

# Imagining the Internet

Elon University/Pew Internet Project

A HISTORY AND FORECAST

SHARE YOUR PREDICTION

About the Site

Predictions Surveys

The 2004 Survey  
The 2006 Survey  
The 2008 Survey

Forward 150/Back 150

KidZone/Teachers

Visionaries Multimedia

Voices of the People

Early '90s Predictions

Elon/Pew Publications

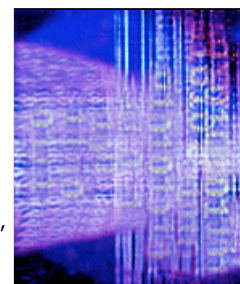
Home

Responses to this 2020 scenario were assembled from Internet stakeholders in the 2008 Pew Internet & American Life/Elon University Predictions Survey. Some respondents chose to identify themselves. We share some—not all—of the responses here. Workplaces of respondents who shared their identity are attributed only for the purpose of indicating a level of expertise; statements reflect personal views. If you would like to participate in the next survey, mail andersj [at] elon dotedu; include information on your expertise.

## The 2008 Survey

### Scenario Five: The Evolution of Augmented Reality and Virtual Reality

**Prediction:** Many lives are touched by the use of augmented reality or spent interacting in artificial spaces. In 2020, virtual worlds, mirror worlds, and augmented reality are popular network formats, thanks to the rapid evolution of natural, intuitive technology interfaces and personalized information overlays. To be fully connected, advanced organizations and individuals must have a presence in the "metaverse" and/or the "geoWeb." Most well-equipped Internet users will spend some part of their waking hours—at work and at play—at least partially linked to augmentations of the real world or alternate worlds. This lifestyle involves seamless transitions between artificial reality, virtual reality, and the status formerly known as "real life."



**Compiled reactions from the 1,196 respondents:**  
**56% Mostly agreed**  
**31% Mostly disagreed**  
**13% Did not respond**

**Expert respondents' reactions (N=578):**  
**55% Mostly agreed**  
**30% Mostly disagreed**  
**15% Did not respond**

*Respondents were presented with a brief set of information outlining the status quo of the issue 2007 that prefaced this scenario. It read:*

While most current Internet interaction is found in the user-generated content and social networks of Web 2.0, the 3-D Web-computing ecosystem is developing quickly. Augmented reality enables the enhancement of real-world information through the use and confluence of the Internet, RFID, GPS, smart-tag networks and portable/wearable information technology. 3-D environments, which are just beginning to be more efficient and accessible, offer ideal design spaces for social and economic experimentation, rapid-prototyping and customized and decentralized production. Every item in the physical world is being mapped, tagged, and databased, as humans build mirror worlds (data-enhanced virtual models of the "real" physical world, also known as digital Earth systems or the geoWeb), and innovate in new, virtual worlds (Second Life, Cyworld, World of Warcraft). MIT's Fall 2007 Emerging Technologies conference had a headline session titled "Second Earth: Second Life, Google Earth, and the Future of the Metaverse," with the explanation: "Social virtual worlds such as Second Life and mapping tools such as Google Earth are beginning to overlap, perhaps foreshadowing the advent of an immersive, 3-D 'metaverse.'" A 2007 Gartner study estimated 80% of all active Internet users will have virtual selves by the end of 2011.

#### Overview of Respondents' Reactions

The majority of respondents mostly agreed with the idea that time spent leveraging augmented and virtual reality for various uses will continue to grow; some noted that by 2020 AR and VR will have reached the point of blurring with reality. Many indicated this will enhance the world, providing new opportunities for conferencing, teaching, and 3-D modeling, and some added that breakthroughs to come may bring significant change, including fusion with other developments, such as genetic engineering. Some respondents fear negative ramifications, including possible new extensions of the digital divide, an increase in violence and obesity, and the potential for addiction or overload. Because of this, some respondents noted that people may begin to "opt out" of using AR and VR tools. Many of those who mostly disagreed with the scenario said VR won't reach the scenario's level of acceptance or sophistication by 2020 or said its primary users will "still be geeks and gamers."

