# A Consumer Electronics Block Party

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An open economic system or a closed more centrally controlled arrangement, what really works best?  It has come as a great surprise to the many oligarchs, monopolists and varieties of political and economic miscreants that freedom, democracy and open markets are far more economically successful than the closed systems they so much prefer.  Surprise, surprise!  Even China, that last great bastion of Communism has now reversed course in favor of more openness, competition and choice, but why?  And how does this observation factor into a better understanding of today's consumer electronics and the great advances this industry is making?  Give us a moment, and we will try to make it clear by telling of an amazing little happening — so do listen up, especially you kind folks at Microsoft and Comcast.

A few days ago the Consumer Electronics Show in Las Vegas closed to rave reviews and a massive attendance as a mighty display of all that is bright and magical about Adam Smith's *The Wealth of Nations*

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and free markets during a time of revolutionary innovation and change.  There was so much to see, so much to marvel at, that it was truly more than enough to make anyone's head spin.  Perhaps as many as 130,000 people were there to goggle at, examine and delve into new possibilities for commerce made credible by the endless collection of new WiFi, cell phones, digital cameras, PDAs, HDTVs, Set–top Boxes, Home Entertainment Centers and other electronic innovations that were there on display.  Simply marvelous, is the only way to describe it all — and that characterization still falls far short of the reality the attendees at this show experienced.

## UBIQUITOUS PC HAS A SEX CHANGE

By way of contrast, we had the COMDEX Show in Las Vegas only two months ago opening and closing mostly to silence, apathy and confusion as though its principal players such as Microsoft, Intel and their legions had somehow lost their way. Less than 40,000 folks were in attendance — including more than a few Las Vegas locals and senior citizens that were bused in for the occasion, to help fill the convention hall — and given tickets to attend Bill Gates and his keynote speech. Not much innovation here, just more WinTel is swell — dare we say it — or go to hell. Sure Linux was there too, but perhaps a year or two too late to save the day. Apple and SUN were there too to remind us of bright possibilities and singular opportunities, but in reality they are too small a factor in a PC world dominated by monopolist Microsoft to make much of a dent. As to the focus at COMDEX, a lot of data security, piracy, the virus menace, barbarians at the gate, as well as worms, Trojan horses and digital spies — an unsavory meal to digest at best. These manifestations are the trappings of an endgame situation for the PC and not of a new beginning for WinTel. The official explanation was that the PC was now naturally morphing into the rest of the world of technology — mostly as hidden devices within various applications, including some in the dashboard of your car. What a swell story, but in all truth probably more of a cop out! In large part, the closed–in world of Microsoft and the PC has to a considerable degree imploded onto itself thereby snuffing out much of

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its earlier fire of innovation. That is except for such near outsiders as SUN, Apple and Linux. The barn door is closed and the cows are long gone, too bad, too sad.

Wait up you say, Bill Gates was there in his dark robes at CES as well, and he had a brand new tale to tell, and it truly sounded swell. As to Intel the other side of WinTel, they too were there dressed up in new garb and in attendance — as the 'Intel In The House' solution in the form of: 1) the EPC or Entertainment PC and 2) WinTel happy chip sets for all the many consumer electronic boxes from cameras, to PDAs to Set Top Boxes. How convenient, a WinTel world for all the little people is being readied to save the CE community. Shades of the prophetic speech of Winston Churchill after WWII wherein he stated that an 'Iron Curtain' was descending over Eastern Europe — perhaps a PC curtain is coming down on CE. Not to worry though as the CE folks are very bright, they know the game and no matter how dressed up to confused and deceive, the likes of Sony, Motorola, Toshiba an Philips can spot a lurking potential monopolist even though he may still be some distance away. As to Dell and Gateway, those truly customer friendly PC vendors, they are mostly innocent shills in the game. And what a game it is as Dell and Gateway move vigorously to extend their brands via such things as fabulous new LCD HDTVs, digital cameras and the like sold at retail in their own stores or via the Internet.

There you have it, the 'Brave New World' of consumer electronics is now in some

danger as the PC Barbarians are at their Gate. Will Rome be able to withstand an attack by these Huns or Carthaginians? That is, will the world of consumer electronics continue on its very successful present course, with sales of over $100 billion dollars in the US alone, or succumb to the attack of the PC gang and its WinTel champions Microsoft, Intel and Dell? Will Sanyo, Samsung, Phillips, Toshiba, LG, Daewoo, Sony, Panasonic, Pioneer, Motorola, Nokia and the rest survive as true free market citizens or will they give way and dance to a tune written and policed by the folks at Microsoft?

