PHILIPS

Speech

November 24, 2009
Icsid World Design Congress
Singapore

An orchid called Mary

A vision on healthcare in 2050

Looking ahead to 2050, you quickly realize that there are a number of things that can be imagined with relative accuracy, and plenty more which can't. I want to start by touching on some of the more predictable aspects.

The general consensus is that there will be more than (9 billion people on the planet in 40 years time, with approximately 90% of them living in urban areas). It doesn't take a genius to work out that the implications for healthcare will be staggering. Three years ago there were approximately 700 million people worldwide older than 60. (By 2050 this number will have almost tripled to 2 billion). 2 billion! Of course, it's good news that people are living longer. But the downside is that more care will be needed than ever before. It is estimated that half the developed world will be chronically ill by the middle of this century.

The spiraling cost of healthcare

If we take the example of another Asian nation, Japan, the cost of the country's national health insurance plan is expected to more than double, from 6.6% of GDP in 2005 to 13.5% by 2035. But naturally this is a global concern. A recent article in Healthcare Finance News said that the cost of health insurance in the US in seven years' time would be 41% of the average family's income, *before* tax, and would continue to rise. For millions of Americans, this would be the single biggest ongoing expense in their lives. Over in Europe, a report carried out by two (Swedish universities suggested that the cost of care at the country's hospitals would rise by a frightening 270% by 2040) alone. Meanwhile the World Health Organisation concluded in 2007 that over 40% of low-income group families in India were *already* incurring huge debts because of the rising cost of healthcare, with about 16% of families pushed below the poverty line as a result.

And these are just cost considerations. There are many others. Think about the drain on time and energy of family members who become informal caregivers. The burden on the active workforce. The effect on general morale with so many people sick or caring for sick loved ones. It's no exaggeration to say that the challenge posed by

healthcare in the future will be greater than the problems caused by the recent global financial meltdown.

The difficulties of crystal ball gazing

So what kind of scenarios can we envisage for 2050 that may begin to tackle this ticking time bomb? This is where we step away from the area where things can be predicted with relative accuracy. Proposing any kind of tangible solution for making an impact on the healthcare landscape 40 years from now would either be naive or an exercise in science fiction. At Philips Design we have already carried out a great many studies into possible future trends and developments 3, 5, 10 or even 20 years down the line. These have taught us, among other things, that the further ahead you look, the more troubled the waters become and the trickier it is to develop a credible, concrete proposition.

One of the reasons this happens is because improbable events actually occur much more frequently than we think. And they have such a huge effect precisely because they are unexpected. Nassim Nicholas Taleb, in his book The Black Swan, argues that we tend to implicitly trust the opinion of people who claim to be experts but who evidently don't know as much as they would have us believe. He also says that we don't have to follow plans as if they were dogma; we have to be more prepared to think for ourselves, to think out of the box. The title of his book comes from the ancient Western misconception that all swans were white, an idea that quickly had to be revised when black swans were discovered in Australia in the 17th century. The black swan thereafter became a metaphor for a highly improbable occurrence. And there are more black swans around than we probably realize.

To illustrate the unpredictability of things, instead of looking 40 years ahead, let's look back over the same length of time. If you had asked someone in 1969 to predict where healthcare would be today, no one could have foreseen the existence of virtual operating theatres, the progress made in unraveling the human genome, or the ability to send patient records across the world in seconds using a glorified telephone line. AIDS was virtually unknown, with much more attention paid to smallpox, which at the time killed 2 million people annually. Yet by 1979 smallpox had been completely eradicated, the only human infectious disease ever to have been wiped off the face of the earth. This was unthinkable only 10 years earlier.

Holistic healthcare

Therefore, because of the inherent difficulties in looking so far ahead, and especially in an era when the pace of change is faster than ever, I'm not going to talk to you today about futuristic imaging equipment, astonishingly intelligent hospital IT

systems or smart solutions for monitoring and addressing health issues at home. These things will probably exist 40 years from now, maybe even made by Philips, but I don't want to get bogged down on product level. Instead, I want to focus on a more general and holistic approach to healthcare.