**Below are select responses from survey participants who agreed to be identified with their statements. This is not the full extent of responses. To see more, read the report PDF, and to read the reactions of anonymous respondents who replied to this question, please click [here](#).**

The Internet is a medium that enhances communication of all types of information. Virtual reality is simply one form of information with an inherent creative component that knows no bounds. Art is ever evolving and mutating, so we must expect the same of virtual developments, too. **–Tim Grafton**, market research director for UMR Research Ltd., a market research company based in New Zealand

I agree that time spent in virtual reality may well be commonplace for many by 2020, providing broadband capabilities increase as well. **–Jennifer Jarratt**, principal, Leading Futurists LLC; works with formalized methodologies to assess and interpret potential futures

Augmented reality will be very complex, layered, and uneven. AR should show up in politics, in struggles over what information is attached to what spaces, and who controls it. **–Bryan Alexander**, director of research National Institute for Technology and Liberal Education, blogger, expert on computer-mediated pedagogy, Ripton, Vermont

I wonder how many who don't participate will be left behind socially and in the workplace. **–Ruth Martin**, National Chengchi University, Taiwan

I think this will happen but 2020 may be a little to soon. The Gartner study of 80% of all active Internet users will have virtual selves by the end of 2011 is way to aggressive. That would mean that over 1.4BB global Internet users today (<http://www.Internetworldstats.com/stats.htm>) and growing, 80% would have to have virtual selves. I don't buy it in three years. I think there will be a small part of the population, starting with today's Second Lifers, who drop in and drop out so to speak. They become the Gibsonesque wireheads. **–Chris Miller**, senior vice president, digital operations and new business for Element 79, an advertising agency

It is perfectly reasonable to imagine greater integration of work and play within present and representational environments. --Oscar Gandy, author, activist, retired emeritus professor of communication, University of Pennsylvania

The proposed 2020 scenario is already a fact of life for many people I know both online and as acquaintances here at university. It strikes me therefore as quite plausible that for as long as the metaverse can provide for a human need for quick and convenient contact, more people of all ages shall flock to it. I do not, however, believe that the metaverse will ever become more than an augmentation of offline life for more than a very small minority of users. **–Francis J.L. Osborn**, futurist and activist, philosophy department, University of Wales Lampeter (formerly St. David's University College)

Most of the use will remain in the realm of entertainment. There will be continued concerns over balancing life "in the real world" against any of the virtual ones. **–Sam Punnett**, president, FAD Research Inc.; has worked in the field of interactive digital media since the 1980s, for the last nine years on strategy, marketing, and e-business development

In the future, people will move between the "virtual" and "physical" worlds in seamless ways — but I don't think we really have any clue as to what this will really look like or mean. Furthermore, I don't think that this transition will occur quite as fast as some believe. It will be more than a decade before we begin to have the capacity to deal with our current technology and our current data overload. If I were to look for future scenarios of the how "virtual reality" and "real life" interact, I think I would look to the science fiction and fantastic genres of literature and arts, especially to those visions of the future that see our bodies being physically connected to "virtual realities" through true "neural-nets." Which of these visions of the future best predicts the future, however, is something I don't think we can even guess at. **–Benjamin M. Ben-Baruch**, senior market intelligence consultant and applied sociologist for Aquent, working at General Motors Corporation

Absolutely—although I think what will happen is that our existing connections within the Internet will simply become more enriched with these sorts of technologies, so we will not be choosing to move into a different space for these experiences, we will simply become accustomed to richer interfaces. **–Richard Osborne**, *Web manager for the School of Education & Lifelong Learning, University of Exeter; research focus is e-learning*

With a little luck, most people with these tendencies will have received sufficient counseling that they choose the real world over computer-generated ones. **–Anthony M. Rutkowski**, *co-founder of the Internet Society and a founding trustee; longtime leader in International Telecommunication Union; vice president for regulatory affairs, VeriSign*

