

— per·suad·er noun

Whether through flat-out coercion or the subtlest seduction, *moving others to a belief, position, or course of action* lies at the core of political, social, and commercial power. In ancient Greece, the art of rhetoric was central to education, and a key topic for philosophers and politicians. Fast-forward to the last century and the rise of mass commercialism, to the juggernaut of modern advertising—the art of the sell.

Now consider the rapidly evolving landscape of connective, aware technologies that we find ourselves living with today. We have reached an inflection point in technological and social change at the end of the first decade of this new century. In many parts of the planet—not just the wealthy developed world—we have moved well beyond figuring out how to simply access and create data, and are becoming enmeshed with mobile, increasingly aware technological systems that are orders of magnitude more

intimate, more automated, and knowledgeable about us than anything we have seen before.

Welcome to the future of persuasion.

Behavioral sciences, neuroscience, genetics, and social network data are creating a new science of motivation and desire. Networked sensor data, semantic analysis, vibrant virtual and augmented realities, compelling data visualization tools, video everywhere, and mobile supercomputing: just as these systems create new avenues for self and collective expression, they also open us up to new avenues of persuasion.

What we do with these tools could not be more important. Will we use them to motivate ourselves and others for positive behavior change, as we seek new life practices that create long-term sustainability for our planet? Or will we be manipulated by those with access to unprec-



en.wikipedia.org/wiki/Cicero

↑  
**Speechmaking was one of the earliest persuasive technologies, immortalized here in an image of famous rhetorician Cicero denouncing Catiline in the Roman Senate.**



www.amctv.com/originals/madmen/

↑  
**Today, many think of persuasion as linked to modern advertising.**

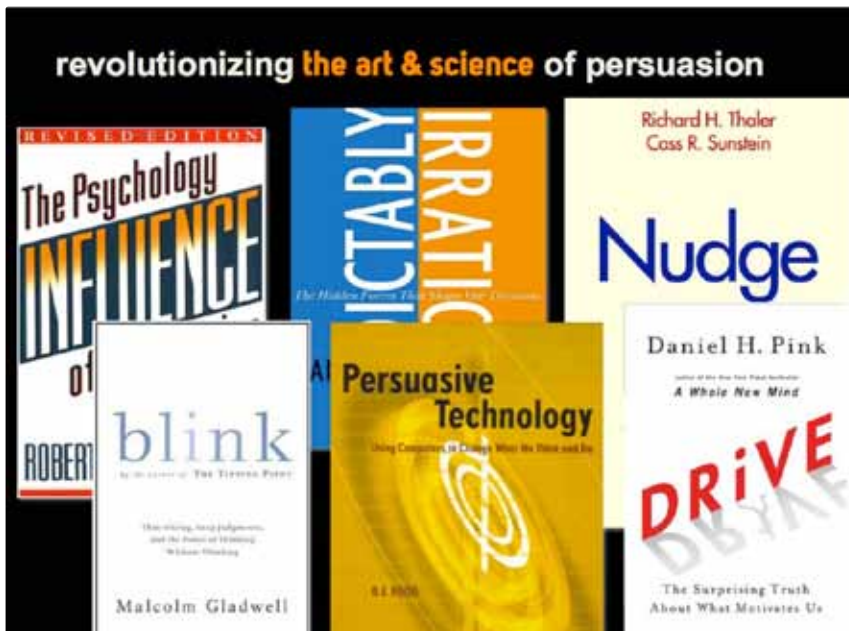
edented insight into what we do and say, where we do it, and with whom we do it?

In this report, we will journey through the future of persuasion, looking at “forces of persuasion”—the core drivers of change in how we will be persuaded and will persuade others—along with related strategies for designing more persuasive experiences and defending against unwanted kinds of persuasion. We will explore the combinations of technologies that will provide the foundation for change, and we will meet some of the practitioners and researchers who are developing this future.

The new forces, technologies, and applications of persuasion presented in this report suggest a range of scenarios for the future development of persuasion, with a range of social and economic impacts. More important, however, is the dynamic between the two sides of persuasion: persuading and being persuaded. It is perhaps this dynamic—sometimes in harmony and sometimes in conflict—that will have the largest impact on technology, innovation, and society over the coming decade.

Ultimately, the two are likely to co-evolve, each feeding the other. This creative co-evolution suggests a scenario of rapid innovation and expansion of all forms of technological context awareness, with both predictable and unexpected opportunities for creating economic, personal, and collective value. However, the same dynamic—where top-down control meets bottom-up hacking—may also create darker scenarios when the interests of those at opposite ends of the dynamic conflict. Thus the future is certain to heighten debates on the commercial use of digital data, the role of technology in daily life, and individual privacy.

The persuasive future we are entering is not an option; we must all participate in it. It is the future of advertising, of learning, of the workplace, and of health. We have to choose our stance toward this future and understand that for all of us, in our roles as consumers, users, citizens, employers, and employees, the challenge is how to harness the power of persuasion for the right reasons rather than for the wrong ones.



Cialdini, Robert B. *Influence: The Psychology of Persuasion*. Fogg, BJ. *Persuasive Technology*. Ariely, Dan. *Predictably Irrational*. Gladwell, Malcolm. *Blink*. Pink, Daniel H. *Drive: The Surprising Truth About What Motivates Us*.

← We are in the midst of an explosion of new findings and popular interest in the art and science of persuasion and motivation.





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NASA

# The Remaking of Persuasion

## Seven forces at play

Many future means of persuasion will be the same as they were in the past: logic, argumentation, a well-crafted story. But our understanding of persuasion, attitude formation, and behavior change is evolving, not only through traditional disciplines like psychology and economics, but increasingly through neuroscience, game design, and the development of new persuasive technologies.

We've synthesized new scientific findings and emerging technologies into seven forces that will define persuasion in the next ten years. These forces can be harnessed and directed, even designed, but rarely controlled or stopped outright. Read them for an understanding of how we are about to find ourselves heavily influenced by a whole host of new people, places, and things.



### Force One: Digital Mirrors

Algorithms analyze and reflect back our digital activity to shape attitudes, behaviors, and identities.

We are each beginning to create an enormous number of digital artifacts, which we can choose either to share or to protect. Health records, fitness logs, social contact lists, media preferences, and so on are, to varying degrees, all entering the public sphere. These artifacts will be mined to create a “digital mirror” of our lives. With the dramatic increase in the number of digital artifacts, there will be a greater drive to make sense of it all—to understand how the artifacts are linked. Innovations in web graph analysis are the new frontier for creating digital mirrors of our lives, which will reflect back new awareness and analysis of our own behaviors. These digital reflections, often based on analytics that will be hidden from us, will become a powerful source of influence on our actions and emotions.

### Systems for self-improvement

Often, digital mirrors will be devices or services that we adopt for self-improvement. For example, the Personal Performance Coach from Accenture Technology Labs is a software prototype that will listen to both ends of a mobile phone conversation and determine whether one party is talking too much or interrupting too frequently. The system reports feedback right after a call and rewards improvement over time. Many digital mirrors will take a similar form, watching what we do and, like any coach or personal trainer, offering analysis, feedback, and motivation. But how will we know what interrupting too much is, without some baseline for comparison?

### Systems that know me better than I know myself

Accenture's digital mirror is personal, but many other digital mirrors will reflect something back only in comparison of our lives to others. One such mirror is called TweetPsych, an online service—or perhaps provocation—that offers to generate a “psychological profile” by looking at the words in a Twitter user's stream of tweets and comparing to other users' tweets. These comparisons range from the emotional valence of a Twitter stream—such as whether it is in a more positive or negative style than the average user—to a frequency comparison of topics such as education or finance.

Such digital assessments are not trivial. Behavioral confirmation, a foundational theory from psychology, has repeatedly demonstrated that we change our behaviors based on what others expect us to be. In a classic test of behavioral confirmation in which undergraduate students interacted over a phone, female students were deemed friendlier and more charming when the males they were talking to had been told their counterparts were attractive.<sup>1</sup> A perceiver can cause another person to act in ways that confirm the perceiver's expectations. Neuroscience is suggesting our brains are even wired to experience such confirmations directly in the ventral striatum, the innate reward center of the brain.<sup>2</sup> What our mirrors tell us about ourselves will impact what we think of ourselves, and even what we do.

## Systems that know me by my friends

Project Gaydar was an experiment in 2007 by a few MIT undergraduate students who were curious to know what our social networks could reveal about us. Their goal was simple: to determine the sexual orientation of a person on Facebook who did not specify it, solely by aggregating the specified sexual orientations of Facebook friends. Their formula made the right determination in every single case, according to the volunteers who agreed to reveal it.

Project Gaydar was deemed “right” 100% of the time because the cooperating students had clearly defined sexual orientations but chose not to declare one in their Facebook profiles.

There are, however, many reasons people do not list something like sexual orientation or political persuasion, and privacy, while vitally important, is probably not as dominant a reason as uncertainty. Many people's attitudes may simply not yet be formed; they may be still deciding, or solidly in the middle. Digital Mirrors are confronting younger users in particular with a new “age of early self-conception,” as Web entrepreneur Ben Casnocha has termed it. “As younger and younger people set up profiles,” he says, “they end up confronting some of the central angst-inducing identity questions early in life.” For future digital mirrors, however, the nuances of uncertainty and proto-identity formation will likely not matter, and they will begin to tailor our digital experiences according to our best answers or their best estimations.



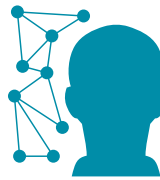
↑ TweetPsych will create a “psychological profile” of any public Twitter account, based on the words used in that Twitter stream.



↑ Project Gaydar is a project from MIT students to determine the unlisted sexual orientation of a profile just by looking at the listed orientations of their online friends.

## Digital mirrors: reflective or predictive?

We might be inclined to label these digital mirrors as not only reflective but also predictive. Again, harking back to the principle of behavioral confirmation, we adjust our behaviors to live up to others' expectations. Advertising firms like RapLeaf and social networks like Facebook, using digital mirrors such as TweetPsych and Project Gaydar and supplemented with enormous stores of "friendship data," could begin to adjust our online interactions and environments—automatic curation of digital news or the personalized layout of a Web shopping site—to their expectations of who we are. With such constant embodiment of these expectations, there exists a real potential that we may be tipped one way or the other to conform to meet them: gay or straight, liberal or conservative, safe or unsafe credit risk, in a solid relationship or "on the rocks." Far beyond reflecting or predicting, digital mirrors will be powerful forces for persuasion.



## Force Two: Network on My Shoulder

Friends, networks, and online crowds show up in everything we do, offering instant support or mass peer pressure.

Having easy access to people online is not particularly new (though it's not all that old either; Facebook, after all, has only been around about six years). Mobile phones provide on-the-go access to contact lists, and instant messaging gives us our buddy lists. These interactions are still conversations, however, and even IM or text message conversations bring with them extraneous conventions and traditions—the tax of small talk—that prevent people from reaching out as often as they might for quick motivation or support. Buddy lists and contact lists offer easy access to the network at our fingertips, but they are quickly morphing into networks on our shoulders. These networks will transform the way we are influenced—and influence others. As they become more automated, and constantly visible, we will begin to compare our daily behaviors to new "norms" set by our own social networks or even by crowds of strangers. Peer pressure will be amplified, creating new forms of crowd mentality, for good and for bad.

## Networks go from conversation to general awareness

In May 2010, Microsoft released an eagerly awaited but quickly abandoned new entry into the market of mobile phones. Microsoft's KIN targeted users in their teens and twenties, and to appeal to this audience, the company radically departed from what has become common in



www.rapleaf.com

↑ RapLeaf scans millions of blogs, social networks, and digital trails and uses the term "friendship data" to describe how they augment existing ad campaigns. The CEO of Rapleaf exemplified their strategy with a scenario where "a home buyer with an on-the-fence credit score should be treated as a safer bet if his friends have higher scores."



www.kin.com

↑ The Microsoft KIN phone handset provides a steady stream of updates from your social network.

mobile phone design. Instead of a home screen with icons representing different apps or functions on the phone, the KIN displays a constant stream of updates from friends and contacts in a user's social networks, so there will be no hesitation between wondering and knowing what friends are up to. This is a "Network on My Shoulder."

Devices like KIN portend a significant shift, from intentional and targeted conversations within a social network to a more automatic and mass awareness of the network's activities, moods, and needs. The change from conversations to awareness is essential to understanding the new persuasive power of social networks. Even though the KIN line from Microsoft has since been discontinued, other mobile phones built on the popular Android platform feature social network streams as home screens, including new offerings from Motorola.

### Networks go automated

As devices sense behaviors and environments, they will begin reporting not only to their owners but also directly to online networks. The Withings body scale, for example, is known as the "scale that tweets," and what it advertises as a feature to some people is probably a nightmare to others: the option to post the result of each weigh-in to social networks like Facebook or Twitter. Once a person's weight exists on an online network, other people can interact with it, ideally with supportive comments and replies.



www.withings.com

↑ The Withings scale, also known as the "scale that tweets."

The Withings scale epitomizes a scenario in which we adopt a persuasive technology for personal benefit. The scale must be purchased, connected to a wireless network, associated with a social network, and finally set to automatically broadcast weight. For some it will be well worth it for access to near-real-time encouragement.

### Networks force comparison with the crowd

Not all network interactions will be opt-in, however. It will be much harder to ignore the network on your shoulder when it is built right onto your desktop—as with the Daydar software prototype from the MIT Media Lab.

Daydar is a system to track and display the minute-by-minute, day-by-day productivity of a team or social network. A dynamically updated progress report is displayed as the desktop background of each member's computer. The size and colors of the blobs on the display correspond to both the scale of tasks and the real-time success of the team or network at accomplishing them. The user is made aware of their own progress and how it compares with the rest of the team, even more subtly and consistently than with a stream of social network updates such as those produced by a device like the Withings scale.

Daydar users can compare their behaviors and performance to the crowd at a glance. Surely this can be motivating—the principle of social proof says that we typically turn to those around us for information on behavior norms—but Daydar points toward a new type of subtler, inescapable awareness of others.



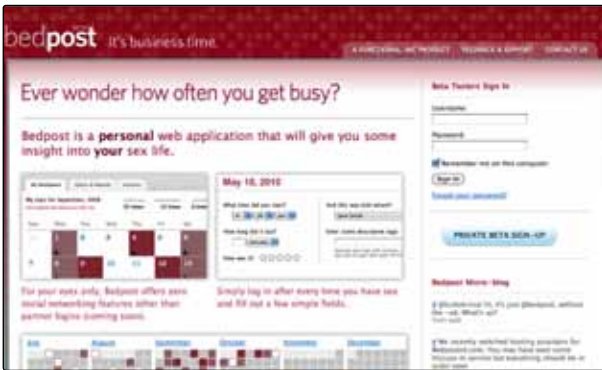
web.media.mit.edu/~jkester/papers/Daydar.pdf

↑ MIT Media Lab's Daydar—a prototype to track and display the daily productivity of your social network.