Before I do that, let's sketch a bit of the context in which this idea has been envisioned. Already today the world could be safely described as a global village, especially in terms of diseases, viruses and pandemics. They don't respect national borders, and the vast amount of international and intercontinental air travel accelerates the spread of problems that, in another age, would have remained more localized. To give one a small example, it is thought that mosquitoes surviving a transatlantic flight to Kennedy airport in 1999 brought the West Nile Virus to New York. Swine flu is an even more recent reminder of how quickly infections can spread across continents. I'm sure all of us here today have been through airports like Changi, and when you see the incredible diversity in passenger nationality, as well as the seemingly endless choice of destinations, it's not hard to imagine that a sneeze on one side of the world could be at the root of an epidemic on the other.

But this globalization also has its upside. Just as there are increasingly few boundaries to the spread of pathogens, there are also fewer and fewer barriers to spreading and accessing knowledge, competences and solutions. The amount of specialized medical literature available on-line is already breathtaking and increases with every passing day. Specialists can consult each other for second opinions, often in a matter of minutes, regardless of location. And medical tourism, traveling to another country for faster, cheaper or more specific treatment, is a booming business, already estimated at 45 billion US dollars per year.

The hospital is like a factory

In other words, the problems and opportunities go hand in hand. And we feel that it is in this direction, in the inclusiveness and global accessibility of healthcare solutions, that we should be looking when we consider a scenario for 2050. We want to examine how to address health issues in a preventative, diagnostic and curative way. But in order to do so, we are talking about something that goes far beyond the kind of healthcare model we have become accustomed to over the years.

At the moment, the vast majority of hospitals are essentially like factories. There is a certain industrial feel to how you are treated. You are admitted with a particular complaint, you are treated on the basis of that complaint, and then you are moved on to make room for the next patient. There is no real holistic monitoring or overall implication management. It's a linear, sequential process based around deploying

the minimum amount of resources while getting you in and out as quickly as possible.

Three scenarios

As I said already, when considering 2050 I want to focus on a more general and holistic approach to healthcare. In order to illustrate this, we have developed concept scenarios (imaginary situations) based around three characters; Eve and her quest for a healthy baby, Pete with his lung-carrying dog, and Mary.

Scenario one; Eve

For Eve, her biological clock is ticking and she is desperate for a child. However, there is a history of serious illness in her family line. Given this inherent hereditary danger, she is allowed to 'design' a child which does not have any of these health problems. She locates several donors, whose DNA is combined and used to create a healthy new embryo which is placed in her womb to begin a new life. To maintain genetic diversity, only a few babies are created in this way. Her daughter becomes the 60th generation of her family. With seven fathers the family tree takes on a whole new dimension, although all lines still point to her in the centre.

Scenario two; Pete

In the second scenario we consider the plight of Pete, who lives in a crowded urban area in eastern Asia. The polluted environment there doesn't do him any favors at all, and he suffers from chronic obstructive pulmonary disease. For him there are two stark choices; live a shortened life, or alter his lifestyle and adopt a pet as an organ donor. He chooses the second option. When the time comes, Pete will receive a new lung from his dog, therefore considerably prolonging his time on earth. Unsurprisingly, Pete takes good care of his pet and makes sure they both enjoy a healthy existence. They are, quite literally, friends for life.

Both these scenarios are intended as examples of how you could take a very different view of specific aspects of the care continuum. They address issues that may be contentious and even controversial, like genetic manipulation and cross-species organ transportation, but which at the same time promote dialogue and creative thinking.

Scenario three; Mary

But I'd like to talk at greater length about Mary, who features in the third scenario, because that revolves around an entire concept which goes beyond the parameters that define the traditional monolithic axis of healthcare. Instead, it considers an all-encompassing methodology that would bring together the myriad factors that

influence someone's health, fitness and general sense of well-being, examine the context in which these occur, and offer the possibility to take a snapshot of all these factors at any point in a person's life so as to enable a more complete solution for whatever issue has to be addressed.

Cupio Curo

The idea is that this tool, a personalized care model which we have called Cupio Curo from the Latin meaning 'desire to care', could be at the heart of tackling health and well-being issues at any point in your life.