Until we can feed our children by spending time in an "alternate universe" it will be little more than a time-waster for most of us. Where it will play a huge role is in bringing the physically handicapped into the main stream, allowing a bedridden lawyer to present closing arguments, an impaired (e.g. Steven Hawking) college professor to teach class at three universities simultaneously and/or allow an amputee soldier to pass his sill/knowledge on to his outfit in the field from a bed at Walter Reed. **–James Gorman**, *principal, Working Technology Partners, a company offering technology solutions to businesses*

While agreeing these technologies will become important, people vastly overestimate the value of 3-D "virtual world" presentation to these interfaces. The virtual world will deliberately look virtual, and not try to model our real 3-D world as much as people think. 3-D is hard. **–Brad Templeton**, *chairman of the Electronic Frontier Foundation, also of the Foresight Institute, is an Internet pioneer who has been active in the computer-networking community since 1979*

The metaverse will be important for many, but recalling the first question and how mobile devices will become an important connection tool for most people, those using the metaverse will be a significant minority of the total. Sustained life (work/education/socializing) inside the metaverse will happen, but like telecommuting not as quickly as we might expect. Real life's appeals will be stronger. **–Adam Peake**, *executive research fellow and telecommunications policy analyst, the Center for Global Communications (GLOCOM; studies the intersection of public policy and the Internet*

Virtual reality is more entertaining for many people, than their real lives. **–Camilo Elias**, *university student*

Virtual worlds blur the line of fact and fantasy and pose a danger to our society. **–Dana Rostern**, *student, Hofstra University*

It seems unclear to lump together augmented reality and mirror worlds. They can have very different contexts, uses, points of interaction, and expectations. The geoWeb will be a powerful force, and may increase the sense of physical place. The metaverse will have to deeply increase sensory experience, wayfinding, and orientation—so it may ride on the back of situated augmentation, but not necessarily be coupled with it. **–Duane Degler**, *user-centered designer and strategist for Design for Context, writer and editor for IPGems, focused on knowledge management, semantic integration and performance improvement*

The opportunity to test one's own environment with a bigger universe is too exciting to turn down. **–Nancy W. Bauer**, *chief executive officer and editor-in-chief, WomenMatter Inc.*

For vivid fictional depiction of realistic future worlds of immersive augmented reality, see: "EARTH" (1990) and "Rainbow's End" (2006). **–David Brin**, *futurist and author whose 1998 non-fiction book "The Transparent Society: Will Technology Force Us to Choose Between Privacy and Freedom?" identified key issues of concern*

A "Snowcrash"-esque world is coming but it's farther off than 2020. We'll see advancements towards this and some early adopters, but many people will be slow to accept this new augmented reality. **–Jay Buys**, *vice president for digital development, Fleishman Hillard, an international marketing and communications company*

Over the next 12 years, artificial spaces will find their home. We do not yet know what form these will take and how they will be used, but they will become a part of the "normal Internet" in some way. They will continue to be used for entertainment purposes, and also find increased use in the academic communities. Where else will they find a foothold? **–Ross Rader**, *director of retail services, Tucows Inc.; works with ICANN in the Registrars Constituency, part of the GNSO (Generic Names Supporting Organization)*

I'm surprised there is no mention of gaming in this scenario. If people spend time in artificial spaces/virtual worlds it will likely most often be in game environments. **–Steve Jones**, *professor of communication and associate dean of liberal arts and sciences, University of Illinois-Chicago, co-founder of Association of Internet Researchers*

We may make some use of virtual reality or holographic projection in our user interfaces.

