



## TECHNOLOGY, CRISIS, AND INTERACTION DESIGN: A CONVERSATION WITH BRUCE STERLING, DONALD NORMAN, AND DERRICK DE KERCKHOVE

LORENZO IMBESI

**Lorenzo Imbesi:** Would you give us a definition of “interaction design”? On the one hand, what is the role of technology in the area of design, and on the other, the role of design for technology and society?

**Bruce Sterling:** “Interaction design” is the area between “human/computer interface design” and “experience design.” “Interaction” has arrived on the design scene because the older static model—a human here and a computer there—has been overthrown. “Experience design” is a broader paradigm, but is still too nebulous to directly address pressing contemporary design problems with websites, cell phones, and so forth.

**Donald Norman:** What is “interaction design”? What isn’t? To me, the most interesting part of design is the interaction between the design and people, or in some cases, between the design and society. I push, it responds. It moves, I respond. It is all about interaction.

**B. S.:** Design’s role here is still the usual design role: user observation, form-giving, ergonomics, iterative prototyping. Designers do not have to become chip engineers or social workers. They can if they like, but it’s not required.

**Derrick de Kerckhove:** When, at the time “interactivity” was still a puzzling word to most people, I offered “cyberdesign” as the word to best describe designing for interactions. The reason being that *cyber* means rudder, which is the governing principle of design—namely, how to direct flows, of mind, of substance, of material, of traffic, of goods.... All design, I believe, begins with the body. Every gesture we make is preceded by a sequenced and simultaneous simulation, a neural “preview” of the gesture itself. “Interaction design” is the technical management of extended human gesture and touch. Interactivity is a variable of touch, not vision. It has texture, pressure, and motion. Tactile

interfaces have been around for some time, but they have really caught on since the spread of the iPhone. Simulation (which is design in its purest form) is also part of this process, which is embedded in the organic human and animal body. In a certain sense one could say that even music—and particularly dance music—is a form of design because it is meant to manage human gesture by vibrations.

**D. N.:** The design of services is pure interaction design. It is a delicate negotiation between service provider and service receiver, whether the provider is a machine (such as one that delivers tickets or money) or a person. With products, the critical parts are all about understanding and communication, about the nature of the interaction, and about the benefits (or not) that are received. And above all, it is about the quality of the experience, ideally about pleasure and joy, beauty and excitement, but often instead about disappointment and frustration, irritation, and annoyance.

**D. de K.:** We have learned a lot about the organic need for simulation in the presence and patterning of mirror neurons. We need intrinsically to simulate in order to process. What technology does is to allow this simulation, supported by electricity, to be externalized and distributed in endlessly variegated forms and configurations. Technology itself being a product of design, it is returning the compliment by offering new tools to design, not only simulation, but also cognitive and connective tools. We always thought design was dependant on cognition, but we may discover to our stupor that cognition is dependent on design. As for Design and Technology, they are Siamese twins and they cannot be separated. All technology is the result of patient design that evolves along with available scientific and material resources. In turn, technology affects design by creating its own mindset.

**D. N.:** What role does technology play in all of this? Everything artificial is technology, so everything designed is technology by definition. A narrow view is that technology has to involve electronics and computers and perhaps screens and other mysterious stuff. This point of view has it that technology is the stuff we can't understand, and once something becomes accepted as everyday, such as the kitchen stove, it is no longer technology. Well, let me strongly refute that premise. Design is everywhere. Technology is everywhere. Interaction is everywhere.

**L. I.:** The rhetorics of Immateriality and Digitality were the frameworks for research and experimentation in the 1990s and early 2000s. Now it seems we're going back to the centrality of material objects. Are virtual and immaterial issues still relevant for design and research? What are the emerging matters that will bring together innovation, research and design?

**D. N.:** Long live the body, the physical world, reality! The world of computers led to an unfortunate diversion away from reality to the confining sterility of screens and keyboards, mice and other artificial animals. We lost touch with our bodies, lost touch with the real world. Cheers for the disappearance of this artificial emphasis on artificiality. We human beings have bodies. We evolved in a three-dimensional world with three-dimensional sounds, sights, objects, and experiences.

**D. de K.:** It is quite evident that material technologies, such as biotechnologies, nanotechnologies and genetic engineering, are grabbing some of the attention, and for good reasons, but I don't think we are going back to the materiality of the object. All the above-mentioned technologies are dealing with sub-visual, infinitesimal substance management. Matter itself is dematerialized by the analytic process that goes from subatomic to quanta. The transition via the virtual and the immaterial from the mechanical to the digital era has opened for many people the possibility for understanding that matter is just as fluid as information at the level of quantum mechanics—which is one of the significant directions science and technology is taking today. What is happening is that matter is being turned into a kind of art-form, a programmable substance for specified purpose. Even as it is invested and manipulated by technology, and much of it dematerialized, matter becomes an object of attention. Just as, according to Walter Benjamin, the work of art loses its aura in its mechanical reproduction, reality is turned into an object of aesthetic appreciation by such things as “reality TV.” The immaterial (and I would include networks, “augmented reality,” environmental sensors and all digital technologies) is the aura that surrounds matter and penetrates it. We carry our auras in our pocket where we store our cellular phones. I am in touch with the world, and the world is in touch with me.

