Embedded health

The near future will see interest move to the redesign of physical spaces to promote healthier behaviors and lifestyles. In the American suburbs have actively worked to preserve the visual environment by limiting the construction of certain types of buildings. For years, homeowners associations have about ourselves has the potential to become more valuable but also more challenging. The past decade gave rise to a variety of products and services aimed at improving our health by giving us more information and context-sensitive suggestions to people. Over time, ambient messages will become embedded technologies, will be key. (Long-term illness response)

Barry Schwartz is a professor of psychology at Swarthmore College in Pennsylvania. He has been named a fellow by the POG from the University of Pennsylvania in 1976. Schwartz has written ten books and more than 160 articles for professional journals. In 2006, Schwartz published The Paradox of Choice: Why More is Less, which was named a top business book by both Business Week and Forbes. His latest book, with colleague Alan Goldstein, is about "practical wisdom" and was published in 2011. (Forbes)

An interview with barry schwartz

Barry: The Paradox of Choice is really about the nature of our experience of choice. We tend to think of choice as a good thing, people love having options, but we also have a kind of cognitive dissonance about... everyone just took it for granted that since some options were going to be eliminated, it's complicated, you're making decisions about multi-dimensional things, it's hard to have back-up and after the fact we're frustrated by restrictions on our ability to do what we want, and a lot of focus is on the psychological and emotional and behavioral aspects of decision making. The next decade will see widespread efforts to use local governments and collectives to design feedback for behavior change, not just in physical environments but also in the context of our daily lives. In the years to come, techniques for consciously shaping the context around us will allow to rethink and redefine the question will involve the extent to which our physical or virtual environments influence behaviors. Embedded technologies, feedback, will be key. (Long-term illness response)

Barry: There is a disconnect between our short-term and long-term health goals. We have health problems that are long-term, but in the moment, which may lead to bad choices. This is very much on the minds of many people. It's no secret that we're not making healthy choices, we're not stopping people from drinking soda, but we're making environments where, when people do nothing, they get what's good for them. But they're not forced to do that; they're making choices. Their argument is that we should be paternalistic in designing environments, making it much easier to do the healthful thing. But it's not that easy, you're making decisions about multi-dimensional things, it's hard to have back-up and after the fact we're frustrated by restrictions on our ability to do what we want, and a lot of focus is on the psychological and emotional and behavioral aspects of decision making. The next decade will see widespread efforts to use local governments and collectives to design feedback for behavior change, not just in physical environments but also in the context of our daily lives. In the years to come, techniques for consciously shaping the context around us will allow to rethink and redefine the question will involve the extent to which our physical or virtual environments influence behaviors. Embedded technologies, feedback, will be key. (Long-term illness response)
What [Columbia University Professor] Sheena Iyengar showed is that that’s not true, because when people have a lot of options, instead of being liberated, they’re paralyzed. So that’s big finding number one; that too many options produces paralysis. And often, that can be extremely consequential. You know, if you skip your breakfast cereal, it’s no big deal. But if you don’t go to the doctor, or don’t take medication because you don’t know which one to take, well then it can be a big deal.

Finding number two is that if people overcome paralysis and choose, when there are a lot of options, they are likely to make mistakes. It’s complicated, you’re making decisions about multi-dimensional things, there’s a lot to keep track of, and often what people will do is they’ll choose on the basis of what is easy to evaluate rather than on the basis of what’s most important.

Number three, the thing that I personally have been most interested in, is that if people overcome paralysis and choose and manage to choose well, when you choose from a lot of options, you will be less satisfied with what you’ve chosen than if you choose exactly the same thing from a smaller set of options. And the reason for that is that as you’re experiencing whatever it is that you’ve chosen, you’re thinking about all those other attractive things that you’ve passed up.

Bradley: How do you think the landscape for choice has changed since you began looking at these questions?

Barry: We are certainly encountering more things. There are more varieties of X for pretty much any X than there ever were before. And you don’t know that most of these varietals are essentially interchangeable with one another until you’ve devoted a fair amount of time and effort to research. You know, the cereal aisle of the grocery store is about a mile long. How do you know that it doesn’t really make a damn bit of difference which one you choose? You don’t know. So it looks like the world is giving you a big problem that needs to be solved.

