Recommended Readings for Competing Values Jumpstart from Subject Experts

Advertising (from Stephanie Padgett)

"Super Models" by Joe Mandese, *Media Post,* August 2007,
http://publications.mediapost.com/index.cfm?fuseaction=Articles.showArticle&art_aid=65086

Comments: This discusses how we measure media spending and why it's changing.

"Platform Diving" by Adrienne Mand Lewin, *Media Post,* August 2007,
http://publications.mediapost.com/index.cfm?fuseaction=Articles.showArticle&art_aid=65088

Comments: This discusses where and how people watch programs and its impact on advertising.

"The Last Word" by Joe Mandese, *Media Post,* October 2007,
http://publications.mediapost.com/index.cfm?fuseaction=Articles.showArticle&art_aid=68423

Comments: A balanced discussion of the future of print (for those interested in reading more about the trials and tribulations or print counterparts, read all three articles in this Oct. 2007 issue).

"Leading National Advertisers Report: Spending Up 3.1% to $105 Billion," overview article of 2007 Ad Age Leading National Advertisers report, by Bradley Johnson, *Advertising Age,* June 25, 2007, http://adage.com/article?article_id=118648.

Comments: Group members can download the entire 104-page report for free at http://adage.com/images/random/lna2007.pdf (the majority of the file contains reference pages and summaries for each of the top 200 spending companies).

Competitive Media Landscape (from Amanda Lotz)

"Traditional Media in the Digital Age" by Douglas Ahlers and John Hessen, *Nieman Reports,* Fall 2005, pp. 65-68.

Comments: Fall 2005 perhaps seems an eternity ago, but the key here is the complicated, unexpected, and gradual patterns of adoption. This is a key challenge—to develop a comprehensive strategy that responds to the phases of change that will occur as viewer/user behavior evolves.

"Online Video Is Creating Its Own Viewers, Not Stealing TV's" by Daisy Whitney, *TV Week,* February 19, 2008.

Comments: The link is just this week's example of industry research supporting the premise that new distribution routes affect old media use in complicated and unexpected ways. Available audience is not a zero-sum game between old and new media.

Introduction to *The Television Will Be Revolutionized* by Amanda Lotz (New York University Press, New York and London, November 2007), pp. 1-25.

Comments: Optional reading. The book is more focused on television as an industry broader than affiliate operations, but it will give you a sense of where Lotz is coming from and how she thinks about the bigger picture. *The Television Will Be Revolutionized* examines television at the turn of the twenty-first century—what Lotz terms the "post-network" era. Television, as both a technology and a tool for cultural storytelling, remains as important today as ever, but it has changed in fundamental ways as the result of technological innovations, proliferating cable channels targeting ever more specific niche audiences, and evolving forms of advertising such as product placement and branded entertainment. Many of the conventional practices and even the industry's basic business model are proving unworkable in this new context, resulting in a crisis in norms and practices.

Technology (from John Krienke)

"The Wealth of Nations" by Davide Castelvecchi, *Science News,* September 1, 2007, vol. 172, no. 9, p. 138.

Comments: This piece is to get you thinking about what your core platform is and the appropriate adjacent markets that make sense to leverage.

Assorted information sheets from Internet2: Arts, Digital Video, Teaching

Super Models

by Joe Mandese, *Media Post,* August 2007 issue

Digital may be more fashionable, but industry economists aren't giving up on the traditional role of media.

Last June, after more than half a century of presenting twice annual estimates for the advertising economy, Universal McCann's director of forecasting Bob Coen did something unusual and, in some ways, very symbolic. For the first time, Coen was joined by a co-presenter, Brian Wieser.

The move was telling for several reasons. For one, Wieser, a bright young economics turk who is director of industry analysis at sister Interpublic unit Magna Global, is known by insiders to be Coen's heir apparent. Not that Coen is showing signs of retiring anytime soon, but the move seemed to be Interpublic's first public acknowledgment that Wieser is at least waiting in the wings to become Madison Avenue's official scorekeeper. More to the point was what Wieser presented: Interpublic's first-ever forecast for "emerging media."

Talk about studies in contrast. Coen, a white-haired, soft-spoken octogenarian gave his assessment - a fairly tepid one at that - for the economic health of the traditional advertising economy, including such media as TV, radio, newspapers, magazines, outdoor and Internet banner ads. Wieser, a 30-something with jet black hair and swarthy good looks, offered his view for the emerging media marketplace, including search, online video, social networking and mobile marketing, which are all growing at healthy double-digit rates, and which many see as the future of the advertising business. But somewhere toward the end of Wieser's presentation, something equally revealing happened. It became apparent that Coen's forecasts have not been capturing many of the newest and most dynamic sources of media - the kind that many people believe are transforming the underlying relationship marketers have with consumers.

By Wieser's estimates, those emerging media are still relatively small, totaling less than $12 billion in 2007 advertising budgets. Some might argue with the absolute size of Wieser's estimate, but the reality is that ad spending in emerging media is a mere pittance when compared with the $630 billion marketers will spend this year on the media Coen has historically defined as advertising in his tallies, which are the basis for most official estimates for the advertising economy, including the U.S. government's.

A final significant thing occurred as Coen and Wieser fielded questions from a group of reporters and Wall Street analysts who attended the presentation. They agreed it might be time for the industry to finally revise how advertising is defined to reflect the growth of new media platforms, and new ways that marketers use to communicate their brands, products and service messages to consumers. It was a significant inflection point for the advertising industry and the media world, coming just six months after Coen made a presentation at which he went to great lengths to remind the industry about what is included - and excluded - in Madison Avenue's official advertising pie (*Media*, March 2007). During that presentation, Coen flashed the cover of a 1942 academic tome - *The Economic Effects Of Advertising*, by Harvard professor Neil H. Borden - that has served as the gospel defining the advertising business for 65 years.

Contrast that with the presentation Wieser made in June, in which he flashed an image of his own computer-generated avatar from virtual community Second Life to illustrate the kind of new media platforms that have been falling below the radar of Coen and other industry analysts, but which have become an important source of marketing spending and strategy. They may also be part of the reason why the growth of the traditional advertising world has failed to keep pace with the overall economy.

The New Math

Last year, U.S. ad spending fell to 2.13 percent of the gross domestic product, down from 2.25 percent in 2004, according to Coen's estimates. If the kind of newer media platforms tracked by Wieser are factored into the equation, the picture looks a little better, but the reality is that even new media are still small relative to the broader economic effects of established media. To really account for what's happening to the advertising economy, Wieser says, the industry needs to redefine advertising to include other forms of "non-media marketing" such as promotion and customer relationship marketing, that have been taking greater shares of the budgets of many big marketers.

"Change is happening in places where we're not looking," Wieser asserts, adding that the perception that marketers are simply shifting advertising budgets out of traditional media like television to online isn't entirely true. For one thing, TV advertising spending continues to grow, albeit at a slower rate than online and other digital media. The growth in online ad spending, he says, is coming primarily from new advertisers, or e-commerce marketers who are "endemic" to the Internet.

"It's a different group of advertisers that are driving the growth of online ad spending," he says. "The perception that TV is a declining medium is wrong. That's not the case at all." At least not yet.

The reason, Wieser says, is that television advertising continues to work for big marketers, and is still more efficient than emerging media platforms. Not only does TV usage continue to grow, but TV remains the dominant media platform among most consumers.

Comparing TV to online video - currently the rage among Madison Avenue's digerati - Wieser says there's no contest. Although usage of online video grew nearly 40 percent in 2006, it barely registers relative to traditional TV usage. Using what he describes as aggressive assumptions, Wieser predicts traditional TV will remain "90 times more popular" than online video through 2011, the end point in his current forecast. Reasons include the quality of content, the technological and economic hurdles associated with making online video universally accessible, and the fact that TV is simply far more "convenient" for most people to use.

Convenience is the same reason why Wieser doesn't believe traditional marketers will abandon television any time soon. Although online video ad spending - $366 million this year - is growing at a much faster rate - 56 percent for 2007 - than traditional TV advertising budgets, Wieser estimates it is a mere fraction of the more than $60 billion U.S. advertisers will spend on television this year. Most of the growth in online video - like most of the other emerging media platforms Wieser tracks - is coming not from the big, traditional advertisers, but from new advertisers. In effect, he says, the economics of new media - everything from online video to search to social networking - is causing the "advertising pie" itself to grow by attracting new brands, products and services that were not able to establish themselves with traditional media.

In some ways, that's always been true about the advertising economy. Traditional marketers may have been among the first to support cable TV networks during their pioneering days in the 1980s, but the reality is that cable attracts thousands of brands that aren't big enough to buy the major broadcast networks.

To illustrate how these economics have been impacting new media, Wieser divides the world of online banner advertisers into two buckets: traditional advertisers; and those that are either new or endemic to the Internet. The data shows that the top 100 TV advertisers represent only 24 percent of online banner advertising; of that traditional advertiser total, "brand-based advertisers" account for only 20 percent.

On the other hand, endemic online marketers also are once again some of the biggest customers of traditional media. E-commerce, or so-called "dot-com" businesses, have re-emerged as one of the largest advertising categories for traditional media. Coen estimates dot-com brands will spend $4 billion on traditional media to drive traffic to their sites, nearly twice what they spent in 2001, the year following the dot-com crash.

Branching Beyond TV

Some might think Wieser's view - coming from a big traditional advertising organization like Interpublic - might be biased. After all, Interpublic, like the other big agency holding companies, still derives the majority of its revenues from traditional forms of advertising. But they also are investing heavily in digital media startups, as well as in growing their own digital media operations. Interpublic has invested in Facebook and Spot Runner, and has acquired the search firm Reprise Media). WPP Group also invested in Spot Runner and has acquired 24/7 Real Media. Publicis has acquired Digitas.

Those investments are part of a Madison Avenue diversification strategy that acknowledges the traditional view of advertising is evolving into new forms of marketing communications that include a variety of new digital media services.

Something else appears to be changing along with them: the underlying models the ad industry uses to define what it does. Even Coen concedes that Borden's 1942 treatise needs revision. The problem is that, like digital media itself, the definitions and business models governing advertising are beginning to blur across some lines. Not surprisingly, this disruption is becoming most evident within the online advertising world, where some industry leaders have already begun redefining advertising.