**–Fred Baker**, fellow, Cisco Systems, former Internet Society (ISOC) chairman of the board; Internet Engineering Task Force (IETF) leader; an architect of the Internet

Probably this trend will continue. But is it really completely new, or only new in the degree of the augmented reality? **–Norbert Klein**, member of ICANN's GNSO Council and Internet Society leader who works with Open Institute Cambodia, a company whose primary focus is on information

This one I probably would say "neutral" if that were an option. Of course the technologies will advance, but, it's also true that the applications that prevail are often those with the simplest interfaces and functionality (e.g. Twitter). So, the crucial thing will be to what extent these tools will truly add value to our work and happiness. **–Richard Hall**, professor of information science and technology and co-director of the Laboratory for Information Technology Evaluation, Missouri University of Science and Technology

Individual elements of a society will eventually become part of a global society. **–Hakikur Rahman**, chairman, SchoolNet Foundation; coordinator of Sustainable Development Networking Programme in Bangladesh; active in Internet Society Board, South Asia Foundation

Yep, spot on. See my answer two questions ago wrt identity. **–Jeremy Yuille**, digital media coordinator at RMIT Communication Design and program manager at ACID in Melbourne, Australia; previously director at IXDA, the Interaction Design Association

I think that this vision is over-hyped, but I wait to be proven wrong. **–Micheál Ó Foghlú** Research Director, Telecommunications Software & Systems Group, Waterford Institute of Technology, Ireland advisory committee; member of W3C; blogger

The Internet is a communication media, not an alternate universe. **–Christian Huitema**, distinguished engineer, Microsoft Corporation, pioneering Internet engineer (on the Internet Architecture Board 1991-96; Internet Society leader 1995-2001)

When people are able to fulfill "real-life" conceptions and also fulfill activities within virtual worlds, this will bring ease of access to its optimum height, whereby many social activities will be maintained through a virtual existence. **–Sam Ozay**, e-learning and e-communication specialist and solutions architect at Postmodern (Asia/Pacific); formerly general manager at European Language Centre

Mostly agree, although full adoption will take longer than implied in the statement above. **–Brough Turner**, chief technology officer and co-founder of NMS Communications; oversees evolution of technology and product architectures

I shudder to think of a future in which one cannot distinguish between virtual and real. **–Hinda Feige Greenberg**, Ph.D., director of the information center for the Robert Wood Johnson Foundation, dedicated to improving healthcare for Americans

This will be just too much fun to ignore. And one can deny a lot in Second Life. **–Dan Lynch**, founder of CyberCash Inc. and Interop Company and an Internet pioneer; board member of Santa Fe Institute; director of computing for SRI International in the late 1970s

Augmented reality will be an important recreational activity in niche markets but fully integrating augmented reality into "real life" will still require too much commitment for too little reward to become entirely mainstream. **–Michael Edson**, director for Web and new media strategy, Smithsonian Institution

This future seems plausible, but not by 2020. **–Aaron Schmidt**, Walking Paper Consulting, a blogger who writes about libraries, technology, and usability

Successful work/play in the metaverse will require a different set of social interaction skills than those that generate success in "real life." **–Mark Youman**, principal, ICF International, a Washington, DC, consulting-services company that works with government and commercial clients

Human beings have always lived some part of their lives in their imagination. These are tools that extend our imagination, our daydreams and help us live today and create tomorrow. Like all technical tools some people will have more access than others. **–Ramona Nelson**, Ph.D., co-director of the healthcare informatics program, Slippery Rock University

Artificial worlds are just an escape from the real one. The time spent on this could be put to a better and higher use (like reading, working, volunteering, helping others, etc.) **–Judith Siess**, president of Information Bridges International Inc. and publisher and editor of the One-Person Library newsletter, author and blogger

Absolutely. However, by then it will be clear that this situation would have produced substantial drawbacks. In particular exposure by the young generations to virtual life can produce a lower appreciation of the difference between fiction and reality, as fiction would be

too close to reality. This is an aspect that can be governed, as exposure to television has been governed. We have seen that in cultural contexts where families and educational institutions have been less effective, some problems have been created, while when this fiction-vs.-reality situation has been governed by some sort of "adult supervision" it has worked for the progress of mankind. **–Roberto Gaetano**, ICANN board member; also responsible for SW development for International Atomic Energy Agency; an active participant in the ICANN policy making process

