



From being digital to digital beings

by N. Negroponte

For the past decade, everyone has been very conscious, even self-conscious, of the emerging digital world. I have never seen another era in which hype and understatement were so often the same, not to mention the incredible rate of change of change itself.

To me, what is so fascinating about being digital is not our connected lives or the computer presence, but the extraordinary impact on our ways of thinking. Like: nothing is crazy, risk is good, humankind is global.

While each of the authors who follows has a tie with the Media Lab—in some cases for more than 20 years—the likenesses end there. The group is so interdisciplinary that the term itself is considered trite. Different backgrounds, different ages, and different nationalities make the place a culture of differences. Therein lie the seeds of innovation. The work of the lab is not science, not technology, not humanities, but various blends of all three.

Dismissing is dismissed

Not too long ago, things were not done simply because they were not done. QED. Children were to be seen, not heard. Companies proudly announced, “Established in 1850” or whatever old date, to imply the wisdom of experience. I cannot tell you how many people told me throughout my career: “Son, my company has been in business for many years, we are very profitable, and we just don’t do it that way.” Success was their worst enemy.

Enter the economy of dot.coms. While no longer necessarily in financial favor, boardrooms and academic

departments will never be the same. This is not just because recruiting will be harder—which it will—but because people are no longer as quick to dismiss wild ideas. In fact, common wisdom has come to be considered just that: common. Now there is a real respect for counterintuitive thinking and wild ideas.

On the one hand, this is great. No idea is too outrageous to be considered. On the other hand, it is not so great, because the lunatic fringe is suddenly over-populated. The Media Lab style of thought is more widely available. And being unique is not enough. Many ideas, such as those that follow, need more follow-through than ever before, such as the kind of peer review to which the technical papers in this issue have been subjected.

Being risk-prone

Another side effect of the digital world is that risk is often celebrated and not diminished. In fact, one of the reasons the United States is leading the new economy is that it is one of the few societies where children can grow in a climate that does not view business start-ups as a form of unemployment. In some other cultures, parents are far more prone to want their children to be very secure, and so working for a large company or the government is considered ideal. In fact, many 14-year-old French boys still aspire to go to the *Grandes Écoles* and then work for the government. Nothing wrong with working for the government, but wanting to do so at 14 strikes me as very limiting.

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Ten years ago, almost all of the Media Lab graduates worked for our sponsors, such as IBM, or other large companies. Today, many more of them work for start-ups or themselves. The switch is dramatic.

What this does is change the landscape of research funding. If companies cannot hire all the graduates they want, they can certainly fund their start-ups. To this end, many major corporations are creating early-stage venture capital divisions. It is fair to say that over half the research in telecommunications today is done by the start-ups, not the big industrial or academic labs. One of the reasons is a redistribution of risk and reward. In my opinion, this is an extremely healthy change and will spread to the whole world.

Being global

When I grew up, I did so in a racially mixed environment and have very little visceral understanding for racial tensions; in a very real way, they do not make sense to me. By contrast, I went to all-boys schools and have three brothers, which has made it harder for me to understand gender issues. However, I see in my son a much more natural grasp of gender issues, his education having been 100 percent coeducational.

By extension I would postulate—and this is a big leap—that children born today will grow up with a much more global view than most of us, because of the Internet. Access to other languages, cultures, and different points of view will make tomorrow's adults much more aware of the planet as a single place and unique resource to be shared. Even something as basic as geography is getting a big boost, insofar as geographic location has become one of the many means of searching the Internet. I am told that some large percentage of Americans do not know where the Pacific Ocean is. I find that hard to believe. Nevertheless—true or not—it will not be true for long. Young people everywhere will just be far more global in their outlook.

Everywhere

Everywhere is very different from anywhere. Most of us think of computing as being anywhere. I have carted a laptop for over 20 years and a terminal for 15 years before that. I have had Internet access from a tiny island in Greece since 1979. I prided myself (10 or 20 years ago—now it is common) in being able to access the Internet with a local call from anywhere and sported the paraphernalia to do so (lots of phone

plugs and alligator clips in case of emergencies). Today this is not only easy, but taken for granted. Anywhere is almost commonplace.

Everywhere is not. At the heart of the last part of this special issue is a disembodied computer, no longer characterized by a box with keyboard and display. Instead the image is made up of particles of computation, massively interconnected, most always wirelessly. In scale, this notion is closer to genomics than the Internet as we know it today. Both the metaphors and the technologies of tomorrow's "everywhere computing" will be borrowed more from biology than engineering.

Digital beings are not robots or oracles like Hal from the movie *2001*. They are embodied in all things large and small, and very small. Anything manufactured by humans, including food, will have a computational aspect to it. It will be common to download and upload bits to and from things smaller than a pin. We will find new ways to print or grow computers. Within ten years we will all be eating them for a variety of health purposes. Sound crazy? Don't dismiss it. Just read on.

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