Ads of the Future

"The industry is crossing an inflection point, passing from the conventional mass media 'interrupt and repeat' model for advertising to a family of advertising models centered on relevance," asserts Steve Rappaport, director of knowledge solutions at the Advertising Research Foundation, and one of the authors of the recently published *Online Advertising Playbook*. The playbook, based on knowledge gleaned from the past 10 years of Internet advertising, was intended to serve as a guide for traditional marketers to understand online advertising. It's proving to be a guidebook for new approaches to advertising that could have import well beyond the online world.

The reason: Concurrent with the emergence of new media and new forms of marketing communications, is a sense that the traditional model no longer works in an anywhere, anytime, on-demand world. In fact, one of three new advertising models identified by the playbook has been dubbed the "on-demand model," and is based on a consumer's ability to choose content and interactions with brands.

The other two models identified by the playbook include a "permission-based" or opt-in approach to advertising, and one that has been defined as "advertising as a service to consumers." These new models are still somewhat subject to interpretation, and Rappaport says the lines between them can also blur. He also believes other new models will evolve from them as marketers and agencies begin to understand new ways of interacting with consumers via new platforms. Social networks, for example, provide an entirely new framework for brand marketers, which many believe could transform consumer marketing much the way it is transforming how people socialize.

"Certainly, it's not stopping here," says Rappaport, a Madison Avenue vet who first began writing about how digital media would impact consumer marketing in the late 1970s when he was an executive at Interpublic and such changes were purely theoretical.

"If you look at it over the long view, we have gradually been shifting away from a probabilistic exposure of an advertising model to one that is very deterministic, and on-demand," Rappaport says. "It's been happening slowly over time, but what's happened is that the sudden growth in broadband access is accelerating the process, and now you can see very clearly that this is going to fundamentally change advertising in ways we never thought about."

Interpublic's Wieser agrees with Rappaport's assessment. He just doesn't think it will happen as soon as some online evangelists are saying, because they're not properly accounting for the entrenched organizational cultures that are built around traditional media models.

"At some point, we are going to reach that inflection point, but it's like trying to predict when the stock market is going to crash or when the housing boom is going to come to an end. You know it's going to happen eventually, you just don't know when that will be."

One thing Wieser is pretty confident about, is that when that shift finally does occur, it will be the most profound change ever to impact Madison Avenue: "The longer this goes without correcting, the more significant the change will be when it occurs."

Joe Mandese is Editor of MediaPost.

Platform Diving
by Adrienne Mand Lewin, *Media Post,* August 2007 issue

Consumers now get news, music and video in a multitude of forms. Are you ready to plunge into the digital deep end?

In a world where you watch "Heroes" on a 50-inch plasma screen, stream it to your laptop for free on NBC.com and download it to an iPod for $1.99, the question arises: Do platforms matter? Do people care whether they're watching "TV" on a TV set, a cell-phone or a monitor at the gym?

Sure, industry insiders make all sorts of distinctions: out-of-home, online, broadcast, cable and the like. But do consumers? And if it doesn't matter to them, should marketing become more fluid? Do the traditional strategies for media campaigns no longer make sense?

We asked media executives and other industry experts their thoughts. Their answers were as varied as today's entertainment options themselves.

"The television in the living room is the predominant media experience of our day," says James McQuivey, principal analyst at Forrester Research. "The average adult watches 28 hours a week - that's a part-time job."

Television, however, has one major problem: Scheduling. The networks' long-standing practice of airing shows at specific times simply means that many people would never have the opportunity to view certain programs without a hi-tech assist. "The PC as a platform has made so many inroads because a pc is so much more convenient," McQuivey says.

It was consumers' desires to rearrange programs to fit their own schedules that sparked the first wave of time-shifting via VCRs in the 1980s. Since then, consumers' ability to time-shift has evolved into an ability to platform-shift, thanks to broadband. Now, with networks streaming shows online and selling them as downloads, video programs can be watched anywhere - on iPhones, laptops, even Xboxes. At the same time, devices like the Apple TV and Slingbox threaten to even further disrupt media - if disrupt can still be considered the right word for enabling a phenomenon as widespread as video on demand.

"What's happening now with the younger generation is they grew up with an interactive environment," says Jason Hirschhorn, president of Sling Media Entertainment Group, maker of the Slingbox. "They don't distinguish the platform they get the content from ... but they sure distinguish instant access."

Instant access means everything from portable DVD players, iPods, mobile phones and laptops with wireless service to Slingboxes that allow viewers to watch their TVs or DVR through computers and remote devices.

But, while consumers might want content on demand, that doesn't mean they view platforms as fungible - and they definitely don't think ads translate well across all devices.

Rishad Tobaccowala, CEO of Denuo, Publicis Groupe's futurist consultancy, says the same people who view TV programs on cell-phones, for instance, resent ads on those gadgets far more than on TV screens. "A mobile phone today is considered to be an extremely personal device, and you don't want stuff pushed at you," he says. "Content that is created for something you ask for, that knows where you are, that's deeply personal, with a small screen - that content obviously is very different than when you're sitting at

home watching a 100-inch LCD television set that doesn't know where you are. Both have video content, but it's completely different."

And then there's context. "I don't think there's any question that the platform or device through which a consumer's accessing content matters in terms of what the programming structure and advertising model is that's delivered," says Adam Gerber, former vice president of advertising products and strategy with Internet TV service Brightcove and a member of the Interactive Advertising Bureau's digital video committee. "I don't think you can look at it just in terms of platform or device - consider where the consumer is as they're using it."

Lori H. Schwartz, senior vice president and director of the Interpublic Emerging Media Lab, agrees that what consumers are doing while they access media is important. "I think context matters a lot - the context in which you are consuming it reflects your state of mind," Schwartz says.

In other words, killing a half-hour in a Starbucks by watching Verizon's vcast content is an entirely different experience than being at home playing an Xbox game on a big-screen plasma TV for three hours.

"These different platforms have a lot to do with context - where a person is, where in the moment in their lives that they are, what they're in the mood for," Schwartz says. "I think that a lot of companies are experimenting with little treats of video instead of full-length pieces.

"You look at video snacks on your phone, as opposed to a bigger screen with a more comfortable seat. Little three-minute overviews - sports highlights, trailers, all those sort of snacks - work better in portable situations. It's different than, say, a Slingbox or an iPod or a Verizon experience of watching an hour-long movie on an airplane trying to kill five hours," Schwartz says.

Gerber adds that producers should keep these distinctions in mind when creating content that consumers will likely view on-the-go. They need to consider "how you create different programming experiences" for the different contexts, he says, noting that TV networks have already started to figure this out with "Webisodes" and "mobisodes," which have extended programs beyond the traditional TV season.

In the Eye of the Storm

For content creators, the new reality also means re-examining long-held business assumptions, says Barry Parr, a media analyst with JupiterResearch. "Essentially, what we're saying to clients now is, if you're a content producer you need to be more like a network and not like a destination. [You need] the broadest possible distribution, and it's incumbent on you to find ways to do that."

Parr says there will need to be "a complete rethinking of what a television program is because you don't have any reliable notion anymore about where that thing's going to show up. Ten years ago, you had a pretty good idea what your lead-in was. That's not true anymore. It's going to be trial and error."

And that has left content producers, distributors, advertisers and agencies scrambling to figure out their next moves, says Paul Woolmington, founding partner of Naked Communications.

"Everyone's sort of caught in the eye of the storm at the moment," Woolmington says, "and they're not really sure what to do."

Fast-Forwarding into the Future

Content might be flowing across different platforms, but advertising isn't transitioning nearly as smoothly.

"Although we have opportunities, the marketplace is slow to make investments," says Stacey Lynn Schulman, CEO of media consultancy firm Hi: Human Insight. "People look at new media and they try to interpret it through the lens of what they know, and that's a big mistake."

Formerly president of Interpublic's Consumer Experience Practice, which guided clients in how to use emerging media, Schulman says marketers often asked for plans showing them how to get into such areas as video-on-demand or streaming video - but they'd balk when the formats couldn't be measured in traditional metrics.

Advertisers also are skittish because there is much more happening with their brands that is beyond their control, Woolmington says. "There are more silos now, channels that consumers are engaging with. What people are doing, their instinct is to build their models around the silo - let's have more of these pipes. One way of combating fragmentation is just to embrace all these pipes.

"I think actually what you have to do is understand the consumer ... understand which of the channels is going to be relevant," including blogs, he says. "Understanding how consumers interact is more critical in realizing how you deliver on that. The stuff that's failing is stuff that's repurposed from somewhere else."

McQuivey adds that the newer category of download-to-own or pay-per-video and streaming is "just about to explode." These are ad-supported downloads where users can watch episodes of shows online but the ads can't be skipped. New technology will allow media players to have the ability to rotate in new ads if users watch the clip another time online and will allow users to forward clips to others.

"This gives [advertisers and programmers] the kind of control that they've never even had in regular television," McQuivey says. "They're very excited about it. Now, for first time in history, they're going to encourage you to forward it to your friend. Suddenly, instead of saying, 'They're copying our shows,' they're saying, 'They're forwarding our ads.' It changes the game completely.

"In a world where they're all threatened by the DVR, it's [a change] that everyone from the network to the advertiser is going to welcome with arms wide open."

Tobaccowala says marketers will be challenged to come up with a cohesive brand strategy to accomodate consumers' changing habits. "Marketers have to recognize we're moving more and more, regardless of the device, into an on-demand world. We also are recognizing we're moving into a world where people will be passing along things to each other," he says. "But at the same time, how do you re-aggregate all these messages? You're going to have to have, at some stage, an understanding of what your brand is, whether it's a content brand or distribution brand."

And with so many ways to distribute content, the old dynamics will no longer make sense.

"I believe it will be a world where the economics of measuring the impact and economics of distributing are all changing," Tobaccowala says, adding, "They're going to have to sort of recognize that increasingly more of their money is going to go into measurement and content creation than into distribution."

Gerber says on-demand will create opportunities for advertisers to drive a deeper brand connection than traditional advertising.

"The beautiful thing is the kind of 30-second, intrusive TV model becomes much less imperative and there's a much more engaging opportunity that advertisers have in that they can produce interactive content, they can produce longer-form content, they can do things that are completely out of bounds of the traditional TV model," he says.

Sling Media's Hirschhorn agrees. While advertisers used to have to buy space, now "they also can just take space online." He noted that Snoop Dogg has a hugely successful MySpace page promoting his career, but "10 years ago you had to buy an ad in Billboard."