## Networks create new baselines for normal

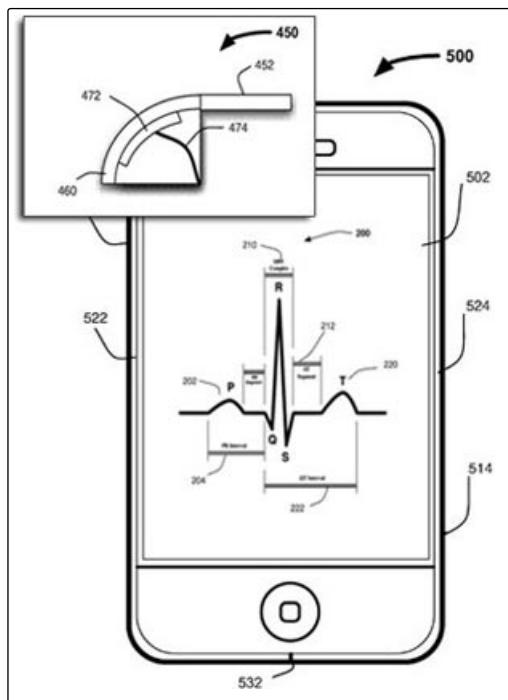
Many will feel that productivity is an acceptable domain of life for systems that quantify, display, and compare our performance to others. But few would likely want the network on their shoulder when they are having sex. The Bedpost app is a digital diary for self-trackers who are interested in reflecting back on the details of their sex lives (social networking features are limited to partner logins). It is a product of the growing Quantified Self phenomenon: people who track data points in their lives ranging from daily happiness and well-being to attention and productivity, to health metrics and even sex.<sup>3</sup>

Bedpost and Daydar suggest that we are bringing the Network on My Shoulder into previously personal areas of life. The aggregated data produced by these systems is also establishing new baselines—metrics that can be accessed instantly but that are also potentially unavoidable, even when we may not be seeking a social comparison.



www.bedposted.com

↑ Bedpost is a digital diary to make it easier for self-trackers interested in reflecting back on the details of their sex lives.



www.medgadget.com/archives/2010/05/apple\_files/patent\_for\_iphone\_heart\_monitor.html

← Apple filed a patent in May 2010 for the iPhone to detect heart rate through the casing of the phone itself.



## Force Three: Telepathic Technologies

Sensors tracking our location, health, and attention know just the right time and right place to persuade or intervene.

Stanford innovator and psychologist BJ Fogg notes timing is often the missing element in behavior change. Fogg has a name for properly timed alerts—he calls them triggers—and he has isolated triggers as the single most powerful component of successful behavior change.

There have been many visions over the years of the persuasive potential of technologies if only they knew something about our immediate context, such as our mood, schedule, location, or health. Sensors that track such factors could know just the right time and right place to persuade or intervene. We are currently in the midst of an explosion in the deployment of sensors to detect images, heat, motion, and more. New household sensors, for example, will create assistive environments and new kinds of smart objects. Hundreds of sensors are being embedded within cars that allow parts to communicate among themselves, and that also deal with human factors issues. In addition, we are finally at the brink of having mobile devices not only be aware of location but also understand aspects of our biological state. Mobile phones have been relatively dumb for most of their history but are quickly becoming intelligently aware.

As the devices and environments around us become aware, they will play a bigger role in making decisions for us, or in nudging us toward specific actions.

### An old dream: telepathic advertising

One of the most enduring telepathic scenarios is the location-based coupon where, for example, owners of a coffee shop can beam an instant discount to the mobile phones of people passing by their front door. This vision has been waiting for cellular networks and mobile handsets to catch up, but implementation is finally here.

The North Face chain of outdoor clothing stores is piloting a campaign in the summer of 2010 to send text messages to potential customers as they—and their location-aware mobile phones—pass under a “geo-fence,” a virtual perimeter corresponding to several city blocks around each store, that triggers a message upon entry. This is a pilot project, and participants are required to opt in and declare their interest in the North Face brand, but it points to a future in which our technologies know something—or maybe a lot of things—about our immediate context and take action accordingly, almost as if they were telepathic.

### Persuading the future me

The North Face geo-coupon is an important new opportunity area for digital marketing, but mobile locative capability is also being tapped by enterprising people to power their own goals. These users are repurposing smart phone apps to be more mindful, and to improve their own behaviors. The Locale app, for example, is designed to turn off a phone’s ringer when the phone enters a user’s own geo-fence. One woman programmed her phone to vibrate whenever she passed the gym, a tactile reminder and ping of guilt. A programmer wrote his own app so that his phone would send out a text message to friends whenever he lingered near an electronics store where he was known to spend too much money.

At least for the near future of telepathic technologies (including location-aware phones), such grassroots stories of personal mindfulness and self-improvement will be interesting to follow, as people seek out capabilities to help them keep on track with their long-term goals. But certainly the next phase of telepathic technologies will be those that not only detect conditions but also then act—more autonomously, even aggressively—to alter our environment or our behavior.



↑ The North Face is piloting a program to send text messages to potential customers when they pass under the “geo-fence” surrounding retail stores.

www.nytimes.com/2010/02/23/business/media/23adcoo.html?\_r=1



↑ Locale allows users to specify conditions under which their phone’s settings should change.

## Detecting attention

Most of us would like to avoid danger, especially when we're operating a vehicle. Therefore, significant research is being done to detect the physiological state of people while they are driving, initially to detect moments of imminent danger. Mercedes offers a feature in its high-end models, known as Attention Assist, which will watch for patterns of erratic driving. Lexus brands its similar functionality as a Driver Attention Monitor, in which a camera trained on the driver's face detects nodding off, and Saab is focusing even more closely on a driver's eyes with its Driver Attention Warning System. In labs, work is being done to use video processing to detect drivers' yawns, and researchers have built prototype cars that will blare alerts or vibrate the steering wheel to rouse a sleepy driver. Researchers have proposed tailoring a car's environment in response to even greater awareness of a driver's condition, such as minimizing alerts when a driver is stressed, or decreasing music volume when navigating new terrain.<sup>4</sup>

Offices and classrooms are also taking on greater context awareness. Research has found that a person's level of fidgeting is one good measure of attentiveness and engagement, and work is being done to tailor digital learning environments with fidget-detecting chairs.

Microsoft is researching systems that can "automatically detect frustration or stress in the user" through facial analysis or biofeedback and that "offer and provide assistance accordingly," such as simpler interfaces to the current task or even performing the task automatically. Microsoft is also doing work to make sense of users' cognitive processing as they perform computer-based tasks.



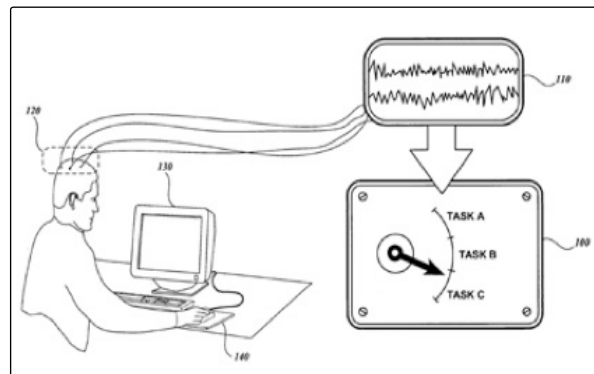
↑ Chairs outfitted with sensors can detect engagement and adapt interfaces accordingly.

## Adaptive interfaces for better persuasion

Beyond basic personal safety, one of the fastest growing needs for telepathic tech is to help us with information and cognitive over-stimulation. Researchers at Tufts University wired stockbrokers—people who are constantly monitoring streams of financial data looking for patterns and who need to “recognize major changes without getting bogged down in the details.” The stockbrokers were asked to watch a stream of financial data and write an involved email message to a colleague. As they got more involved in composing the email, the fNIRS (functional near-infrared spectroscopy, which measures blood oxygenation levels in the brain) system detected this and simplified the presentation of financial data accordingly.

The dynamic displays employed by the Tufts researchers are part of an emerging area of exploration known as adaptive interfaces: intuitive interfaces that effortlessly connect our desires to our actions. Such interfaces could be over-used in the future as our technologies come to know more about our mental states. The researchers warned, “it is a safe assumption that users do not expect an interface to change with every whim and daydream during the course of their workday. We must be judicious with our design decisions.” However, as the decade progresses and our cars can sense when we are tired, our chairs know when we are bored, and our computers will almost literally be telepathic, our interactions will change because technology will adjust accordingly, typically in the direction of removing options in the name of simplicity.

<http://portal.acm.org/citation.cfm?id=1294237>



[www.newscientist.com/blog/invention/2007/10/microsoft-mind-reading.html](http://www.newscientist.com/blog/invention/2007/10/microsoft-mind-reading.html)

↑ Researchers at Microsoft have prototyped a system designed to switch to simplified workloads when a user is experiencing cognitive overload.



## Force Four: No-Click World

Personalized, adaptive interfaces effortlessly connect our desires to our actions.

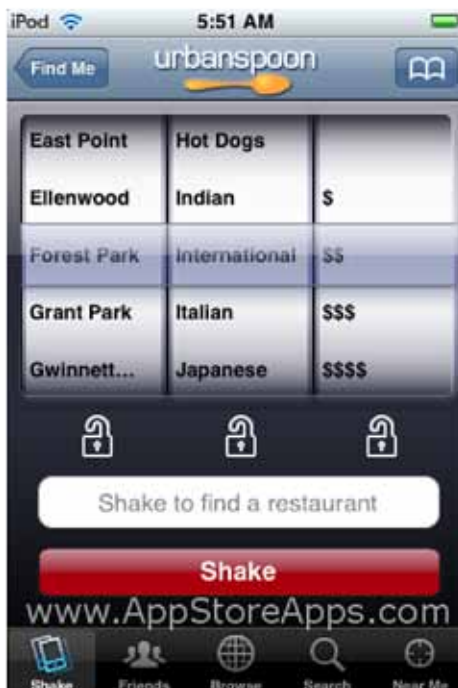
In his 2004 book, *The Paradox of Choice*, sociologist Barry Schwartz puts forward the idea that having an abundance of choices in our modern life causes us a great deal of anxiety, disappointment, and ultimately unhappiness. He acknowledges that “autonomy and freedom of choice are critical to our well-being” but concludes that we are ultimately happier when some decisions are made for us.

In the coming decade, this growing understanding of, and importance placed on, simplicity will be embodied in emerging technologies that reduce the work required to process information and up the level of social engagement between user and technology. These technologies will include natural, intuitive interfaces and displays that convey data and progress in the actual *in situ* settings.

BJ Fogg has developed a behavior model that synthesizes and simplifies previous thinking about which formulas can reliably and repeatedly achieve desired outcomes. In Fogg’s model, a person will perform a desired behavior when sufficiently motivated, when able to perform the behavior, and when triggered to perform it at the right time. Fogg uses the term simplicity interchangeably with ability, suggesting that “to increase a user’s ability, designers of persuasive experiences must make the behavior easier. In other words, persuasive design relies heavily on the power of simplicity.”<sup>5</sup>

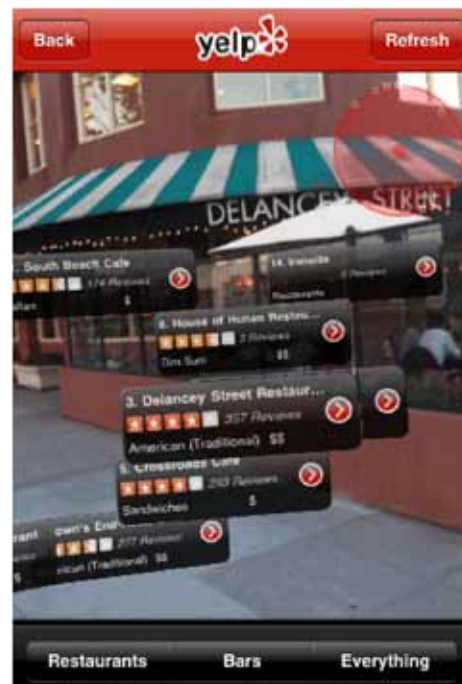
### Decide for me

Enter the iPhone restaurant-finding app called Urbanspoon. It offers a large database of restaurant listings that you can search by location, cuisine, and price, but it is not the size of database or the myriad of ways to slice-and-dice it that has made Urbanspoon wildly successful; instead, it is the ability to shake the phone and, in slot machine style, get a restaurant recommendation delivered at random. As of March 2010, the app has been collectively shaken half a billion times.



www.urbanspoon.com

↑ The Urbanspoon app invites users to shake their iPhone and, slot machine style, get a restaurant recommendation delivered at random.



www.yelp.com

↑ Yelp Monocle offers an augmented reality display of Yelp’s ratings for businesses on Yelp.

### Reducing barriers to action

One of the most important powers of augmented reality will be to make nearby opportunities more visible and more actionable. Like Urbanspoon, Yelp has created apps for smart phone platforms to make their extensive databases of local businesses more actionable in situations where users are hunting for something nearby. Yelp's mobile interfaces are quite usable, but they can require several steps between curiosity about what is nearby and actually finding enough information (name, location, rating) to act. Yelp has worked to reduce these barriers with a new mobile-app feature called Monocle, an augmented reality (AR) overlay that displays nearby business listings over a real-time video feed of the street in front of the phone. The listings are overlaid based on the direction the phone is facing and the distance from the phone's position, leaving a user to simply put one foot in front of the other until reaching a place that sounds interesting.

Finding the right restaurant is not itself an especially important behavior, but imagine a simple presentation similar to Yelp Monocle's but for the nearest healthy food options or the nearest place to recycle a plastic bottle that would otherwise be thrown away. Both are situations where effortlessly simple interfaces will be the difference between action and avoidance, persuasion and ignorance.

### Using nature to stimulate engagement

Just as Monocle encourages urban discovery by making it easier to explore, the no-click world will also have interfaces that persuade us toward physical activity as a matter of life or death—not our death, but that of virtual objects in our care. Such organic metaphors will increasingly be used to embody real-time data.

These interfaces are examples of the simplicity principle in action: they strip away unnecessary data and tell you only what you need to know to adjust your behavior quickly. They could instead use bar charts—inorganic blocks that stack on top of each other—but the organic metaphors tap into a deeper motivation we have, to help living things live, or at least not let them die on our watch.



www.wired.com/autopia/2008/12/when-ford-and-h/

↑ The dashboard for the 2010 Ford Focus Hybrid car prominently features a plant that grows healthier as a person drives more fuel efficiently.



www.fitbit.com

↑ The only display on the Fitbit Tracker, the first mass-consumer wearable physical-activity sensor, is a flower that blooms only when its wearer is reaching a target level of physical activity for the day.

## Using social interaction to stimulate engagement

It turns out that humans are still fairly primal when it comes to interacting with technology that seems even vaguely alive, especially if it seems human. Stanford professors Byron Reeves and Clifford Nass have extensively studied this phenomenon and have dubbed our vestigial and cordial reactions to friendly technology as “The Media Equation.” Their conclusion is that people treat computers, TV, and new media as real people and places.

This gullibility may actually be a source of persuasive potential. Intuitive Automata, a commercial spinoff of the MIT Media Lab, uses conversational interfaces and friendly robots to motivate patient engagement with traditional telemedicine systems. These systems are designed to check in daily with patients living with chronic disease, asking questions like “How do you feel today?” and “Have you been eating?” Their research showed that even with the standard simple display and a few buttons, it can be hard to sustain patient engagement long enough to truly manage the disease. So they ran an experiment in which some patients received a standard telemedicine device while others received Autom, Intuitive Automata’s anthropomorphic robot. Autom is built around a telemedicine screen but also nods, blinks, and converses with patients about their health. Patients who received Autom continued to engage with the daily questions from their health care provider for twice as long as those who received only the screen.

14

In the coming decade we will find ourselves increasingly being seduced and cajoled by our software and hardware.



www.intuitiveautomata.com

Intuitive Automata created Autom, an anthropomorphic robot, to engage with patients about their health.



## Force Five: Epic Win

We will use games to persuade ourselves to be better people, from working harder to feeling more empathy, to considering the effects of our actions.

The convergence of social networks, console gaming, locative personal media, and alternate reality gaming is driving a growing recognition that games, as IFTF Director of Game Research and Development Jane McGonigal puts it, are some of the world’s best engines of happiness, joy, fierce competition, human connection, and hard work. Thus the movement to port the most compelling aspects of games—what makes them fun—to other arenas, to motivate more engagement with learning, work, public action, and health.

