

## Redirecting Consumption, Reapplying Technology

Peter Zelchenko  
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### Introduction

On the crest of the dot-com euphorics, amid quite a bit of international media fanfare, Harvard professor Clayton Christensen was praised for allegedly having coined the term “disruptive technology” in his 1997 bestseller *The Innovator’s Dilemma*. He was describing radical innovations that often are catalysts for emerging markets. Suddenly, every entrepreneur was touting his ideas as “disruptive technologies” in order to attract venture capital. However, I’ve just discovered that Christensen was not the first to come up with the expression. Ironically, it was ecologist Hazel Henderson who first used the expression 19 years ahead of him. During a major low point in global technological confidence, she wrote,

“...In a highly complex, interdependent, technological society, individual freedom, when armed with polluting, disruptive technologies, now destroys the freedom and amenities of others.”  
(Henderson 1978, p. 14)

Of course, this is not at all what Christensen meant. Though he is ostensibly an expert in innovation, Christensen did not invent anything in this case; he simply cribbed it from someone else, repurposed it, developed an entire book around it, and made a mint. He doesn’t even seem to be aware of the woman who anticipated him a generation earlier. But innovation has always encouraged that kind of amnesia, according to George Basalla (1988) in his truly seminal work, *The Evolution of Technology*.

On the occasion of today’s economic doldrums, let us revive Hazel Henderson’s definition.

Today’s system of production pressures consumers to hastily reclass commodities to an undesirable “used” or “old” status so that they may be discarded for new ones. This is what disruptive really means – marketing pushes and speeds the use of all resources, harnessing machines to achieve new heights in productivity. This lowers the value of human labor and further drives food, shelter, and health care out of reach, commodities whose values are rising only by virtue of the value added by these same disruptive technologies.

Technology and its disruptive misapplication come in many forms. In the larger sphere, technology is not limited to electronic devices. It is meant to encompass all of the innovation, mechanical or social, that rests on top of the most primitive enhancements in civilization’s history. For practicality, this may exclude the fishing pole and the thatched roof and the tomahawk and everything else predating the Industrial Revolution (Note 1). But mechanized transportation and telecommunications of all forms certainly come to mind, as do petroleum and petrochemicals, and nuclear power. Cities and suburbs are complex manifestations. For this discussion, we may include overnight shipping, marketing and media, and even language as perhaps subtler elaborations of technology. I will present just two of many examples of technology’s misapplication.

### Plastics

Plastics, the plastics and packaging industries, and the market forces behind them are probably the greatest unit triumph of sheer marketing will over technological common sense in America. The complex of the plastic products industry takes reasonable assumptions and ignores them for the sake of profit. At issue are the

careless use of scarce nonrenewable resources; the exploitation of Third-World countries and peoples; the historic connection of petroleum to North-South geopolitics and the general use of petroleum as a political football; the virtual elimination of human labor in production; the highest profits attainable in manufacturing going to a select few; and the well-known host of pressing environmental concerns attending plastics disposal.

In reality, the preference for plastic over renewable materials in packaging technology is not easy to justify objectively. It is sometimes more convenient to print upon, it is of a lighter weight for shipping and can be shipped one way, and it costs more to produce a unit than to reclaim its equivalent in glass (Hayes 1978, p. 17). These are viewed subjectively as advantages to the producer but are a bane to the conscious consumer (Blumberg and Gottlieb 1989).

This raises questions of what or who the conscious consumer really is in society. In Chinese companies, management frequently sponsors lunch for all office workers. When they purchase from restaurants, dozens or hundreds of meals arrive daily in stacks of disposable styrofoam containers. It is oddly customary, at the end of a meal, to skewer the box with one’s chopsticks before discarding it. When these containers first came into use, many Chinese thought it was preposterous to throw away so much good styrofoam and began without any sense of guilt to fish it out of the waste stream for reclamation. Western expatriate influence, in the form of repugnance at the thought of reusing that class of plastics, forced Chinese diners to adopt the “use once and skewer” solution.

In America, few individuals, even those concerned with recycling, would take great issue on the spot

with the use of disposable plastic dishes at a special event, or of styrofoam containers for leftovers at a restaurant (Note 2). It is considered politically incorrect to take issue with these things by asking for reusable dishes at a party or bringing one's own containers to a restaurant. This is particularly true since the convenience-driven events which trigger the use of disposable goods are assumed to be times of conviviality, not of conflict.