Woolmington urges advertisers and agencies not to come to the table with individual biases. They should work together, he says, to come up with a "big idea." "American Idol," he proposes, is a perfect example. Yes, at the heart of it, it's a TV program, but the big, big idea sells with the events, tours, partnerships, licensing of 'American Idol' apparel, karaoke machines, consumer electronics. It's spawned multiple industries, multiple revenue streams."

But how can agencies approach these new ideas?

"What the agencies are struggling with requires really good integration, a great composer of a strategy, as well as a great conductor," Woolmington says. "It has to be a conductor who can make each of the instruments work in harmony. That's the macro issue. The micro is taking an opportunity like a partnership with 'American Idol' - how do you fully exploit it?"

Parr says there will be considerable adjustments.

"Advertisers and agencies are extraordinarily conservative about things they'll sponsor," he says. "Second, these newer models make it really difficult to measure issues in just getting the scale to get the kind of reach and frequency to make it happen. And finally, we don't know what the ads will look like in new [media]. It's an era of experimentation. It's difficult for folks, and the market is going to move much faster.

The Last Word (NOT)
by Joe Mandese, *Media Post,* October 2007 issue

Are visual communication forms like video' graphics and multimedia supplanting text-based media?
Let us spell it out for you: N-o-w-a-y!

In the caste system of the communications industry, few would argue that print media isn't falling into some disfavor. More than five and a half centuries after German engraver Johannes Gutenberg invented the movable type printing press, some people believe the long reign of print media may be at an end, as digital technologies enable publishers and consumers to create, access and disseminate content much faster, more efficiently and on-demand than print-based media ever could.

Whether printed media actually fades, or is simply evolving into a new form of digital publishing, may be the subject of debate. What is not, is what is happening to the core component of printed content: type. Type, text, or the printed word is not fading as a media content format. In the age of digital media, it actually appears to be growing - for now.

But there are media designers and futurists who believe that we are becoming a more "visual" society and a less literary one, and that over time, text will take a back seat to video, audio and multimedia content. Others contend that humans simply are not programmed to process certain forms of media content as effectively in other formats, and that our reliance on text will actually grow, not subside as digital media proliferate.

It's an interesting scenario - given some rethinking about the nature of media content, and the role various content formats play in the economic food chain of the media industry.

"I clearly believe we are moving to a format-based paradigm, and we are seeing it both online and offline, from what I call 'text purveyors,'" says Steven Fredericks, president and CEO of TNS Media Intelligence, and author of *StrADegy*, a book about how digital media is impacting the future of advertising that makes a strong case for shifting away from media platforms and toward media content formats.

Fredericks says he's been spending a lot of time with conventional newspaper and magazine publishers, and says "they've finally woken up" to the fact that they're now publishing across platforms, and that the big challenge for them today is "how to think more broadly in terms of the notion of text.

"What they really are about is text. Whether that text is in a digital format or an analog format should not be an issue for them. The issue should be how they monetize it and what the role of advertising should be within that."

Instead of growing less focused on text-based content in the age of digital photography, cheap video cameras and editing systems, and multimedia graphics, Fredericks argues that we are actually growing more dependent on text as a form of communication - both professionally and personally.

He cites the rise of social media as a prime example. While amateur video networks like YouTube command much of the industry's fascination with social media, Fredericks notes that the predominant content format populating blogs, discussion boards, social network pages, etc., continues to be text-based communication.

It's All About Text

In fact, one of the largest forms of communication on the Internet continues to be primarily text-based: e-mail. "Communications," including e-mail, currently accounts for 33 percent of the time the average user spends online, according to a recent study by the Online Publishers Association. Others think the share of online time spent communicating via text - including e-mail, instant messaging, chatting, discussion boards, social media pages, blogs and the like - is actually much higher, though the OPA study asserts the trend is toward consuming content, which currently accounts for 47 percent of the time spent online. However, while video and audio comprises much of that content, so does text.

Another form of digital content that appears to be dominated by text - at least for today - is mobile. Text messaging has emerged as the killer app for most wireless services, and continues to be the only significant commercial application for mobile marketing in the United States.

And in a broader context, the fastest growing segment of online advertising is actually all about text: search. "For many of our clients, it is the fastest growing segment of their advertising budget. And that is all text," says David Edelman, executive vice president of strategy and analysis capability leader at Digitas.

Edelman says it's not just keyword search advertising that is fueling a text focus in the media industry, but that text is actually part of the fundamental way humans process communications. For example, he notes that even on multimedia Web pages, it is the written copy that often is the most engaging and persuasive content online. He cites examples of some big retail clients who moved away from a copy focus on their Web sites and, ultimately, reverted back when they discovered that text sells better.

"When they converted to video they actually experienced lower response rates," he says. "Whereas with text, it is much easier to bullet point and clearly define the benefits of a product of a brand, because you're literally spelling it out for people."

That's something that people in the direct marketing field have known all along, says Edelman, citing the emphasis on copy in direct mail pieces, which still are one of the largest forms of commercial media, even with the rise of the Internet and the power of television.

Processing the Patter

Perhaps the greatest example of text's communication power is something Edelman says has impacted most business organizations, especially those on Madison Avenue. "Why do you think that organizationally we've moved away from voicemail as a form of internal communication and toward e-mail? It's because text is a much more efficient way of communicating information."

The growth of written - or more likely, typed - words online also is having an impact on the way big marketers communicate with and research consumers. The rise of viral marketing, buzz marketing and social media monitoring are all largely about spreading or analyzing text, says TNS' Fredericks. That's why TNS MI acquired Cymfony, one of the pioneers in the field of natural language text analysis for the marketing world.

"Everyday, we are processing in excess of 30 million entries on blogs and message boards that are all unstructured, natural language text," says Fredericks, noting it is the job of companies like Cymfony, or rival Nielsen BuzzMetrics, to transform that raw, written data into information that is relevant for marketers to understand how all that word-of-mouth is impacting the bottom line of their brands.

Fredericks says great strides have been made in the science, and companies are beginning to discern not just the volume of the dialogue, but the context of what people are saying when they write and post online. That's not something that can currently be done with video- and audio-based algorithms, he says. In fact, any contextual analysis of video or audio content generally must be transcribed into text before it can be processed utilizing such systems.

Our reliance on text-based marketing will only grow, Fredericks says, citing two key developments. The first is the shift toward behavioral targeting, which will increasingly be used to target content and advertising at consumers based on what they've written or said online. The second phenomenon is much more about human nature. As marketers increase their one-to-one dialogue with consumers, Fredericks says text will continue to be the primary way they communicate.

"As advertising becomes more interactive, there is going to be a back and forth between the consumer and the advertiser in terms of communication, and it's unlikely that consumer is not going to be communicating back in terms of video," Fredericks notes, adding that the big issue for the media industry is not how it uses text to communicate with consumers, but how it profits by doing so.

"The uncertainty right now is how quickly that is going to happen and how the advertising models are going to be promulgated," he cautions. "That's where we need to spend our attention. How is the content going to be paid for and who is the advertiser going to write the check to?"

Synergy of Words and Images

Not everyone agrees we're becoming a more text-driven media content society. Big media companies are experimenting with new forms of "visual journalism" and "visual communication" that either omit or minimize the role of written text in their content. It's a trend that's likely to continue, says Jennifer George-Palilonis, journalism graphics sequence coordinator at Ball State University, and head of the school's visual journalism program. Ball State was one of the first schools in the nation to offer a degree majoring in visual journalism, and George-Palilonis says it was an outgrowth of changes in the technology the newspaper industry used to produce papers. It started with the shift to desktop publishing in the 1980s, and has progressed with the shift to Web publishing in the '90s and the new millennium.

Whatever the root causes, George-Palilonis says it is having a tangible net effect on the way media companies produce their content, which in turn is breeding a generation of media consumers who are more apt to "scan" content than read it.

She says this doesn't necessarily mean the demise of text-based storytelling, but she thinks it will lead to greater blends of text and multimedia which may reduce the reliance on the printed word.

One example, she says, is "charticles," a new abbreviated form of storytelling popularized by big consumer magazines like *Real Simple* that replace long, copy-intensive stories with charts, tables and pictures that may be worth a thousand or so words of written content.

"If you look at *Real Simple*, you've got a whole magazine produced via alternative story forms. There are no long stories in *Real Simple* magazine. That's the whole point."

Joe Mandese is Editor of MediaPost.

Leading National Advertisers Report:
Spending Up 3.1% to $105 Billion

Traditional Media Pinched as Largest Marketers Extend Reach Via Internet, Promotions

By [Bradley Johnson](#)

Published: June 25, 2007

CHICAGO (AdAge.com) -- The top 100 U.S. advertisers last year increased ad spending by a modest 3.1% to a record $104.8 billion. But most of that growth came from "unmeasured" disciplines. In a troubling sign for traditional media, the marketing leaders increased measured media spending by just 0.6%, the smallest gain since the 2001 recession.

The 100 Leading National Advertiser Profiles contain the details of lead marketing personnel, brands, agencies, agency contacts as well as advertising spending by media and brand, sales, earnings and more for the country's 100 largest advertisers.

Download:
[2007 100 Leading National Advertisers Report](#), http://adage.com/images/random/lna2007.pdf
[Tables from the 52nd Leading National Advertisers Report](#),
http://adage.com/datacenter/article?article_id=118652

Media measured by ad-tracking services -- such as TV, print and some forms of internet advertising -- accounted for 58.2% of these top marketers' U.S. ad spending, down from 59.6% in 2005, according to Advertising Age's 52nd annual 100 Leading National Advertisers report. The rest of the spending came from unmeasured disciplines, primarily marketing services such as direct marketing, sales promotion and digital communications (including unmeasured forms of internet media such as paid search).

Case in point
Exhibit A: Procter & Gamble Co., the No. 1 advertiser. Ad Age estimates that P&G's unmeasured U.S. spending last year rose 15% vs. a 3.9% increase in measured media. The package-goods giant's shift toward unmeasured disciplines continues. The marketer's first-quarter measured spending fell 8.6%, according to TNS Media Intelligence.

P&G Chairman-CEO A.G. Lafley Jr. last month told analysts: "If you step back and look at our [marketing] mix across most of the major brands, it's clearly shifting, and it's shifting from measured media to in-store, to the internet and to trial activity [i.e., product sampling]." Mr. Lafley said P&G will put a big emphasis on such "nonmeasured media" in the fiscal year beginning July 1.