## Harnessing digital achievement

The Boy Scouts have been leveraging one persuasive power of gaming—achievement—through awarding merit badges for more than 100 years. In early 2010, the Boy Scouts announced a video gaming badge that is earned by completing activities such as playing a video game with family members in a tournament or listing five ways that a friend could learn how to play the Scout’s favorite game. This announcement stirred some warranted controversy about childhood obesity and turning kids into “screen zombies,” but the Boy Scouts’ new badge was also an acknowledgment that digital performance can be harnessed and channeled for positive outcomes.

Now that so much game play is done online and integrated with social networks, earning and displaying rewards for achievement is even more prominent. Casual gaming on Facebook has brought digital merit badges to a vast swath of older netizens, expanding digital achievement systems well beyond the conventional online or console gaming audience.



The Boy Scouts recently announced a “video gaming” badge earned by engaging friends and family in gaming.

www.wired.com/gamelife/2010/04/cub-scouts-videogames/



## Games as powerful social influencers

In 2007, Georgia Tech professor and game designer Ian Bogost coined the term persuasive games, arguing that games have the power not only to entertain, but to persuade and inform, to impart a point of view to their players through the ideology embedded in their core logic and narratives. Through the process of learning the rules and exploring a game's internal physics of cause and effect, players find themselves in rich interaction with alternative ideologies. Bogost and others design persuasive games that pull players into unexplored worlds and force them to confront situations that make them think about real world problems ... without being preachy or uncomfortable.

For example, MTVu, MTV's 24-hour college network, launched online Flash game *Darfur is Dying*, a "viral video game for change." Players take on the role of a Darfur refugee and at several points in the game are restricted to very limited options, including keystrokes or clicks that simply will not be acknowledged by the game. The lack of options to progress is designed to mirror the helplessness experienced by many refugees of the Darfur conflict. Human rights organization Breakthrough has created the game *ICED*—"I Can End Deportation"—inviting players to walk in the shoes of someone in the ecosystem of U.S. immigration. It immerses players in a character's daily struggles, translated into missions to complete as a seamless aspect of gameplay.

*ICED* and *Darfur is Dying* are free online games, both exemplifying fairly lightweight development. With low-cost tools like Adobe Flash and new engines to make 3D worlds, a compelling game can be made quickly and cheaply by almost any party with an ideology to express.

## Morality engines go mainstream

These same ideas are also influencing the design of more mainstream video games. *Fable II* is a big-budget fantasy role-playing game for Microsoft's Xbox system that starts players as young adventurers and ages their online characters as time passes in the game's narrative chronology. The game touts your freedom in its virtual universe to do almost anything you can think of in the real world—but to go along with such freedom it includes a "Morality Engine," which attaches "morality points" to every action. In fact, your character's physical aging process is correlated to your morality score, including the potential for a flawed complexion due to immoral deeds performed earlier in your virtual life. Your character's weight is correlated to your eating choices, and you earn "purity points" for eating a vegetarian diet. In the next decade, expect games to show up outside of traditional gaming platforms, but also look for them to push us to be more aware of the real world of real human relations.



↑ *Persuasive Games: The Expressive Power of Video Games*, by Ian Bogost.

[www.persuasivegames.com](http://www.persuasivegames.com)



↑ *Darfur is Dying* is billed as a "viral video game for change," produced by MTVu, MTV's 24-hour college network.



↑ *ICED* is an online game that lets you inhabit the first-person shoes of someone in the ecosystem of U.S. immigration.

[www.darfurisdying.com](http://www.darfurisdying.com)

15

[www.icedgame.com](http://www.icedgame.com)



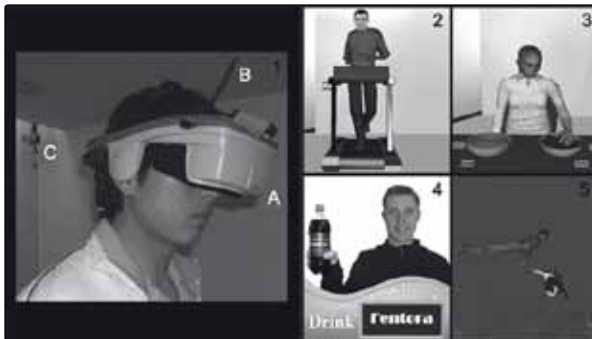
## Force Six: Amplified Imagination

Dynamic visualizations morph reality to influence how we see the world and ourselves.

The future of persuasion is being transformed by tools that dramatically expand the capacity to visualize our environments and ourselves, from augmented reality overlays to more commonplace immersion in virtual environments with avatars representing us. From simple cartoon representations to powerfully realistic graphic renderings, the new world of visualization will have powerful effects on human psychology. According to Stanford professor Byron Reeves, avatars could be “the most psychologically potent feature of new media” – in other words, the most persuasive.

Emerging technologies are giving us enormous new powers to create simulations that are “realer than real,” based on rendering combined with complex modeled behaviors and interactions. These technologies will allow us to amplify our imagination by creating environments that are photorealistic and that we can accept as real. Such applications will also enable us to create super-realistic avatars; soon we will be able to create effects as good as in the movie *Avatar* using just our phones.

16



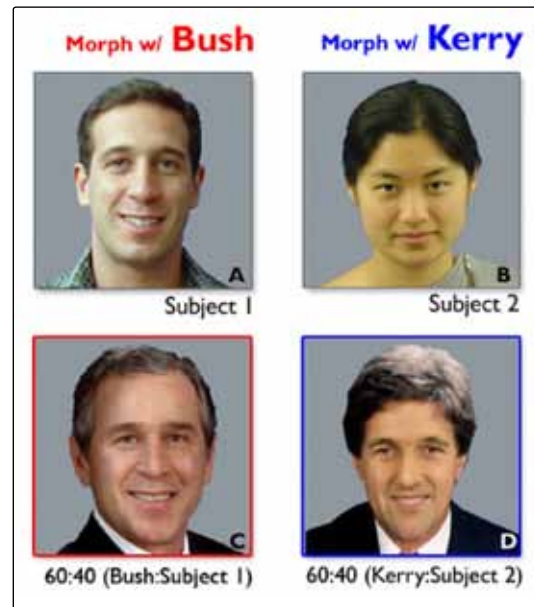
↑ Stanford’s VHIL Lab has been exploring the psychology of our relationships to virtual images of ourselves, showing that virtual bodies can have significant impact on our physical bodies.

Bailenson, J.N. & Segovia, K.Y. (2010). *Virtual doppelgangers: Psychological effects of avatars who ignore their owners*. In W. S. Bainbridge (Ed.), *Online worlds: Convergence of the real and the virtual* (175-186). Springer: New York.

## Vulnerability to the virtual self

Stanford’s Virtual Human Interaction Lab (VHIL), a leading center for work on the persuasive power of avatars, is at the frontier of understanding the profound effects that virtual-body experiences can have on our decisions, judgment, and emotions. The “Proteus Effect” describes how we alter our behaviors, both in virtual environments and in the real world, in response to experiences via virtual avatars. For example, researchers have demonstrated that inhabiting a taller avatar makes us more confident, seeing our avatar exercise or eat healthily promotes those same behaviors in the real world, and, in what the lab calls self-endorsement, seeing our avatar happily using a product increases our affinity for that product.<sup>6</sup>

But it’s not only experiences with avatars that will persuade us in the next decade. The rise of photo-, audio-, and video-morphing tools will increase the possibilities of more subtle forms of self-endorsement ... ones that we might not even be aware of. Another series of experiments at Stanford’s VHIL suggests just how malleable we might be when seeing subtle aspects of ourselves hidden in images of others. Researchers morphed the faces of U.S. presidential candidates in a 60%/40% blend with either a random person or the participant in the experiment, and the participant was asked to vote for a candidate. The results were striking: the candidate morphed with the participant’s own face was more likely to be selected than one morphed with a stranger’s face. And in post-experiment interviews, not a single person detected that his or her image had been morphed with the photograph of the candidate.



[vhil.stanford.edu/pubs/2005/identity-capture.html](http://vhil.stanford.edu/pubs/2005/identity-capture.html)

↑ Subjects in a Stanford study who had their faces morphed in a 60/40 blend with presidential candidates were more likely to vote for the candidate morphed with their own face.



## Avatars get pervasive

Avatars do not have to be super-realistic to be effective, nor do they require a fully immersive virtual reality headset or even an extensive virtual world to roam around in, such as the standard-bearer virtual world Second Life. Avatars are gaining steady traction as their own form of social networking, and many teens around the world send instant messages or talk in chat rooms alongside an avatar accompaniment. They are primarily socializing—not exploring or gaming—and this use of avatars as an extra layer of sociality is likely where we will continue to see them.

IMVU is a leader in avatar-based social platforms primarily targeting kids and teens, reporting 10 million users of their service a month. IMVU offers its users an almost unlimited capacity to customize their avatars' height, hair color, and so on. Other options, including a general inclination toward doll-like proportions, are fairly dysmorphic and out of step with the natural range of body sizes in the real world. If avatars really are the most psychologically potent form of new media, and if inhabiting modified avatars begins to alter our real-world moods and behaviors, avatar use by young people will be the next battleground for parental concern and oversight (as MySpace and Facebook were this past decade).



↑ Avatars from IMVU, an avatar-based instant messaging service with 10 million users a month.

## Immersive previews

As discussed in Force Four: No-Click World, augmented reality (AR) will be applied as a persuasive means of translating information into immediate action in the real context of decision making. But the better-known vision of AR—as a sort of magic window, overlaying images of things-that-could-be right into our view—will also provide context-aware imagery that will influence opinions and choices.

Early work on AR has been done in the context of urban planning and community development, often to help citizens imagine how new developments or master plans would manifest in a specific neighborhood. In Rotterdam, for example, residents can see how a large new building called Market Hall will look when it is completed in 2014 by viewing the construction site through their AR-capable mobile phones. As simple AR toolkits make it easy to create such visualizations, we can imagine multiple visualizations for a proposed development, each aligned to a different point of view, competing for citizens' hearts and minds, and ultimately inciting votes or protest about how a community should develop.



↑ Augmented reality will show us real-world possibilities before they materialize. This app gives passers-by a view of what the new Market Hall in Rotterdam will look like when it is completed in 2014.

### Visual filters make sense of real-time data

At IFTF, we frequently look to digital artists, activists, and provocateurs as early indicators of future directions of change; often their work is a painstakingly handcrafted prototype of what will be an automated feature of tomorrow's technology. One such vision can be found in a video, made by mashup artist 236.com, which went viral near the end of the 2008 presidential campaign. It repurposed clips from the three Obama–McCain presidential debates, overlapping clips every time a candidate repeated a political phrase he had said verbatim in an earlier debate. The artist's position, although unstated, is clear: these forums are idealized as a raw conversation about issues but are often just repeated displays of political theater.

This particular video was crafted by combing through debate transcripts and time-coding and synchronizing video, and of course was possible only after the three debates (and election) were over and comparisons could be made. But imagine the presidential debates in 2016, where today's postmortem artistic statement becomes a real-time filter, thanks to the ability to access prior video mere milliseconds after the candidate says a phrase and to persuasively visualize those repetitions in real time, ultimately affecting voters' impressions before an election. Dynamically-generated visual filters like these, nascent now, will become vitally important in the future.



## Force Seven: Awe-gmented Reality

Expressing and detecting emotion becomes a persuasive layer in our interactions with technology.

Emotion will be an increasingly important component of persuasive technologies over the next decade. The rise of social media is, in large part, about the human desire to connect more intensely and the search for fresh, compelling ways to reach out and touch one another. Real-time video, avatars, Facebook comments, even the simple text message: all afford different emotional expressions. In the coming decade, new findings in brain and behavioral sciences will continue to uncover genetic and neurological bases of emotions that will open up novel forms of intervention. Increasingly sophisticated facial and gestural recognition software will allow us to mine our physical responses for new clues into emotion. The Network on My Shoulder will bring our emotional awareness of others, and others' awareness of our emotional state, into more corners of our lives. And Digital Mirrors will shape our self-perceptions by reflecting back the emotional content of our digital trails.

Many personal devices already or will soon aim video cameras at our faces as we interact with them, from the tiny cameras built into the top of most laptop monitors to the newest mobile phones like the iPhone 4, with its cameras both in back of the handset and facing forward toward the user's face. The potential for many of the technologies in our lives to know something of our emotional state and adapt accordingly is closer than not.



✦ Mashup artist 236.com created this video, which repurposed clips from the 2008 presidential debates, overlapping clips every time a candidate repeated a phrase he had used earlier.

[www.youtube.com/watch?v=wfd5g8Y\\_Jqo](http://www.youtube.com/watch?v=wfd5g8Y_Jqo)

## Translating emotions

What start out as assistive technologies for people with disabilities often result in mainstream applications down the line. Researchers at the MIT Media Lab have created a prototype called the Self-Cam, part of a larger Social Emotional Sensing Toolkit. The Self-Cam is a wearable camera and computer for people with autism that analyzes its wearer's facial expressions and head movements and reports back which of six states of mind the wearer may be conveying to others: agreeing, disagreeing, interested, confused, concentrating, or thinking. Gaze-based interfaces, facial expression analysis, and head position analysis are already being developed to increase the efficacy of online social interactions between virtual agents and humans as well.

Similar work at Stanford's VHIL to detect expressions is demonstrating that what we project on our faces may also be predictive of our future behaviors. As the VHIL puts it, facial expressions are "true reflections of internal intent, allowing us to predict future behaviors." Within two minutes of detecting participants' faces in an experiment about online shopping, the VHIL's algorithm to detect micro-expressions was able to accurately predict whether the participant would make a purchase or was only doing virtual window-shopping. These kinds of emotional translation tools will play an increasingly important role for all kinds of "assisted" interactions in the coming decade, whether they be human-human, machine-human, real world, or virtual.



www.lauren-mccarthy.com/happinesshat/

↑ If activating your smile muscles leads to an immediate improvement in mood, might we start persuading ourselves to happiness by tools like the Happiness Hat? Artist Lauren McCarthy created this deliberately provocative wearable device that detects whether its wearer's cheek is raised high enough to be smiling and, if not, pricks with a tack in the back of the head until smiling begins.

## Sending touch

Of course faces are not the only means by which we signal our emotional state. An emerging body of research is discovering that touch can be a remarkably expressive medium for conveying emotion, and receiving a touch a powerful precursor to changing attitudes and behaviors. In one experiment, a sympathetic touch from a doctor gave people the impression that the visit lasted twice as long.<sup>7</sup>

The growing ability to embed circuits in everyday objects that are wirelessly connected to online networks is creating new traction for digital forms of touch. Touch is even meeting the Networks on My Shoulder, as in an MIT Media Lab prototype of a "haptic social network." Called Stress OutSourced (SOS), a jacket outfitted with small vibrators across the back becomes an intermediary between people in need of a stress-relieving pat.<sup>8</sup> Supportive online networks could offer to provide that virtual touch when needed. The placement of the vibrators also indicates the geographic origin of the touch—a touch from someone within 10 miles will be felt closest to the spine, while an international supporter would be felt on the periphery. We can easily imagine future versions of the SOS concept that are self-contained, whereby Digital Mirrors or Telepathic Technologies detect our negative moods and automatically deliver increasingly lifelike affirming touches.

## The power of awe

The name of this force, "awe-gmented reality," is of course a pun on the technology of augmented reality. This twist was inspired by a recent finding that should trigger a feeling of optimism for anyone invested in the future of persuasion. Researchers at the University of Pennsylvania discovered that among the most emailed stories—those that ultimately went viral—from all the news stories on *The New York Times* website were those that exhibited a quality they termed "awe." These stories were typically more positive than negative, considered ideas on a grand scale, and ultimately suggested that the world was a large and mysterious place. The stories required "mental accommodation." As one researcher put it, when people feel something like this, they are compelled to share that sensation. The potential to design a reality that is continually connected by the inspiring emotion of awe is an exciting reason to be hopeful as we move ahead.



flickr.com/streamishmc



# Persuasive Design/ Persuasive Defense

The dynamic between the two sides of persuasion will be played out for all of us to some extent, as we move into a world of aware environments and high-resolution digital reflections. How can you, as an individual, use the forces of persuasion to design a better future and also to protect yourself against the designs of others?