As a point of reference, we all know that over a period of years Microsoft has invested heavily — some $10 billion — in the cable TV industry in such companies as Charter Communications, Comcast and others. Yet it has failed so far to gain any real traction therein — as in the dismal failures of Microsoft TV, Ultimate TV, Microsoft WebTV and the like. A nice little operating system anyone — no strings attached? All the while, those equally single–minded oligopolists from the cable TV world — read Comcast and Time Warner if you like — just keep refusing to let Microsoft have a real play in their game. As for Microsoft on the Internet with MSN 8, that seems to have worked out all right — that is once Netscape was given a little treatment. Yet while this area may be Microsoft's new flagship, its Internet toolbox has yet to invade or infest the TV or the 'lean back' living room entertainment experience to any great degree. But we had better wait

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and see before we call that one. That said, the end–around play for Microsoft is to control and get into the consumer electronics boxes that populate the living room, the den, the RVs and the rest of the so called leisure world.

At a Consumer Electronics Show that reached an all time high of success by displaying an amazing array of evolving products, the troubling news was that the PC boys showed up in force well armed to put the hammer to the CE industry. Take it any way you like, now that WiFi is truly here to enable home networking, the many digital boxes in the home must interoperate. When they do, by what means are they to function and communicate with one another? One option is to let Microsoft dominate with such systems as Windows Media 9, Windows XP, Windows CE and the like. Another option is stay with the broad family of systems that the industry supports from the likes of Sony, Motorola, Apple, Ucentric, SAP, Adobe, Symantec, Samsung, TiVo, Pioneer and others that conform to IEEE and other industry standards. It all sounds innocent enough, as both choices appear to offer good and sensible ways to proceed. But wait a minute; one option is to stay with the open creative free marketplace while the other signals a future dominance by a US Courts censored monopolistic self–serving prince. If anyone doubts this observation, please contact IBM, SUN, Palm, Netscape and Apple for another perspective. Therefore, it may be a good idea for the CE industry to hold Microsoft at bay just like the cable TV

folks do.

As to Bill Gates bragging at the CES Show that he is not entering the CE home entertainment world, but that the CE folks by going digital have now entered His world, what can one say? The arrogance of such a remark and the perspective it displays speaks for itself. Nothing more needs to be said except Caveat Emptor, let the buyer beware — of Trojan horses from the Northwest bearing sweets. Is a world of common computer crashes, network failures, Windows patches galore, firewall breakthroughs, viruses, worms and the like — requiring endless hours of fixing and rebooting — what consumer electronics houses and their public want? Hardly. How about a Linux based open standards world where all can play instead — does that sound like a problem? Enough said.

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### HDTV — FOR A NEW EXPERIENCE

At some point what may have appeared at first to be a qualitative improvement in the television experience via a better viewing screen has now become a behavior altering Change with a capital C. What once seemed a gradual transition, denoting little more than an improvement in appearance, has now morphed into something truly new heralding in a transformation of the media and a Happening with a capital H. That is what many feel is now occurring in HDTV land. It is undergoing the sort of transformational change that alters the nature of the consumer experience to such a degree that it even changes some of his or her behavior in truly meaningful ways. Say

as in staying at home as a family to view an event or entertainment instead of going out to a football stadium, opera house or movie theater.

The coming availability of affordable LCD, PDP, DLP, LCoS, OLED and other forms of HDTV technology is truly revolutionary in many ways (Note: you may ignore the many acronyms, as these will not be discussed in detail herein). The combination of a large 16:9 aspect ratio (shaped) viewing area on an HDTV set as compared to the 4:3 aspect ratio on an old fashioned TV, along with a 1920x1080 pixels HDTV display which has up to ten times the resolution, quality, brightness and contrast of the old TV, makes all the difference. That is due to the fact that the much greater degree of apparent 'reality' one experiences with HDTV tends to fool the viewer and draw him or her much further into the 'show' than with an older TV set. After all it is the experience the consumer gets from the HDTV technology that counts, and not the detailed technical aspects of the media technology that matter to the buying public. At the present level of performance of the new HDTV sets, the nature of the experience has indeed been dramatically altered. Only affordability and the availability of sufficient content may be holding many a consumer back from making the purchase, and prices are coming down. The cable industry, with its highly evolved talent for turning great opportunity into large infrastructure investments followed by self–defeating pricing, may yet find ways to diminish the value it derives from HDTV. But what else is new? Consumers buy value

and they always will — just look at the DVD phenomenon and what is a happening today in the camera enabled cell phone arena.