If our imaginations can get lost in something as basic as a good book, it seems very plausible that Internet will be our new fantasyland. **–Bill Warren**, vice president of government relations, Walt Disney World; founding editor of the Orlando Business Journal

In the future, virtual environments will allow people to participate in rich experiences, including workplace situations, remotely with an avatar. **–Buddy Scalera**, vice president for interactive content and market research for CommonHealth Qi, in charge of interactive online strategies, including social and viral marketing

While I think that the scenario holds true without a doubt, the level of participation in virtual worlds is where I most fall a little. The only thing that militates toward some of the day in a virtual world is the enormous popularity now of Webkins and the Penguin Club (a Disney Property) and the foresight of Disney—all of which mean that the generation that will have grown up by then will be used to virtual worlds and augmented reality. The verdict on Second Life as more than a fad is almost out—but not quite yet—and it seems to have some adult staying power. But Webkins and Penguin Club are HUGE! So this scenario given who the adults will be rings somewhat true. **–Paul Greenberg**, president, The 56 Group LLC; BPT Parters LLC; MyCRMCareer.com, social-media companies

The urge to live a better live via augmented reality will be too tempting. **–Don Kasprzak**, chief executive officer of Panaround.com, a Web-solutions design company; former system engineer at Apple Computer

In the fields of architecture and design, immersive-3-D has been explored for some time, now influenced by 3-D CAD to modeling realities and the advantages of mapping on Google Earth. Design firms operate virtually, networked by the Internet with leading-edge design universities offering educational curriculums fully online from multiple physical ports. The metaverse is real for architecture and design. It is key to transforming understanding about change of physical realities of the built environment. **–Janice Stevenor Dale**, president, JSDA Inc., The Design University

Second Life has had its day and is now fading—in the current manifestation, such artificial realities are little more than a fad. Google Maps, however, represents a significant new medium by which to bridge the virtual and actual worlds, creating new forms of expression, communication, and learning. **–Joan Connell**, online editor, The Nation magazine, formerly an executive producer for MSNBC.com, senior editor for MSN and a Pulitzer finalist for her reporting

These modeling tools will be used to create new ways of learning and simulating possible options to assist in decision-making. I don't see it creating this parallel world like Second Life where people spend an overwhelming amount of time. There is too much to gain from "real" life—including an income and food. **–Cameron Norman**, assistant professor in the department of public health sciences, the University of Toronto; actively engaged in use of the Internet to help tackle tough health issues, including work with the Centre for Global eHealth evaluation

The Internet has made it possible for millions of people to express their creativity like never before... people who in the past would have never sat down and drawn a picture or shot a video. This has spawned many new forms of art expression, virtual reality and interactivity. The real genius will be the person who uses this technology to help us realize and participate in the real world around us. **–Mike Samson**, interactive media writer and producer

Virtual reality will be driven greatly by economic and environmental concerns. Students will be able to attend classes in the virtual world. Corporations will rely heavily on virtual environments, reducing building costs by allowing employees to telecommute. Families will even be able to take virtual vacations at a fraction of the cost of the "real world" equivalent. **–Jamie Richard Wilson**, journalist and freelance Web developer

For as long as the Internet has been around (and even before), a 3-D metaverse has been predicted—and it keeps not happening. Immersive virtual environments are appealing for a certain percentage of people (reasonably constant over time), but mostly people do and will use increased ICT capabilities in ways that are more and more integrated with the rest of their lives, not disconnected. **–Jacob Kramer-Duffield**, blogger and student, UNC School of Information and Library Science

I agree with this scenario, although virtual worlds must evolve into an essential aspect of our

daily lives by offering an essential "service." Otherwise, they will become boring and cumbersome. **-Susan Thomas**, S2 Enterprises LLC

