

# The Trouble with Ubiquitous Technology Pushers

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The idea has seized our imaginations with all the force of a logical necessity. In fact, you could almost say that the idea *is* the idea of logical necessity — the necessity of embedding little bits of silicon logic in everything around us. What was once the feverish dream of spooks and spies — to plant a “bug” in every object — has been enlarged and re-shaped into the millennial dream of ubiquitous computing. In this new dream, of course, the idea of a bug in every object carries various unpleasant overtones. But there are also overtones in the larger and better-promoted notion of ubiquitous computing, despite the fact that our ears are not yet attuned to them.

## Why Not Omnipotence?

I suppose Bill Gates’ networked house is the reigning emblem of ubiquitous computing. When the door knows who is entering the room and communicates this information to the multimedia system, the background music and the images on the walls can be adjusted to suit the visitor’s tastes. When the car and garage talk to each other, the garage door can open automatically whenever the car approaches.

Once your mind gets to playing with such scenarios — and there are plenty of people of good will at places like the MIT Media Lab and Xerox PARC who are playing very seriously with them — the unlimited possibilities crowd in upon you, spawning visions of a future where all things stand ready to serve our omnipotence. Refrigerators that tell the grocery shopper what is in short supply, shopping carts that communicate with products on the shelves, toilets that assay their clients’ health, clothes that network us, kitchen shelves that make omelets, smart cards that record all our medical data, cars that know where they’re going — clearly we can proceed down this road as far and fast as we wish.

And why shouldn’t we move quickly? Why shouldn’t we welcome innovation and technical progress without hesitation? I have done enough computer programming to recognize the inwardly compelling force of the knowledge that I can give myself crisp new capabilities. It is hard to prefer not having a particular capability, whatever it might be, over having it.

Moreover, I’m convinced that to say “we should not have technical capability X” is a dead-end argument. It’s the kind of argument that makes the proponents of ubiquitous computing conclude, with some justification, that you are simply against progress. You can only finally assess a tool in its

context of use, so that to pronounce the tool intrinsically undesirable would require an assessment of every currently possible or conceivable context. You just can't do it — and if you try, you underestimate the fertile, unpredictable winds of human creativity.

But this cuts both ways. You also cannot pronounce a tool desirable (or worth the investment of substantial resources) apart from a context of desirability. Things are desirable only insofar as a matrix of needs, capacities, yearnings, practical constraints, and wise judgments confirms them. This leads me to the first of two complaints I would like to lodge against the ubiquitous technology pushers.

## Asking the Wrong Questions

When we are asked to accept or reject a particular bit of technology — and, more broadly, when we are asked to embrace or condemn ubiquitous computing as a defining feature of the coming century — we should flatly refuse the invitation. Technologies as such are the wrong kinds of things to embrace or condemn. To focus our judgments on them is to mistake what is empty for something of value.

Take, for example, the questions we face in the classroom. They are *educational* questions. They have to do, in the first place, with the nature, destiny, and capacities of the child. Such questions are always deeply contextual. They arise from a consideration of this child in this family in this community, against the backdrop of this culture and this physical environment.

It's one thing if, deeply immersed in this educational context, pursuing the child's education, we come up against a gap, a shortfall, a felt need, and if, casting about for a solution, we conclude: The computer might offer the best way to fulfill this particular need. But it's quite another thing to begin by assuming that the computer is important for education and then to ask the backward and destructive question, "How can we use the computer in the classroom?" This is to deprive our inquiry of its educational focus and to invite the reduction of educational questions to merely technical ones — a type of reduction that is the reigning temptation of our age. It leads us, for example, to reconceive learning as information transfer — fact shoveling.