The shift from measured media mirrors what's happening in the agency business. Since 2005, U.S. marketing-communications agencies have generated more revenue from marketing services than from traditional advertising and media, according to Ad Age's DataCenter. Omnicom Group, the world's largest marketing organization, generated 57% of its revenue last quarter from marketing services.

Majority boost spending
Sixty-nine of the 100 marketers disclosed worldwide ad spending in their annual reports. They define "advertising" differently -- some include only media spending, while others factor in promotion -- but the figures provide a useful indicator of global spending trends. Among these companies, stated worldwide ad spending last year increased 3.5%, and revenue increased 7.3%.

As for U.S. advertising, 69 of the 100 LNA companies increased combined measured/unmeasured U.S. ad spending last year; 75 of the 100 increased measured media spending.

On Ad Age's list, the biggest cut in U.S. spending came at General Motors Corp., down a whopping $814 million or 19.8%. GM reduced spending for each of its brands, but its big spending cut reflected a pullback in corporate advertising.

GM's ad cuts moved the automaker down a notch to third place in the LNA ranking. AT&T grabbed the No. 2 slot as its estimated spending jumped 26% to about $3.3 billion. The company spent heavily to rebrand SBC as AT&T.

P&G tops list
The top advertiser is no surprise: Procter & Gamble, whose estimated spending last year rose 6.8% to $4.9 billion. P&G has been No. 1 or No. 2 for 50 of the 52 years that Ad Age has ranked Leading National Advertisers. P&G, following its 2005 Gillette acquisition, now appears to have a lock on No. 1; its '06 estimated spending was 46% higher than that of No. 2 AT&T.

The nation's top 100 advertisers last year accounted for 41% of U.S. measured spending. Their share varies by medium: The companies accounted for 67% of network TV advertising but only 34% of measured internet advertising.

The marketing leaders drive some ad categories. Measured spending in the biggest ad category, automotive, fell 5.7% or $1.2 billion, reflecting a pullback in Detroit. Telecom, the No. 3 category, rose 9.6% or $959 million. Last year's three most-advertised brands were all telecoms: AT&T/Cingular, Verizon and Sprint.

This year will be tougher. In the first quarter, six of the top 10 U.S. advertisers cut spending, according to TNS. This month, TNS cut its full-year U.S. ad growth forecast from 2.6% to 1.7%, the worst since 2001. That's bad news for traditional media. But there should be more opportunities for disciplines unmeasured by ad trackers. Just ask P&G.

Traditional Media in the Digital Age

Data about news habits and advertiser spending lead to a reassessment of media's prospects and possibilities.

By Douglas Ahlers and
John Hessen

A Harvard graduate student recently went to a job interview at The New York Times and was asked why she would want to pursue a career in an industry that probably would not survive the decade. The message she walked away with was clear: The Internet is killing the print newspaper.

As the Internet has developed into a ubiquitous source of news and information, many observers and industry professionals have openly questioned the long-term viability of printed newspapers or network television news programs. Such fears are supported by statistics like a staggering 1.9 percent drop in newspaper circulation in the six months ending March 30, 2005 and a decline in total circulation of more than 15 percent since 1984. Television network evening news viewership has fallen 37.8 percent during this same period. The audience for local TV evening news has also slipped from 76 percent in 1993 to 59 percent today.

With dismal numbers like these, it is not a surprise that a February 2005 story appearing on the front page of The Washington Post's Sunday business section concluded, "The venerable newspaper is in trouble," and The Wilson Quarterly recently dedicated an issue to "The Collapse of Big Media." But to paraphrase Mark Twain, reports of their death have been greatly exaggerated.

Unconventional Wisdom

In an extensive analysis of the impact online media is having on its traditional print and television counterparts, we found little evidence to support the claims that the latter are facing annihilation. In fact, there is a great deal of information suggesting that most news consumers prefer to use new media as a complement to print and television rather than as a substitute. This is good news for well established media brands that can leverage their visibility to expand both audience and revenues online. When we went on to examine the degree to which not just consumers but advertisers have substituted new media for traditional news outlets, the results again suggest an encouraging economic outlook for print and television news.

The idea that the rise of the Internet spells the end of print and TV news stems from the popular sense of the Internet as a disruptive rather than a sustaining technology. As described by Clayton Christensen of the Harvard Business School, sustaining technologies are those that change an industry through incremental improvements, while disruptive technology creates a new playing field, knocking down traditional barriers to entry and transforming an industry or market completely. The Internet certainly has the appearance and characteristics of a disruptive technology, but its impact on the news industry has been far less profound than anticipated.

Traditional media's high overhead costs have always been outweighed by high profit margins. But with the U.S. Department of Commerce estimating, for example, that 30 to 40 percent of newspaper production costs go to printing and delivery, there are clearly powerful economic advantages favoring online media where these costs are near zero. Thus we'd expect to see online media, with its decisive cost advantages in du-

plication and distribution, gain market dominance at the expense of print and television. In theory, these cost differences between the traditional news media and the online media should be passed on to the consumer, causing news consumers to substitute the lower cost online media for traditional media. News producers, in turn, should seek out lower-cost means of duplication and delivery, pushing consumers to the online distribution channel much the way banks encourage customers to use ATM's. But the reality is that these competitive advantages are simply not as great as they appear, and they have not led to the predicted wholesale substitution of online media for offline alternatives. What follows are some reasons—economic and psychological—that help to explain why:

- The cost of news to consumers is typically heavily subsidized (an average of 85 percent in the case of newspapers) or completely subsidized (as in the case of television) by advertisers. So despite the economic advantages inherent to online media, there is little pass-through benefit to the consumer from these cost savings and therefore little financial motive for consumers to actually substitute one form of media for another.

- There is strong evidence that news consumption habits are hard to break absent a major price benefit of switching. The major decline in newspaper readership is actually due to a generational gap rather than to a switch in behavior from established newspaper readers. It is attributable to the fact that young adults, ages 18-35, are not adopting the newspaper readership habit in the first place. In 1972, 42 percent of people under 30 read a newspaper daily, but now, only 23 percent of adults under 30 read a newspaper yesterday. This is in contrast with the older age cohorts where 52 percent of people aged 50-64 and 60 percent of people who are 65 or older read a newspaper yesterday.

This news-consumer generation gap exists online as well. Survey data show that only an average of 5 percent of adults over the age of 45 use the Internet as a source for national news, whereas 22 percent of adults 18-24 and 14 percent of adults 25-34 use the Internet to get news. This data show that few existing newspaper readers are switching outright to online media, but the younger age group is gravitating to using online and offline news media in roughly equal proportions

> As the use of multiple media channels has become the dominant strategy for news consumers, credibility and public profile, established via the offline media, can provide tremendous leverage for an online presence. And a strong online audience can translate into better sales at the newsstand as brand preferences are carried offline.

as they become news consumers (23 percent reading papers and 22 percent going online for news). This gives us reason to believe that the vast majority of newspaper readers will not change their news consumption habits in the near future. But it also raises long-term concerns (15-25 years out), when the younger age cohorts begin to replace today's older newspaper reading generations. This same trend holds true for TV network news for which the median viewer age is 60, with only 18 percent of adults under 30 watching.

Another factor in understanding the psychology of news consumers is the widespread perception that online and offline media are largely complementary rather than competitive. While industry-sponsored research tends to view the audience as monolithic consumers of one media at the expense of others, the reality of the dynamic "multichannel" media user is very much the norm.

A study by Frank Magid Associates for the Online Publishers Association found that 51 percent of users of online news Web sites identified themselves as

multichannel users who actively seek out news through a variety of media, for instance using the Internet to find more information about a story first seen on network news. For such individuals, the broad spectrum of online and offline media is used as a kind of information buffet from which they sample according to appetite and interest. Among those who are younger and those with more online experience can be found a large and growing number of "multitasking" users, comfortable consuming news from several media sources simultaneously.

The Magid study also found strong evidence of overlap between users of online and offline news sources, with 70 percent seeing the two as complementary and only nine percent suggesting that online and offline media were in direct competition. Among users of online news sites, 64 percent reported that they also use the corresponding offline media property (i.e., NYTimes.com and The New York Times) either frequently or occasionally.

Conclusions can be drawn from this that in a rich world of media choices, the majority of Americans choose "all of the above." This suggests that brand identity and reputation could play a decisive role in shaping consumer choices. As the use of multiple media channels has become the dominant strategy for news consumers, credibility and public profile, established via the offline media, can provide tremendous leverage for an online presence. And a strong online audience can translate into better sales at the newsstand as brand preferences are carried offline.

The Internet's Impact

So how big of an impact is the Internet having on the traditional news media? The Magid study showed that only 29 percent of news Web site visitors were "online-only" news consumers. This translates to only 12.2 percent of the adult U.S. population. Another 21.5 percent of this group are multichannel news media users, as described above,

so this leaves two-thirds of the population as offline-only news consumers or as "dabblers," who are people who go online for news very infrequently in response to high profile events.

From this data we can see that roughly 12.2 percent of the U.S. population substitutes the online news media for offline news. For another 21.5 percent, the online news media acts as a complement rather than as a substitute. And 66.3 percent of Americans have shown no change in their news consumption habits. A 12.2 percent shift is significant, but it scarcely represents a disruptive migration to online media.

But what about the future? Does this shift represent the entire impact or is it just the beginning of a mass migration? Long-term trends can be inferred by looking at the media mix of experienced Internet users. Those with six or more years online report spending three hours per week reading print newspapers, which is 14.3 percent less time than new Internet users and 25 percent less than nonusers. The experienced users spend an average of 45 minutes per week reading news online. Notable in these numbers is that even for long-term Internet users, there is only a fractional reduction in newspaper readership.

The resounding implication is that generational news-consumption patterns are of far greater significance to the well-being of the industry than competition from the Internet.

To properly assess the future of the news media, it is necessary to acknowledge that the news business serves two interrelated markets—consumers and advertisers. Though declining circulation and ratings figures tell us that print and television have undoubtedly lost a share of their audience, they've not experienced a corresponding drop in advertising revenues. Despite increasing fragmentation of the market, advertisers have not found any suitable substitute for the exposure generated by traditional media.