DESIGN FOR PERSUASION	DEFEND AGAINST PERSUASION
<p><b>Design the most beneficial and supportive network.</b> ▶</p> <p>People influence us simply by being in our networks, whether as a source of motivational support or to set a mainstream baseline for comparison and conformity. Knowing this, pick the right people: turn digital mirrors on those in your network to see what gets reflected back; learn what you may not know about them and what influence they could be having on you. Consider designing the “right” social network—not just people who will be active supporters but also those whose proximal influence will improve your health, happiness, productivity, and ultimate well-being.</p>	<p><b>Defend against your autonomous network identity.</b></p> <p>Know what your automated identity says about you. Use digital mirrors to reflect your own behaviors, and watch emerging tools like online privacy service ReputationDefender, which ambitiously claims to provide “total awareness of your online presence.” The merchants of digital mirrors, like TweetPsych, won’t likely be revealing their algorithms, so it falls upon us to learn their systems. Test them, hack them, game them. But above all know what they say about you, because as behavioral confirmation suggests, others’ expectations of you today may subtly become your behaviors tomorrow.</p>
<p><b>Design systems and triggers to motivate your future self.</b> ▶</p> <p>A somewhat dystopian vision for this persuasive future is one of surveillance, where lingering outside a fast-food restaurant for too long automatically sends an alert to a snooping doctor. But lead users—people who are writing custom programs and triggers on their location-aware phones—are reclaiming this power for their own goals. They are using telepathic technologies to time-travel, acting today to program whichever form of motivation they will need when they pass a certain location, trigger a condition, or in the future.</p>	<p><b>Defend against interfaces that reduce your options.</b></p> <p>Telepathic technologies in a no-click world will adapt by reducing options when they sense we are frustrated or overloaded. This simplification will take the form of pared-down displays, less data, or devices that just do something for us automatically. But sometimes being overwhelmed is a good thing, sometimes we will be better than software at figuring out patterns, and sometimes an abundance of choice may be just what we need to keep our brains sharp. Look for tools that provide information but still let you make the decisions.</p>
<p><b>Design the ultimately persuasive reality for yourself.</b> ▶</p> <p>It may seem silly that we are motivated by earning badges or seeing tiny modified digital versions of ourselves, but it turns out that we are. To meet your goals, be an early adopter of these persuasive techniques. Set up game rewards for the goals you want to meet. Spend 20 minutes a day as an avatar that is taller for confidence, or watch your avatar eat healthily or have a productive day. Morph your face with your boss’s to get that promotion.</p>	<p><b>Defend against persuasion beyond the senses.</b></p> <p>We’re going to need a significant update to our media literacy. One defense against subliminal persuasion, currently being debated, is a ban on, or mandatory labeling of, images that have been heavily retouched by Photoshop image software, particularly photographs of models in ads and magazine covers. “These photos can lead people to believe in a reality that does not exist,” warns French parliamentarian Valérie Boyer, building on evidence that these often grossly-exaggerated images can alter attitudes—starting with lowered self-esteem—and ultimately affect behaviors through eating disorders and body dysmorphia.</p>

## PERSUADING PEOPLE TO CARE

What could possibly persuade someone in California or Massachusetts to care enough about urban blight and the future of the city of Detroit that they would invest their own money in it? LOVELAND, a Detroit-focused organization pioneering new approaches to engagement, is prototyping answers to this question by selling land—one inch at a time.

Jerry Paffendorf, micro-real estate developer and creator of LOVELAND, sees the project as “crowd-creating a new kind of city” in down-and-out areas of Detroit. The project invites participants to buy one-square-inch properties within a 10,000-square-inch lot. Investors are given a deed to their acquisition and a magnifying glass so that they can survey their new territory.

A key part of this story is LOVELAND’s ongoing campaign to persuade people of the value of their decidedly unconventional approach. As one strategy for accomplishing this, Paffendorf has made participation in LOVELAND a unique game experience. The project has developed its story around “Inchy,” a one-square-inch character, eager to participate in an urban renaissance for his beloved Detroit, a city where the population has dwindled to less than half of what it was in the city’s peak in the 1950s.



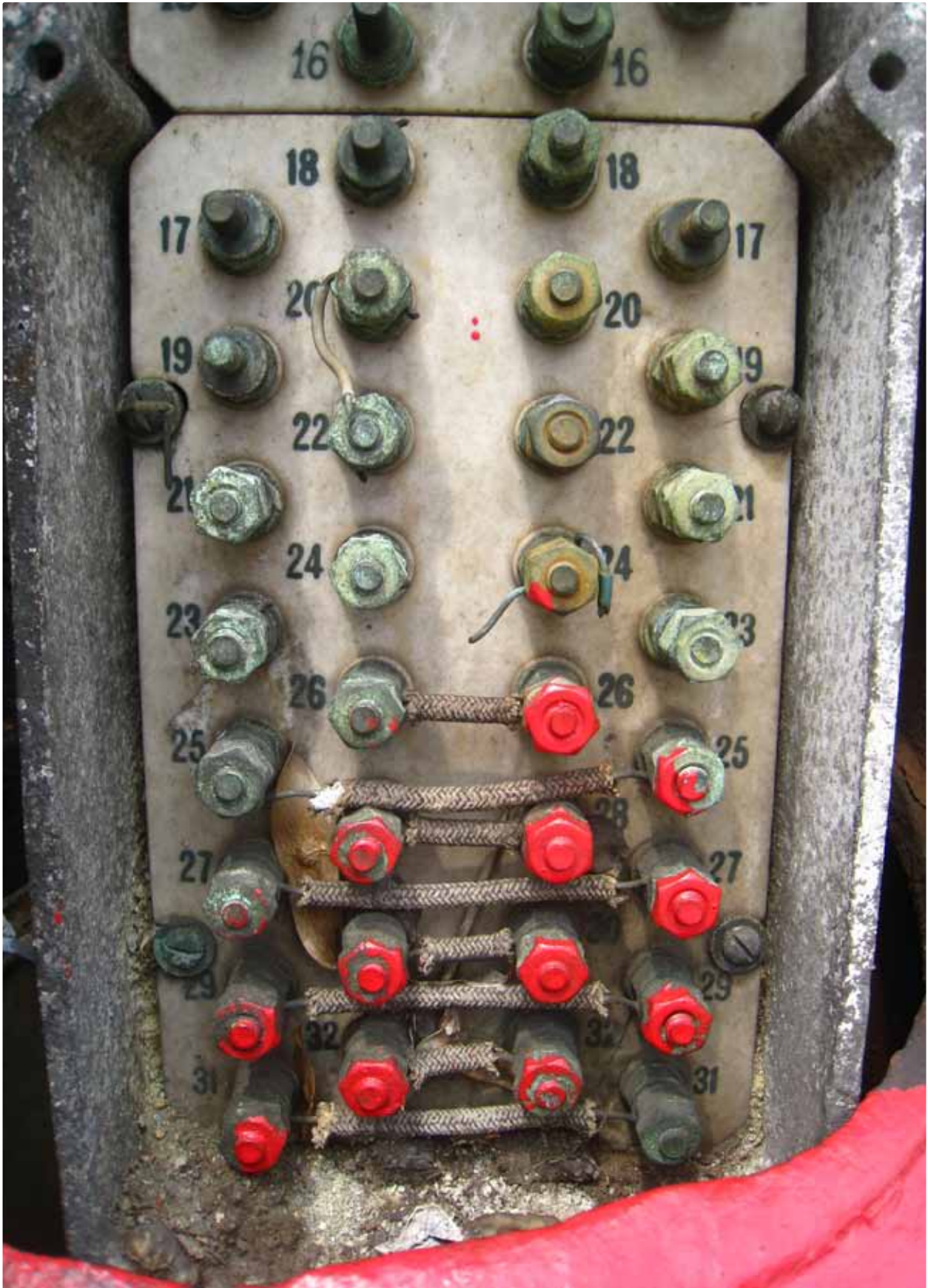
That is just the beginning, however. LOVELAND has created a full cast of characters and a backstory for their tiny municipality. As a result, the LOVELAND team has already sold all of the properties in their initial lot and is in the process of bootstrapping the creation of additional properties.

Paffendorf credits the venture’s success to its decision to locate in a less populated city, its application of digital world concepts to the physical world, the creation of a framework for relationship building, and the encouragement of personal creativity.



The lesson from LOVELAND is that fundraising for solutions to tough social problems can be made much easier by being made entertaining—that social investing can be made not out of guilt or anxiety but out of delight and hope.





flickr.com/streamishmc/

# Technical Foundations

## Combinatorial effects for amplified persuasion

Powerful trends in information technologies will enable continuing waves of innovation in persuasive experiences. We have identified three technology clusters that are foundational in this development:

- 1. Worldwide webs of semantically linked people, data, and things:** These will enable us to create new persuasive experiences by visualizing, sharing, and mining complex information about our lives.
- 2. Supercharged human-machine interactions:** Multicore supercomputing chips and cloud-served supercomputing are providing new affordances, recognizing our speech, our languages, our gestures, and our faces, and instantly rendering intensely natural and intelligent interactions.
- 3. Immersive media venues:** Computing, video and mobile technologies are rapidly converging to support seamless, multisensory 3D and tactile digital interactions.

### 1. WORLDWIDE WEBS OF SEMANTICALLY LINKED PEOPLE, DATA, AND THINGS

We are creating an enormous number of digital artifacts from all domains of our lives, as illustrated in the figure below. We can choose either to share or to protect this personal data, using them to update friends and family or releasing them to be mined by third parties. We may not think of them as being related to persuasion, but once they enter the digital world, they are fodder for dissemination and analysis—they become platforms for persuasive intervention.



### Web graph analysis:

With the dramatic increase in the number of digital artifacts that we are producing, there is an inexorable drive to make sense of it all—to understand how the artifacts are linked, and the meanings of our connections. Web graph analysis is the new frontier for creating meaning and value out of these artifacts. The value is in the graph of connections between linked entities. A few examples:

- **Google's Page Rank:** Values a Web page's relevance for search results based on the weight of the links to that page, and the links to those pages. Google uses a constantly evolving set of algorithms but essentially the highest ranked pages are listed first.

← **Personal Identity Ecology:** experiences are filtered through personal digital identities and contexts.

- **Semantic graphs of linked data:** Early Web pages were connected with simple links or URLs. Now we are building huge semantic Webs of linked data (not just pages) based on a consensus grammar for digital relationships, called the Resource Description Framework (RDF). We can use RDF to establish simple connections between entities and to describe the nature of the relationship between those entities. For example, RDF can use the information that “Flipper is a dolphin,” and “dolphins are mammals,” to infer that “Flipper is a mammal.”
- **Semantic graphs of social networks:** Social networks are generating millions of digital artifacts that, at first glance, can appear incoherent. However, the relationships they reveal can be linked by a “social graph” in the same way that digital objects can be linked by a web graph. These social graphs look at the relationships not only between people but also between people and digital objects. The analysis of social graphs is also strongly based on RDF grammar, allowing machines to make inferences from the relationships uncovered. Open Social Graph, for example, is an emerging Web standard for these social graphs that was recently endorsed by Facebook. Now, both humans and machines can begin to decipher the relationships and qualities of our social networks using sophisticated inference engines and other semantic computing techniques. Facebook has already experimented with this to some degree, by mining information to explore things like “the happiest days of the year,” based on when people say they like things.

### Sensors

Not all digital artifacts arise in the social sphere, however; many are created by electronic sensors. We are starting to wear sensors to measure our fitness and to monitor our health and are installing a huge variety of sensors in our households that will provide the raw data for machine inference. This is likely to lead to future assistive environments. Similarly, hundreds of sensors and MEMs (Micro Electro Mechanical systems) are being embedded within our cars. Vehicle companies are just beginning to explore how these sensors and probes can be harnessed persuasively to improve the safety and economies of our driving. As a result, we are starting to be surrounded by what could be called telepathic machinery—and making sense of it requires real computing power.

## 2. SUPERCHARGED HUMAN-MACHINE INTERACTIONS

In the future, we will look back at typewriting interaction with computers as a quaint relic, like tapping Morse code dots and dashes over a telegraph. User experience is rapidly moved from sharing text, to sharing images and videos, to sharing direct sensory experiences—from sounds and sights, to touch and mood. We will use technologies to learn much more about who we are, about the people we interact with, and ultimately about what it means to be human. Companies like Google will offer a new class of interactive services. These computation-intensive processes will make use of the growing scale and supercomputing power of cloud computing, and will require large-scale pattern recognition, data mining, inference, machine learning, and complex interactive models and analytics.

### Multicore, cloud-served computing

Multicore and cloud computing are enabling us to completely rethink the kinds of computer and human interactions that are possible. New cloud-enabled models of interaction use will provide more intimate and responsive experiences by enabling people to, for example, carry on online conversations with other people in other cultures in their native languages.

Google now has more than one million CPUs harnessed into a single operating system to instantaneously answer queries requiring millions of simultaneous instructions. This can be used, for example, to compare the patterns of a spoken voice with millions of stored patterns of sounds of words, and to transcribe speech to text. Other emerging applications compare a picture of a face with millions of other faces, to recognize who the person is in a camera viewfinder.

Supercharged interactions between people and media are already used for high-end biometric authentication of fingerprints, retinas, handprints, and sound prints for high-security applications. These capabilities are now migrating down to common, ordinary experiences like:

- Automatic speech recognition
- Real-time language translation
- Mining vast social graphs
- Visual search by sending an image to a search engine
- Gestural interfaces with games and media

All of these capabilities require massive computing resources to compare a simple pattern with millions of stored patterns to infer a meaning. This is only possible with modern multicore, and cloud-served, supercomputers.

### 3. IMMERSIVE MEDIA VENUES FOR PERSUASION

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The same high-performance supercomputing resources are also giving us enormous new powers to create simulations that are “realer than real,” based on rendering combined with complex modeled behaviors and interactions. These technologies will allow us to amplify our imagination by creating environments that are photorealistic and that we can accept as real. Applications include:

- **High-resolution simulations:** Our video games and video media, business and scientific visualizations and our educational media will be able to display massively complex dynamic models of both real and imaginary phenomena, like histories, natural ecologies, and human physiologies.
- **Photorealistic graphics and animation with synthetic actors:** High-performance computing can render computer-generated images with such precision resolution that these synthetic experiences cannot be visually distinguished from the physical world.

#### Ubiquitous video

Video is becoming ubiquitous, appearing on our mobile devices and displays in our homes, workplaces and in public, and on millions of Internet channels. As it becomes integrated with the Internet, in software and in Web-enabled televisions, video objects will become more interactive, offering us clickable, linked Web objects. Television networks and television manufactures are making the necessary investments to provide quality 3D experiences to us for a new generation of televisions and projection environments. Finally, we are beginning to experience videos linked to our locations, triggered by GPS and by barcode-like patterns. (For more in-depth analysis of video, please see IFTF’s *Future of Video* report, available at [www.iff.org/FutureofVideoReport](http://www.iff.org/FutureofVideoReport).)

#### Augmented reality

The first Web browsers enabled us to view hyper-linked media on a page. Now the smart phone viewfinder is becoming a Web browser to view and interact with digital linked media, attached to the real world. Mobile users are already experiencing the first generation of augmented reality, using apps like Layar, Wikitude, and Junaio. Further applications in development include augmented reality glasses, enhanced vehicle windows, and ultimately, digitally augmented contact lenses. The underlying data is often geo-coded, or identified with latitude and longitude, and for future augmented reality applications, information about the elevation of the digital object will also probably have to be included. These first-generation viewers are so far showing only a few narrow glimpses of a growing mass of geo-coded data and media.

