Celebrating Communications Technology for Everyone

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Introduction

Developing communications technology to support people with disabilities has rocketed to the top of the national agenda. In February 1994, the Technology-Related Assistance Act was reauthorized to help people with disabilities use new communications technologies at home, school, and work.(note 1) Shortly thereafter, President Clinton signed the Goals 2000: Educate America Act, a comprehensive education bill that will foster a thorough study of the effects of communications technology on school reform for children with disabilities.(note 2) Meanwhile, only four years after its passage, the landmark Americans with Disabilities Act of 1990 (ADA) is reshaping telecommunications, employment, public accommodations, and perhaps most important, public attitudes.(note 3)

As fast as communications policy for people with disabilities is changing, on this sixtieth anniversary of the Communications Act of 1934, much work still remains. To stimulate discussion of the emerging issues, I convened an Annenberg Washington Program conference during the spring of 1994, entitled *Communications Technology for Everyone*, which featured assessments of communications policy and technology from leading experts. Speakers at the conference exchanged ideas on (1) how accessible communications technology can assist students with disabilities, (2) how government, industry, and advocacy groups can provide communications technology to people who need it, and (3) how the rights of persons with disabilities can be guaranteed by laws like the Communications Act of 1934. In this Essay, I briefly address each of these areas in turn.

I.Using Communications Technology to Provide an Accessible Curriculum

The ordinary classroom can present "monumental" communications barriers to students with disabilities, according to Anne Meyer, co-executive director of the Center for Applied Special Technology (CAST). Many people often see these barriers as outgrowths of the students' disabilities. But, just as stairs can bar access to a building, the medium of print can constitute a barrier for students with disabilities. Communications technology can offer alternative access systems which have a strong appeal-so strong, in fact, that students without disabilities may also be drawn to them.

At the 1994 Annenberg conference, Meyer and CAST co-executive director David Rose introduced several CAST "pioneers"-individuals who have been working with CAST to develop better technologies for communication in school.

- Caroline, a six-year-old, has cerebral palsy with hearing loss; she cannot hold a book. CAST has designed software that permits Caroline to read a book on a computer. A page of text and illustrations appears on the screen alongside video of a signer, and a digitized voice reads the text aloud. Caroline uses a customized chin switch to enter commands. This technology enables Caroline to undertake the kind of independent explorations that other kindergartners perform.

- Andrea, a first-year graduate student studying special education, has a learning disability and hearing loss. CAST is working with her to develop software that displays textbook pages on a computer screen. A voice reads aloud as the pertinent text is highlighted on screen. She can pull out part of the text into a notepad for review and look up the definition of unfamiliar words in an electronic dictionary.

- Megan, a fourth-grader in a mainstream classroom, loves reading and hopes to be a writer. She has cerebral palsy and significant visual impairment, and her speech is difficult to understand. Now, when she is assigned to give a presentation to her class, Megan composes her remarks ahead of time on the computer, then uses the computer's

speech output capability to convey the information to her classmates. Other students no longer stop her in the middle of a presentation and ask her to repeat something.

- George, a thirty-nine-year-old worker on a commercial farm, has developmental disabilities. As part of his work, he studies weather maps. The maps are available on computer databases, but accessing them requires a series of steps that exceed George's skills-such as starting the telecommunications program on a computer, dialing the database, keying in the password, and interpreting options. Using macros and text-to-speech capabilities, CAST has consolidated these steps into four keystrokes so that George can reach the database on his own. In this case, the information itself is accessible, but the ordinary access route is not.

- Robert, a college freshman, is legally blind and has cerebral palsy; he has trouble reading and writing. He hopes to study the law and become an attorney, using digitized books that are read aloud electronically. CAST has developed a prototype interface to allow Robert to use a commercial electronic information service. The interface magnifies the screen and its icons, reads aloud electronic mail and other digitized texts, and responds to voice commands. The system helps Robert move closer to his goal of full independence.

- Judy, age twenty-three, had a brainstem stroke as a college freshman; the only muscles she can control are her eyelids. Working with other organizations, CAST has developed a system that Judy can control. A camera attached to a computer focuses just below her hairline. She blinks her eyes to activate computer commands.

Helping these students with disabilities, like many other communications technology applications, requires software. Today, few textbooks have been converted into electronic form, and the procedure for doing so-scanning the data into a computer one page at a time-is costly. Although publishers generally typeset and design books electronically, most companies are unwilling to part with the digital data. But expense is not the only problem. Most digitized books have an "added quality," like ramps built onto existing structures. Ideally, the alternative access system would be built-in from the outset through "universal design."