Tracking Advertising Dollars

Between 1998 and 2004, news media advertising revenues have increased by

a total of 15 percent despite a major advertising recession in 2001-2002. In the case of newspapers, ad revenues have grown at an inflation-adjusted 6.24 percent during the past two years and will return to prerecessionary levels by the end of this year. Analysts have projected continuing growth for newspapers at a compound annual rate of 5.3 percent through 2008.

Network TV morning news shows were scarcely affected by the recession, with revenues growing at an annualized rate of 10.6 percent since 2001. Local news broadcasts accounted for 46 percent of station revenues in 2004, up from 39 percent in 1999. And ad revenue for the cable-TV news channels grew 39.4 percent from 2000 to 2004 despite the advertising recession. This leaves only the evening network news broadcasts having yet to return to pre-recession revenues, but even they have rebounded substantially.

While virtually all segments of the offline media were hit with recessionary declines in revenues in 2001-2002, the online advertising market also saw a similar drop at this time (26 percent decline between 2000 and 2002). This suggests that the decline in traditional news media ad revenues during this period (10 percent) was due to a pullback in total advertiser spending rather than a shift to advertising online. As advertisers returned to the market in 2003-2004, offline news media has seen overall ad revenues increase by 7.15 percent annually. Advertisers are showing no real signs of abandoning newspapers or TV news in favor of the online media.

Just as online news media have siphoned away a small but not catastrophic share of the offline audience, so too have some ad dollars migrated online. But again the percentages are not the stuff of doomsday predictions. In 2004, all online advertising accounted for 3.61 percent of total U.S. advertising spending versus 17.5 percent for newspapers and 25.4 percent for television.

Findings by the Interactive Advertising Bureau and Pricewaterhouse-Coopers show that online advertising continues to be the fastest growing sector of the advertising market. In 2005, online advertising is expected to grow

1992
U.S. & Canada
NAA reports 11 newspapers have an online presence in the United States and Canada and more than 250 offer voice information services.

1992
United States
February: Gannett's Florida Today launches on CompuServe. Content focuses on U.S. space program.

1992
United States
June 9: Congress removes restrictions prohibiting commercial use of the Internet.

1992
United States
November: Delphi becomes the first consumer online service to offer access to Internet mail, ftp, newsgroups, telnet and gopher.

1993
Switzerland
February: First alpha version of Marc Andreessen's Mosaic browser for Windows is released by the NCSA at a conference at CERN in Geneva.

1993
United States
March 2: First known Internet e-mail message from a U.S. President is sent by Bill Clinton.

1993
Worldwide
Number of countries now reachable by e-mail: 117.

1993
Switzerland
April 30: CERN board declares that WWW technology will be freely usable by anyone.

at a rate of 22.4 percent while newspaper ad revenue growth is projected to be 5.13 percent. But behind these numbers is the simple fact that even at the slower growth rate, newspaper ad revenues will grow substantially more in actual dollars than online advertising. And even when we look forward, projections for 2008 show 94.3 percent of total advertising dollars still going to offline media; hardly the stuff that industry collapses are made of.

The one area that has seen direct online competition growing significantly is classified advertising, particularly for cars, real estate, and employment. With classified ads contributing 35.5 percent of total newspaper ad revenues, newspapers have been hardest hit as 9.1 percent of classified advertising has moved online ($1.73 billion in online classified advertising versus $17.3 billion in newspaper classified advertising). Jupiter Research projects that online classified advertising will more than double to $3.7 billion by 2009. This increase of two billion dollars in less than five years is a staggering compound annual growth rate (CAGR) of 16.4 percent. But it is still less than the $2.5 billion growth that the newspaper classified business will produce

at a puny 2.67 percent CAGR.

In numerous cases, publishers have responded by going online themselves to recapture lost revenues and leverage their ability to reach consumers both on and offline. From 2002-2004, Knight Ridder's online classified revenues doubled to $83.3 million, or 10.67 percent of their print classified revenues. Knight Ridder also owns Cars.com and in partnership with Gannett and Tribune Company owns CareerBuilder.com, an online employment service. Similarly, The Washington Post Company recently purchased Slate, and The New York Times Company acquired About.com.

Such ventures are among the ways for established media entities to leverage their brand and customer base online. Extending their brand presence online provides companies with the opportunity to capture new audience and new advertising markets. For example, Knight Ridder's 2004 results show that online earnings contributed just 3.78 percent of total revenue, but because of high online profit margins, these earnings contributed 5.7 percent to total operating income.

While initial reports of Mark Twain's death were greatly exaggerated, eventually they were proven to be merely

premature. The same prospect exists for the traditional media entities that fail to understand and explore the complementary nature of online and offline media and take steps to attract the next generation of news consumers. Doing so will allow them to capture an ever larger audience and increase ad revenues. If they fail to do so, early reports of their death might be issued with little exaggeration after all. ∎

Douglas Ahlers, who was a founder of Modem Media and a pioneer of online advertising and electronic commerce, was a spring 2005 fellow at the Shorenstein Center on the Press, Politics & Public Policy, where he examined the intersection of online and offline news media. He is now at Harvard's Belfer Center for Science and International Affairs. John Hessen is a communications consultant based in Silicon Valley. He specializes in the fields of media, technology and politics.

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The News Media's 30-Year Hibernation

Online newspapers 'are not creative. They are not interactive. They're too much like newspapers.'

By David Carlson

The problem with online newspapers is this: They are just like offline newspapers. That means they are not particularly interactive, they are barely customizable to individual preferences, they contain mostly outdated information, and they are hardly relevant to most readers' daily lives.

From the very conception of online services (1970 at the British Post Office Research Laboratory outside of London), the inventors envisioned

them to be more than just a new way of distributing the same old information. Led by Sam Fedida, the researchers came up with the idea that led to videotex, a graphical approach to the display of information online that can be said to be the forerunner of today's online services. The prototype, named Prestel, was first demonstrated in 1974. By later that year, these researchers had identified six classes of services that could be delivered via the new medium.

A bit more than 30-years later, online newspapers still struggle to deliver these services and, for the most part, haven't figured out how to deliver online news in new ways, either.

The great promise that online journalism brings is the potential to tell stories in ways they never have been told before. Using online technologies it is possible to capture the strengths of the existing news media, eliminate most of the weaknesses, and roll them

TV Week

News

February 19, 2008 7:32 AM

Online Video Is Creating Its Own Viewers, Not Stealing TV's

By Daisy Whitney

Online video consumption is not drawing eyeballs away from traditional television. Instead, it's emerging as "a medium unto itself," according to a new study from Leichtman Research Group.

The study found that only 9% of those who watch online video say they "strongly agree" that they now watch less TV as a result, while only 4% expressed strong interest in disconnecting their TV service to watch only online video.

"Online video is emerging as a medium unto itself—not necessarily a replication of, or an alternative to, traditional TV viewing," said Bruce Leichtman, president and principal analyst for Leichtman Research Group.

The study found that in homes with broadband service, 31% of adults online now view online video at least weekly, up from 25% a year ago. The younger demos are heavier users. Among individuals 18 to 34, 42% say they watch video online at least weekly, up from 28% last year, while only 15% of individuals 35 and up watch online video at least weekly.

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Tags: Bruce Leichtman, **online video**

Comments (1)

Jon: If that's true of mass media entertainment, then is it any less true of mass media advertising and marketing?

Methinks the reports of the death of mass media advertising and marketing by purveyors and prognosticators of "new media marketing" just may be, ever so slightly, premature.

If not just plain, flat out wrong.

Posted by Jon | February 19, 2008 11:11 PM

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Science News Online

The Wealth of Nations

A country's competitive edge can spread industry to industry, like a disease

Davide Castelvecchi

The economies of poor and developing countries often depend almost exclusively on a single product—perhaps timber or coffee—or on a handful of products at most. That's hardly a startling observation, but what's puzzled economists over the years is why it's been so difficult for these countries to start up new activities in the hope of spurring economic growth and lifting themselves out of poverty.

While there have been a few success stories, such efforts have often ended up consuming heaps of money to little lasting effect.

A team of economists and physicists is now proposing a new way to look at development. The researchers have shown that a country's competitive edge can spread from one kind of product to another along a well-defined network of links, much as disease epidemics tend to spread among people who are socially connected.

The newly charted map of products could help countries design good policies by indicating the most promising paths to creating new industries. The network's structure also presages the hurdles that many developing countries will face along that path.

Traditionally, economists have tried to link a country's commercial expansion to "factors of production," such as reliable transportation infrastructure or the availability of skilled and unskilled labor, explains Ricardo Hausmann, an economist at Harvard University. For example, says Hausmann's colleague and graduate student Bailey Klinger, conventional economic theory predicts that a country with the capacity for making computer chips should also be competitive in other industries that require skilled labor, such as vehicle manufacturing.

An entrepreneur traffics in empty oil drums in the Nigerian port of Warri. Mathematical analysis of the connections among industries explains some of the difficulties that face developing countries trying to expand and diversify their economies.
George Steinmetz/Corbis

But when the two economists looked at actual data, such correlations often failed to show up. Many countries that export computer chips don't export cars, and vice versa. Building and shipping cars requires very different skills and infrastructure than making computer chips does, the researchers point out.

Instead, the two found correlations that standard economic reasoning didn't predict. For example, fish exporters are often successful at exporting fresh produce as well. That's because both activities require similar infrastructures—good roads, ports with refrigerated storage facilities, and bureaucracies able to monitor food safety—Hausmann and Klinger suggest. A country that has developed the means to generate and export one product can easily branch into the other.