**B. S.:** We are not retreating to the material, we are hybridizing the virtual and the material. This is a useful step forward. It will still be possible to design exclusively for data on screens, but in a world where screens are increasingly small, portable, wireless, and located, it's a purist gesture to restrict digital design to the virtual.

**D. N.:** Now, sometimes virtuality is beneficial. But let it be delegated to one of the many tools and systems available to us. It must be dethroned, taken off its high pedestal and simply placed on the shelves between the other tools of modern life, such as communication, writing, travelling, and talking.

**D. de K.:** We must therefore continue to pay attention to the varieties of opportunities for design in the virtual realm. The aura of matter is like that of the original work of art, irreplaceable.

**L. I.:** Are we carrying virtuality within our artificial world of objects?

**B. S.:** It makes sense now to frame our situation in that way, but in the long run I think that approach is archaic. Rather than importing some virtuality into actual objects—like putting a horse’s head on a “horseless carriage”—we should struggle to comprehensively understand the planning, fabrication, shipping, use, and disposal of objects. For instance, interaction design might re-frame physical objects as “a set of frozen interactions.” It’s common now to see objects as “object-service” hybrids, but there must be many decades of useful design work to be done here.

**L. I.:** What is the “objective” shape of the future?

**D. de K.:** The future has no shape, it is always emerging not only from a myriad of contributing circumstances and equilibriums, but also from the infinite varieties of our individual cognitive processes. The future is behind us, not ahead. It is what’s pushing the emergent state of things. However, if you prefer, you can also put it under us. It feels, then, as if it were under our feet, whereas in reality it is all around us, fused in and by the present, the imminent.

**B. S.:** I do believe that the future has an objective shape outside of our metaphors and mental frameworks for the future, but it’s very hard to talk about raw futurity without casting it in some metaphor like “shape.” Since futurity is a process rather than a destination, it’s not required to have any “shape.” Futurity isn’t even required to be humanly comprehensible. It’s more fruitful to approach the future as a set of “design scenarios,” rather than as some static stage-set called “the future.”

**D. de K.:** Furthermore, the future of the ‘objective’ itself may be in question. Its status is threatened, just like that of reality. So much of what we believe, even in the scientific order, is now seen to be part of a consensus adopted

through a specific set of cognitive and technological filters that tailor physics as much as physics in turn shapes them. However, if we limit our focus to the actual “shape” of the object of the future, one can imagine big trends from the fluid form visible in Calatrava, Gehry and in the ovoid yearnings of automobile design. Emphasis may be put on distributed technologies, interactive sensors, interconnections between the material and the digital, what Neil Gershenfeld has aptly named the Internet of things. Beyond all these visible shapes, there may be a new design awareness and sensibility for the complexities of network design, or of self-generated content environments. Ordinary people’s personal relationships to the environment, immediate or distant, are becoming more aware, more involved maybe. I see the possibility that instead of always judging things from a rational point-of-view, many people will be tempted to perceive things in a more “physical”—some say “experiential”—way. That is, sensing the world from one’s “point-of-being” rather than merely looking at it in a detached manner. Really, there is room for tactile design.

**L. I.:** Can you describe a design project that could be taken into account, for whatever reasons, as paradigmatic of the current condition of research in design?

**D. N.:** In design research, we need a cumulative, sustainable body of knowledge and understanding. We need principles that designers can use to their benefit and that other researchers can verify or refute, but in either case, principles that build upon prior work to erect a permanent, ever-growing body of valuable, useful insights into the science of design. The practice of design is complex. At times the project starts with nebulous, ill-formed goals, but intending to end up with practical, useful, pleasurable objects and services. There is plenty of room for creativity and sparks of genius, but also plenty of room—and a great necessity—for principles, tools, and techniques that can build upon previous learning.

**B. S.:** Well, if you call Web 2.0 a “design project,” it was pretty well paradigmatic for the period 2005–2008. Web 2.0 had whole sets of contemporary design innovations: componentized services, perpetual beta, web as a platform, connected devices, architectures of participation, user-generated content, richer user experiences through detaching and embedding little modules of software, and so forth. If I had to pick a prize horse for 2009, I’d say Google Wave, even though it won’t be released until 2010. It’s paradigmatic in technology studies for a medium to stop mimicking earlier forms and take on native forms.

