

the
connected
family
bridging the digital generation gap

seymour
papert
foreword by nicholas negroponte

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the
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*To Ian, John, Mason, Sam and
their grandmother, Suzanne Massie*

Foreword

Never before have we had so much to learn from kids, and we admit it. We all turned to children to program our VCRs, but that was a means to outsmart those nasty and heartless manufacturers who even made the buttons kid-sized. Twice a year, all homes in America have their digital time put forward or back, mostly by children, not because it is too hard for an adult, but because it is just not worth the effort to learn and remember how to change the oven clock. Plus we don't find it much fun.

Something very different is happening with computers and the Internet. Children are no longer just an adult's prosthetic tool to cope with electro-mechanical gadgetry. Instead, kids bring a new culture to the family landscape, a culture which has at its core the extremes of being simultaneously personal and global. Children understand computers because they can control them. They love them because they can make their own windows of interest. Remember sitting in class? If what the teacher said was too simple, you lost interest. If it was too hard, you lost interest. And oh how tiny that window was.

Seymour shows the reader a different window, one which opens as wide as you want. He argues that it cannot be left shut. In some sense, Seymour allows you to be an atheist, but not an agnostic. He is soft spoken and patient in real life, and between the lines as well. While he would never say it this way, he is telling children to beware of parents who try to colonize the computer medium. He is telling parents to beware of some of

their deepest feelings, even to pinch themselves now and again, when they fall back on drill and practice in the three R's. But wait, the three R's worked for me. Right?

Wrong. In today's world, most adults would do very badly as kids. There are many more complexities, ambiguities and differences. This is not because we have traffic jams, gutless politicians or racial tension, but because we have an information access which reaches across the planet. And now it is not only available to banks, airlines and media moguls, but to children as well. Kids can empower themselves and see new notions of work and play, society and self, teaching and learning—concepts which no longer have those crisp lines separating one from the other.

I have known Seymour for over thirty years. More than anything, he taught me how to think. In 1965 he wrote the foreword to Warren McCulloch's *Embodiments of Mind*, which was the only part of the book I really understood. About that time we became friends. We cooked together, we traveled together and we even got ourselves in trouble once in a while. I wondered if I would ever be able to write a foreword for somebody as great. Now I got my chance. This is a man who makes remarks like, "You can't think about thinking unless you think about thinking about something." That keeps you thinking.

When I first read this book I heard Seymour's voice and recognized his expressions. Then I realized that my reaction was not so personal: Others will hear the same voice of intelligence, experience and passion. They will understand immediately that these are not the thoughts of somebody who just bought a PC ten years ago, but of somebody deeply involved in the issues raised here, from his childhood days in South Africa to his studies in England, from his work with mentor Jean Piaget to his partner Marvin Minsky to his recent decade at the M.I.T. Media Lab, where I have had the honor to work with him.

Seymour is the emancipated child.

Nicholas Negroponte, August 1996

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Generations

A Love Affair

Across the world there is a passionate love affair between children and computers. I have worked with children and computers in Africa and Asia and America, in cities, in suburbs, on farms and in jungles. I have worked with poor children and rich children; with children of bookish parents and with children from illiterate families. But these differences don't seem to matter. Everywhere, with very few exceptions, I see the same gleam in their eyes, the same desire to appropriate this thing. And more than wanting it, they seem to know that in a deep way it already belongs to them. They know they can master it more easily and more naturally than their parents. They know they are the computer generation.

Like other passionate affairs of the young, this one mystifies thoughtful parents and troubles cautious ones—often even parents who are computer enthusiasts themselves. And so it should. The computer presence will undoubtedly transform the lives of children, and if we are entitled to *hope* the change will be beneficial we are not entitled to *assume* this on behalf of the next generation. Great change is never free and seldom comes without risk.

Benefits and dangers seem to come in pairs. Parents are delighted when their children spend hours with a computer in deep concentration. But they feel nervous about an addictive quality of the experience. They wonder whether video games do harm beyond merely wasting time.

Parents are amazed and excited to see children break down the barrier of space and nationality, making pen friends across the globe or becoming experts on the planet's environment. But then they worry about whether children might fall into bad company or pick up corrupting ideas while roaming the highways and byways of cyberspace.

Most parents are pleased when their children acquire knowledge they never had themselves, but many feel alienated and rejected when their children talk in language they do not understand about exotic places and engrossing activities they do not know. Some wonder whether living in an artificial world will sap childhood's innocent spontaneity.

Some parents are worried, and many more ought to be, about the fact that profit-driven barons of the software industry can have as much influence as they do on the minds and the culture of children.

To begin thinking more deeply about why so many children are passionate about computers and why so many parents are nervous, I take a look at the beginnings of learning and how they might be changing.