Path to success

To refine their perspective on economic linkages, Hausmann and Klinger developed a new notion of closeness between products. By analyzing global export data on numerous categories of goods, the two economists calculated, for each pair of categories, the probability that if a country is good at exporting one type of product, it will also be good at exporting the other. When that probability is high, those two products have a short "distance" between them. When the probability is low, the products are far apart.
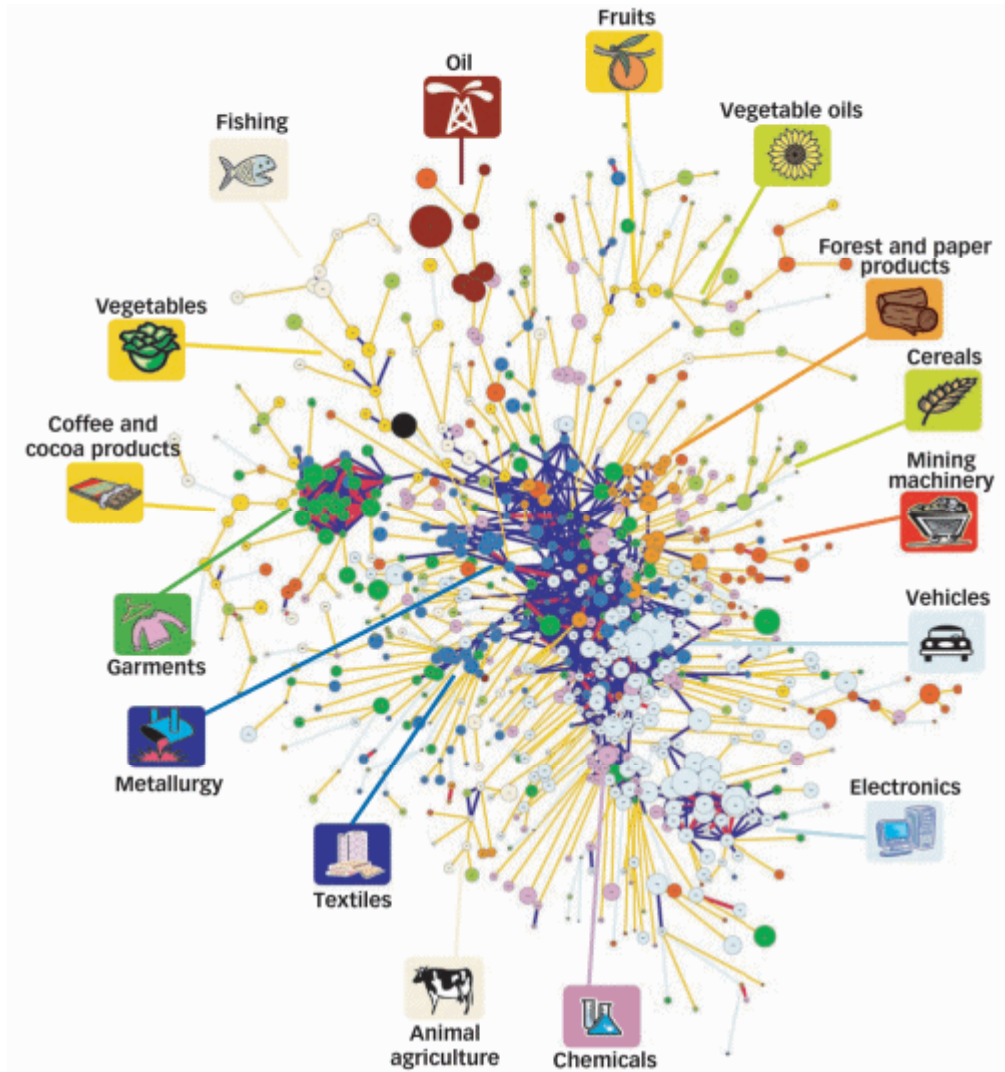
HIDDEN LINKS. In the product space network above, nodes represent products. The more closely products are linked, the more likely they are to be produced and exported by the same countries. Each node's size represents the total world trade in that product, and the nodes' colors follow an older classification of products.
Hidalgo/*Science*

The researchers focused on export data because they are good indicators of high-quality production, and because they are the best global data available. While many countries don't compile reliable data on domestic production and consumption, exports are carefully recorded worldwide.

Hausmann and Klinger created a table listing the distance between each pair among 775 types of goods. To make sense of this mountain of data, Hausmann sought the help of Albert-László Barabási, a physicist at the University of Notre Dame in Indiana. Barabási specializes in applying the abstract theory of networks to real-life situations, such as the structure of the Internet or the degrees of separation between people.

Cesar Hidalgo, a graduate student working with Barabási, translated the distance data into a network. He represented each category of goods as a node and drew links between nodes only when they were close according to Hausmann's metric. Nodes that were strongly connected to many other nodes formed clusters,

whereas those that had only a few connections straggled out toward the edge of the diagram. Hidalgo chose an arrangement of the nodes to spread out the network on a page as clearly as possible.

The resulting network, which the four researchers call the product space, maps out world exports. But it represents a kind of cartography that has nothing to do with the geography of the countries involved. Instead, the map shows how industries gather in clusters according to how likely it is that those industries thrive in the same countries. The team's findings appear in the July 27 *Science*.

In the middle of the product space lies a large "continent" of products tightly connected to each other. These include the vast majority of industrial products, from machinery and steel to chemicals. Garments, textiles, and electronics form their own, smaller, clusters.

Farther out, almost in isolation at the network's periphery, are products such as oil, minerals, cereals, and coffee.
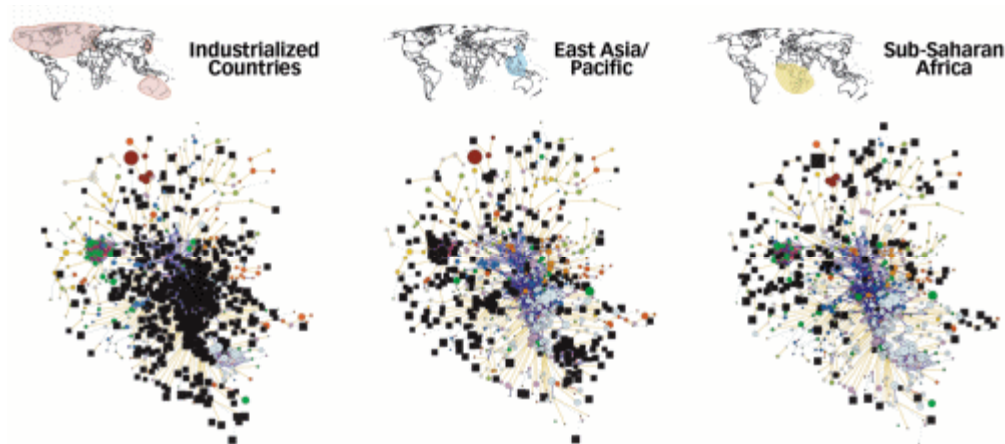
REGIONAL DIFFERENCES. In these illustrations, black squares mark products successfully exported. The industrialized countries' products (left) occupy the highly connected core of world trade. Goods from Southeast Asia and the Pacific region (center) cluster in the garment industry and in electronics, while sub-Saharan Africa's products (right) are mostly peripheral.
Hidalgo/*Science*

The rich countries of the industrialized world tend to have broad portfolios of industries, and accordingly occupy large areas of the product space, usually including much of the network's core. Fast-growing developing countries such as China, Thailand, and Hungary are strong in some of those central, well-connected regions. The poorest countries, especially those in sub-Saharan Africa, tend to specialize in a few of the peripheral products—such as oil for Nigeria and copper for Zambia.

The product space is a snapshot of the status quo in the global trade of goods. It represents empirical data, not an interpretation of the causes of the status quo or of its consequences. However, the researchers also argue that the network can help explain why some economies have grown, while others have not.

By crunching 2 decades' worth of data, the team showed that countries that have expanded into new industries have usually done so by stepping from one node to another one directly linked to it. The process is reminiscent of how information or diseases spread across a social network.

For example, the team looked at Malaysia's and Colombia's exports during the 1980s and 1990s. In those decades, both countries were successful at branching out into new industries close to those in which they were already competitive. Colombia widened its production of garments to include lingerie, while Malaysia expanded into cameras from other electronics products.

On the other hand, economic activities toward the periphery of the product space have fewer links. These tend to be industries, such as mining or the growing of certain crops, that require infrastructure or skills with few alternative uses. Historically, countries that rely on them have had a hard time branching out into new industries. The network's structure is a stark reminder of the difficulties that these countries face, and the four authors admit that it doesn't point to an easy solution. "Nevertheless," Barabási says, "it's important to understand what are the causes and the consequences of where these countries are."

Treasure hunting

Hausmann and his collaborators say that their new approach might help governments and aid organizations orient themselves when deciding how to invest money, though it won't point to specific policies. "It's kind of like having a map that allows countries to move around from product to product," Hausmann says. "But the map doesn't tell you where to go."

To emphasize the contrast between their model and standard economic theories, the researchers color coded the network's nodes using an existing classification that groups products according to the similarity of the factors of production they require. Nodes of the same color often ended up far apart, meaning that in practice, countries have rarely been able to move directly between them. "It's telling you that these factors of production are not [the factors] that matter" to predict how diversification can succeed, Hidalgo says.

"This is a highly original approach," says physicist Eugene Stanley of Boston University. "What makes it unique is that the network is not a network of countries, but of products."

"If you just had the data on a table, it would be impossible to see these patterns."
— LUIS AMARAL, NORTHWESTERN UNIVERSITY

"The analysis is pretty revealing," says Luis Amaral, a physicist at Northwestern University in Evanston, Ill. "If you just had the data on a table, it would be impossible to see these patterns at all." Amaral says that the team's methods might help economists understand the growth of companies as well as of countries.

Columbia University's Joseph Stiglitz, a recipient of the 2001 Nobel Prize in Economics, says that the team has come up with "a very interesting and appealing idea." He says that he emphasized the importance of product-specific skills over factors of production as early as 1969. That was before network theory and computers enabled economists to tackle extreme complexity.

"Will the world converge, or will it continue to be a world of poor and rich countries?"
— RICARDO HAUSMANN, HARVARD UNIVERSITY

For Hausmann, the ultimate question is, "Will the world converge, or will it continue to be a world of poor and rich countries?" In the past few months, he has been traveling around the world, invited by officials of developing countries and international organizations to brief them on his team's approach. At least two countries—South Africa and Colombia—have begun reviewing possible policy changes based on the new ideas. His team's research has highlighted how countries' potentials differ. Perhaps it will someday help countries figure out how best to exploit their potentials.

Letters:

This article describes the difficulty of moving from exporting one product to exporting another in terms of a "distance" between various products. I would imagine, however, that a nation that already manufactures computers, for example, could easily move into calculators, but that the reverse might not be true. Did the researchers consider the directionality of their links?