With that goal in mind, CAST has created an instructional program for early reading with built-in comprehensive access. The result is a series of early reading books available on paper and CD-ROM. The CD-ROM version has many advanced features. An introductory cartoon presents the book titles using music and speech. After the student selects a book, each page is displayed on the screen. On command, the CD will read the page aloud, using different voices for different characters. The student can "click" a mouse to hear an individual word pronounced, or use a microphone to read the book, and then hear the rendition and compare it with that on the CD. By magnifying and coloring illustrations and writing responses to stories, students can make the books their own.

For students with disabilities, teachers can customize the learning experience. For example, the pace of the oral reading can be slowed down, or the text can be magnified. The system can scan through its options for students who can operate only a single switch. The colors of text and background can also be adjusted to each student's learning preference. As a result, a single CD can virtually republish a book for each child in the classroom.

Communications technology brought into the classroom to help students with disabilities often ends up aiding other students as well. "We have gone into a lot of classrooms around a specific child with a disability to try to make an accessible curriculum, and the classroom reorganized around good technology," Rose said. "It became part of their general curriculum plans."

II.Getting Communications Technology to the People Who Need It

The students who demonstrated their communications technology at the Annenberg conference are still the exception, according to Robert Williams, commissioner of the Administration on Developmental Disabilities in the Department of Health and Human Services. Most students lack access to the communications technology they need, and many who have the technology lack the training that will enable them to put it to everyday use. The challenge, he said, is "not to come up with just a few more exceptions, but to change the rules of the game entirely."

One important change would be to design universal access into technology. Engineers often design technology for

people like themselves, "mostly men in their twenties who don't have any apparent disabilities," said Deborah Kaplan, vice president of the World Institute on Disability.

Kaplan, whom President Clinton appointed to the National Information Infrastructure Task Force, said that schools and industry have a major role to play in promoting universal access.(note 4) They must be made aware of software and hardware with built-in accessibility, then use their buying power to support it. Doing so is particularly important now, with many institutions poised to invest heavily in links to the National Information Infrastructure. And, as accessible communications technology becomes more widely disseminated, the price will fall. For example, closed-captioned television decoder boxes initially cost several hundred dollars, but when federal policy mandated that all television sets be manufactured with this capacity, the cost plummeted to less than twenty-five cents per television. "There's a lesson there about market efficiencies and mass-marketing accessibility," Kaplan said.

Paul Hearne, president of the Dole Foundation for Employment of People with Disabilities, noted that one of the arguments advanced by industry-that there is no consumer demand for accessible communications technology-has a familiar ring. Twenty years ago, representatives of bus companies contended that there was no demand for accessible buses because "we never see any people with disabilities on the bus." "That's because they can't get on the bus," retorted advocates for people with disabilities. "It's the same thing with the information infrastructure," Hearne said. "We have to argue that from the beginning the information infrastructure must be accessible to people with disabilities."

Along with universal design, other possible approaches for changing the rules of the communications game include:

Creating "schools without walls" for students with disabilities. H. Rutherford Turnbull III, co-director of the University of Kansas's Beach Center on Families and Disability, recommended that to help prepare individuals with disabilities for employment, communications technology should bring the community to the classroom and the classroom to the community. Colleges and universities could also provide telecommunications data and services to state and local education agencies.

Supporting sympathetic people in industry and government. Many industry and government leaders are interested in universal access and other needs of the disability community. At the same time, there are vast bureaucracies at the federal, state, and local levels whose officials need to be informed about accessible communications technology.

Involving people with disabilities in developing the technology. Michael Hartman, manager of the employment program for people with disabilities at the NASA/Goddard Space Flight Center, said that more young people with disabilities should be encouraged to study technology, science, and engineering as a way of gaining power over future technological advances. Robert Williams of the Administration on Developmental Disabilities noted that "When I go around our nation and hear young people tell me that what they expect after high school is to end up on social security, something is terribly wrong . . . . Technology is only a tool. It is up to us to help young people use that power."

III.Guaranteeing the Rights of Persons with Disabilities

The "seamless web" of the information superhighway, as the administration has called it, includes more than schools. People with disabilities face grave unemployment and underemployment problems.(note 5) Communications technologies will not only foster skills in children previously excluded from the classroom, but they will also make all children familiar with technology-aided integration and thereby eliminate some phobias and stereotypes. In these ways, an inclusive classroom can foster an inclusive workplace and society.