As to HDTV pricing and economics, with a number of new LCD factories soon coming on–line in the Orient, with the capacity to produce vast quantities of 30 inches–in–width and larger LCD HDTVs, a price war is surely in the offing for the larger models of HDTV, say 30 to 50 inches in width. That is to say that more affordable HDTV is probably on the way later this year and early on in 2005. As to the preferred technology to buy, the times are also changing. For now LCD is better than PDP or plasma, but the situation remains in flux as new versions of LCoS, DLP and OLED are also on the way. Remember that the HDTV set you buy today, when replaced, will simply move into the study or the bedroom. Not to worry, it surely will not go to waste over the ten or more years of its usable life.

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## SHIFTING COPYRIGHT LAWS

The highly polarized world of copyright is also at center stage in consumer electronics' three–ring circus. On one side we find a nefarious gang of thieves and pirates hiding behind a great mass of misbehaving children and hapless parents — and face it, great harm is being done. On the other side of the conflict are legions of high priced attorneys and Washington lobbyists pressing the Department of Commerce and the FCC for shackles to apply to the bad guys — no matter how it damages the public good or the media industry or the CE industry.

On the docket as part of the process of creating case law, there are many pending cases whose resolution will help to convert the DMCA (Digital Millennium Copyright Act) and other copyright legislation into a body of legal practice — onerous though it may turn out to be. Lost in the shuffle and of great value to each side — that is for those who are bright enough to see it — is the citizens' right of Fair Use and its economic necessity. All in all, it is a great big mess of double speak that portends, as government actions often do, to block progress and stifle further CE industry growth. What is one to do?

It was worth attending the CES Show if only to hear GartnerG2's Michael McGuire expound with intelligence and conviction on the Shifting Copyright Law. Equally gratifying and to an extent more surprising was later in the day to hear U.S. Senator John Ensign, Chair of the Senate Technology Task Force, speak with force and intelligence on the subject of copyright and Fair Use. We were truly moved by the idea that four Senators and six Congressmen, many of whom are members of the House Commerce Committee, were in attendance to wax eloquently on CE subjects in general and copyright in particular — Thomas Jefferson would have been proud! What is one to learn from all of this and how does it relate to the future of consumer electronics? The following seems clear from what we heard.

■ The DMCA is overkill that may yet wound the goose that lays the golden eggs.

■ Fair Use as it relates to a citizenry's right to make a copy of protected material as a backup or for other legitimate private purposes is good for business.

■ New revenue models are needed to provide content owners with better ways of earning income out of their copyrighted materials.

■ Copyright is and should remain a limited right and was never a property right.

■ The legal slicing and dicing of copyrighted materials is an economic necessity.

Face it, media content remains king with digital technology hard at work as its willing attendant. And good content requires lots of costly talent, a great deal of effort and the availability of significant amounts of high–risk investment as it is created and made available for distribution to the public. It follows that the CE industry is highly dependent on a set of workable non–draconian copyright laws that nurture a healthy media content and distribution industry. A failure to deal effectively with this subject will surely have dire consequences for the CE industry and its public. Michael McGuire of GartnerG2 also detailed the work underway at the Berkman Center for Internet and Society at the Harvard Law School, as a place where balanced in–depth study is underway to help untie the Gordian knot that may ultimately yield a balanced copyright jurisprudence that is in harmony with the citizen's right of Fair Use. That sounds a lot more promising and reasonable than the MPAA's practice of bluster, threaten and

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sue as an approach to solving the problem of piracy and illegal P2P distribution.

The CES Show was a great big hit, and while much of the progress was indeed incremental, there was also a great deal that was noteworthy including:

■ The PC kingpins are searching for a place in the sun within the CE space.

■ High Definition is an experience altering technology on the move.

■ The Camera Cell Phone phenomenon is still rising.

■ A few Washington bigwigs are smiling on Consumer Electronics.

■ DVR as an accepted imbedded technology is here to stay.

■ Massive handheld flash memory storage devices up to 4 Gigabytes are coming.

■ WiFi that can now truly fly and really works.

■ Sprint and Verizon are upbeat, alive and ready to compete.

■ A few famous firms now appear somewhat lost in space.

■ A new era is dawning at Motorola under CEO Ed Zander formerly of SUN.

■ Ultra Wideband is emerging from the shadows to take its place in the multimedia sun.

■ Sony as always remains king of the mountain.

All in all a very satisfactory result that holds the promise of an even better future.