Freedom Lost

Watch a baby explore the world. Everything within sight is seen, everything within touch is felt by hand, by foot and by mouth. The full range of available sounds is emitted. The baby is exploring a small world, but is exploring it very thoroughly. It is obvious that a great deal is being learned. Educators talking about the

way the learning happens would use words like: self-directed, experiential, nonverbal. I prefer to say **home-style learning**.

Gradually the child becomes aware of a much larger world that cannot be reached and explored in this way. Known people are sometimes in other places. Sights are fleetingly seen from a car window. Books have pictures of animals from other continents. Increasingly, questions come up that cannot be answered by direct exploration. There are not many ways open to find answers. Essentially three: Think up an answer, ask someone or just wait in the hope that one day someone in person or on television will give the answer.

And so little by little the child's ways of getting knowledge and of using it are forced to change, to become more dependent on other people and less spontaneous; more verbal and less experiential. The shift is not emotionally neutral. In fact it runs into head-on collision with the development of a sense of delight in "doing it myself." More in some cases than in others but always to some extent, the change brings elements of frustration and anger.

That is how it was. A story hints at how it will be.

A LEARNING STORY

Ian Views a Videotape

My grandson Ian, aged about three at the time, walked over to a shelf where videotapes were kept. He selected one (although he "couldn't read" he could choose the tape he wanted), loaded it into the VCR, sat down in a comfortable armchair, wielded the remote control, uttered a child's expletive I understood a moment later as meaning he had forgotten to rewind the tape the last time he used it, rewound, pressed PLAY and settled in to watch the tape. It was about road-making machinery—a topic of great interest to many children, and not only boys.

My first reaction was to be astonished by the **fluency** with which Ian did all this. Then on reflection I decided there really wasn't anything astonishing in it except my own astonishment—on which it is worth pausing for a moment because it shows that even someone who has spent half a lifetime studying children can fall into underestimating their capacities, and that observing children using technology reminds us that they can do more than we think. In fact I have come to see parents' expanding ideas about what children can do as one of the important contributions of computers to how children learn. The more they are respected the better they will do.

What Ian actually did with the mechanics of the technology was no more complex than some of the operations performed by every three-year-old without arousing one bit of astonishment. Knowing where a favorite toy is kept, getting it out and putting it away later is quite as complex a performance as using a VCR or loading a CD-ROM into the computer drive and clicking icons until the desired action is produced. Getting around the house is much more complex than managing the icons on a computer screen, and getting around the parents infinitely so.

Yet there *was* a good reason to be astonished.

What impresses me most in the incident is not related to the mechanics of handling the VCR but to the content of the experience. My mind was boggled by how different Ian's simple act of choosing and viewing a videotape was from anything people my age could do when we were three years old. The nearest I could have come to immersing myself for half an hour in a topic like road-making machines would have been to find an adult with the knowledge, the storytelling talent and the time and inclination to tell me about it. For this I was dependent on adults. As it happens I was especially lucky in having a scientifically educated father willing to spend a lot of time talking with me. But my freedom of choice was far short of what a collection of tapes, CD-ROMs and Web addresses can give a child today, and this in turn is far, far short of what children will have in a few years' time.

With greater freedom of choice will come dramatic change in how children learn and develop.

. . . and Freedom Regained

Ian may have been born a little too soon for the changes to be really dramatic. Although he often used them, his collection of tapes was far too small to have anything of relevance to most of what might attract his interest. For example, during the week after his fish died, he grabbed every adult he could to ask questions and talk about it. But imagine a situation in which he could have found easy and flexible access to information and artificial realities relevant to fish and dying. It seems obvious that he would have spent significant time exploring his curiosity and his feelings by immersion in these.

Of course I am not implying that it would be better for a child to go to a machine than to a person when troubled by the death of his fish—quite the contrary. I am seriously worried about the psychological and spiritual consequences of children becoming more independent of their parents in their exploration of the world. But for better or for worse this will happen, and it will be far more likely to happen for the worse if parents act like cyberostriches, putting their heads in the sand in denial of the looming changes in the learning environment.

Children driven by instincts for independent action and frustrated by dependency in learning are seizing with passion the key to freedom in learning. Parents can fight it or join it. *The Connected Family* is really about strategies for the sensible choice. About how you can “join it.”

Over many generations, societies have evolved ways of relating to children. These have become embedded in cultures as the principles of good parenting. But now assumptions on which they were based are unraveling as unprecedented opportunities are opening to children. It may seem to be an awesome task to rethink and

rebuild our ideas about children and how to deal with them. It will certainly require some work. But it is the task we have to face, and facing it one step at a time is not really awesome at all. I shall offer you an approach to it that may sometimes be a little hard but will also be enjoyable. Using language I have learned from children engaged with computers, it is **hard fun**.

Hypertext

You have noticed that some words are underlined. This is not for emphasis but in the spirit of what is called hypertext in computer jargon. If you were reading this on a computer screen the underlining (or some similar indication) would tell you that the word hypertext is a hot word, which means that something interesting will happen if you click on it with your mouse. Perhaps a definition of the word or a bunch of other hot spots that lead you to related passages might jump onto the screen, or perhaps a voice would give you the same information or perhaps an animated cartoon would play out the meaning of the word.