Jesse Ziser
Austin, Texas

Cesar Hidalgo of the University of Notre Dame in Indiana says that although the model described in the story didn't have directional links, he and his colleagues are working on a version that would include this

possibility.—D. Castelvecchi

If you have a comment on this article that you would like considered for publication in *Science News*, send it to editors@sciencenews.org. Please include your name and location.
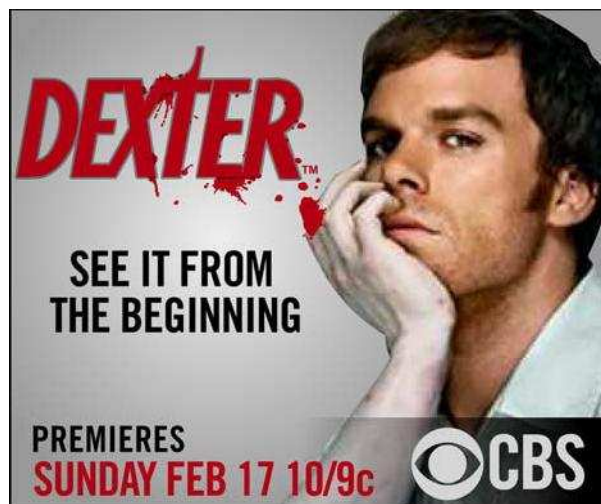
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Further Readings:

Supplemental information about the Product Space and the Wealth of Nations is available online at: http://www.nd.edu/~networks/productspace/index.htm.

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From *Science News*, Vol. 172, No. 9, Sept. 1, 2007, p. 138.

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Some of the largest consumers of advanced networking on campuses are not in the physics, engineering or computer science departments. Using high-capacity infrastructure to create global stages, enable remote instruction, allow participatory discovery, and open access to rich collections of media–Internet2's Arts & Humanities communities are redefining how they create, teach, perform, and collaborate.

PERFORMANCE

Photo courtesy of the University of Texas at Austin

The Miró Quartet: Live & Virtual

http://arts.internet2.edu/fall2004-perfevent.html

During the Fall 2004 Internet2 Member Meeting, an evening performance event, *The Miró Quartet: Live &Virtual,* showcased the use of cutting-edge networking and streaming technologies, and featured the world-renowned Miró Quartet, a group comprised of University of Texas at Austin faculty. The event took place in two auditoriums with the audience switching venues during intermission. In the first auditorium, the audience saw and heard the string quartet in person. In the second, the audience saw the performance via real-time streaming High Definition Television (HDTV) and 10.2 channel immersive sound technology, developed by the Integrated Media Systems Center at the University of Southern California (USC). The 10.2-channel audio, projected over 26 speakers, allowed engineers to simulate how sound from an in-person performance reflects off acoustic surfaces in three dimensions. The HD stream featured four parallel channels, which captured each of the performers on stage individually. The performance served as a prototype for performing for an audience in two smaller auditoriums.

Telematic Choreography

*http://dance.fsu.edu/telematics/events/
wsu3304.html*

Photo courtesy of Maggie Allesee
Department of Dance, WSU

The Florida State University (FSU) Department of Dance used Internet2's Abilene Network to provide long-distance coaching for dance students at the Wayne State University (WSU) Maggie Allesee Department of Dance. This interactive rehearsal session enabled internationally renowned choreographer and FSU Professor Jawole Zollar to observe and coach WSU dancers using interactive video and audio as they rehearsed excerpts from her work *Hair-Stories*. This telematic dance coaching session was the inaugural event of the Black Box Studio, a technology-enhanced FSU facility for video documentation, telematic research, and multimedia theater design. "Telematics"—a term created to describe the blending of computers and telecommunications technologies—provides a set of applications often used in the delivery of distance education. According to FSU Assistant Professor Tim Glenn, faculty researcher in dance telematics, "Advanced network technology opens the door to a whole new approach for how we create, teach, and perform dance works. As a result, the art of dance is redefined by incorporating the tools of new technologies into the dancers' experience. "

Art on the Grid

http://www.uaf.edu/news/featured/05/artgrid/

Instead of a physical location that is "somewhere," the Access Grid provides a virtual location that is "everywhere." Using the Access Grid, an ensemble of multimedia large-format displays and interactive visualization environment, the University of Alaska Fairbanks presented musical artist Valerie Naranjo to 26 locations around the world. Valerie is the percussionist for the Saturday Night Live Band and Drum Principal and Arranger for the Broadway production of *The Lion King*. During her session, she performed on the gyil (pronounced "Jee-lee", an African xylophone), the marimba, sang Native American songs and lectured about her music. She also directed remote participants in call and response singing, and ended the clinic with a Q&A session. Students and faculty from five university percussion programs participated: University of Alaska Fairbanks, University of New Mexico, University of South Dakota, University of Maine, and Jackson State University. Other participants included public school students, teachers, and music enthusiasts in the Access Grid community. This project was coordinated through "Art on the Grid", a collective of visual, media, and musical artists/educators who are developing productions on the Access Grid in order to explore its strengths, weaknesses and inherent potential. For more information about Art on the Grid, visit http://arts.internet2.edu/files/Percussion-and-Internet.pdf

Photo courtesy of Arctic Region
Supercomputing Center

Return to the Titanic

http://www.clevelandart.org/educef/titanic/html/

The Cleveland Museum of Art provided a live portal to a unique interdisciplinary experience, *Return to The Titanic*. A series of satellite broadcasts featured live video from the depths of the Atlantic Ocean chronicling Dr. Robert Ballard's return expedition to the Titanic. Serving as the Ohio location, the Cleveland Museum of Art created a bridge for its community to the historical, archaeological, and scientific significance of the Titanic site.

A satellite system on the expedition's research vessel sent a real-time stream to VBrick Systems networked video appliances, located at Mystic Aquarium and Institute for Exploration in Connecticut, and then streamed live in MPEG-2 and MPEG-4 video formats over the Abilene Network to the Cleveland Museum of Art where the program was supplemented by an special overview of works of art reminiscent of the period.

Photo courtesy of NOAA

Transatlantic Master Class

http://www.nws.edu

The 2005 GARR conference in Pisa, Italy—hosted by GARR, the Italian Academic and Research Network—invited members of the Internet2 Arts and Humanities community to help stretch the boundaries of technology-enabled, simultaneous, remote learning and teaching. Technical teams from GARR and the New World Symphony created virtual studio space for viola maestro, Hillary Herndon, at the New World Symphony, and viola student, Anna Simeone, from the Conservatory of Music in Pisa. Bridging languages through translators and distance through technolgy, student and teacher interacted during this live musical exchange. The broadcast, the first of its kind between Europe and the US, used two laptop computers: one receiving the 30 Mbps NTSC signal from Miami and converting it to PAL, the other sending the outgoing PAL signal to Miami at 30 Mbps where it was decoded using DVTS software, resulting in an aggregate bandwidth of 60 Mbps. In addition to the conference attendees on site, 170 viewers attended by netcast.

Photos by Fabio Bisi

The EVIA Digital Archive

http://www.indiana.edu/~eviada/

Photo courtesy of R. Thomas Bray, Digital Media Commons, University of Michigan

While most research happens in libraries and archives, ethnomusicologists depend on the products of "fieldwork" for their study. World music events rarely involve only the sound of music, but many additional facets of creative communication. Video recordings, because of their ability to capture not only sound but the multiple facets of creative communication that surround it, are regarded as the recording tool of choice.

Preserving these video recordings and making them easily accessible for teaching and research is the aim of the Ethnomusicological Video for Instruction and Analysis (EVIA) Project. A joint effort of Indiana University and the University of Michigan, and supported in its initial phase by the Andrew T. Mellon Foundation, the EVIA project is coordinated by a team of experts in ethnomusicology, archiving, video, intellectual property, and digital technology. Ultimately, project plans include providing guidelines for future archives and establishing a functioning digital repository and delivery system for the current collection, which contains approximately 150 hours of digital video. Using the advanced network capabilities of Internet2, EVIA will provide high quality video streams to scholars for new research endeavors and to teachers for creating rich learning experiences.
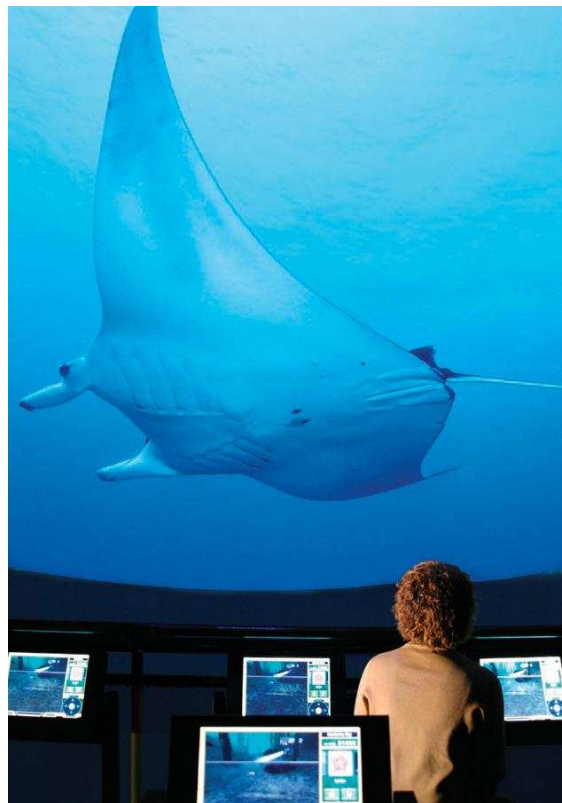
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INTERNET2®

Streaming high-quality digital video over advanced networks is essential to nearly all Internet2 applications, whether in the arts, sciences, or healthcare. Many initiatives in our member community are producing a new generation of digital video applications, advancing worldwide research and education.

Streaming Video

Streaming Video

Interactive Video

High Definition Video Array
ResearchChannel Consortium

http://researchchannel.org/inside/i2wg/projects.asp

ResearchChannel pushes the boundaries of High-Definition (HD) video over advanced networks with a variety of projects ranging from uncompressed, extreme-quality HD at 1.5 Gbps; to editable, studio-quality HD at 270 Mbps; to production-house-quality HD at 45 Mbps; to viewer-quality HD-to-the-desktop at 19.2 Mbps. Having successfully tested these prototypes, ResearchChannel will continue to develop projects involving networking configuration and hardware and software development. Areas of further work include uncompressed HD for interactive videoconferencing, decreasing the latency of 270 Mbps HD, and improving the desktop HD client.