**L. I.:** We're experiencing one of the ultimate crises: our financial and economic crisis also suggests a defeat of the economic and capitalistic system which was based on free fluxes, which could bypass physical boundaries and limitations, thanks to new technologies and communication. Do you think new technologies still have a role in overcoming this crisis?

**D. de K.:** I wish I could feel confident saying that this crisis is no more than a self-adjusting shake-out of disproportions in the relationships between inflated market value, triggered by catastrophically grotesque levels of avarice and greed among many people in charge, and actual production or service. That's one possibility. Another is that the crisis may not be quite as innocent as the media buzz lets on. While people are genuinely affected, it still feels "fabricated"—designed, in fact! To declare bankruptcy is a common way to unload people and industries deemed less efficient.

**D. N.:** I do not see the current economic and political crises as huge defeats of the underlying systems. I see them as a predictable and inevitable result of the corruption and selfishness that pervades much of life, regardless of political, economic or philosophical attitudes. Yes, we need reform. Yes, it is time that industry thought of serving people over the long-term, which means customers, employees, the local communities, and all of society. Yes, we need an end to short-term economic gains at the expense of stability and sustainability. We need an economic system more rooted in true human and social needs and behaviour than in the elegant but irrelevant mathematics so cherished by the financial community. We need to ensure survival of the earth and its resources.

**B. S.:** Well, a financial emergency is a special kind of emergency. Both of the twentieth century's world wars were horrible, comprehensive emergencies, yet they both accelerated technology—they certainly didn't slow it down. If the business world is in collapse, one can predict a lot of creative energy going into noncommercial technologies in the public sector and the cultural sector. Those have been badly neglected and could do with some focussed effort. A financial crisis is a very mild crisis. An "ultimate crisis" would be a thermonuclear war. There's nothing ultimate about this crisis.

**L. I.:** Big crises may be also big chances for change: can you give a signal of hope?

**B. S.:** Well, yes, I can do that. For centuries, India and China have been oppressed, poverty-stricken societies with massive overcrowding and few resources. In the 1960s it would have been logical to despair for their future prospects. Yet, fifty years later, China and India seem remarkably lively. I wouldn't say that hope is our duty, but despair is a form of arrogance. Despair can be self-deceptive, a cynical cover for what should really be honest bewilderment. We don't properly understand what will happen next, yet it's foolish to assume that those events must necessarily be bad. We might be pleasantly surprised.

**D. N.:** There is always hope. Crises are always opportunities. The major failures are now exposed. Unfortunately, the same people whose greed and opportunism got us here are still involved, if not in charge. But this may indeed mark the time of significant change, aiming for sustainability, substance, and quality over greed and arrogance. We would all benefit from a long-term vision.

**B. S.:** Our society is clearly not sustainable. It needs rapid, massive change. The status quo was doomed, so we're not losing much by financial turbulence. We may find ourselves in a world that is unimaginable by present standards, but more sustainable than any world we've personally known.

**D. de K.:** As for new tech giving us a means to get out of this mess, certainly. What we are seeing is a race between two orders of culture, that based on oil and that based on electrons. Oil, in all its forms is part of the mechanical era, which can only be tolerated by the environment in small doses, for example—comfortably—in craftwork. But industrialization run amok is disastrous for the environment. Not only does electricity, in its digital form, partly dematerialize many processes associated with most industries, it also provides a constant update on the damage to the environment done by industrial processes. The danger is real. Only people with an industrial-mechanical mentality deny it. But other people are beginning to get the idea. Sustainability wasn't a word twenty years ago. Today it's business. And technology can help. Green technology is effective. The race is quite literally between forces of destruction and forces of healing. Personally, I am convinced that the Internet is a planetary self-healing process that will eventually work out. Just watch Barack Obama. He is a child of the Internet and wouldn't have been elected were it not for blogs, Twitter and Zuckerberg. Obama is the person to move us from the reign of oil and terror to that of networks and peace.

**B. S.:** Vaclav Havel didn't have a lot of obvious hope in the early 1980s, and yet he said: "Hope is a state of mind, not of the world. Hope, in this deep and powerful sense, is not the same as joy that things are going well, or willingness to invest in enterprises that are obviously heading for success, but rather, an ability to work for something because it is good." Despair is no cure for panic. The cure for panic is action. There are things we can do that will make sense no matter how things turn out. We should give them a try.

**D. de K.:** The hope, of course, is that improved regulations (better design) will put forward better guarantees across the whole line of production and service, including genuine environmental concern, instead of solely serving the interests of investors.

**D. N.:** It is time to apply design thinking to the crises of the world, to think the unthinkable. What if the stock markets of the world restricted sale of a stock until at least 5 years after its purchase? What if bonuses and rewards in industry and politics alike were based upon long-term performance, perhaps even measured in decades (so it would impact pension plans, not immediate living)? What if all people could share, not just the highest-level executives? What if...?

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