There is a flood of location-based map data, geo-coded Web pages, and live sensor data available on the Web using new open standards like Keyhole Markup Language, a map description language used by Google Maps and Google Earth. The beauty of these standard codes is that ideally, they can be viewable on any browser, just as an html Web page can be viewed by any Web browser. Unfortunately however, our GPS equipped phones can’t calculate location accurately enough to display geo-coded objects more precisely than 5-20 meters. This is a technical limitation of both GPS, and of the data itself. Most geo-coded information does not yet include precise 3D coordinates (latitude, longitude, and elevation).

Most first general smart phone AR applications rely on the GPS and an internal compass to show viewers only the general location of the data. This works sufficiently well for finding a coffee shop, but not well enough to provide information about the fine detail of an object or place in view. However, new technical developments will enable both creation and viewing of precisely located digital objects. Big technology companies like Nokia, Microsoft, and Google are beginning to precisely locate digital objects by comparing the image in the view to a stored pattern. Using their vast network of computers and massive database of images, Google’s Goggles visual search application can identify a picture of a place, like the Golden Gate bridge, and eventually will be able to calculate the “pose” of a camera, the field of view, and the precise distance of the viewer from the object in view. Nokia’s Point and Find, and Microsoft’s Photosynth work similarly, and will ultimately offer the same capability for people to both add a precisely located annotation to the real world and to discover the digital information attached to physical places.

By 2015, we will begin to see this kind of digital augmentation seamlessly through the first generation of special eyeglasses equipped to show digital data overlaid on the real world. By 2020, it is possible that these glasses will not be necessary and that we will see the new digital world directly through special wireless contact lenses, already in development in University of Washington labs and elsewhere.

Just as the hypertext Web changed the way we interact with text, these new augmented reality technologies will change the way we behave in the physical world. It is important that we begin to think now about the implications of physical space transformed into information space. Clearly, we will not want to see everything online about everything we see. We will have to develop new ways to query and filter the views of potentially vast amounts of information in any place aggregated from thousands of digital objects describing the physical environment. This sorting process will be central to the future of persuasion.

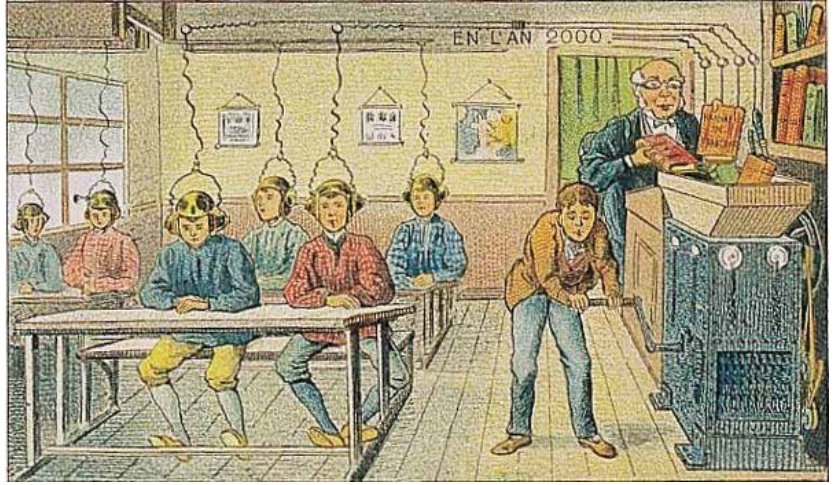
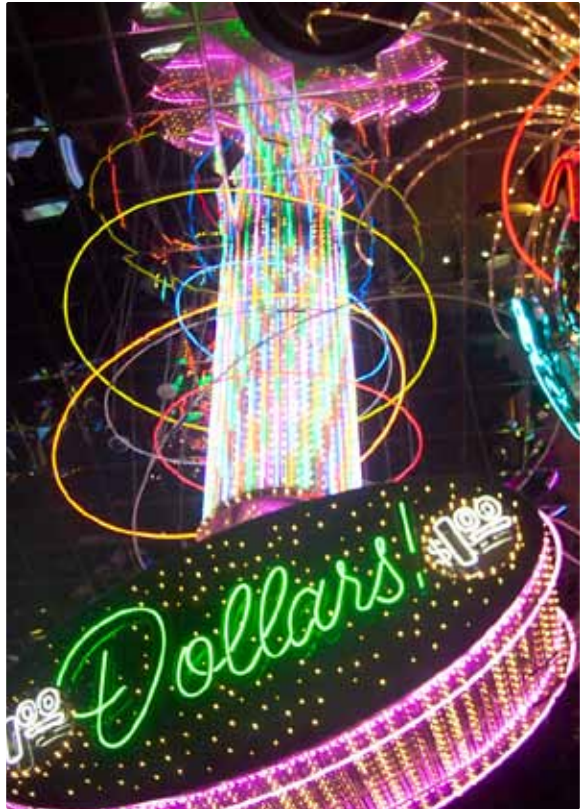
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flickr.com/shadowmagi/



http://www.constructingtheuniverse.com/School%202000.jpg

# Applications

## Advertising, health, learning, governance

We've identified transformative forces and emerging technology clusters that are transforming the future of persuasion. They will have profound effects on storytelling, argumentation, and influence across all domains of daily life. We've chosen four core areas to explore more deeply: advertising, health, learning, and governance. In each, we will see new persuasive voices emerge, from among others, our networks, the surfaces around us, or our own digital reflections. Ads will become so persuasive that we won't even think of them as ads. Learning, at its best, will be highly responsive to what students are actually doing, making knowledge more accessible to the human brain. More of us will be able to get ourselves to make those changes in personal health that have stymied so many of us for so long—eating better, staying more active. And everyday political discussions will be more complex than ever before, incorporating new forms of action. Read on to find out what this might mean for you.

### MARKETS:

#### ADVERTISING EVERYWHERE AND NOWHERE

The arms race between advertisers and consumers is poised to escalate, with advertisers using the tools of data mining, geo-location, and neurotechnology to take precise aim at their target markets. Indeed, the very definition of a target market will shift from demographics and psychographics to specific individuals whose desires and aspirations are revealed by their digital trails online and their actions in the physical world.

Meanwhile, tomorrow's generation of data-savvy young people, with media creation as their first language, will develop resistance against intrusive new forms of context-aware, highly personalized advertising. After all, who wants to be a "target"? They will be fluent in the language of marketing, and they will be advertisers themselves, seeking public engagement in their own creations. By becoming practitioners of persuasion, they will more easily recognize when media is being used to control or manipulate them. Additionally, everyone will have access to the same data, which right now is the most valuable currency in the persuasion economy.

As a result, companies will feel pushed toward more invasive forms of persuasion, drawing from advances in neuroscience. Yet research on the psychology of happiness shows that we "buy" ourselves the greatest happiness

when we spend our money on social activities or things that lead to greater social connectedness. Out of this tug of war between empowered consumers and new advertising practices bolstered by science and technology, the real truth in advertising will finally emerge: the product is the story, and it has to sell itself.

#### A market segment of one

As cyberspace becomes a layer on top of our existing reality, online advertising will shift into the physical realm. As described in Persuasive Force Three, Telepathic Technologies, location-based ads are already being piloted. But advertisers are not the only ones who will take advantage of location-enabled services. Individuals will be able to leave "digital graffiti," with their own product reviews right outside the stores or even inside, next to particular products.

In a world where the digital and physical merge into a blended reality, every one of our actions, experiences, and decisions becomes a data point. As we go about our daily lives, we are generating a digital trail that, now and forever, can be mined to reveal patterns about our past, our present, and possibly our future. In the near term, advertisers will use these digital trails for intensified contextual and behavioral targeting, delivering advertising online that is informed by data about the websites we visit, the searches we conduct, our purchase histories, and the clues these trails offer about who we are as individuals.

As more data is collected and combined and as the science of analysis improves, the advertisements delivered to us will become highly personalized. With advertising and product placement creeping into all facets of our lives—from billboards with 3D video to mobile AR experiences—perhaps the positive side is that the ads will increasingly be for products and services we might actually want to buy.

**Signal: Monetizing content through meaning**

Today, marketers using systems like Google AdWords bid on the keywords on websites with the goal of delivering relevant ads adjacent to a site’s content. However, many words have multiple meanings, and content can be very eclectic, making it difficult for automated systems to glean context. OpenAmplify’s Web service for advertisers is built on academic research on natural language processing. According to the company, OpenAmplify “reads and understands every word used” in e-mail, websites, tweets, or searches, and “identifies the significant topics, brands, people, perspectives, emotions, actions, and timescales” to deliver highly targeted ads in context.

Advertising will move into all our digital channels, and the ads will be so relevant to our conversations, activities, and experiences at any given moment that the line between advertising and everything else we are doing will blur.<sup>9</sup>

**Signal: Following in your digital footprints**

Of course, as our digital lives move from the screen to the real world, highly contextual advertising will follow. MIT researchers have pioneered methods for what they call Reality Mining: collecting and analyzing bulk data from mobile devices to paint an accurate picture of human social behavior and even predict individuals’ future activities.

The MIT research led to the formation of Sense Networks, a firm that helps its clients “understand customers and anticipate needs in order to deliver accurate recommendation, personalization and discovery—better than ever before—without retaining customers’ original location data.” For example, the company’s Citysense application uses location data from your mobile phone to learn your patterns of movement. Based on that historical information, it can then recommend places you might enjoy. For retailers, it could provide insight into where consumers actually shop and how far they are willing to travel for a particular product or service.<sup>10</sup>



↑ In the movie, *Minority Report*, Tom Cruise’s character attempts to evade police, but is instantly identified by digital billboards delivering personalized advertisements.

www.youtube.com/watch?v=oBaik5YUdvG&feature=related



↑ OpenAmplify is a Web service for advertisers built on natural language processing.

www.openamplify.com/page/about/

## Consuming happiness

On the heels of the recession and the related drop in consumer spending in the United States, scientists are gaining new insight into the age-old question of whether money really can buy happiness. At the intersection of neuroscience, behavioral economics, and positive psychology, a science of happiness is emerging. For example, studies are consistently showing that while spending money on “stuff” does make us happy to a point—we have to feed, clothe, and house ourselves—we get the most satisfaction and are “happiest” when we buy social activities and connectedness.

As learning from the science of happiness diffuses into the public consciousness, we will see a shift in consumer spending. Some people may buy experiences rather than goods, while others may decrease consumption across the board. Advertising will be affected in two ways: first, we will see an increase in marketing as companies scramble to fight a reduction in consumption; then, companies will be forced to rethink what they have to sell, perhaps leading to more focus on innovating around intangible products and services. Even if the products do remain the same, the way companies persuade us to buy them will be very different.

### Signal: Finding happiness in experiences, not things

According to Stanford University researchers, marketing campaigns that are focused on the experience of a product more than possession of the product are much more effective. Just think of catchy slogans like “It’s Miller Time” and Citibank’s “Live Richly.” In 2009, Ph.D. candidate Cassie Mogilner and her colleagues studied hundreds of magazine ads and ran simple experiments to determine how marketing references to “time” and “money” affected consumer decisions and satisfaction. “Ultimately, time is a more scarce resource—once it’s gone, it’s gone—and therefore more meaningful to us,” says Mogilner, who led the research. “How we spend our time says so much more about who we are than does how we spend our money ... When you refer to time, there is a big social component that integrates the products you use with the people in your life, which makes the product experience more meaningful and richer.”<sup>11</sup>

## Signal: Spending on others

In 2008, researchers found that spending money on others promotes happiness more than buying for oneself. Elizabeth Dunn and Lara Aknin of the University of British Columbia, Michael Norton of Harvard Business School, and their colleagues surveyed more than 600 people. They found that those who engaged in “prosocial spending”—gifts and charity—were happier. Then they looked at how another group who had received bonuses at work spent their money, and how happy they were. “We found that spending more of one’s income on others predicted greater happiness,” the researchers reported in their scientific paper.<sup>12</sup>

## Brains and brands

You say you prefer Pepsi to Coke, but what do you really think? The field of neuromarketing aims to use brain imaging and electroencephalography (EEG) technology to measure consumer preference and the effectiveness of advertising by observing how various stimuli affect brain activity: Which commercial is more persuasive? What package design is most alluring? As we learn more about the brain, neuromarketing will become another tool in the advertising arsenal.

However, the fact that a particular kind of music lights up a certain region of your brain does not mean that hearing that tune next time will make you choose one brand of soap over another. More likely, what we learn about how the brain works will result in various “marketing cocktails” of stimuli—auditory, visual, and even smells—that trigger certain emotional states or product brand associations.

While the line between the brain scan and the “buy” button is not as direct as some advertisers might hope, large marketing firms will almost certainly start recruiting from university neuroscience programs. Protests will certainly follow, raising valid concerns about subliminal influence, the use of mind control for marketing, and the fact that access to that data will be controlled by the companies rather than the individuals who opened their minds to the marketers. Neuromarketing for persuasion will be a volatile subject, and one that most companies will have to manage very carefully.

### Signal: Measuring brainwaves for messaging

London-based firm Mindmetric’s website reads like the description of an imaginary evil company in a science fiction novel: “Mind-reading technology!” “Predicting pre-conscious emotional response!” “Revolutionizing market research by revealing true emotions!” The technology consists of 128 EEG sensors placed on the head to measure electrical activity in the brain in response to marketing stimuli. European ad firm Bark Group signed on as a client “to leverage this state-of-the-art technology to craft higher-efficacy campaigns, to design copy and advertisements that are tailored to elicit both conscious and subconscious consumer reactions.”<sup>13</sup>

### Signal: Designing with biometrics

Campbell’s Soup Company recently announced their use of biometrics, such as measurements of galvanic skin response (moisture) and heart rate, to determine consumer response to various product package designs. The company partnered with Innerscope Research, a neuromarketing firm, and others, on a two-year research effort that combined the biometric data with deep surveys about Campbell’s as a brand and the experience of eating soup.<sup>14</sup>

## HEALTH: TARGETING WELL-BEING

Although many of us are motivated to quit smoking, lose weight, and exercise more in order to live healthier, longer lives, changing our daily habits can be a difficult challenge. The future of self-persuasion looks good, though. Embedded sensors and other forms of context-aware technologies are beginning to provide opportunities for essential “just-in-time” feedback that encourages us to make healthier decisions in the moment, wherever we may be. Smart devices already let us receive messages of praise or encouragement, subtle suggestions, and will begin to deliver simulations that may lead us to change our behavior. They also keep us connected to our social networks, which can exert a powerful influence on us.

The challenge for the future of persuasion in health will be to find the optimal balance between the pervasiveness of these technologies and our willingness to be influenced by them. Some people will embrace them; others, less motivated to improve their health, will reject such technologies as intrusive. New insights into the underpinnings of behavior change may help shift this delicate balance.

### Ubiquitous computing for health

Imagine if the environments in which we live, work, and play could communicate with us about our health—for example, if our pill bottles could remind us to follow our daily regimens, our office computers could tell us to take a break when we get too stressed, or our smart phones could let us know that we can join a friend who is exercising nearby. We are starting to see embedded sensors in everything, from the walls in our homes to the clothes we wear, providing continuous wireless monitoring of our biometrics and activities, and triggering the delivery of just-in-time, contextualized, and customized feedback.

These pervasive platforms provide relevant information for decision-making, suggest healthy behaviors, and connect us to our social networks and health care teams for encouragement and support. The messaging we receive may take many forms, including simulations, visualizations, or AR. For some, of course, the experience of pervasive monitoring and feedback may feel too intrusive, so having control over the technology will be important.