Spurred by this backward thinking, we've felt compelled to spend billions of dollars wiring schools, retraining (or dismissing) teachers, hiring support staff, buying and updating software, rewriting job descriptions, and designing a new curriculum. Then Secretary of Education Richard Riley comes along after the fact and says, Oh, by the way,

We have a great responsibility....We must show that [all this expenditure] really makes a difference in the classroom. (*Education Week on the Web*, May 14, 1997)

The same concerns arise in the workplace. Why do we work? Surely it is, in the first place, in order to discover and carry out our human vocations and to achieve something of value for society. What shape this productive effort might take — and what tools might be embraced healthily — can follow only from the most profound assessment of the needs and capacities of both the individual and society.

Yet such assessment is increasingly forgotten as social "progress" and vocational decisions are handed to us by automatic, technology-driven processes. It is no accident that we see today a growing consensus among entrepreneurs that all considerations of human value should be jettisoned from the business enterprise as such. Seek first the Kingdom of Profitability, we are advised — that is, seek what can be perfectly calculated by a machine — and all else will somehow be added to you.

Here again is the reduction of real questions to one-dimensional, abstract, decontextualized, technical ones. The availability of the precise, computational techniques of accounting have encour-

aged us toward a crazy reversal, whereby the healthy discipline of profitability no longer serves us in work that we independently choose as worthy and fulfilling, but rather we choose our work according to its profitability. It is always easier to make our choices according to rules that can be clearcut, precise, and automatic — the kind of rules that can be embedded in ubiquitous silicon — than to ask what sort of human beings we want to become. We can answer the latter question only through our own struggling and suffering — that is, only by embedding *ourselves* in real-world contexts.

## Is Technology Really Context-free?

So my first complaint is this: the most visible pronouncements in favor of ubiquitous computing take the form of huge investments in places like the MIT Media Lab where the whole aim is to pursue new technologies out of context, as if they were inherently desirable. This mistaking of mere technical capacity for what really matters is the one thing guaranteed to make the new inventions undesirable.

The healthy way to proceed would be to concern ourselves with this or that activity in its fullest context — and then, *in the midst of the activity*, ask ourselves how its meaning might be deepened, its purpose more satisfyingly fulfilled. Only in *that* meditation can we begin to sense which technologies might be introduced in appropriate ways and which would be harmful.

If the researchers at the Media Lab pursue their work via such immersion in problem contexts — that is, by exploring significant questions as a basis for seeking answers — they’ve done a miserable job of communicating the fact to the rest of us. What we actually receive from them (via the news media) is a steady stream of exclamations about the wonders of this or that technical capability. Typical, so far as I can tell, is the fact, reported in the *New York Times*, that one of the Media Lab staffers most concerned to render kitchen appliances intelligent is “a bachelor who rarely uses his kitchen”. Is it such people who will point us toward the realization of the kitchen’s highest and most humane potentials?

A technology-focused consciousness — and you could fairly say that our society is becoming obsessively technology-focused — is a consciousness always verging upon emptiness. It is a consciousness whose problems are purely formal or technical, with precisely definable solutions. They can be precisely defined because they lack context, they have no significance of their own.

Now, it needs adding that no technology perfectly achieves this “ideal” of emptiness and self-containment. As I have pointed out before, a complex device like the computer evolves historically and has numerous tendencies of ours, numerous habits and contexts of use, built into it. This is why you can never say that such devices are neutral in their implications for society.

And, of course, its non-neutrality is what enables us to assess a technology: does it fit into and serve this particular context or not? So when I speak of “technology as such”, I am to some degree falsifying things. But the point is that this is the very falsification the ubiquitous technology pushers are encouraging through their strongly decontextualized celebration of ... technology as such.

This makes a certain self-deception easy, whereby new technical capacities are much too quickly assumed to represent the answers to problems. And it diverts massive social resources into the production of technologies that, because they will be injected into real contexts with alien force, will certainly prove socially destructive.