# The Digital Experience and Consumer Behavior

By Stuart Volkow and Leo B. Willner

The dizzying array of new features as well as new user interfaces to be found on consumer electronics today are the consequence of consumer demand and 'optimized designs' that fell wide off the mark. What limits the value proposition on new media technology is not just processor speed, bandwidth, storage, throughput, resolution, screen size, available channels and the like — although each of these factors does play a role. Indeed the limitations that hold back further progress in some major areas of consumer electronics are even beyond resolution in the outer reaches of Moore's Law. Neither can some of the frustrations and limitations we all experience be overcome by simply extending the capabilities of the hardware and software platforms used in CE or by improving the standards under which they operate. Sad to say better versions of bloated operating systems like Windows CE or Windows XP Media Center are also not the answer. Neither is networking the home and bringing a state of interoperability to the many electronic devices. As always, what is really holding back electronic media are the limitations of the machine–to–human interface. Therein lies the problem as well as the opportunity.

As to how much media contact is enough and how much interfacing humans want to have with media devices, that is also an issue that warrants much future study. How many movies on demand, MP3 playlists, emails, time–shifted TV programs, video games, web sites, as well as magazines, newspapers, and books can any one person effectively deal with? How much TV, PC and handheld screen time at work and at home is too much, before sensitivity is lost and the information weary consumer is rendered immune to almost any commercial, informational or other message — embedded or not? These are issues that weigh heavily on the design and attractiveness of new consumer electronics media devices.

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A good place to look for answers is in that area of psychology that details how we as humans perceive and inculcate external reality. In this regard, we may want to recall the triangular concept of Vedic Psychology that seeks to explain perception and subsequent recall and knowledge. At one vertex of the triangle is the value or importance of a 'thing' to the person perceiving it. At another is the intensity of attention it commands. Third is the creation of memories as a summation of the experience. From noticing something, to focusing on it momentarily to paying attention to it, all the while setting to memory some of the experience according to its importance and the degree of attention it was given.

For example, a mother can hear her baby's slightest whimper, even out of a deep sleep, because of its criticality to her. Similarly, the memory of the baby's birth is emblazoned on the mind of the parents for life in high fidelity because of its

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singular importance. In like manner, an elephant walking on a street in LA, or a movie star in full view in Akron, Ohio, are compelling events in their own settings that attract attention which triggers interest and memory — yet a movie star in LA barely warrants another look.

Linda Stone, formerly of Apple and Microsoft, coined the term "continuous partial attention" to describe the modern dilemma of information overload. Designer and author Richard Saul Wurman also identified the phenomenon in his prophetic 1989 book *Information Anxiety*. Both describe a common condition that places a limit on how consumer electronics and other attention getting devices interact with the human experience. In order to satisfy the consumer, or impress knowledge upon this individual, attention and interest must be attained via truly effective and compelling man–machine interfaces (MMI). In addition entertainment and advertising also play a role as each embodies the art of gaining the attention and holding the interest of chosen populations. Placing a machine or gadget in between man and the content just complicates the entire process a bit more.

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With the vast array of information and entertainment choices now at everyone's disposal, capturing the interest and holding the attention of the public has become increasingly difficult. Transforming mere attention into deep experience is another aspect of the problem, which, when managed properly,

can even alter the perception of reality and modify behavior. In that regard, increasing choice via an exponential increase in media bandwidth and storage–width may trigger a truly singular behavioral change in the consumption of media from a push to a pull type of activity. That is to say from the passive mode of sitting and watching, to the interactive mode of choosing and using. The limits of time and attention remain, but they can stretch and bend in response to truly effective human interface design.

Device designers can raise the market share enjoyed by their offerings by employing design principles that help place their machines into a more natural setting and by including an appealing user interface. After all, the consumer is buying the interface as much as the device. We can all learn a lesson from the millions of unused VCR timers as the mass market continues to struggle with various EPGs, handheld LCD screens, and hopelessly overcrowded remote control CE devices. The lean–forward hands–on active–mind experience, and the lean–back push–button remote control experiences are difficult to mix into one system. Yet the demands of a home media center and home networking require that both scenarios be properly accommodated. The key is to avoid the dreadful errors that have been made in the past by such august houses as Microsoft with its WebTV, a lean–back lean–forward design disaster to be sure.