**Signal: Making homes smart and persuasive**

The term “smart home” can refer to a highly automated environment in which processors control the heating, lighting, and other details. Taking this concept a step further, new research and experimental smart homes, such as the PlaceLab in Cambridge, MA, and the ORCATECH Living Laboratory in Portland, OR<sup>15</sup>, are being developed with ubiquitous wireless sensors and context-aware computing systems that can provide just-in-time persuasive interfaces to residents.

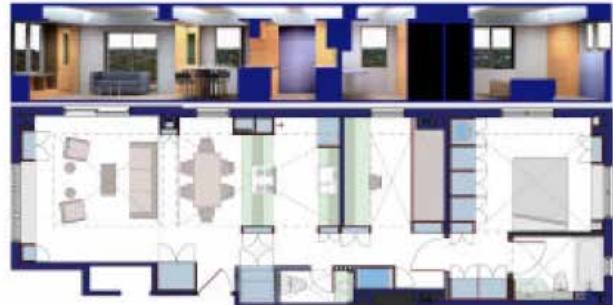
One example of sensing technology that is being developed to help people be more mindful of their health behavior is the MIT Media Lab’s ReflectOns, which they describe as “mental prostheses that help people think about their actions and change their behavior based on subtle, ambient nudges delivered at the moment of action.”<sup>16</sup> The prototype fork ReflectOn addresses the issue of weight control without focusing on counting calories. Instead, it takes into account several recent studies that have shown that the old admonition, “wolfing down your food will make you fat,” may be true, and that eating more slowly might prevent weight gain.<sup>17</sup> The fork measures the time between bites and provides subtle haptic feedback when the user is eating too quickly. Eventually, ReflectOn devices will feature unobtrusive sensors that can be embedded throughout a smart home.

**Signal: Prodding patients to take their medicine**

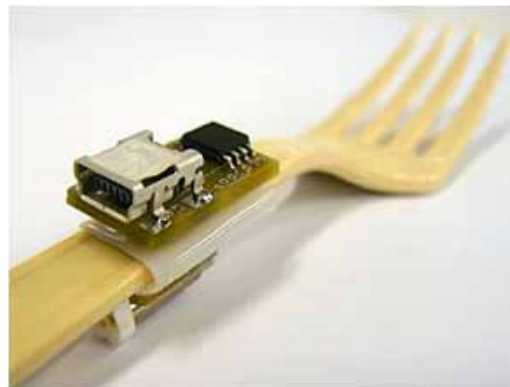
Another company capitalizing on the move toward ubiquitous computing is GlowCaps. By simply integrating a timing system into a standard prescription bottle, they have managed to dramatically increase the timeliness of pharmaceutical treatments. Prescription bottles equipped with GlowCaps first glow to indicate that it is time to take medication, then play an increasingly loud ringtone before finally sending a patient a text message reminder. In demonstration, this simple innovation increased adherence to medication schedules among people with hypertension from 61 to 98%.<sup>18</sup>



architecture.mit.edu/house\_n/documents/PlaceLab.pdf



↑ PlaceLab is an apartment-scale shared research facility where new technologies and concepts can be tested in an everyday living environment.



www.consciousanima.net/projects/reflectons/ & cfb.media.mit.edu/research/ambient-intelligence/reflectons-persuasive-objects-think/

↑ Prototype of a ReflectOn sensor, which provides real-time feedback to the user.



↑ GlowCaps fit on regular prescription bottles and provide alerts indicating that it's time to take medication.

## Rewards for healthy behavior

We know it is not easy to consistently make decisions that are good for our health. Would it help if we were rewarded for engaging in healthy behaviors, not only with improved health outcomes in the long term but also with immediate incentives? Principles of behavioral economics can move us in that direction, particularly when combined with elements of game play. Technology makes it easier to decrease people's natural tendency to discount how a decision today will affect their health in the future, by making small but tangible rewards for healthy behavior available to them in the short term.

In their 2008 book, *Nudge*, Richard Thaler and Cass Sunstein presented the concept of choice architecture, which includes creating opportunities ("nudges") that make a healthy choice easier or more desirable (that is, by providing rewards). In a recent blog post about Let's Move, a government program dedicated to solving the childhood obesity epidemic, Thaler and Sunstein noted that getting children to exercise for an hour a day will be one of the key nudges involved in the program.<sup>20</sup>

### Signal: Competing for exercise points

Switch2Health (S2H) is a company that seeks to motivate tweens and teens to exercise by rewarding them for physical activity. Its S2H REPLAY<sup>21</sup> is a sophisticated wrist-worn device that combines a multi-axis activity sensor with proprietary algorithms that verify that the user has engaged in continuous moderate intensity physical activity (such as brisk walking, playing tag, or jumping rope) for 60 minutes

(divided into 20 three-minute segments). It then generates a 12-digit encrypted code that users enter on the S2H website; points are earned and accumulated toward a variety of rewards. S2H.com also features a leaderboard, which promotes "healthy competition" by encouraging users to move up the board by being more physically active.

### Signal: Rewarding kids with diabetes for glucose monitoring

A similar technique is employed by a blood glucose monitor, called the Didget, that Bayer has begun producing for children with diabetes. The monitor interfaces with the portable Nintendo DS game system and rewards players with points when they check blood glucose levels. Points accumulate to unlock new game levels and to purchase customized in-game items.

34



www.s2h.com

Switch2Health has partnered with a community youth health program sponsored by Paul Pierce, the captain of the Boston Celtics.

## Healthy social connections

What if your friends and family could help you get healthier without nagging you about it? Recent studies have shown that social networks play a significant role in our health, spreading behaviors related to obesity, smoking, and even happiness.<sup>22</sup> Although social networks are not new, online social networking platforms are. Stanford professor BJ Fogg believes that Facebook in particular is a revolutionary persuasive medium because it makes possible what he calls “mass interpersonal persuasion.”<sup>23</sup> Other emerging technologies, including location-aware mobile applications such as Loopt, provide greater opportunities for us to connect with others. These tools also use social norms and accountability as motivating forces to help people regulate the way they behave. Game elements are often incorporated, and game designers are also creating experiences that incorporate online platforms, geo-location technology, and mobile devices with social elements that subtly encourage physical activity.

### Signal: Helping friends lose weight

SMART (Social/Mobile Approach to Reduce Weight) is intended to harness the influence and power of social networks to improve weight-related behaviors in young adults.<sup>24</sup> It currently uses a combination of mobile phone and Facebook applications, but its design encourages new applications to develop virally and recognizes that new technologies will emerge over time. Its intervention elements are intended to be accessible, appealing, and fun. Tapping into social norms is one strategy: if all your friends are using tracking technology to measure their activity levels, you will be inclined to do so as well. Encouragement and social pressure are also strong motivators.<sup>25</sup>

### Signal: Leveraging social commitments

A commitment contract obligates you to achieve a specific goal within a particular time frame, and puts your reputation at stake for failing to reach your goal. StickK.com, developed by Yale professors Dean Karlan and Ian Ayres, is based on the principle that assigning accountability is a key factor to behavior change.<sup>26</sup> The site lets your social network know when you fail to keep your end of the bargain, motivating you to save face by living up to set expectations.



www.stickk.com

↑  
**Stickk works as an accountability engine, alerting your social network when you've failed to keep your end of a bargain or deal.**

## Virtual therapies

Virtual reality (VR) technology can help you conquer your fears, relieve your anxieties, and improve your interpersonal skills in the real world by immersing you in a virtual one. It can also play a role in changing behaviors related to smoking and eating habits. VR technology integrates real-time computer graphics, body-tracking sensors, audio/visual/touch displays, and sensory input devices to immerse a participant in an interactive computer-generated virtual environment (VE). The user's orientation and gaze change the VE in a continuous, natural way, and the addition of haptic interfaces produces desired action and provides tactual sensory feedback.

VR allows for precise control over complex, immersive, and dynamic 3D stimulus presentations that can uniquely target a variety of psychological, cognitive, and physical disorders for systematic testing and treatment. VEs provide a fundamental advancement in how human functioning can be addressed in many health-related situations.

### Signal: Experiencing virtual cognitive-behavioral therapy

VR has been successfully used as a form of exposure therapy in the treatment of phobias, anxieties, and post-traumatic stress disorder. More recently, psychologist Giuseppe Riva and colleagues have developed Experiential Cognitive Therapy (ECT), which integrates VR technology with principles of cognitive-behavioral therapy to modify body image perceptions and eating habits in the treatment of eating disorders and obesity.<sup>27</sup> Other emerging applications include addressing addictions and attention deficit/hyperactivity disorder.

Riva is the head researcher behind the NeuroVR<sup>28</sup> initiative, a free, open-source VR platform that provides clinical professionals with a cost-free VE editor, allowing non-expert users to easily modify VEs to best suit the needs of the clinical setting. It offers not only a rich database of 2D and 3D objects that can easily be placed in a pre-designed virtual scenario, but also the option of adding new objects to the database. This feature allows the therapist to enhance the patient's feeling of familiarity and intimacy with the VE by using, for example, photos of objects or people that are part of the patient's daily life. The NeuroVR Player offers the ability to use a head-mounted display to immerse the patient in the VE.

### Signal: Treating physical discomfort digitally

The deep attachment between people and their avatars has opened new possibilities for management of pain and discomfort. One recent application, for example, has demonstrated that soldiers who have been the victims of serious combat-related burns can palpably reduce their levels of pain by entering a computer landscape of snow and ice called SnowWorld.<sup>30</sup> Interestingly, virtual immersion in a cold climate even elicits many of the physiological responses of actual treatments involving cooling.

36



NeuroVR

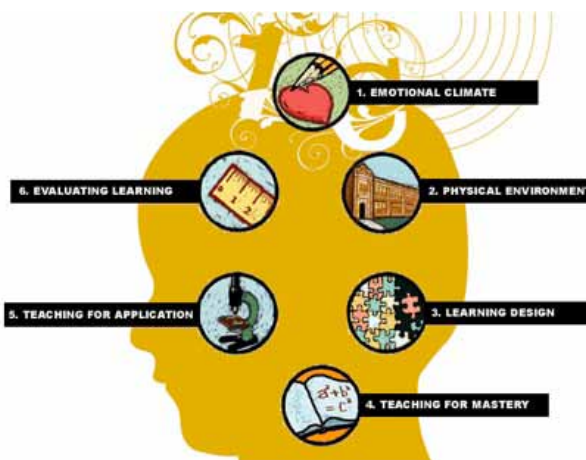
↑ The NeuroVR Editor provides an easy-to-use, icon-based interface.<sup>29</sup>

## LEARNING: BUILDING 21ST CENTURY KNOW-HOW

The structure of learning is changing. Advances in fields such as neuroscience are increasing our understanding of the optimal conditions for acquiring and retaining knowledge and are allowing us to tailor learning experiences to the information being conveyed. New approaches to teaching are freeing learning from the classroom and studio. Immersive simulations and games for learning can better equip us with the capacity to adapt to multiple possible outcomes.

### Customized learning environments

Both teachers and students will possess a wide array of new skills and technologies that will allow the creation of unique, optimal conditions for learning. From neuroscience research, it will be possible to pinpoint the amount of visual, verbal, and other sensory stimuli needed to optimally enhance participation, memory, analysis, and other cognitive processes. Furthermore, through the use of real-time, bidirectional communications technologies, specific learning pathways will be continuously monitored and modified. Teachers will be able to identify when their students are having difficulty grasping particular concepts and will be able to fine-tune the content accordingly. Students will simultaneously be able to indicate when they are confused or when subject matter is being presented too slowly to hold their attention.



↑  
The Brain-Targeted Teaching Model, developed by Dr. Mariale Hardiman.

www.braintargetedteaching.org

### Signal: Brain-targeted teaching

The Brain-Targeted Teaching Model, developed by Johns Hopkins University Assistant Dean of Urban School Partnerships Dr. Mariale Hardiman, links advances in neuroscience with, among other things, physical classroom conditions, teaching methodology, and modes of evaluating student achievement. At Roland Park Elementary/Middle School, Hardiman used knowledge of brain functions to develop and implement a number of Brain-Targeted Teaching techniques. For example, since “scent can also be used to enhance memory, as olfactory input moves directly to the limbic system or emotional center,”<sup>31</sup> kindergarten classrooms were scented with peppermint to facilitate imprinting.

### Signal: Customizing curricula

Innovations for Learning’s TeacherMate—a handheld computer and set of instructional applications designed for use in schools, at the cost of \$100 per student—provides teachers with the flexibility to differentially adapt the presentation of a standard curriculum to meet the learning progression of individual students. Each student’s device provides the teacher with continuous data about students’ performance and speed on particular exercises, helping the teacher immediately identify where students are encountering barriers to their academic progress.

The screenshot shows a 'Class Report' table with columns for Group, Student name, Level, No. of stories read, High freq. words, Phonics fluency, Comprehension, Math facts, Math concepts, Sp. and counting, and Time on task. The table contains 15 rows of student data.

Group	Student name	Level	No. of stories read	High freq. words	Phonics fluency	Comprehension	Math facts	Math concepts	Sp. and counting	Time on task
Green	Mike B.	3	3	42%	45%	42%	40%	48%	60%	2:35
Green	Sasha B.	2	6	53%	48%	30%	49%	55%	60%	2:25
Blue	Sarah E.	2	12	80%	75%	73%	70%	72%	78%	2:35
Blue	Sue G.	4	15	75%	75%	68%	85%	70%	80%	2:45
Blue	Latelya J.	4	17	70%	73%	69%	70%	64%	60%	2:25
Yellow	Brandon K.	3	8	60%	55%	60%	50%	45%	45%	2:45
Green	Jordan K.	3	8	43%	47%	43%	60%	65%	50%	2:45
Yellow	Jon S.	3	7	53%	60%	33%	60%	60%	70%	2:35
Yellow	John S.	3	8	53%	63%	33%	60%	70%	60%	2:25
Yellow	Shawna S.	3	6	60%	67%	60%	60%	60%	60%	2:05
Yellow	Ben W.	3	8	62%	68%	60%	60%	60%	60%	2:15
Blue	Ma W.	4	15	80%	75%	75%	85%	70%	80%	2:15

↑  
Screenshot from Innovation for Learning’s TeacherMate.

## Connected self-empowerment

Pervasive mobile connectivity, combined with awareness of location and context, will bring about large-scale changes to what we learn, where we learn it, and who we learn it from. Learning practical skills will be enhanced by the ability to consult step-by-step video or AR instructions for any task. From learning how to cook a new recipe to how to tune a car's engine, new worlds will be unlocked by this capacity to consult highly detailed, contextually relevant learning programs.

The ability to tap into the knowledge of specialized knowledge communities, via services that can rapidly match an individual's queries with the resources for obtaining answers, will help turn every moment of our lives into an opportunity to learn. Trust and authority will become increasingly valued, as students endeavor to ensure that the individuals, data, and learning software they use are comprehensive, responsive, and adaptive.

### Signal: Augmenting the mechanics of learning

Research by Columbia University's Steven Henderson and Steven Feiner exemplifies the potential application for AR-guided learning.<sup>32</sup> Using customized commercially available

hardware, the team developed an AR application designed to guide military mechanics through a number of standard maintenance tasks. Given the high-complexity environments in which military mechanics must operate, Henderson and Feiner made use of AR to help mechanics locate objects and perform tasks more accurately and rapidly than they could using non-augmented mechanics.

