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CONSIDERING THE HUMAN ELEMENT IN AN AGE OF HIGH TECH

William G. Covington, Jr.

No new technology is of any benefit if it isn't meeting a human need. Technological innovations introduced with novelty in mind have faded from the scene, while those that have found a niche by meeting a need have survived.

With the opening of the John Joseph Moakley Center for Technological Applications, this scenario involving the link between human needs and technological innovation is played out again, this time on the Bridgewater State campus.

HISTORICAL EXAMPLES

When Edison and other inventors came up with devices such as the Kinetoscope, which presented the illusion of motion in photography, there was initially an audience.

However, after the novelty of "moving pictures" wore off, the audience dropped off until scripts with storylines were in-

troduced. Innovators in radio, which was called "wireless telegraphy", had trouble convincing corporate decision-makers that the device could be used to communicate to the general public. Conventional wisdom was that the only use for "wireless" was to communicate from ship to shore to ensure safe passage to harbor.

In more recent times, cable television was originally useful only to residents of rural communities. Mountainous areas of Pennsylvania and Oregon were the first locations where residents pooled their resources so that each home could receive broadcast television signals that otherwise would be unattainable. From that effort "community antenna television" (cable TV) was born. It wasn't until cable was slowly transformed from a delivery system to a program supplier that traditional

tween the Soviet Union and the U.S. in the late 1950s and early 1960s should be recognized more for what it did to communications than for space exploration. As a result of the innovations of that era, satellites orbiting the earth allow for instantaneous communication through various systems such as: network television, teleconferences, telephone service, and pay TV services.

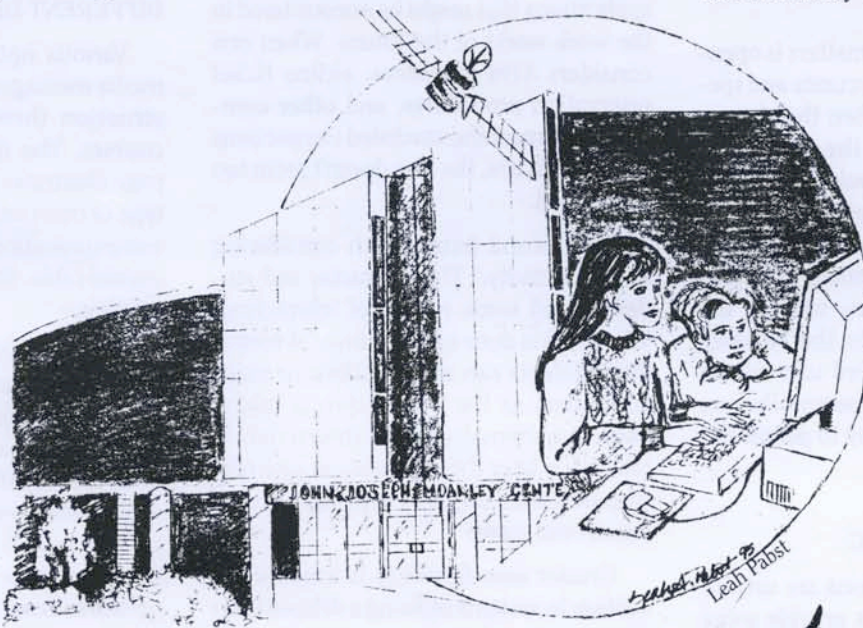
THE ROLE OF "REAL PEOPLE" IN A MEDIATED WORLD.

Will shop at home networks replace shopping malls? Will computer-generated curriculum make teachers obsolete? Will teleconferencing result in empty office buildings? Some futurists make such extreme predictions, but in reality the odds are not likely that any such dramatic changes will occur.

John Nasbit, one of the foremost writers in the area, notes that people like physical interaction with other people. In other words, they want to go to the mall, to work, and to recreational events. It's part of being human.