Live Coast-to-Coast Undersea Video
University of California, Santa Cruz
University of Connecticut
VBrick Systems

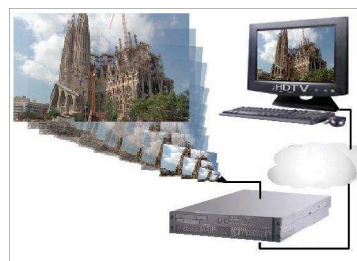*http://mysticaquarium.org/newthings/articles/immersion.asp*

Visitors at Connecticut's Mystic Aquarium immerse themselves in an underwater world 3,000 miles away by remotely controlling underwater cameras in California. Using interactive consoles at the Mystic Aquarium's Immersion Institute, visitors control three video cameras on an underwater submersible in Monterey Bay, the largest U.S. marine sanctuary. The live video is encoded into DVD-quality MPEG-2 and sent at an average rate of 6 Megabits per second (Mbps) to the University of California, Santa Cruz, where it travels across Internet2 high-performance networks to the University of Connecticut and on to the Mystic Aquarium.

Super High Definition Video
Nippon Telegraph and Telephone Corporation
University of Illinois at Chicago
University of Southern California

*http://www.onlab.ntt.co.jp/en/mn/*

The successful transport of a Super High Definition (SHD) stream over advanced networks occurred at the Fall 2003 Internet2 Member Meeting, where an NTT system at the UIC Electronic Visualization Laboratory sent SHD to the Robert Zemeckis Center for Digital Arts at the USC School of Cinema-Television. SHD scientific visualizations and student films—four times the resolution of HDTV—were compressed to 200-400 Mbps streams using an experimental JPEG codec, stored, and sent to an NTT real-time decoder. NTT's prototype SHD frame buffer then fed an eight-megapixel projector for display.

Interactive Video

Digital Video Transport System
WIDE Project Japan

http://www.dvts.jp/en/
http://www.sfc.wide.ad.jp/DVTS/software/
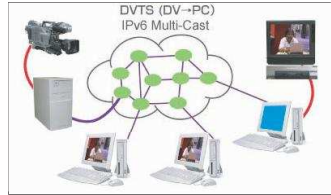
Digital Video Transport System (DVTS) enables high-quality, real-time communication using free, downloadable software and off-the-shelf video and audio equipment. DVTS streams DV across advanced networks at 30 Mbps using Internet Protocol version 4 (IPv4) or 6 (IPv6). The DVTS client for Windows XP supports IPv6 unicast and multicast. PAL support has been included in the Mac OS X and Linux clients, and redundant audio transport capabilities have been added to improve audio performance in low packet-loss conditions. DVTS has been used to link instructors with students, and researchers with research laboratories around the globe.

The Access Grid 2.0
Argonne National Laboratory

http://www.accessgrid.org/

The Access Grid is a set of resources for multi-site, group-to-group collaborations over advanced networks, consisting of large-format video displays of participants, presentation sharing, and multimedia streaming. Access Grid version 2.0, released in May 2003, has been completely rebuilt using the Globus Toolkit for security and access to the Grid infrastructure. This allows developers to create advanced collaborative applications using the Access Grid Toolkit. The new Access Grid is capable of supporting a wider range of client platforms, including desktop computers, laptops, and traditional room-based nodes. The Access Grid project at Argonne National Laboratory is supported by the National Science Foundation, the U.S. Department of Energy, and Microsoft Research.

Virtual Rooms Videoconferencing System 3.0
California Institute of Technology

http://vrvs.org/

Virtual Rooms Videoconferencing System (VRVS) is a web-based system for interoperable videoconferencing and collaborating. VRVS supports multiple platforms—Windows, Mac, Linux, Unix—and diverse collaborative applications—Access Grid, H.323 videoconferencing, QuickTime, chat, desktop sharing, and, soon, Microsoft Messenger. Ninety-five percent of the code was re-written for the spring 2003 release of VRVS 3.0, which includes an advanced booking system, new virtual rooms for meeting spaces, a streamlined web-based user interface, firewall and NAT solutions, Access Grid tunneling, self-selection of video streams, user authentication, and synchronized time zones. No port reservations are required in order to initiate a videoconference—simply book a room in advance for any number of participants to join. Funding provided by the National Science Foundation and the U.S. Department of Energy.

www.internet2.edu

Internet2 advanced applications are helping instructors develop new teaching techniques, enhancing the learning experience for students, and extending universities beyond their geographical boundaries. By bringing together learning communities and removing barriers to information retrieval and learning resources—Internet2 applications are changing the way we learn and teach.

Undergraduate Education

Distance Learning

Collaboration Tools

Remote Instrumentation

Undergraduate Education

Screenwriting Course
Bradley University

http://gcc.bradley.edu/slane/

In order to be competitive in the entertainment industry job market, university graduates need to know how the industry works from top to bottom. But, how do you expose students to agents, writers, directors, and producers? And, how do you do it from Peoria, Illinois? Jeffrey Huberman, Dean of the Slane College of Communications and Fine Arts at Bradley University, explains, "We provide students with an excellent education in many aspects of the entertainment industry, but we didn't offer a course in screenwriting. We thought Internet2 advanced network technology could provide a solution." Huberman collaborated with California State University, Los Angeles (CSLA) to create a screenwriting course, which enrolled students at both Bradley and CSLA. The course included guest lectures by agents, screenwriters, and production executives—brought live to the classroom via interactive videoconferencing. Through the use of advanced networking technology, students learned all the steps involved in bringing a project to production from professionals who are successfully managing careers in Hollywood.

Distance Learning

Singapore–MIT Alliance
Massachusetts Institute of Technology
National University of Singapore
Nanyang Technological University

http://web.mit.edu/sma/

The Singapore–MIT Alliance (SMA) is an advanced engineering degree program that combines an innovative distance-learning component with traditional on-campus learning. SMA is a highly-collaborative effort that provides thousands of students with courses using the most technologically-advanced distance learning facilities available. SMA course offerings use a live lecture format delivered via videoconferencing with supplemental data content provided over an application sharing link. Vijay Kumar, Assistant Provost & Director of Academic Computing at MIT, comments, "Our goal is to improve the educational experience and meet the lifelong learning needs of our students while simultaneously expanding MIT's reach and influence by providing educational offerings to a global audience."

Integrated Seminar in Nursing Informatics
Committee on Institutional Cooperation

http://www.cic.uiuc.edu/programs/CICCourseShare/

The Committee on Institutional Cooperation (CIC), a consortium of 12 research universities, piloted a course in nursing informatics for four participating institutions: University of Iowa, University of Wisconsin-Madison, Indiana University, and University of Michigan. This innovative course used the Internet2 Commons H.323 Videoconferencing Service to deliver live, interactive lectures to students. The course was supplemented by an on-demand video archive and web-based conferencing and course management. The four participating universities used CIC's CourseShare administrative system, which allows students to register and pay tuition, receive grades and credit for specialized inter-institutional courses all at their home campuses. Connie Delaney, professor at the College of Nursing at the University of Iowa, stresses, "This collaboration provides creative strategies that leverage the scarcity of nursing informatics faculty and at the same time offers students participation in a wealth of research projects and innovations across multiple institutions."
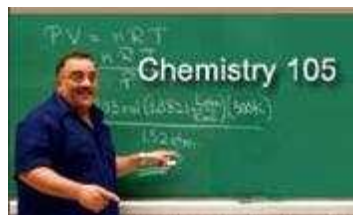
Collaboration Tools

MediaVision and Chemistry 105
Case Western Reserve University

http://www.cwru.edu/its/itac/mediavision/

MediaVision Courseware is an advanced instructional technology project that enhances existing teaching methods with new multimedia learning content. For Chemistry 105—a large, lecture-style undergrad chemistry course—MediaVision provides students with video recordings of lectures, review sessions, and homework assistance; MP3 audio recordings; and an on-line textbook. Lectures and review sessions are recorded; encoded for network distribution; indexed and "published" to the web where they can be keyword searched by students. Network-based delivery extends access to the multimedia materials both on and off campus, which is especially critical to commuting students. MediaVision Courseware illustrates how technology can improve the educational outcome as well. During the first semester of Chemistry 105 using the MediaVision Courseware, scores for the first two tests rose to an 81 average, from a previous average of 72.

Digital Anatomy
Stanford University
University of Wisconsin — La Crosse

http://havnet.stanford.edu/

When Stanford University medical students "dissect" an anatomical specimen, they zoom in, rotate it, dissect it, and even put it back together again. Remote Stereo Viewer (RSV) is an educational tool that allows medical educators and students to view 3D stereo anatomical interactive photographs on a workstation. Since an anatomical specimen can be viewed in various stages of dissection, the student can go back and forth between layers to better understand the complexity of the structure. The high-resolution 3D stereo images are stored on a server and then individually downloaded to a workstation on demand, requiring high-bandwidth transport at a minimum of 35 Mbps. RSV is used in a "virtual classroom" style setting that allows multiple, remote users to access digital anatomy datasets and collaboratively view and discuss a virtual dissection in real-time. Dr. Sakti Srivastava has been using this tool for over three years in the gross anatomy class at Stanford and comments, "When we conducted field trials to evaluate the usability and learning efficacy of the applications, we discovered that its simple, user-friendly interface and high quality images made it an attractive option for students. When RSV was used both as an introduction to a real dissection and as a refresher after the dissection had been completed, students self-rated themselves as having better learnt the concepts and details."

Remote Instrumentation

Remote Microscopy Course
University of Michigan
Lehigh University

http://emalwww.engin.umich.edu/

A Scanning Electron Microscope (SEM) at the University of Michigan (UM) plays a key role in courses taught at Lehigh University. Each year, the Lehigh Microscopy School attracts over 100 engineers and scientists who receive instruction in a wide variety of microscope techniques using SEMs and other state-of-the-art instruments. One of these instruments is the Philips XL30FEG SEM located in the Electron Microbeam Analysis Laboratory (EMAL) at UM. The Philips line of SEMs was one of the first to be completely computer-controlled, as opposed to the knob and switch "interfaces" on older instruments. Extending its usability via remote-control to an Internet-wide audience resulted from the work of Dr. John Mansfield and collaborators. Mansfield, Manager of EMAL, explains, "Advanced networks provide the bandwidth and performance required to control the SEM in real-time from anywhere in the world. Remote access extends the use of this extremely costly resource for instructional and collaborative research purposes."