One novel attempt at a better user interface on display at the Consumer

Electronics Show in Las Vegas this month is out of Ambient Devices of Cambridge MA. In a compact table–top device no larger than a shoebox a user receives a live update on 40 or more key channels of information such as the weather, sports, stocks and the like in the form of highly visual color bars or gauges. This user–friendly information device is based on the work of Professor Hiroshi Ishii, chair of the Tangible Media Group at the MIT Media Lab. The device is on-line 24x7 and employs a highly efficient markup language to manage the information it displays, receiving updates over the pager spectrum. The device displays the status of a set of data in an analog fashion using color bars, or simple needle gauges. To see whether the pollen count is high or low, just note the color on the Allergy Channel part of the display. Similarly for financial indicators such as the Dow or the NASDAQ, say green is up and red is down, etc. No logon is needed, no WiFi to engage, no Ethernet to connect, no menus to employ, no computer required, just pure information in an easy to understand visceral form. It is a gentle heads–up or update as to what is going on in your world that you can peruse instantaneously. The goal of Dr. Ishii's research is: "to change the 'painted bits' of GUIs (Graphical User Interfaces) to 'tangible bits', by taking advantage of the richness of multimodal human senses and skills developed through our lifetime of interaction with the physical world." His projects span a wide range of experimental interfaces that take advantage of tactile feedback and 3D manipulation of physical objects.

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Touch–typing aside, tactile feedback is a communication channel often ignored in interface design. Not so at Alpine Electronics as they have included a uniquely designed flat panel display with their IVA–D300 Mobile Multimedia Station. That LCD surface allows a user to simulate the experience of tactile feel as he or she plays with its simulated buttons and knobs. There is, after all, something comforting about simply turning a dial – as analog devices often feel smooth and natural to the touch, as in turning the wheel when driving a car. In fact, we venture to say that the iPod phenomenon has in large part been driven by its brilliant thumbwheel analog controls.

Overall, as many of us ponder how to make media machines work even better; we should look deeper into the source of consumer satori — or enlightenment — as ordinary users seek to gain satisfaction from their new digital cameras, DVRs and other advanced media gadgets. It is after all the human interface that matters most of all in our success with these machines. Today it seems as though every CE manufacturer employs its own unique GUI in its home media server — from Apple to HP and LG to Panasonic, Samsung, and Sharp. The winners among the consumer electronic houses are likely to be the ones that offer ease–of–use, convenience and self–evident knowledge via their GUIs. The Tao of interface design is to enable the media consumer to place his or her attention into personal balance with the level of importance they place on each piece of

content so as to optimize their experience. When this occurs, consumer satori will have become reality.

[Snatch the remote from my hand, grasshopper. —Ed.]

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## KALSOW'S BACK–CHANNEL: *"Validating the Middle Ground"*

■ Reviewing the January issue of PC World article **Patches Backlash** regarding the endless security disaster Microsoft continues to experience as varieties of self–inflicted wounds may give one pause to wonder what is really going on. Is it possible that a nefarious offense on the part of hackers will ultimately prove to be superior to properly designed software? Or, is Microsoft simply the victim of its own greed and built–in closed–mindedness and perhaps even incompetence? No, we are not kidding. As noted in a recent article in the MIT Technical Review, we may soon be reaching the edge of feasibility when it comes to software complexity. If so, are the folks at MS simply too hardheaded to listen and change course? Stay tuned.

■ Why is there so much doom and gloom in forecasts of the future of electronic media with regard to the coming impact of DVD, VOD and DVR on mass media, its devices and its systems? Have these folks forgotten that change is inevitable and usually follows the natural laws of markets and of human behavior? Is it unclear that our growing concern with terrorism, disease, energy shortages, traffic and crime–in–the–street is leading more and more people to entertain themselves and inform themselves at home? Further, is it not true that socializing, among families and within communities, is down some one–third over the past quarter century? If this be so, does it not follow that TV and other mass media and their content houses, distribution systems, channels, technology houses and the like will continue prosper even in the face of DVD, VOD and DVR — including their advertisers and e–commerce and T–commerce firms? For these and other reasons, we cannot join the doomsayers, as all will be well.

■ TV advertising as a rational form, is it possible?  With TV upfronts out of sync at the start of each year, some might suspect that the media community is incapable of rational behavior.  Certainly the evidence suggests that CPMs are often out of kilter with observable reality and that advertisers are more than a bit annoyed at the general failure of marketing houses, advertisers, networks and services providers to rationalize the process.  It's all a shell game, or so it seems, as media buyers, advertising agencies and the networks appear engaged in a legerdemain, which greatly disadvantages advertisers such as Ford, IBM and Coca Cola.  Now the folks at Net Costs threaten to spoil the fun with their SQAD system, which purports to provide accurate data on the ad market for programming on the networks and their accompanying CPMs.  What a drag, how dare they spoil the fun?!

[Your mileage may vary.  —RGK]

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