Second Life is the most overhyped alleged phenom of the century, so far. There's plenty of reality to go around; we don't need artificial versions of it. **-Jeff Jarvis**, top blogger at *Buzzmachine.com*; professor at City University of New York Graduate School of Journalism; contributor and consultant to the *Guardian*; adviser to start-ups

While levels of engagement will vary, 3-D technology will take off the more personalized it gets. Being able to have a virtual coffee with a friend in a different city, where it looks like you're sitting at a cafe, can see a photorealistic representation of your friend, can select your favorite songs on a virtual jukebox, and talk in real time via headsets, will be a major driving force. In other words, the more senses a 3-D world can stimulate beyond just vision, the more people will gravitate toward it. **-John Jordan**, associate professor of communications, University of Wisconsin-Milwaukee

Are we headed toward the Matrix? If so, then we should remember that while the first movie was inspiring, the next two were disappointing flops. It's far too early to engage in the kind of futurology this particular question prompts. **-Dennis Baron**, professor of English and linguistics, University of Illinois, runs the *Web of Language* site and researches the technologies of communication

Augmented reality will be pervasive in 2020 as both a social norm and a business strategy. Virtual reality tools will be used for entertainment, as they are today, as well as for remote training, education, consulting, and management. Geography will continue to mean less to businesses and new forms of entertainment will make it less likely that you travel to your vacation by 2020. **-Gerard LaFond**, founder and chief strategy officer, red TANGENT, and co-founder of *Persuasive Games*; works with leading brand companies such as Sony, Ubi Soft and Kraft

Virtual worlds are the next evolution in the social networking, and once it becomes easier to integrate content from an external environment into the virtual, the development and integration will become as ubiquitous as the Web. **-Karmon Runquist**, ITS manager, Western Illinois University; formerly a consultant at Alliance Library System

Virtual Worlds will remain the domain of the escapists and of professions, such as architecture and modeling where there are real world applications. One caveat: This idea is very Star Trek Holodeck. If the Holodeck can be mass produced, it will alter our existence. **-Theresa Maddix**, satisfaction research analyst, *ForeSee Results*

While "many" will be involved, the majority of Internet users and especially the majority of real-world people will not be active in metaverses. Already, I often hear/read of backlashes for the anti-social nature of places like Second Life. Anti-social meaning we are interacting via our computer, not face-to-face. **-Mike Driehorst**, messaging strategist; leads social media for *Hanson Inc.*, an interactive communications and video production company

Shudder! Yes, I think this happen. The only upside is I will be able to shop and try on clothes without leaving my home. **-Mariana Almeida**, product manager of Web products for healthcare, Kaiser Permanente

It will still be possible to withdraw from "real life." In fact, more people will totally disappear from their "real-life" social circles than happens today. **-John Jobst**, IT specialist, U.S. Army Corps of Engineer

Virtual worlds still won't beat the sensations possible in real life. However, we're probably moving closer to having avatars that can be virtual personal assistants instead of being idle when they're not in use. **-Brian T. Nakamoto**, co-founder of *MrJoy Inc.* and product-line manager for *Everyone.net*, (a leading provider of outsourced e-mail solutions for individuals and companies around the world)

Much depends on improvements in interface design. Virtual worlds will only become ubiquitous once they can communicate more information with less hassle than simpler mediums like Web pages or teleconferences. "More information" might mean things like body language, or allowing users to use their real hands to control virtual hands, for the purpose of building or interacting. Meanwhile, videoconferencing itself will only become ubiquitous once interface technology allows teleconferencers to make eye contact with one another. **-Ivor Tossell**, technology columnist/journalist for the *Toronto Globe and Mail*, known as "the blogging journalist" and a social observer

I see this as an extension of the gaming phenomenon, so if the quality of "real world" matches and/or exceeds games, then most online users will be virtual inhabitants. **-Lynn Blumenstein**, senior editor, *Library Hotline*, *Reed Business Information*