Basically this model reflects the wider context of your life, and all the associated stakeholders that play a role in it, from before your first breath until after your last. As an example, if you look from a medical perspective then it goes without saying that you will need different levels of care at 22 then you will at 85. But we are not looking only from a medical perspective, which is why the role of other stakeholders is so prominent. We are looking at the total picture. Where is Mary in the world? What kind of social infrastructure is available? What is her genetic history? Which family members can play a role in making sure she stays healthy? Is her diet having a negative impact on her physical condition? Does she have access to education about nutrition and basic hygiene? By taking these and many more aspects into consideration, it becomes easier to determine the core of the problem and come up with better solutions. And not just for Mary; potentially for everyone on the planet.

This interactive and intelligent tool would be completely dynamic, because both your needs and your personal situation never stop evolving. It would be constantly fed with new information from local as well as global sources, literally a lifetime of data, and enriched by breakthrough developments and by various stakeholders joining forces to help each other innovate more effectively. This would signify a move away from the model based on separated interventions to a model of fully-integrated care. And indeed it would transcend healthcare in the classical sense because it would focus on both health *and* well-being. So that means not just diagnosis, treatment and follow-up but also prevention, education, nutrition as well as the complete social, medical, economic, environmental, historical and even spiritual context of someone's life.

An orchid called Mary

In this scenario, Mary passes away in 2050, aged 85. At first it may seem a little strange to you that we include death when talking about health and well-being, but, let's face it, it's something that will happen to us all. As Benjamin Franklin famously said, "In this world nothing can be said to be certain, except death and taxes."

It's also very relevant because terminal illness places a huge burden on a healthcare system geared to prolong your life; the great irony is that a significant amount of budget is spent on people who don't recover. The prospect of no longer being around also has a huge impact on family and friends. So by including the end of life in a model like Cupio Curo you can address issues like acceptance, psychological support for the bereaved, and legacy. What will you leave behind for posterity? In Mary's case, she asked for her DNA to be combined with that of her favorite orchid and planted in the Amazon. In effect, she wanted to be reborn before she died, so that she could, in a manner of speaking, continue to play an active role in the cycle of life.

Valid questions

Of course, an idea like Cupio Curo throws up many questions. Who will own and control such a tool? Who will manage it? Where does all the data come from? Would it be a closed system like today's medical records are, or would it be wide-open and available for everyone to contribute to and maintain, in much the same way as Wikipedia has become an unrivalled global information source powered essentially by people's goodwill? And what about issues like privacy? Ethics? Freedom of choice? Where is the dividing line between corporate interest and public well-being? Does there even have to be a dividing line?

These are all very valid points, and I will readily admit that I don't have all the answers. That was not my intention either. The reasoning behind this scenario is to trigger dialog, to stimulate debate, to inspire thinking about how we could take the first steps towards tackling the increasingly complex and intricate healthcare equation more effectively.

A shared vision

And talking about first steps brings us to what is arguably the most crucial question of all; who is going to get the ball rolling and start? It may surprise you that my answer to that is; not necessarily Philips! I say that because no company on its own can tackle something so large. We need a shared vision, a huge collaborative effort driven by politics and therefore involving governments but also companies, healthcare facilities, individuals, medical specialists but also involving what would be considered as non-traditional partners like NGOs, development organizations, teachers, personal coaches, sports instructors and even spiritual advisers. Why not? The more complete the picture, the better.

Various companies could contribute knowledge in their respective fields of expertise. My own company, for example, would be able to help in areas like imaging systems, clinical care, home healthcare, informatics and patient monitoring. And of course we could apply our design competence to create contextual insights, to develop hypothetical scenarios of options, and to integrate the interests of the different stakeholders.

Something like this could also start small, locally, and spread organically. When I think of a country like Singapore, which is compact, renowned for its visionary approach and a place where the state has an active role in designing the quality of life - I could imagine such an idea taking hold here, establishing a foothold and then linking slowly but surely with other systems and international hubs of enlightened healthcare. It could spread like a benign virus, bringing its influence and benefits to unexpected places in unexpected ways, entirely in keeping with the way in which open innovation encourages good ideas to proliferate of their own accord.