Although text printed on paper is not active in this way, I shall mark some words as **hot** to advise you that there is more about that idea somewhere in the book. You can consult the Hot Word Index to find the other places, or simply take the underlining as meaning "Don't worry if this concept is unfamiliar . . . as you read on, more meaning for it will build up."



Intentions

I first thought about writing a book like this one while talking to the zillionth mother who asked me whether she should buy a computer for her children and what kind and what the children should do with it at what ages and which was the best software. It was easy to recognize a heartfelt need for guidance and reassurance,

but I still had to grapple with tougher problems about the form the book should take.

Asking parents what they thought they needed suggested two models: Benjamin Spock and *Consumer Reports*. A book that might be called *Dr. Spock for the Computer Generation* would answer questions about such issues as appropriate ages and amounts of time in front of the screen, and the dangers of gender bias and addiction and pornography. A *Consumer Report* would attempt to rate the tens of thousands (I mean this quite literally!) of products that vie for the minds of children and the dollars of their parents. Many of the parents who suggested these models for my book were expressing dissatisfaction with the advice and reviews they read in magazines or on-line or indeed in books. One put it to me like this:

When the reviewers like a software, they are full of gush such as: "easy to use," "marvelous graphics," "children love it," "lots of learning." When you talk you raise more controversial questions. Half the time I can't agree with you but you get me thinking. Something important is affecting our children. What we need is not being told it's good, it's bad or it gets four stars like a restaurant. We need to talk more, argue more, think more about what lies behind it all.

They made doing a book like this sound attractive, but I was not convinced and kept looking for another format.

Turning my inquiry from the parents to their children suggested a very (perhaps shockingly) different model. An email from a group of high school students is exceptional only in its eloquence:

Those of us who own a PC know one problem very well: Most parents are pretty slow in understanding the PC. To them even the easiest steps of using a word processor have to be explained for hours again and again. And although these parents really want to learn they fail; computer courses also often cannot help. This usually

leads to resignation on both sides: We, the young ones, regard the old as inferior, and the older generations regard the young as arrogant and unable to really explain and teach. . . .

. . . adults must first really open up to new matters, they must not tell themselves they could not learn anymore, and they have to recreate self-directed exploration. Otherwise they will not be able to catch up with their children's speed of learning.

It is not remarkable that adolescents are critical of their parents. What is really remarkable is that the views they express here are not confined to adolescents. I increasingly hear very similar views from much younger children and, most significantly, from the parents themselves. Many adults would agree that in their own dealings with computers they show symptoms of what a school psychologist would call a learning disability. It is becoming a cultural cliché that adults are inferior to children in learning about computers and, as often happens, the judgment of inferiority becomes a self-fulfilling prophecy.

I was influenced by all three suggestions for what the book should contain, but it is the youngsters who put their finger on what is most important. *What parents most need to know about computers is not really about computers but about learning.*

That sounds commonplace: Everyone knows computers help children learn. But I was coming to understand that most parents will do better at sharing and enhancing their children's learning if *they take a hard look at their own learning*: Many need to work at their learning habits; most—even those who are adept at using computers—should learn new computer skills; and almost all should work at uncovering assumptions that make them want to impose on their children the content and learning methods of their own school days.

These thoughts led me to look around for other recent examples of large-scale change in people's attitudes to their own learning. One of my favorite examples is cooking.

Back in the 1950s, it was a rare American who did not hold "French" or "gourmet" cooking in the kind of awe that computers would arouse thirty years later. Television became the key medium for the turnaround in attitude, not because it was a good medium for disseminating recipes (books are better) but because it made attitudes and feelings visible. I bet that a large proportion of my readers know the incident when Julia Child accidentally dropped her duck in front of the live cameras, calmly picked it up, dusted it off and went on with her cooking demonstration. By entering the cultural consciousness of middle-class America, such incidents contributed significantly to demystifying and "de-snobbing" the mystique of *haute cuisine*, and to bringing tens of millions of Americans to expand what they were prepared to learn and do in the kitchen.

Looking at one not-untypical family will hint at what a similar turnaround in attitudes towards computers might be like.

For Lisa, the computer has become a "home wrecker," separating her from husband Ron as well as from the children. When she is ready for bed, Ron is reading email, exploring the Internet or struggling with some new "installation" (a word she has never been able to grasp) on his computer. Her feelings have evolved from indulgent interest to resentment to full-fledged anger. And her sense of isolation is aggravated by sensing a growing gap between herself and her children, who so easily master software that leaves her with a feeling of baffled inferiority.

On the face of it there is a world of difference between the technophobic Lisa, who simply won't touch a computer, and the technophilic Ron, whose late-night adventures on the Internet are