While a certain percentage of people will be inordinately consumed by artificial and virtual reality they will only be a small minority. Most people will still be involved in making a living

and living ordinary lives. **–Steven Hausman**, *president, HausmanTech Consulting*

This seems to be a logical projection of current trends. **–David F. Salisbury**, *associate director for science and research communications, Vanderbilt University; formerly science and technology reporter for The Christian Science Monitor*

People will use technology only if they see a benefit to it. While having avatar or similar presence in a virtual world(s) will be common, technology will mainly be a navigation and entertainment tool for life. It seems that divide us between RL and VL will remain. Although we will see less of an offline/online split in work and study. **–Ted M. Coopman**, *lecturer, San Jose State University*

I agree with this based on the assumption that "play" within these virtual worlds becomes more intuitive and the software less cumbersome. We are already seeing a huge increase in virtual worlds via mobile devices in China. I expect the same to happen in the US as the technology advances, and costs become cheaper. Adolescents and young adults will be the first to adopt and adapt to virtual worlds. **–Rachel Kachur**, *behavioral researcher, U.S. Centers for Disease Control & Prevention*

Absolutely agree and look forward to this freedom. Here is the opportunity to exchange products of the creative mind outside today's corporate relationships. Workers involved in producing creative constructs will be able to operate totally within these confines. Physical product, phones, iPods, etc. will be marketed and sold here. Entertainment may well live here entirely. **–Eric Kreider**, *director of Web services, the University of Akron (Ohio), US*

But there will be a "back-to-reality" countertrend. **–Paul McFate**, *senior online communications specialist, LDS Philanthropies*

The phrase "well-equipped Internet users" is operative here. There will be a digital divide, making for Internet hierarchies based on either income or social relationship with corporate sponsorship. On another note, I do not see a lessening in the need for so-called "real-life" experiences: these will be even more in demand as the natural environment becomes so degraded that it will become somewhat expensive to enjoy true isolation in a natural environment (as opposed to a virtual or built one). Again, those with extra resources will vie for the status and privilege of having the wherewithal to go authentic, while others may need to remain at home in air-conditioned bubbles while scarce resources are rationed. Taken to extremes, this scenario might also mean that even Internet connectivity will be rationed along with the power to drive it. So, seamlessness in the sense described above, does depend on the availability of other resources needed to keep the planet alive at the same time. **–Alex Don**, *linguist and educator*

The progress of Second Life and its rivals has been surprisingly slow, considering the hype, and the online experience pretty uninspiring—though better 3-D may improve it. **–Roderick White**, *editor, Admap magazine, World Advertising Research Center*

This participation in the metaverse will be an illusion, merely a persona, a projection of one's ego. But then, how much of what we call "real life" is just that? **–Peter W. Van Ness**, *president, Van Ness Group, a Web-development company; founded Personal Computer Solutions in 1983; co-founded StockPlan, Inc. and MyStockOptions.com*

Commercial enterprises of any magnitude will have a virtual presence. Individuals will have several alter egos. **–Robert Grant**, *chief executive officer, VoyaCare Inc.*

Growth and extension of metaverses will continue, as well as advances in hardware that will allow ever-increasing use of connected and stand-alone AR, some of which can and will even be connected to metaverses...Military equipment has been using AR for many years with heads-up displays, targeting reticles, and overlaid image enhancements to...extend the senses and available knowledge about whatever the user is doing in real time with the activity. Manufacturing is just now beginning to see the value and benefits of AR...Instructions and design data can be given to workers as they handle the items being built or serviced rather than referring back and forth to separate documentation; wearable computers have allowed data to be presented to the worker as an overlaid display of data added to the real view of what they are doing as they do it... Most civilian AR is still stand-alone but those too will continue to develop and will be fully integrated with Internet services, and their use will increase exponentially. Metaverses (separate from games) continue to gain in popularity and relevance, as real-world (RW) business and education are conducted within their bounds, not just entertainment...A highly developed metaverse that mirrors pieces of RW can provide abilities to examine replicas of RW things in details and in ways not possible in RW and provide insights. Virtual meetings occurring within metaverses are already one of the most popular and effective uses of a metaverse environment...people log into a metaverse and attend the meeting with their avatar telepresence, with which they can listen to the speaker, view a presentation and interact...Metaverses are in their infancy still but the tremendous potential almost guarantees that it will continue to grow. **–Shawn Kelly Apochromantic**, *configurations manager, designer, technologist, futurist, General Atomics, and volunteer*