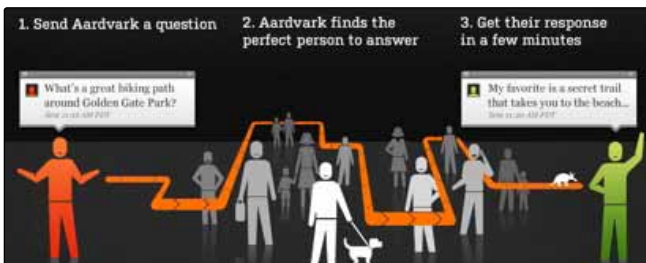
### Signal: Tapping a world of resources

Self-empowered learning is contingent on solutions for seamlessly and rapidly connecting individuals who have questions to the resources that can provide relevant answers. Social search engine Aardvark leverages individuals' trust in their extended social networks to find the most appropriate answer to requests for advice, opinions, or factual inquiries.<sup>33</sup> When users ask Aardvark a question via the Web, IM, e-mail, Twitter, or iPhone, Aardvark's routing algorithm parses the query for its topic and then routes it to other individuals based on factors such as their domain of expertise, their prior history producing strong responses, and how quickly they generally respond. Within a matter of minutes, users can expect a variety of answers—answers that are much more personalized and relevant than when entering similar queries into a traditional search engine.



↑ AR overlay guides real-time tasks.

graphics.cs.columbia.edu/projects/armar/pubs/henderson\_feinerismar2009.pdf



↑ Aardvark enables fast, personalized learning.

www.vark.com

## Games for learning

Games will be progressively more significant as pedagogical instruments. Not only will games increasingly be entrusted with delivering standard curriculum, they will also be used to provide realistic simulations of comparatively rare situations and to convey multi-variable, complex systems by making abstract concepts accessible. By allowing us to experience previously inaccessible conditions, these games will enable us to broaden our understanding of how the world works, or at least how it appears to work, from perspectives other than our own, which will help us to build better models of how events in our lives are likely to unfold.

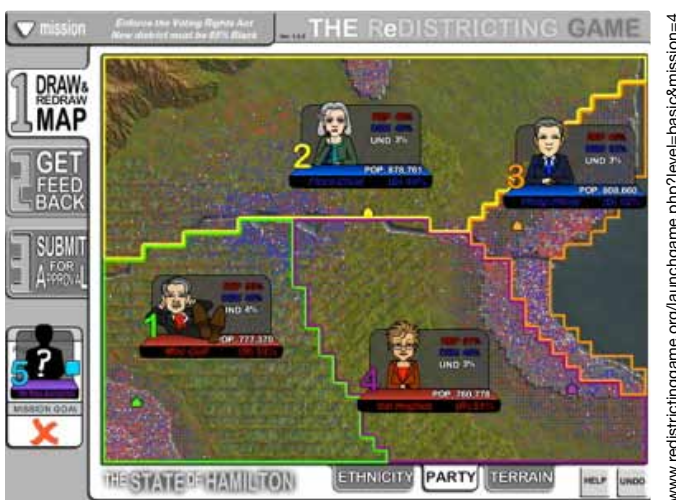
### Signal: **Playing Politics**

Developed by the University of Southern California Game Innovation Lab, the Redistricting Game<sup>34</sup> typifies the new applications of games for learning. The game aims to make the highly abstract concept of gerrymandering (redrawing legislative districts, often to protect the seats of incumbents) tangible for the average citizen. Whereas traditional education about the subject would explain the minutiae of legal procedures and the historical reasons for the practice, the Redistricting Game instead emphasizes experiential learning.

Gamers are placed in the position of a legislator and are asked to amend districts explicitly for their avatar's benefit. The game's structure forces no moral judgments; however, by simulating district redrawing, gamers see how much manipulation and machination is required by gerrymanderers, and they come away with a richer understanding of some of the actions of their elected officials.

### Signal: **Honing motor skills**

Dutch games developer Grendel Games,<sup>35</sup> in collaboration with the Groningen University Hospital, is using games on the Nintendo Wii to help maintain the proficiency of the hospital's surgeons. A recent health report by Dutch officials found that due to lack of training in the motor skills required by the surgeons, a number of errors were being made during laparoscopic procedures. The report recommended that staff be required to obtain certification on simulations of the procedure, but the hospital found it difficult to engage surgeons with simulations that were not compelling. Driven also by the high cost of maintaining comprehensive simulators, Grendel Games created a game that uses modified Wii controllers to simulate the mechanics of laparoscopy—without the game even appearing like surgery. Surgeons were thus able to maintain and hone their skills without consciously knowing that they were learning by playing the game.



↑  
**The Redistricting Game places people in the position of a legislator and amends districts to the benefit of their avatar.**

## GOVERNANCE: PERSUADING UP, PERSUADING DOWN

Voting, lobbying, polling, and other venerable forms of political persuasion will continue to have an incumbent's advantage over start-up social and computational technologies. However, new ways of organizing, communicating, and consolidating political opinion and desire will quickly transform the ecosystem of persuasion on which governments, organizations, and citizens stake their futures.

Everyday citizens are becoming more sophisticated in how they use social media to pool resources and information, organize quickly and effectively, and "persuade up" by increasing their influence with those who make decisions that affect their lives. In the opposite direction, new persuasive technologies are allowing those in power to read, reach, and influence the public with a single stroke.

The trend toward persuading up and persuading down in real time is shifting the hierarchies of control and the balance of power that have traditionally defined governance. A new communication landscape with a "governmentality" toward persuasion is emerging.

### Power and isolation

Research has shown that abuse of power rises relative to the social and emotional distance between the ruler and the ruled. Science journalist Jonah Lehrer recently described this phenomenon:

*Once we become socially isolated, we stop simulating the feelings of other people. As a result, our inner Machiavelli takes over, and our sense of sympathy is squashed by selfishness. The UC Berkeley psychologist Dacher Keltner has found that, in many social situations, people with power act just like patients with severe brain damage. "The experience of power might be thought of as having someone open up your skull and take out that part of your brain so critical to empathy and socially-appropriate behavior," he writes. "You become very impulsive and insensitive, which is a bad combination."<sup>36</sup>*

40



By decreasing social isolation, social networking, and communication tools like Facebook, Twitter, and Skype open a rich channel for leaders and their constituents to exchange ideas, debate issues, and create dialogue. These channels are not only important for the functional practice of open government and deliberative democracy, but they also help overcome many of the logistical barriers to meaningful human contact that can blind leaders (in government, business, and communities) to the needs of their constituents, and often lead to poor or selfish decision-making. Few technologies are more persuasive than human contact, even virtual contact, and social media will make this contact more pervasive and effective.

**Signal: Connecting officials and citizens as social networks**

Besides the thousands of elected officials on Twitter and Facebook, there are now dozens of sites and platforms connecting officials and citizens as a social network. One site, GovLoop, describes itself as the "Social Network for Government." Its vetted membership network claims over 25,000 "innovators from federal, state, and local government." This active community is a sounding board for new ideas for governmental transparency, crowdsourcing, and feedback.

**Signal: Getting cities online**

City governments are beginning to reap the benefit of social media outreach. A recent survey by the Fels Institute of Government at the University of Pennsylvania showed that of 79 U.S. city governments polled, 50% had a Facebook page and 56% were on Twitter. In the report, Jeff Friedman, Assistant Managing Director for the City of Philadelphia, said, "The value for us is being able to reach so many people at one time at zero cost. We are doing a great deal of fantastic, transformational work and ... we need to get this out to people."

Yet, despite the increasing numbers of cities using social media, these tools are still not being used as they could be. The survey found that, of the cities that had established themselves on Facebook or Twitter, only 13 had more than 500 fans on Facebook, and only seven had more than 500 Twitter followers. Much more work needs to be done to use these networks as tools of constituent feedback and persuasion.

www.govloop.com

◀ **GovLoop is a social network with over 25,000 members from federal, state, and local governments.**



## Open data, open minds

Massive amounts of online data are being generated by people as they update their profiles, purchase products and services, and go about their daily lives. From crude surveys to scientific polling, governing bodies have always sought to know (and often to shape) the mindset and behaviors of those they govern. New data processing tools and algorithms are now allowing access to an ongoing, continuously updated stream of live data that tells the story of people's values, habits, and desires. By "scraping" this data for pertinent information, those in power can much more easily and precisely learn the pulse of political psychology—of citizen-defined interest, which was previously only intuited by savvy politicians or interpreted by pollsters, and was subject to misleading biases and agendas.

Data scraping can also be used by citizen groups to check and monitor government and corporate actions. As the goal of transparency becomes realized and more machine-readable government and corporate data comes online, data processing tools will pull insights and patterns out of the flow. Watchdog groups can "follow the money" and expose misuse and abuse of resources. Citizen journalists can track data trails across nations, connecting dots that would have remained obscure.

## Signal: Promoting open access

In late 2009, the Government 2.0 Taskforce in Australia, under its mission "to investigate how the Australian Government can increase the openness of government and encourage greater online engagement," issued a call for entries into a contest for developers, called Mashup Australia, to demonstrate novel and useful applications of government data and the benefits of open access to government information. One of the grand-prize winners among the 82 entries was a mashup that used crime statistics and census data to paint a picture of different neighborhoods through visualization of "economic, education, safety, and socioeconomic indicators." Compelling data applications like these will make information accessible and meaningful for large numbers of citizens.

## Signal: Aggregating investigative journalism

Under risky and difficult conditions, investigative journalists expose abuses and crimes committed by governments, organizations, and individuals. In a globalized world, it is often difficult to follow information across borders. The Global Investigative Journalism Network is a clearinghouse for information that can be scraped, processed, and synthesized to look for significant connections among disparate investigative leads. This information can be used to pressure governments and organizations often in locations far away from where a fact originated. What is a trivial fact in one country might be the key piece of information that exposes an illegal weapons sale or an offshore child labor ring in another country.



↑  
**Mashup Australia was a contest held to demonstrate novel applications of government data.**

www.mashupaustalia.org



↑  
**The Global Investigative Journalism Network is a depository for information that can be searched to make connections among disparate investigative leads.**

flickr.com/24743856@N03 (zuoyou)



flickr.com/photos/donsolo





# Principles

## For persuasive organizations

The spectrum of forces, technologies, and applications presented in this report illustrate the rapid multiplication of points of persuasion in our daily lives. As we move forward into the next decade, we find ourselves in a period of uncertainty about our planet's environmental and economic future. We will need to bring to bear all the tools of persuasion that we can muster in order to create behavior change that matters.

In many cases, the emerging tools of persuasion identified here will give us better understanding of and communication with people at an individual level. There is a strong connection between amplified persuasion and simply communicating with more people on their terms and at their convenience. More personalized is more persuasive. We will see better messaging and media that is more relevant and more useful for us, and we will be able to create it as well.

As new technologies and media allow us to build information into our environments, we are also witnessing the birth of a new architecture of persuasion. While the impact is often unintentional, the design of digital artifacts invites us to interact with the world in certain ways. Even the most basic sensors highlight some measurements over others, and simply drawing attention is enough to impact behavior.

Based on the diversity of material presented in this report, we have distilled a set of 15 key practices to help guide organizations as they begin to explore the new aspects of persuasion that will emerge over the coming decade:

### 1. Recognize human needs at the scale of neurons and micro-actions

Whether at the scale of a genome, a neuroreceptor, a personal social network, a facial expression, or a massively multi-user digital system, we are gaining new understanding of human behaviors with each passing day. New tools are transforming how we see, explain, and ultimately address human needs and actions.

Neural imaging and genetic sequencing are changing our understanding of needs, causality, and motivation at the level of neural activity and genetic code. While technology to

scan the brain in detail and understand the data enough to act on it in any real, practical way is likely some years away, scientists are already making progress in this direction by combining biometric data from a variety of sources (respiration, heart rate, motion, sweat) with in-depth interviews.

The spread of digital social tools ranging from text messaging to online networking has created entirely new, large-scale data sets made up of individual micro-actions that are captured click by click, such as "Liking" a comment on Facebook. The value of these data sets is just beginning to be understood. Expect the next decade to be one of new, unexpected insights into our similarities and differences, data "scraped" from a view of human activity that we've never had before.

Human resources, marketing, product development, and strategy groups should start experimenting with new lenses on their employees, consumers, and business partners. What happens when you see your audience through a lens of biodata or neuroresponse?

### 2. Explore new incentive systems that optimize neural, cognitive, and social rewards

We are on the threshold of designing not slightly better, but much better interactions. The growing focus on brains, bodies, and clicks will allow us to create new programs for optimizing our connections with places, content, and people. We will tailor the amount of visual, verbal, and other sensory stimuli for ourselves, and others, in order to enhance participation, memory, analysis, and positive emotions. This will transform learning, both in the classroom and at work, allowing the most innovative organizations to increase their people's knowledge, productivity, and happiness.

New neural, cognitive, and social reward systems will also mean adopting new forms of compensation and incentives. Money, it is being understood, is only one form of rather crude (but not weak) motivation for most human behaviors. Game mechanics are now being used to activate dopamine neurons in a whole set of new non-game contexts, while alternate currencies or badges are conferring social visibility and status.

### 3. Experiment with new persuasive technologies to remediate stressed-out systems and populations

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Global problems require novel approaches to persuasion. The aging of the human population, increasing social inequalities, and the as-of-yet unknown impacts of climate change on communities, will create the need for new kinds of action at the individual, network, community, and national level. Your organization has to get engaged with using persuasive forces will be used to stimulate and support higher levels of engagement over the next decade, chief among them: new levels of self-control that will increase personal productivity and personal health; new levels of collective cohesion that will increase the power of distributed groups to attract and influence new members; and new levels of top-down coordination that will shape the role of institutions in a networked society.

44

### 4. Build new literacies for digitally-and physically-aware environments

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Sensor technologies will soon be ubiquitous. Cell phones, operating systems, implantable chips, tablets, apps, bio-state monitors, laptops and desktops, social networking platforms, presence sensors in the floorboards of our homes and alertness sensors in the dashboards of our cars: the number and diversity of these potentially persuasive technologies in our lives are increasing with every year. In the majority of cases, they are self-adopted and seen as helpful or fun tools for their users. Getting sensors into people's lives—or getting access to the data created by those sensors—will become a critical business and organizational need in the next decade. Plan ahead by exploring how your products or services are already interacting with sensor data, or how you could embed your product and services with new data-reporting mechanisms.

### 5. Tap the emotional profiles of workers, citizens, and other groups to meet their needs

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Connections are forming between emotional and digital worlds. It will become more common, in the next decade, to use technology to detect and express our own emotions and those of our friends, co-workers, and larger networks. Our cell phones and computing devices, equipped with biosensors and semantic analytics, will know something of our emotional state and adapt themselves accordingly. For businesses and other organizations, we will see a growing dilemma about how to use these new tools.

For instance, will employers want to analyze the emotional expressions of their workers as a new form of pulse survey? Will governments track the kinds of events and media reports that create more positive emotional expression, and try to increase them? In the next decade, expect more nuanced understandings of emotion to play a part in reshaping products, businesses, services, and brands.

### 6. Move beyond advertising to community-based brands

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Advertising is now beginning to move into all our digital channels. As this happens, the best ads will be so relevant to our contextual needs that the line between an ad and an aid to a desired end will be blurred. Forward-looking companies are already engaging in conversational marketing, seeking out and supporting communities in which their lead users are active, and underwriting consumer-led activities and content that fits with their overall brand message.

### 7. Engage your networks in mutually rewarding persuasive profiling

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Digital profiles, or “digital mirrors”—the collection of online attributes and actions that result from the digitization of various parts of our lives—tell a story about our values, habits, and desires. This story is becoming much more than a passive reflection of our “real lives,” and is moving toward anticipation, prediction, and prescription. Third parties will be able to understand the triggers that shape our behaviors at an individual level, and to create a “persuasive profile” that could tailor the information we come across based on what is most likely to compel us to action. Ideally, third-party sites with access to this kind of sophisticated analysis of individual-level persuadability would share it with users so that they could use it for their own ends, say, to lose weight. Organizations seeking to keep pace with these developments will need to think through their approach to the persuasive profiling of customers, employees, and shareholders.