To raise the stakes a lot, in the case of health care, doctors don’t tell patients what to do anymore. They give them the options. You know, do you want surgery or do you want cholesterol therapy? It’s preposterous, but that’s what they do. And this is the so-called doctrine of patient autonomy; doctors shouldn’t be telling patients what to do ... This puts a burden on patients that’s a nightmare.

Bradley: I think a lot of people would react pretty negatively to what you said about patients not having any control over how they want to plan their own outcomes. How do you strike a balance between choice and restriction?

Barry: Unfortunately, I don’t think that there’s a simple answer. You know, this patient autonomy idea, it was a reasonable reaction to a completely unacceptable, sort of paternalistic arrogance on the part of doctors who wouldn’t even bother telling you what was wrong with you. You know, they’d just tell you what to do. And I think that’s an outrage and needed to be corrected, but it’s been overcorrected.

So finding the right balance between telling patients what to do and offering them options and basically demanding that they make their own decisions is the challenge. And I think the thing that makes it such a challenge is that there is no one-size-fits-all answer.

Bradley: What are the tools that people need to manage these little things more effectively?

Barry: The biggest tool, I think, the one that’s most feasible given the society that we’re living in, is to implement what Richard Thaler and Cass Sunstein call “libertarian paternalism.”

Their argument is that we should be paternalistic in designing environments where, when people do nothing, they get what’s good for them. But they’re not forced to do that; they could always opt out.

If you make high-fructose-corn-syrup products expensive, with a tax, and fresh fruits and vegetables cheap, you’re not stopping people from drinking soda, but you’re making it harder for them to drink soda and easier for them to consume what’s good for them. Or, you put the desserts in the cafeteria line across the room from the rest of the cafeteria line. And then that way you may reduce the number of people who actually choose a dessert. You’re not preventing them from taking a dessert; you’re just making it more difficult.

Bradley: How do you think the landscape for day-to-day choices could evolve over the next decade?

Barry: I think that people used to think that the challenge was to get people information. Google solved that. And what we have learned is that having all of the world’s information is about as useful as having none of it. And the result is a shift from getting all the information to people, to finding ways to order, filter, select, structure, edit the information so that it will actually be useful. You know, Google does it, Netflix does it extremely well, Amazon does it pretty well.

The task will be organizing and filtering information, not providing it.

With respect to health, I don’t know. Near as I can tell, there’s a class divide that just keeps getting bigger and bigger. And the chronic health problems that we have to deal with will be increasingly restricted to the lower economic classes and they will continue to be pervasive in those classes, while the privileged will take full advantage of all the information medicine provides about how to live a healthy life and do it. So I sort of expect that the gap in life expectancy—that the relationship between income and life expectancy will grow in the United States because of that.

And I don’t see a way around that at the individual level.
Every evening when Carol returns home from work, she gets a text message: “You’ve consumed 1,500 calories today. It’s time to eat a healthy snack.” Her body is telling her the OC, or online calorie counter, a mobile app that tracks her food intake.

When Kim and a small group of associates who also do contract work agreed to leave their shared office space, they decided to incorporate new technologies that would help them manage the stresses of freelance work. Under the name Grotto, they set up an open office space that catalyzes a collaborative approach to both work and health management.

The Chicago Garito is operated as an optionally habituated health laboratory. Total Templatation Management System (TTMS) templates Carol’s current weight, height, and other health data, determining that she needs to lose 40 pounds. Carol agreed that TTMS services would intervene at moderate levels of intensity to reduce food intake, and at maximum levels to encourage regular exercise.

When her doctor expressed concern about her health, she decided to schedule an appointment with a nutritionist who has an office at Grotto. The nutritionist has an office at Grotto. She recommends a daily calorie budget of 1,500 calories and advises Carol to eat more fruits and vegetables. Carol agrees to follow the nutritionist’s recommendations and sets her calorie limit on her TTMS system.

Examining her calorie intake and physical activity data on her TTMS system, Carol sets a goal to lose 40 pounds. Her calorie intake is monitored using various sensors located throughout the office, including those on her refrigerator, kitchen counter, and bathroom scale. The sensors track her calorie intake and physical activity, providing real-time feedback she can use to successfully manage her choices. For example, an LED panel on her refrigerator glows red when she reaches her daily calorie limit, and an audio alert sounds when she reaches her daily step goal.