Benefiting many different levels of society

Going back to one of the questions I raised earlier - who would use this tool? - I would like to suggest some tentative answers. We see this as something that could be applied to benefit many different levels of society. Patients themselves would have a much more comprehensive overview of all the factors contributing to their health and state of well-being. The same would apply to healthcare professionals and other caregivers, meaning that any help or treatment would be more closely linked to someone's overall situation. In addition, companies could get a much clearer picture of real patient needs when developing business strategies. And various institutions and organizations would have an ideal platform from which to launch alliances and collaborative efforts.

A holistic methodology like this could also function as a very fertile breeding ground for prevention programs. With the burden on healthcare systems all over the world increasing on an almost exponential basis, as I briefly touched upon at the beginning of my presentation, stopping people becoming sick in the first place is obviously of the highest priority. NGOs, local authorities, aid organizations, community groups and even governments would be more empowered to develop prevention programs. Meanwhile educational institutions and public information bodies would know where to concentrate their efforts on informing people about lifestyle-related choices and consequences. In this way, everything from simple local programs about basic water hygiene in rural Africa to global awareness campaigns to limit the impact of future pandemics could be supported.

Care based on the genetic blueprint

Another function of Cupio Curo could be to help mobilize the input of the relevant stakeholders in order to deal with impending ill-health. I'll give you an example. Through decoding the human genome, scientists already know that if someone has a certain pattern in a gene in their fourth chromosome repeated 39 times or more, they will almost certainly contract Huntington's chorea, a horrific and incurable neurodegenerative disorder. The amount of times above 39 this gene pattern is repeated is also an accurate indicator of the age you will be when the disorder kicks in.

For example, if the pattern repeats itself 41 times you are likely to contract the disease when you are 54, whereas if there are 50 repetitions you will probably only be 27 when it starts to take hold. This gene pattern, like all others, is predetermined in everyone; in that respect your fate is imprinted into your life story before it has even begun. Who knows, by 2050 there may thankfully be a cure for this cruel affliction, but even if there isn't, with Cupio Curo it could be possible to read someone's genetic blueprint and then make proper provisions for ensuring the quality of their life was as high as possible from beginning to end.

The spirit of open innovation

As I said earlier, we see Cupio Curo not as an attempt to visualize a concrete solution, but as a trigger, as a platform for encouraging involvement for potential stakeholders. A concept like this would obviously require a huge collaborative effort in order to develop a broader knowledge of the various contextual elements involved. But this is exactly what we are proposing; something that involves multiple stakeholders - yet is of benefit to multiple stakeholders too - in the spirit of open innovation. You can think about it in another way; bringing together the boundless potential out there in the wide world to solve the planet's healthcare problems.

The next step in the journey

Basically we are examining how to elevate the current view of healthcare to a level which is much more customized to the individual, which sees people in the proper contextual perspective, which is long-term sustainable, which maximizes the use of all various resources and competence, which promotes cross-fertilization on a local and global level, which empowers individuals to more effectively manage their own health, and which respects diversity and promotes compassionate, ethical care. And while the scale of the undertaking is unprecedented, in many ways the nature of the challenge is not. Over the centuries we have gone from wandering medicine men to village doctors, and then to town clinics, city hospitals and national or even international healthcare networks. Think of Cupio Curo as the next logical step.

So if you ask me what message you should take away today, I would say that answer depends on who you are. For the design community, you could consider the significance of this notion describing an open, collaborative methodology for your own profession and begin to work out how you could add value to such an ecosystem. For governments and industry leaders, there is the challenge of creating a new economy based around a more inclusive approach to health and well-being which could turn out to be one of the main drivers of this unfolding century. And for everyone there is the tantalizing prospect of being one of the pioneers who takes up the reins and plays an active role in turning vision into reality.

Building the future

Because the future doesn't just fall out of the sky. The majority of events taking place in the coming months, years and decades are a direct consequence of individual actions. We may think that what we do doesn't matter, that it is merely a drop in the ocean, but we shouldn't forget that without all the drops there wouldn't be any ocean at all.

Therefore we have to be active participants. I said at the beginning that accurately predicting how things would be in 2050 was impossible, but what we *can* do is make sure that, step by step, action by action, idea by idea, we can help build the future in a way that improves the quality of people's lives everywhere.