## 8. Harness the potency of avatar experiences

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Research increasingly supports the profound finding that the human brain does not fully distinguish between real and virtual experiences. Despite the arguments against the effects of video game violence, at least some of what happens in computer-generated environments has as much psychological impact on us as things that happen in the real world. This means that there will be extraordinary opportunity to develop more robust virtual interactions, and that these will shape offline behavior as well.

Virtual interactions with digital versions of real-world products will be the next frontier for building brand affinity and awareness, and for fostering distributed collaboration in the workplace.

## 9. Use virtuality to craft “better than real” experiences

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Increasingly, the virtual and the real will blend. Emerging augmented reality technologies are giving us enormous powers to create combinations of physical and virtual living that will have more powerful impacts than “plain old real.” We will see the emergence of new categories of emotional experiences that can only be had through blended reality. This new “world of pure imagination,” as a current AT&T ad puts it, will create new opportunities for healing and health, but may also open up new threats to psychological stability.

Organizations that can overlay virtual effects onto real-world experiences, whether at work, in the retail space, or for entertainment, will have vastly more impact and reach than those that cannot.

## 10. Use simplicity to increase persuasiveness in a multi-channel environment

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Even as we worry about our fragmented attention and loss of ability to focus, the rise of multi-layered, multimedia conversations and interactions with multiple screens over the course of a day, means that we are opening ourselves up to much more persuasive intervention than ever before. To the TV and its 400+ channels and the PC at home and work, we are adding the smart phone, e-reader, and tablet with their hundreds of apps, and of course our social media with its endless links, comments, and updates.

To take advantage of one of the multiple points of intervention that we are creating in our everyday routines requires crack execution of simplicity and the reduction of the barriers between desire and action—in real time. As BJ Fogg notes, “simplicity is a function of your scarcest resource in the moment.”

A key aspect of persuasion in this noisy environment is stripping away all data that the particular user considers unnecessary, and showing only what needs to be known to quickly act or adjust behavior. Simplicity sticks.

## 11. Craft strategic organizational social networks

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Just as individuals will be increasingly influenced by their online social configurations, so will organizations. Companies will need much greater understanding of their digital context and how it influences them, their brand, and their employees. They will want to “design” networks that reduce risk and vulnerability and increase benefits such as positive emotions.

Figuring out what kinds of data are persuasive to different communities of stakeholders will also be increasingly important.

## 12. Anticipate debates about autonomous persuasive technologies

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Persuasion has always been a contentious issue, and next-generation persuasion promises to bring us closer to choices we have imagined but never before faced. We are continuing our long human history of creating new tools to do things for us. The next phase of technological development will be tools that not only detect new sets of human conditions but also then report those conditions and adapt what they deliver to us, acting more autonomously to alter our environment or behavior. The upswing in tools for stimulating behavior change will add new fuel to the old debate on what is gained and what is lost when we relinquish human capacity to machines. As our technologies know more and more about us, and take action accordingly, we will see new cultural splits in the population and a small but powerful movement to refuse full engagement with these tools.

### 13. Engage the public in an active discourse on the potential for new forms of subliminal persuasion

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Subliminal advertising has been banned in many countries for decades, but ambient design and digital audio-, video-, and photo-morphing technologies will increasingly influence us without us being aware of what they are doing. This could lead to powerful personal applications and the capability to amplify will power, but will be very risky practice for commercial organizations and government bodies.

Organizations exploring these topics will be called upon to demonstrate their integrity by using the promise of pre-attentive persuasion only for the right reasons, and with the buy-in of employees, stakeholders, or consumers.

### 14. Use emerging persuasive technologies to build empathy

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Games, augmented reality overlays, and increasingly powerful virtual experiences will enable some users to gain new empathy and perspective. Morally complex, emotionally fraught, better-than-real experiences will broaden our understanding of how the world works and how it feels, for instance, to inhabit a different kind of body in a different social context. This transition will invite users to build an empathic understanding of situations in parallel to an intellectual comprehension of them. In situations where these empathic connections are developed, expect them to both facilitate organizational communication and to bring outside perspectives into new contexts, including “persuading the persuaders.” Organizations can change their relationships to employees and consumers alike by adopting new tools for empathy-building, allowing themselves to be persuaded by the opinions of those who are far away from decision-making centers.

### 15. Use the future as a tool of persuasion

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Conceptualizations of the future are inherently tools of persuasion. With the techniques and technologies detailed here, we are able to more easily design visualizations of multiple, possible futures as aids to decision-making and behavior change. This increased engagement with possible future outcomes increases our ability to adapt to change. As always, better understanding of future consequences is a key driver of behavior modifications in the present. At an individual level, we will be able to think and to program triggers to motivate our future selves.

It is possible to powerfully persuade simply by more effectively “looking before we leap.”



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# Appendix

## Hear more from the experts

In the course of our research, we were fortunate to speak with a wide range of experts. Their insights are incorporated throughout the report, but we are happy to be able to provide additional excerpts, culled from the transcripts of our discussions with them.



**INTERVIEW: LEE SHELDON** Professor Lee Sheldon, Associate Professor, Department of Language, Literature, and Communication, Rensselaer Polytechnic Institute, used the mechanics and incentives of Massively Multiplayer Online Role Playing Games (MMORPG) to invert the structure of his Multi-Player Game Design class. In the following excerpt, Professor Sheldon outlines his rationale, and discusses some examples of how the application of concepts such as “boss raids” —where gamers form partnerships to attack a large and powerful enemy—provoked his students to learn in new, more collaborative, engaged, and adaptive ways. The following are a few highlights from his conversation with IFTF:

### **What prompted you to experiment with bringing MMORPG mechanics to your classroom?**

I was sitting here preparing my syllabus, and I had taught Game Design and Multiplayer Game Design once or twice already, and I had a major problem. The students just sat there. One fell asleep. The ones who were engaged were engaged, what else can I do? Well, heck, I’m teaching Multiplayer Game Design, why not do it as a multi-player game. So, I divided up the classroom into zones, we created guilds—the whole syllabus is all about translating regular pedagogy into gamer terms. I had a chart. They could look at the syllabus and say, “Oh I’m Level 4, I now have a B+,” or whatever. I said at the beginning of the class when I went in, “Okay, you all have Fs. However, through quests and killing mobs and boss raids, etc., etc., you can level up to the point where you get an A.” and I knew I had them.

We’ve now conducted two classes like this. The first was our beta test, and in the second one, I just leapt in with both feet, and it’s been wonderful. They’re basically teaching the class material to one another. Just a couple of examples—they do guild quests, where an entire guild reads the text that’s supposed to be taught. They divide up any way they want, they can even just have one person do it or they can all do it. Guilds are about six or seven students and some of them get up there and drone on and on and read the PowerPoint bullet point by bullet point. After that happened a couple of times, I had a class lesson in how not to do that, because nobody pays attention then. Even if they’re your peers, you’re going to lose them, but one of them did their presentation as *So You Want to Be a Millionaire*, and every three or four slides, a slide would come up and there would be music and trumpets and there would be a multiple choice question and the guilds would all compete

to answer that question, and they gave them candy. And it was wonderful. Everybody was involved. They were trash-talking, they were yelling at each other, and they learned that one better than I think any of the others.

The other example is this semester. I gave them a midterm prep where they have to prepare for a boss raid because there’s going to be a lot of variables. You don’t know exactly what is going to happen, and I had 60 questions of which 40 were going to end up on the midterm. It was an open-book preparation — we use two books in class ... [and] one person in each guild had one of those books, and then I would ask the question and they would hurriedly look it up in the book, and then they would shout out their zone name, that was their buzzer.

The first time, there was one guild that was doing pretty good and the other guilds were getting annoyed. They said, “Okay, there’s got to be a better way to do this.” The next thing they did was to have one person look it up and they would tell enough people in the guild, because there were sometimes as many as eight different things they had to remember, and some of them were failing to memorize them instantaneously, so six people would then memorize one thing, and so they would shout that out, and so that guild started to do well, and the other guilds were sort of grumbling and grumbling. Then, they started writing it down really fast, because you have to close the book before you can hit the buzzer, so you can’t go back and check, so then they were writing down the answers. And so that guild started to win, and then, one of the guilds whipped out their cell phones and one of them was taking photographs of the page where the answer was and then reading it off the cell phone. And I said, this is exactly how you prepare for a boss raid in a game. You learn the strategy, you try, you wipe, you do it again, and so on. And they did incredibly well on that exam.



INTERVIEW: **STEPHEN DUNCOMBE**

Dr. Stephen Duncombe is a media, culture, and politics scholar and activist who has spent years studying and participating in the highs and lows of political behavior. His book *Dream: Re-Imagining Progressive Politics in an Age of Fantasy* explores the political truths and persuasive powers that are hidden in games and popular media, and how people can use those truths and powers for ethical politics. Dr. Duncombe is an Associate Professor at New York University.

The conversation ranged from Aristotle’s opinion polling in ancient Greece, to the art of evoking the affective discontent of young Europeans, to planning for mutations in your messaging. Here are a few highlights.

**What new media or technologies are most relevant now and will be over the next decade for politics and governance?**

I think the future of persuasion is going to be around “data scraping.” There are many applications that show which articles are being forwarded or liked; we are seeing raw stats on what people are finding attractive.

So, it’s interesting to look at what technologies like these are offering in terms of persuasion, because part of persuasion has always been to try and read what an audience wants. This goes all the way back to Aristotle’s *Rhetoric*, a whole two-thirds of which is dedicated to why the Athenian citizen wants a harbor. This is completely irrelevant to today’s world, except in what it says about persuasion. Aristotle is saying you can’t just make a pitch to anybody unless you already understand what they want, how they want it, and how they want it connected to themselves. I like to look at Aristotle’s *Rhetoric* as one of the first works of market research.

Before these new technologies for data scraping, we’ve had to infer population desires by doing public opinion polls, and polling is always going to be limited or biased by the questions you ask, or by events of the day, and what is on people’s mind at the time of the polling. Now we have the means to figure out how people are thinking about things.

For example, let’s say you and I are interested in electric cars. By trolling enough websites, discussion boards, forwarded articles, and such, we can get an indication of what people are interested in in terms of electric cars: what issues, what models of car, what ways people like to think about and share news about electric cars (whether statistical accounts or new narratives). This will be very important in terms of persuasion. We will get a better handle on how people actually understand their world and what they actually value about their world.

You can’t just punch that information into an algorithm and out comes something else. You are going to need people who can read the scraped data and make meaningful narratives out of it. There is a big place for “narrative constructors” (novelists, storytellers) who can take massive amounts of desire and fantasy and write it into a narrative that actually resonates with people.

**It seems as if we are bypassing the problems with people self-reporting their thoughts and feelings, by instead “getting inside the heads” of people.**

Right, but we are not getting inside the heads of individuals. We are getting aggregate data, and getting into the “mass head”—of which there are lots of outliers, but the bell curves are huge.

**Are there “old” media or technologies that we don’t typically think about that are still relevant for the future of persuasion?**

Gatherings, physical gatherings. And I’m not thinking of the protest models—the Tea Party march on Washington, or any progressive protest march against X or whatever. I’m talking about groups like Improv Everywhere and similar spontaneous “flash mob” kinds of gatherings, or temporary autonomous zones, “train parties,” and other things like that. Of course, marketers are already understanding this and are trying to exploit it as much as possible.

One thing that strikes me is the importance of “non-instrumentality” in these gatherings to the action itself. We learned this with Reclaim the Streets. We were having these great parties, and a bunch of us started saying, “This is great, but we’ve got to make this more political.” When we started to make it more explicitly political, we started to lose people. And that’s a problem for persuasion: how do you persuade in such a way if you don’t retain that wonderment that happens in non-instrumental physical gatherings?

**So you’re saying there is a need to make things compelling in and of themselves (that’s the “art”), with the sponsorship or agenda smuggled in, and only visible to those who seek it out—you can’t hit people over the head with it?**

Good work in this area opens up spaces that people have to fill in. The problem with things like the Mountain Dew “DEWmocracy” campaign was that there was no space in there. Or the problem with the Chevy Tahoe campaign is that they opened up space but they didn’t really want people to occupy it. If you “build in” space, and build ideas for space into your messaging, it means being open to the answers that people give you. This is where it works well for us in the democracy business, as opposed to the selling business, because we can create spaces for people to imagine in.

So, if we shift persuasion from persuading people to think X to instead simply persuading people to think, then it’s a whole different ballgame.





INTERVIEW: **DOUGLAS RUSHKOFF**

For two decades, media theorist Douglas Rushkoff has studied how digital technology can be a tool of empowerment and also control. Rushkoff, a co-founder of the Institute for Applied Memetics, is the author of ten books on media and popular culture, including *Media Virus!*, *Coercion: Why We Listen to What “They” Say*, and *Life Inc: How the World Became a Corporation and How to Take It Back*. He has also written and hosted several *FRONTLINE* documentaries, including “The Merchants of Cool,” which looks at the influence of corporations on youth culture, and “The Persuaders,” about the darker side of marketing and new techniques to overcome consumer resistance.

**As the real and the virtual blend, we are seeing “online” advertising move into the physical world through the first augmented reality apps that deliver information in context. Do you think the future of marketing is highly targeted context-aware advertising? Will my phone ring when I saunter past a café to “remind” me that my favorite latte might be the perfect pick-me-up?**

There are certain kinds of impulses that can be stimulated in that way and certain kinds of products suited for advertising that pull triggers like this in the short term, like a jolt of caffeine. So yes, once you understand the self-reinforcing, anxiety-causing triggers in people, you can certainly induce compulsive buying behavior. “I notice you’re trying to lose weight. Buy this diet food! Join this gym!” Once the machine finds the loop that it can stimulate, it’s going to push that button as often as possible.

There are some impulsive, short-term, spontaneous hot-button responses that marketers could exploit for a good long time. To those marketers, we will become as passive as iron filings moving between magnets as we go through our day making little choices. But that approach doesn’t work very well for considered decisions like, say, buying a car or a house.

Also, we don’t actually have enough money to constantly answer the pings to purchase. If the external pings we receive for financial attention keep increasing while our capacity to respond financially to those pings reduces, the only result can be anxiety or eventual desensitization to those advertising pings.

**As neuroscientists learn more about what lights up our brain, I’d imagine that those advertising pings will become more precise and less obvious to our conscious minds.**

As advertisers’ manipulation of our minds through color, sound, and even direct neural stimulation gets more and more honed, I think it will lead to the same kind of fatigue that mall and casino designers discovered by the late 1980s. They thought their tight control over the environment—no clocks, no windows—would disorient people and cause them to spend more money, but it actually made shoppers feel anxious after a time. Now those coercive malls that were built in the 1970s are either gone or have had skylights installed.

In neuromarketing, though, it’s not one marketer coming at us at a time from some central control. They are each doing it individually—competing for our attention. And it’s not like they’ll stop to give the consumer some breathing room. If they all work at the same time to constantly stimulate us, they’ll fry us. Perhaps all the advertisers will get together and develop a currency so they don’t overload the consumer market. But I have a feeling their short-term goals are such that they can’t put down the gun unless everyone else does.

**If you think these new technologies will be effective only in small niches or until cognitive overload melts our minds, what is the future of advertising?**

First, we will have an explosion in all these new kinds of advertising technologies. But then I think advertising and branding as we think of it today will probably fade away completely. People will no longer buy cookies because they saw on TV that they are made by elves in a hollow tree. We are in an era of media transparency. People want to know, “Are these cookies good? What are the ingredients? What are the conditions like where they were manufactured?”

Advertising is being replaced by public relations, and the facts are what will help companies promote their goods. It’s about making a real case for why your product is superior, and expressing how far back and forward those positive attributes go. The brand story is replaced by the story of the product.



# Endnotes

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