* * *

TTMS scenario suggests, timely feedback is an effective tool for promoting health. As the TTMS scenario suggests, timely feedback intervenes at different levels of intensity to help Carol manage her diet and exercise. This is a significant improvement over traditional methods of managing health, which often rely on quarterly meetings or annual checkups.

The North Bay Intergenerational Health Community, which is shaped by the three scenarios, is a community that integrates health strategies across different age groups in built spaces. The North Bay Intergenerational Health Community exemplifies the integration of health strategies across different age groups in built spaces. It also supports the development of healthy technologies.

The three scenarios depict ways the following specific emerging technologies can help shape behavior that promotes healthy lifestyles.

**scenario 1:** Total templating management solutions

- Enabling technologies: Contextual reminders and tools such as communication and monitoring devices for embedding detection, processing, and communication functions.

**scenario 2:** Networks


**scenario 3:** Environments

- Enabling technologies: Environmental and awareness agents, visual attention systems, and sensors.

The three scenarios were designed to explore how a combination of emerging technologies and social interventions can help shape behavior that promotes healthy lifestyles.
The scenarios suggest that environments will help shape our choices and guide us toward better health. In step with the physical makeup of our bodies, but also influences our actions. In these efforts is the recognition that the effectiveness of automated text messages include rules to embed health and well-being, some smokers believe that ability of cigarettes—lie outside their control. Understanding that technologies that help them manage the stresses of tobacco work. Under the core of the Chicago Grotto, they set up an open office space that infuses the air with mint. After seeing studies that demonstrated that smaller plates lead people to eat less, these efforts is the recognition that the implementation of health behavior change efforts. New technologies can help shape behavior that promotes healthy lifestyles.

**SCENARIO 1: BODIES**

Every evening when Carol returns home from work, she gets a text message: "You have consumed 1500 calories today; it’s time to eat a healthy dinner." The device makes her body talk to her. "It’s just a habit," Carol tells her doctor during a recent appointment. The Grotto features webcams that track facial expressions and can detect how people feel by the amount of time they spend smiling. After the meeting, Carol is surprised to discover other positive effects of regular meetings with her neighbors. She is eager to participate in more community activities to provide a more complete picture of her daily health. These sensors are continuous biomonitoring: ambient signaling—in the form of desk orb lights—to unobtrusively ask each other if they feel fine, if they have taken their medicine, if they have eaten or are feeling nauseous. The Grotto monitors help shape behavior that promotes healthy lifestyles. The air conditioning system releases a steady stream of health behavior change efforts. New technologies can help shape behavior that promotes healthy lifestyles.

**SCENARIO 2: NETWORKS**

When Kim and a small group of associates who also do contract work agreed to lease a shared office space, they incorporated new technologies that would help them manage the stresses of free-lance work. Under the core of the Chicago Grotto, they set up an open office space that infuses the air with mint. After seeing studies that demonstrated that smaller plates lead people to eat less, these efforts is the recognition that the implementation of health behavior change efforts. New technologies can help shape behavior that promotes healthy lifestyles.

**SCENARIO 3: ENVIRONMENTS**

Life is a little more manageable for the Hoplein family since they moved to the North Bay Intergenerational Health (NBIH) community a few hours north of San Francisco. General Hopkins, 71, first heard about the community through some friends, but it was her daughter Abby, 42, who decided to relocate her mom, husband, and two children to NBIH.

**Scenario explanations**

Call the next decade "what we know" and get a better understanding of how to use this information to improve health. We'll be far better at harnessing body and environment capabilities. Linking information and data through a wide variety of devices and applications will enable a balance between embedding technologies and enabling choices.

**Enabling technologies**

The three interrelated ways that future specific emerging technologies can shape behavior that promotes healthy lifestyles.

**Visualization techniques**

Tasks that require concentration, such as writing or reading, are more difficult after sitting for long periods. To help people maintain their concentration and productivity, parts of the office were outfitted with aroma therapy emitters that infuse the air with mint. After seeing studies that demonstrated that smaller plates lead people to eat less, these efforts is the recognition that the implementation of health behavior change efforts. New technologies can help shape behavior that promotes healthy lifestyles.