This happy assumption of "better living through plastics" is something America has embraced since the late 1940s, when housewives here first began to pay large sums for Tupperware to complement rather than replace their crockery and mixing bowls for storage (Clarke 1999). Tupperware's appeal came from a combination of its party sales model and a commitment to elegance in design. Ironically, around the same time as dishwashers came onto the scene, disposable plates began to become popular.

Today, new developments are now flipping even these notions on their heads in American plastics marketing, from disposable Tupperware by First Brands (GladWare) and Ziploc (Containers) to Dixie's "Rinse & ReUse" dishwasher-safe paper plates (Stark 2000). These novelties allow homemakers to "put the paper plates in the dishwasher. But throw away the reusable food storage containers." Such ideas, to a Third-Worlder looking in, should seem totally irrational. But rarely in America, even among those who might be expected to show concern, is the core proposition of disposable materials questioned. And if America shows a straight face for these concepts, the world is likely to follow. Tupperware was a pioneer in forging inroads into the global market of housewives, following the American example. As early as 1952, Tupperware had developed markets "in Africa, Canada, France, Ger-

many, Hawaii, India, the Bahamas, Guatemala, and Mexico" (Clarke 1999, p. 188 ff.).

### **Telecommunications**

In 1975, only doctors and some executives carried pagers, and they were quite expensive. In 1985, a significant number of professionals carried them, and very few owned mobile phones, which were still considered vanity items. But by 1995, a strange thing happened: cellular phone sales had begun to skyrocket while pager sales began to drop, although the bargain monthly service fees for pagers had brought them within reach of the most humble consumer (Casio 1999; Wall Street Journal 2001). No boom in pager sales for new users occurred; the vanguard simply began to replace their old technology. Today, while cell phone sales are experiencing their first dip (because the initial market is showing some signs of saturation and a reluctance to upgrade), service contracts are still booming (Ziff-Davis 1999).

Cell phone service marketers are sending the often false message that cellular phones are cheap enough for everyone and often cheaper than regular home service. They are targeting two main markets – the working class and the digiphiles, both of which are buying into it, although the cost of cell phone service is typically on the order of ten to twenty times greater than pager service.

In June of last year, Pacific Bell worked with Cingular Wireless to provide 100 migrant farm workers with free trial cellular service, calling it a way "to study how technology can improve the quality of life for this very mobile population" (Pacific Bell 2001). In order to add to the impression of humanitarianism, the press release went on: "The results of the trial may also determine whether access to a greater range of telecommunications options improves

the farmworkers' access to providers of childcare, health care, education and employment."

Cingular, a service provider which often targets low-income communities, also hired pop icon Jamie Lee Curtis as their spokesmodel and planted sales and payment offices at busy intersections in working-class neighborhoods throughout the U.S. Payment delinquency issues are handled in a patient, tender-hearted way, in a style reminiscent of credit card companies and crack dealers.

These are only two among an endless assortment of examples of misapplied technology. Overdependency on the automobile, and the endless hyping of electronic appliances, even the paper waste inherent in huge daily newspapers, should be assumed as just a few of the numerous additional culprits of technological misapplication, which is the rule rather than the exception in technology use today.

### **Information consumption**

Technology, really, has been standing still for the past half century in terms of real progress to everyday quality of life. This is, not coincidentally, approximately when true consumer culture took hold. In fact, technology as we are expected to consume it today is adding greater stress to lives at both the production and consumption vectors – in general, technology introduces international labor stresses while encouraging technology-rich consumption addictions among a growing worldwide consumer base. In the telecommunications example above, Pacific Bell's experiments in selling cellular phones to migrant workers in California were offset by the closing of the Canon pager plant in Puerto Rico.

Worldwide, the necessities of life are basic indigenous nutrients, a roof overhead, and a fair shot at seeing a doctor when it is urgent.

Industrialization, and its incremental upping of the ante over the past two centuries, entered a crisis somewhere between the Great Depression and the 1950s, depending on what criteria are being applied.

During this period, there was a recognition that with the existing level of industrial advancement these basic necessities were becoming theoretically obtainable by a majority of the world at what might translate to competitive prices or, in human labor terms, a not disagreeable amount of human effort per capita. But this meant that markets for this reasonable satisfaction of need would eventually become so competitive that prices and profits would become so low as to be of little relevance. The end of work was at hand.