## Can We Be Too Eager to Solve Problems?

I don’t mean to suggest that the bearers of technological wonders are shy about telling us how their inventions will solve this or that problem. They are all too eager. When you are convinced you

have a nifty answer, everything begins to look like a problem demanding your answer. This leads to my second complaint: technology pushers too often fail to recognize the difference between solving a problem and contributing to the health of society. Solving problems is, in fact, one of the easiest ways to sicken society. A technical device or procedure can solve problem X while worsening an underlying condition much more serious than X. Here are a few examples:

There's already wide recognition of the danger in solving the problems presented by medical symptoms. Aspirin, by eliminating pain, can mask an underlying illness or cover for bad habits that in the end may prove fatal.

One reason television-watching is on the increase, or so I read in an article today, may be that "it's a way to stop conflicts between kids and adults". Yes, in the heat of the moment you could say that television is an effective answer to the problem of family conflict. But won't this truce of convenience, this mutual disengagement, very likely lead to an even more radical parting of the ways somewhere down the road?

- The same article contained the observation that "there are a lot of neighborhoods where you're better off staying in watching TV than going out on the street". In such neighborhoods the television may indeed be at least a partial solution to the problem of personal safety. But in a deeper sense you will find that television has helped to make the street what it is, if only by sucking what was once the vigorous communal life of porch and street, first, into the family living room, and then into the isolated dens of individual family members.
- The technical mechanisms of hypertext are thought by many to solve the problem of providing adequate context for documents. And they do solve the "outward" problem of aggregating and structuring a collection of text blocks. But, as all web users have discovered by now, this solution can work against any effective grasp of context. Being a click or two away from everywhere is disconcertingly like being nowhere at all.

Every worthwhile context involves an inescapable and creative tension between a center of meaning and a boundless periphery that shades into the unknown. This tension is given form by means of the conceptual threads we must (with the author facilitating) actively weave through our reading. When the supplied links substitute for, or weaken, our own activity — as they will when we believe the links themselves can do the work of supplying context — then we lose context instead of gaining it.

- Everyone seems to believe that the cell phone is an instrument conducing to personal safety. And, in a narrow sense, this is certainly true. Many a parent breathes more easily after conferring a phone upon a son or daughter who must travel alone.

But what is it that makes one alone? Doesn't the widespread use of cell phones, in our cultural milieu, tend to thicken a little further that mutual insulation between us by which society becomes a less hospitable and less safe place? Each of us becomes less inclined to seek help from those immediately around us, and the habit of offering help weakens. For people who pass each other with cell phone attached to ear, the important items of business — including the sources of help — always seem to be elsewhere, and there is not much room for attention to the immediately surrounding social context. The question, "Who is my neighbor?" becomes harder and harder to answer.

## The Basic Choice

None of this should be controversial. You might even say that these examples make the trivial and universally recognized point that social problems are complex. But what isn't so widely recog-

nized — or is too often forgotten — is that the technological mindset, so excellently trained to think in terms of discrete solutions, bugs, fixes, precise “specs”, and well-defined syntaxes, is not inclined toward a reckoning with organic complexity.

But this is exactly what is needed. With an organism, or a society of organisms, changing one “spec” implies changes to *everything*. While (with some justification) we make it the engineer’s task to frame problems that are as “well-behaved” and as rigorously specifiable as possible, we face social problems that can be fully understood only with the fluid, pictorial, category-blurring, whole-encompassing finesse of the imagination.

Or, putting it a little differently: society presents us with conversations we must enter into, not problems to be solved, however much we find the reduction to manageable problems a necessary, temporary expedient. Only when we remain aware of what we are doing and continually allow the larger context to discipline, dissolve, and re-shape our narrowly focused problem solving do we remain on safe ground.

But let me clarify what I am and am not saying. I’m not saying that you shouldn’t give your daughter a cell phone. I can imagine situations where I would do it. This would have the immediate (and substantial!) virtue of contributing to the safety of a loved one. But if I were not also working consciously against the unhealthy tendencies of the larger context that necessitated the phone, and to which the phone itself all too naturally contributes, then I would be adding my small share to the miseries of society. I would be making society safer only in the sense that exclusive, gated communities may make a society safer — for some people, and for now.