Paul Steven Miller, Commissioner of the Equal Employment Opportunity Commission (EEOC), stressed the importance of empowerment instead of paternalism. "For too long we have had able-bodied people sitting around talking about what is best for the `other,' for that group of people." To develop workable communications policy, people with disabilities must be included, particularly in the discussion about the National Information Infrastructure. "When building standards were developed, people with disabilities were not part of developing those standards, and we saw what happened," he said.

According to Carol Rasco, assistant to the President for domestic policy, the Clinton administration is working toward full inclusion for people with disabilities. When asked about financial assistance to provide communications technology for those who need it, Rasco suggested that government incentives, through the tax code or otherwise, might be appropriate. In the workplace, employers are often surprised to learn how simple and inexpensive inclusive technology can be.(note 6)

The United States has established the principles of a disability policy, said Robert Silverstein, staff director of the Senate subcommittee on disability policy. Congress is "making sure that every piece of legislation that goes through is consistent with that policy." The guiding principles are "inclusion, not exclusion; independence, not dependence; and empowerment, not paternalism." Silverstein stressed that the ADA is premised on the view that "disability is a natural part of the human experience, and we have to remove those attitudinal and physical barriers that prevent people with disabilities from fully participating."

Katherine Seelman, director of the National Institute on Disability and Rehabilitation Research of the Department of Education, noted that the issues have advanced substantially since 1986, when she helped to organize the first Annenberg Washington program forum on communications technology for people with disabilities. Nevertheless, she said, "some issues remain very pressing: financing, training, and especially the involvement of individuals with disabilities in all of this."

Conclusion

Although many issues remain unresolved, five vital precepts emerge regarding the future of communications policy for persons with disabilities:

1.Accessibility must be built in, not added on. Universal design will benefit all users, not merely those with disabilities. Using laws like the Communications Act of 1934, the government can encourage or perhaps mandate universal design and set standards.

2.As communications technology becomes more important, accessibility becomes more important. The National Information Infrastructure must not be off-limits to people with disabilities.

3.Communications technology has the potential to make education vastly more inclusive through individualized curricula, "schools without walls," and other innovations.

4.Accessible communications technology has implications beyond education: for health care reform, telemedicine will bring doctors to geographically isolated people; for welfare reform, telecommuting can reduce chronic unemployment among people with disabilities.

5.Additional dialogue and research are needed regarding emerging communications technological accessibility problems, not only for people with disabilities, but for all underrepresented individuals in society-the poor, the isolated, and the vulnerable.

A profound question underlies these five precepts on this sixtieth anniversary of the Communications Act of 1934: Will the National Information Infrastructure help people with disabilities and other underrepresented people move closer to full participation in American society? Or will it further isolate them from the mainstream?

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Notes

*Professor of Law and of Psychology, University of Iowa. Senior Fellow, The Annenberg Washington Program. Fellow, Domestic Policy Institute, Princeton University Woodrow Wilson School. This Essay is adapted from the Author's 1994 Annenberg Report *Communications Technology for Everyone*. All quotations are from transcribed proceedings available from the Author. The Annenberg Report is also available in an accessible CD-

ROM format, free of charge. Return to text

1. Technology-Related Assistance for Individuals with Disabilities Act, Pub. L. No. 103-218, 108 Stat. 51 (1994) (codified in scattered sections of 29 U.S.C.A. 2201-71 (West Supp. 1994)). Return to text

2. Goals 2000: Educate America Act, Pub. L. No. 103-227, 108 Stat. 125 (1994) (codified at 20 U.S.C.A. 5801 (West Supp. 1994)). Return to text

3. Americans with Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 327 (codified in scattered sections of 26 U.S.C. (Supp. IV 1992)). Return to text

4. *See generally* Deborah Kaplan & John De Witt, Telecommunications and Persons with Disabilities: Building the Framework, The Second Report of the Blue Ribbon Panel on National Telecommunications Policy (Jan. 18, 1993). Return to text

5. *See* Peter D. Blanck, *Integrated Employment, Economic Opportunity, and the Americans with Disabilities Act: Empirical Study from 1990-1993*, 79 Iowa L. Rev. (forthcoming 1994). Return to text

6. *See* Peter D. Blanck, Annenberg Washington Program, Communicating the Americans with Disabilities Act: Transcending Compliance-A Case Report on Sears Roebuck and Co. (1994). Return to text