In order to protect profitability, the concept of a universalized luxury lifestyle was developed. Very briefly, the automobile ran over the locomotive, making possible the suburban castle, and in it ample space and structure for material accumulation. For the first time, the concept of a lifetime “career ramp” of incremental raises became highly institutionalized, to provide a systematized material goal for the new nuclear family. Driving this was marketing, that great technological lever which was to redefine how goods are thought of and therefore how they are bought and sold.

Of course, this is a very two-dimensional and condensed explanation of history, but it is quite adequate for our purposes here. The so-called Third Wave, with electronics at its center, brought with it solid-state devices as well as the maturation of inexpensive, rigid, and reasonably lightweight structural materials and protective housings which could last a lifetime. Automobiles from this period were almost literally built like tanks, and easily

repaired. Radios and other appliances were repairable with a 10-watt soldering iron and a voltmeter, and engineers jokingly speculated that replacement electronic parts would be so cheap that they would be sold out of gumball machines. (They were wrong about the gumball machines, but today for various reasons a transistor does cost far less than a gumball and probably has a shorter useful life.)

The problem with this principle of quality, as Japan soon taught us, is that it is not sustainable in a free-market system. Throughout much of this period, competitors learned to fine-tune the art of product differentiation, which would allow them to squeeze out momentary advantages and stay ahead in profits temporarily. At the beginning of the century, flour was either unbleached or bleached. By the end of the century, the question was whether the digital signal was over copper or glass or thin air – and the average American now owns and operates dozens, and in many cases hundreds, of digital signals.

Today we are glutted with products and choices. To keep us consuming, marketers have been forced to take the product and conceal its true self, hiding the fact that it is just another toaster or magazine or cell phone, and find ways to persuade us that it is time to replace the old one. A fiction must be developed to surround the device involving packaging, sales, service, and, most importantly, the time which dictates this commodity is too old and we need a new one – some expiration date, whether it be for a computer (Moore’s Law) or a newspaper (the end of the day) or a bottle of water (some brands actually have expiration dates).

From this criticism, one should not assume that I am against petrochemicals or pagers as solutions, or any other innovations for that

matter. As a true replacement for certain metals and glass in products of longer-term use, such as windows, furniture, cookware, cabinetry, and a world of other products, plastics have been a great boon to the world. As a way to make urgent contact with a mission-critical individual, pagers are a well-designed, perhaps even a technologically ideal, extension to telecommunications. The problem is not with the innovations per se, but rather with the dual error of marketers dictating their parameters of use, pushing them as one-use or mass-use products, and, even worse, American consumers accepting them as such.

The only evolution of technology which can be said to be insidious, therefore, is not plastic, or pagers, or mass-scale circuit integration, or the automobile, or other technologies which have merely been misapplied, but rather the technological innovation of 20th century marketing. By marketing I mean the stewarding and manipulation of consumer perception of a commodity – that is, the information surrounding the commodity, not the commodity itself. The 21st century may be marked as the one in which American marketing of dubious technological applications continues its viral transmission worldwide, or it may be one in which the next generation makes wiser choices in technological applications.

Each of these objects of consumption – whether they be a kind of food or a technology use or a food for thought – falls under the extended heading of technology advanced from that basic nutrient and roof over our head and simple health plan. What is driven by marketing here is consumption not of the technological product but of the information surrounding it. We are forced to consume the raw materials of this edition and move on to the next one, without ques-

tion. It could be a newly released hardcover book, a software upgrade, a square of paper towel, another car, or the plastic wrapper surrounding a chunk of ramen noodles. But the mandate is to tear one off, throw it away quite soon, and reach for the next one, never to question the motivation or the cycle.

The product being discarded may still be usable. There may be a reasonable alternative to discarding the product that is not as wasteful. The product may not be cost effective when compared to simpler alternatives, and may prove to be inconvenient in comparison. Severing ties to this awareness – and developing the new culture of replacement – is the basis of marketing's information flow as a disruptive technological innovation.

In terms of computers and other appliances, what is replaced may be the device itself when we are told to upgrade, it may be the batteries or electricity, or it may be the data flowing through it. In the case of print media, we are made to consume paper – without the paper and the distribution, most information is valued at almost nothing, as we are learning from the Internet. Even the value added by printed plastic packaging is a kind of information consumption: the additional value is not in the sum of the ingredients, but primarily in the packaging and logo design. Without the packaging, the product is worth nothing more than its equivalent food materials and the precooking involved.