Seeking clarity at this point is crucial because what the technology critic seems to be saying can easily provoke a justified incredulity in those who, with all good faith, are working to put more sophisticated technical resources at our disposal. “Do you really mean that, in terms of our underlying social problems, we’d be better off without cell phones — and computers, and GPS locators, and space probes, and genetic engineering techniques? And even if this were true, can you possibly believe that, outside the dreams of madmen, the world’s vast apparatus of technological advance could be dismantled?”

No, I believe none of those things. What I do believe is that, with our technologies in hand, we are given the freedom to construct a hellish, counter-human, machine-like society, or else a humane society in which the machine, by being held in its place, reflects back to us our own inner powers of mastery. And the difference between these antithetical movements is the difference between focusing more on the human dimensions of whatever domain we are concerned with, or on the technological dimensions. In the former case, we will recognize that the primary challenges *always* have to do with the development of character, insight, volitional strength, imagination, and so on; our technical activities will be valued above all for the way they can help us develop these capacities. The other, gravely misdirected approach is to focus on technological developments as if they themselves held solutions.

So, no, I don’t suggest that we ban cell phones. But our society’s fixation upon technological development as the very substance and marrow of human evolution has become ferocious. There is a grotesque disproportion within American culture between the terms in which we see our billion-dollar investments and the real needs around us. This distortion is dangerous and needs healing — a prospect that admittedly appears as unlikely today as a broad, public consciousness of recycling, pollution, and environmental issues must have seemed in the Fifties.

I can’t say what our technological trajectory would look like if we were fully conscious of the issues; but it is certain that, with our attention upon the things that count, the trajectory would be radically different — which is not quite the same as saying we should “halt all technological progress”. The point, rather, is to escape the mindset that sees progress primarily in terms of technology.

## A Paradoxical Reversal

I pointed out above that solving problem X is not necessarily to contribute to society's health. This can be stated more strongly and paradoxically: to the extent we believe we have a rigorous technological solution, that solution will probably worsen *the very problem* it was intended to solve.

You can already see this reversal in the bulleted examples listed above. For example, devices helping to “guarantee” our safety may, in the end, work against safety itself. But we need to take clear hold of the dynamic at work here.

The automobile, an early-twentieth-century driver might well have thought, will bind us into closer communities. The distance between us is overcome and we can connect more easily with each other. Yet the automobile's effect on our communities was quite otherwise. One can in fact argue – I often do so in my public lectures — that all distance-collapsing technologies, by their very nature, end up inserting greater distance between us. I have no space to develop this thought here, but I think you can see the force of the claim easily enough.

Look at it this way: the whole idea of a distance-collapsing technology is to enable us to get more quickly from point A to point B. But getting more quickly from A to B means having less time and opportunity for attending to any of the points between A and B. Moreover, as the influence of distance-collapsing technologies spreads, A and B themselves become intermediary points in an ever-expanding net of one-time destinations that are now mere waystations. If we're to cover those spaces efficiently, we have no more time for A and B than for any of the points between. And so we find ourselves in a world where we're all just passing through.

How can people who are just passing through — determined to criss-cross each other's paths at ever more dizzying speeds — come closer together? The easiest result — not an absolutely necessary one, but the result we can most naturally fall into — is the one that only seemed at first glance to be paradoxical: we find ourselves flying further and further apart rather than coming together. As abstract spatial distance yields to our technological prowess, the qualitative nooks and corners of particular places — places where significant meetings can occur — disappear into the quantitative vastnesses of that abstract space.