*builder in Second Life*

While the direction is correct the timeframe seems way premature. **–J.W. Huston**, *president of Huston Consultancy and futurist*

I don't think it will be a majority. I do, however, think that the lines will continue to blur and that this distinction will be less clear in 2020 than it is to us now: I know what you mean when you differentiate between my use of Second Life and, say, Flickr. But maybe by 2020, those two experiences will be not so drastically different. **–Matt Gallivan**, *senior research analyst, National Public Radio*

NASA is trying to figure out how to use a Second Life-type tool to allow future Mars explorers to stay in touch with the mother planet. They think they can lick the latency problem from Mars to Earth. That speaks to the possibilities that exist in these tools. **–Douglas Schulz**, *managing editor for online publishing, America's Health Insurance Plans; formerly a Web team director for a biotech industry organization and manager of Internet and Web services at the Council of Better Business Bureaus*

Most people will prefer "real" interactions to "virtual" ones. **–Mike Langum**, *Web developer, U.S. Office of Personnel Management*

Augmented reality will become easier and easier and become seamless parts of our lives. **–Lawrence Swiader**, *chief information officer, U.S. Holocaust Memorial Museum*

By 2020 most people will scarcely remember what it was like to live only in the 'real world.'  
**–Elizabeth Cleary**, *student, National College of Art & Design, Dublin, Ireland*

While there very likely will be a small community of early adopters of "augmented reality," it will be many years (30, 40?) before its use become prevalent. Cost of use is certainly one of the "braking" effects holding back rapid adoption; but it probably will be the result of "unrecognized benefits" accruing from "augmented reality" that will keep the number of its users in low figures for a very long time. I witnessed this same phenomenon in the case of various technologies: fax, high-definition TV, supersonic flight for passengers among others. It's the old tug-of-war between technological "push" versus market "pull." Nothing new under the sun. **–Fredric M. Litto**, *consultant for Pearson Education Global e-Learning, president, Brazil Distance Learning Association*

My only comment to this is that the metaverse is a real place, just not located in the 4Ds that we are used to. Continued enhancement of the "feelies" (Brave New World—Aldous Huxley) will make the metaverse more and more a part of the Universe. **–Richard Hammond**, *knowledge management team leader, United States Environmental Protection Agency; knowledge management expert currently examining Semantic Web and RFID*

This is already happening to some extent. In Second Life, NPR's Science Island and NOAA's island are good examples of virtual world delivery of their content to a generation that has little or no interest in static Web content. Ten years ago it was "you'd better get a Web page," now (certainly in 2020) it's "you'd better get a virtual world presence." I love the thought of a virtual planet! **–Patti Nelson**, *a Webmaster who works on U.S. government sites*

The accidental loss of important privacy through creating virtual selves will drastically reduce the move towards a metaverse. The hope is for effective and practical means of practicing safe-virtual-play. **–Dixon Hutchinson**, *software engineer*

Techno-dreaming. **–David Hakken**, *Indiana University School of Informatics and a professor of anthropology who studies social change and the use of automated information and communication technologies*

Many elites will interact with each other and the "metaverse" this way, but I don't believe that this technology will be so widespread that it affects most people. **–Paul Hyland**, *executive producer, edweek.org; formerly a member of the board of directors for Computer Professionals for Social Responsibility and director at Media Matters for America*