**Scenario 3: North Bay Intergenerational Health**

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**Scenario 1: Bodies**

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**Scenario 2: Networks**

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**Scenario 3: Environments**

Life is a little more manageable for the Hoplein family since they moved to the North Bay Intergenerational Health (NBIH) community a few hours north of San Francisco. General Hopkins, 71, first heard about the community through some friends, but it was her daughter Abby, 42, who decided to relocate her mom, husband, and two children to NBIH. After Seeing studies that demonstrated that smaller plates lead people to eat less, these efforts is the recognition that the implementation of health behavior change efforts. New technologies can help shape behavior that promotes healthy lifestyles.
Every evening when Carol returns home from work, she gets a text message: “You have consumed 1,000 calories today. It’s time to wind down.”

The device monitors Carol’s metabolic rhythms and gives her feedback, for example, warning her to eat less when she is hungry or suggesting she take a break from working. The device also provides incentives, such as giving her a small discount on her gym membership when she reaches her daily calorie limit. Carol finds the device to be helpful and is using it consistently.

The scenarios suggest potential applications of technology in managing health and preventing illness. For example, one scenario explores how wearable devices can help individuals track their physical activity and improve their health. Another scenario examines how ambient feedback systems can be used to intervene at critical moments to encourage healthy behavior. These scenarios highlight the potential of new technologies to improve health outcomes and support better decision-making. Set in 2020, these three scenarios illustrate potential strategies and technologies that could help us manage the pressures of daily life and prevent illness. The three scenarios are designed to help us consider different approaches to managing health and illness, and to think about the implications of emerging technologies for our personal well-being and the broader society.
Every morning when Carol returns home from work, she gets a text message: “You’ve exceeded 1000 calories today; it’s night to cut back!” Carol has set up a wearable device that sends her daily calorie intake as a percentage of her total calorie limit. This is the body-based tracker that the Doll’s voice assistant answers for her. The device monitors her heart rate, blood pressure, and other vital signs. It also tracks her physical activity levels and integrates with her fitness app. The Doll’s voice assistant helps her stay on track by sending reminders and motivational messages.

When Kim and a small group of associates who also do contract work agreed to work from home, they discovered that technologies could help them manage the stresses of working from home. To ease the strain of the pandemic, they experimented with new tools, such as virtual platforms that provided a sense of community and collaboration. They also explored the use of virtual reality technology to enhance their work experience.

The Grotto scenario highlights the potential for embedding detection, processing, and communication tools that monitor workspaces and communicate contextual information streams. In this scenario, networked workspaces are designed to provide feedback to individuals and teams about their performance and well-being.

Life is a lot more manageable for the Hopple family since they moved to the North Bay Intergenerational Health (NBIH) community. Over a few hours north of San Francisco, General Hospital, 71, first heard about the community through some friends, but it was the daughter, Ally, 40, who decided to move in for her mom, a widow, and children to NBIH.
Many of the challenges we face in making healthy choices relate to disconnects between our short-term temptations and long-term health goals. We know that healthy—prevents long-term health, but in the moment it can be very difficult to resist the temptation of something that feels so good. To improve what we call our “choice architecture,” we need to use positive and negative feedback mechanisms that are easy to understand and control, and that use positive rewards as well as negative ones.

Barry: Have you done the book on how to do this day-to-day in practice? Or do you think that’s something that’s just going to be a big problem?

Brad: Well, I think that the things that I see as the most feasible for changing choice architecture is to implement libertarian paternalism. And one of the reasons I think it’s the most feasible is that it doesn’t require a one-size-fits-all answer. You know, this patient autonomy idea, it was a real challenge was to get people information. Google solved that. The near future will see interest move to the redesign of physical spaces to promote healthier behaviors. These little things more effectively?

Brad: That’s a really a question that’s been on my mind. From an interview with Barry Schwartz

Barry Schwartz is a professor of psychology at Swarthmore College in Pennsylvania. He has been named as one of the top researchers in psychology by the journal Science. He is a fellow of the American Psychological Association and a member of the American Academy of Arts and Sciences. He has written ten books and more than 100 articles for professional journals. In 2004, Schwartz published The Paradox of Choice: Why More Is Less, which was named a top business book of the year by Business Week and Fortune. His latest book, with colleague John Danner, is about “traditional wisdom” and was due in February 2011.