Clearly I am distinguishing here between two different senses of “coming together.” And that is the crux of the matter. Technology can indeed overcome those physical spaces, but if this is how we frame the problem (and we *must* frame it this way if we want a perfectly effective technological “solution”) then we have turned our eyes away from the much less easily defined problems that really matter. This is how the new and wondrous technology becomes guaranteed to make the real problem worse. If you falsely believe that X will achieve Y, then you've not only lost sight of how Y can really be achieved, but you're also turning your attention in unpromising directions.

The certainty of the unhappy reversal, in other words, is a direct result of a technological fixation that encourages a subtle but disastrous shift in what we imagine our problems to be. The engineer, of course, can always say, “Hey, I was just trying to overcome the problem of spatial distance. What people do with this opportunity is their choice.” There's profound truth in that. But the disclaimer is more than a little disingenuous in a society — and an engineering culture — where the exercise of the technical machinery for connecting persons is chronically confused with personal connections.

## The Machine and I

In summary: There's nothing easier than to find problems your new gadget will solve. It's so easy that it has encouraged a standard formula of journalism: “Dr. Jones' new discovery (or invention)

could lead in time to [your choice of solved problems here]”. How standard this formula has become is a good measure of how technocentric our society has become. The technical achievement just *must*, it seems, translate into a social good. There is no equivalent standard formula that routinely acknowledges the risks of the new development. There is no recognition of the historical logic of reversal I’ve discussed here — and therefore the prevailing formula becomes part of this logic, helping to guarantee a destructive result.

I don’t know of any truth more worthy of contemplation in our society today than this one, startling as it may appear: No problem for which there is a well-defined technical solution is a human problem. It has not yet been raised through imagination and will and self-understanding into the sphere of the human being. And what is this sphere? It is, above all, the domain of the “I”, or self. The “I”, as Jacques Lusseyran remarks,

nourishes itself exclusively on its own activity. Actions that others take in its stead, far from helping, serve only to weaken it. If it does not come to meeting things halfway out of its own initiative, the things will push it back; they will overpower it and will not rest until it either withdraws altogether or dies. (*Against the Pollution of the I*, Parabola, 1999)

All problems of society are, in the end, weaknesses of the “I”, and it is undeniable that technologies, by substituting for human effort, invite the “I” toward a numbing passivity. But by challenging us with less-than-fully-human problems and solutions, technologies also invite the “I” to assert itself. This assertion, this grace bestowed by technology, always requires us to work, in a sense, *against* the technology, countering it with an activity of our own — countering it, that is, with something more than technological. Then the technology becomes part of a larger redemptive development. When, on the other hand, technology itself is seen to bear “solutions”, the disastrous reversal has already occurred.

What we should ask of the technology pushers, whether they reside as engineers at the MIT Media Lab or as employees at high-tech companies or as consumers in our own homes, is a recognition that the primary danger today is the danger of this reversal, where the strengthening activity of the “I” is sacrificed to the automatism around us. For every technology we embrace, we should require of ourselves an answer to the question, “What counter-force does this thing require from me in order to prevent it from diminishing both me and the social contexts in which I live?”

I spoke a moment ago of technologies inviting us toward passivity, or else inviting us toward self-assertion. But this is not quite the same thing as saying that technologies present us with choices and we are equally free to go to the right or to the left. The choices aren’t symmetrical. It takes an inner wrench, a difficult, willful arousing of self, to accept active responsibility for what technologies do to us. Passivity, on the other hand, is easy. It’s the choice we can make, so to speak, without bothering to choose. It’s also the predominant stance toward technology in our society today. Many a massive PR and sales apparatus is aimed at dressing up the choices of passivity to make them as titillating and irresistible as possible. And, by many accounts, our yielding to the titillation is what drives the “new economy”.

I originally subtitled this article “Why We’d Be Better Off without the MIT Media Lab”. But let me broaden that. What we’d be better off without is every organization that pushes purely technological “solutions” as if *they* were what could make us better off. The Media Lab has done its best to make itself the reigning symbol of this push — and I think would proudly lay claim to the crown. But it remains true that the pathology infects our society as a whole.