### **Solutions**

Severing marketing's information flow at the point at which it meets the consumer is the simplest solution to the problem. This involves, from the producer end, the promotion of basic, unelaborated products and allowing them to stand on their own qualities. From the consumer end,

it involves personal awareness of the realities of commodity value and a resistance to commercial suggestion.

Allow me to indulge in a few truly utopian solutions for the short term. I've written in the past that not every computer needs to be wired to the Internet and, of those that do, few truly require broadband (Zelchenko 1999). Within computer management there are tremendous, unsustainable infrastructure costs, while the vast majority of computer-mediated communication is done with basic text in one font, in word processing and e-mail. More powerful computing devices should be kept rare, and limited for online research and high-level digital production applications.

True inexpensive bulk foods and household products could be explored institutionally. New stores could provide all goods in bulk and packaging-free, inviting customers to bring their own packaging and measuring out the quantity needed, rather than that prescribed by packaging. In the long run, packaging and its cohort, portioning, are a detriment to the consumer, veils which conceal a product's true quality and volume. As technology, these are important only to the producer. Accompanying this would be a newly sparked interest in home cooking.

Appliance manufacturers would end artificial obsolescence by providing consumers not with one-year warranties, but terms which guarantee reasonable support over the true lifetime of a product. As a corollary to this, consumers would become more educated in the inner functioning of their appliances and perhaps in how to do basic repair or first aid on them. Here in Chicago, at the Autonomous Zone, our "Unscrew U." project encouraged ordinary people to boldly open their broken home appliances and discover their

function and ways to repair them.

In general, an era of conscious consumer regressionism in America might encourage greater stability, but proponents of regressionism are few. The voluntary simplicity and thrift movement since its roots in the 19th century has continually remained small and has emerged largely from isolated middle-class hyperconsumers (viz. St. James 1994, Dominguez and Robin 1993, Dacyczyn 1998). Because the practitioners are isolated from the working class, while marketing clings to the working class for survival, these movements never flourish. Others are bent on finding ways to fold the technological paradoxes back over itself – e.g., solar panels, automated farming, wind and hydroelectric power, hydrogen cells for cars, and other interesting concepts. But these plans usually do not strongly question the level of consumption and therefore allow the perpetuation of the misapplications.

It will be the responsibility of forward-thinking young Americans to break the chain of disruptive technology. The economic slump we are seeing today may be a sign of this, as it seems to have been preceded by a slowdown in cellular telephone sales, computer hardware and software upgrades, and other indicators, and public opinion is hinting at signs of true skepticism rather than mere economic reluctance. But it is difficult to discern the chicken from the egg here. One thing is certain – without consumers having second thoughts, producers will remain powerful enough to sustain and possibly increase their exploitation.

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Note 1. This critique is generally limited to technology of the Industrial Age and, more particularly, the 20th century. I will allow that, for a more rigorous debate of the objective merits of technology throughout civilization, one must consider even the most primitive technologies, and I intend to deal with this elsewhere. For background, see Basalla 1988 and Henry Petroski's work, *The Evolution of Useful Things*.

Note 2. Environmental activists, founders of groups including the Greens and Critical Mass, have unconsciously used disposable paper and styrofoam plates and plastic utensils with abandon at their functions. At a recent benefit for the Crossroads Fund, Chicago's most socially relevant grantor, plastic Solo cups were used for

drinks without exception. Several guests who asked for glasses were denied. Thousands of cups were not recycled. Solo, based in Urbana, Ill., has had its problems with labor and the environment and is one of the nation's largest petrochemical consumers and purveyors of plastic products.

## About the writer

Peter Zelchenko began a career as a computer programmer in 1975 and has worked here and abroad in computer and print-publishing technology, most recently as an advisor for Apple's Publishing Technology Center in Beijing. He has reported on technology for the Chicago Tribune and has written critically for or been interviewed in the Chicago Sun-Times, Lumpen, the Reader, Educational Leadership, the Future of Print Media Journal, and elsewhere.

Peter Zelchenko  
1757 W. Augusta Blvd.  
Chicago, IL 60622-3209  
(312) 733-2473 or [pete@suba.com](mailto:pete@suba.com)