In the early days of television, the movie industry fought television's growth because it was thought that no one would go to the movie theatre if people could stay home and watch television. It didn't take the industry long to realize teenagers want to go out on Friday and Saturday

nights. They don't want to stay home and watch TV with their parents. Concert attendance, sports events, and cinema itself all benefited from television. The exact opposite of what extremist futurists predicted took place.



broadcasters saw it as a threat. Up until that transition, cable was an ally, simply a method of delivering a signal to an extended audience.

Some observers contend that the "conquest of space" and the "space race" be-

Will books become obsolete as information becomes increasingly available via electronic media? There are futurists on both sides of this prediction. Some say there will be no need for paper products such as books, magazines, and newspapers. Others say print media are such a part of our way of doing things that they will always be around in some form. Again, it would seem that predictions of drastic lifestyle changes are less realistic than the prediction that in the new media mix there will still be a place for the printed word.

THEORY APPLIED TO THE PRACTICAL:

The new Moakley Center has the word "applications" in its title. This implies technology, not for its own sake, but with the end result of meeting human needs. What will those needs be in the 21st century?

Prediction about such matters is open-ended and no one can be accurate and specific at the same time. When the phonograph was introduced the inventors thought its application would be for letter dictation. No one imagined a "record industry" for the masses. In general terms, however, it can be confidentially predicted that as people discover new uses for the technology housed within the Moakley Center, as yet undiscovered uses of the facilities will evolve. What seems obvious in hindsight is an epiphany to people living in the present.

TRENDS WORTH NOTING:

While specific predictions are unwise to make, long term trends provide some clues about what can be expected in the years ahead. One such trend is "distance education." Generally speaking the term is used to describe education that is less centralized than a traditional classroom setting. The distance can be near or far. It could entail connections to the next county or as far away as Russia.

Technology is designed to meet specific instructional needs when used for distance education. Some systems are more elaborate than others. A simple distance education system would allow a profes-

sor to speak to students at various locations through the use of television cameras and monitors. A more complex form of distance education would be found in a system that allowed students to ask questions to the instructor as the presentation is being given, even though they may be physically separated by hundreds of miles.

The impact of such a dramatic change in the educational delivery system is that technologies such as computers and television are made user friendly to achieve desired results. Such technologies do not displace the need for human interaction, but rather change the roles of the people involved. Rather than interacting in a face-to-face setting, the teacher/student interaction occurs through a machine-mediated context. In the high tech world, this is a way of preparing students for similar applications that might be encountered in the work world of the future. When one considers ATM machines, airline ticket reservation procedures, and other commonplace machine-mediated transactions presently in use, the idea doesn't seem too far-fetched.

The second trend worth considering is "interactivity." The instructor and students need some means of interacting. When this is done in "real time," it means that students can ask questions or make comments as the instruction is taking place. An alternative is for interaction to take place later through one-on-one correspondence, possibly through e-mail (electronic mail).

Greater user flexibility is a major advantage to systems utilizing a delayed form of interaction. A professor and student do not have to find a time slot that fits into both schedules, an important asset as more working adults return to college.

As society becomes less time bound and more services become available at unorthodox hours, such educational flexibility helps students think beyond the limitations of a "9 to 5" time frame. It is clear that in the 21st century people will have greater control than previous generations in determining when they will transact their business.

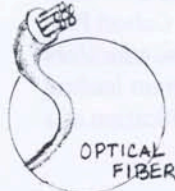
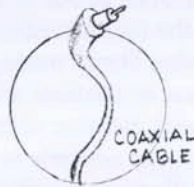
A third trend is for the technology to become increasingly user-friendly. Personal computers did not gain widespread acceptance until large numbers of people became comfortable using them. This principle of user-friendliness applies to any new technology.

Media professionals working with educators in emerging areas of high tech thus have a two-fold challenge. First, they need to make new media technologies as "user friendly" to non-media people as possible. This means educating instructors on the subtle differences between, for example, presenting for televised courses as opposed to traditional classroom sessions. Second, media professionals have a significant role to play in producing a product that enhances learning.

DIFFERENT DELIVERY SYSTEMS:

Various options exist for delivering media messages to students receiving instruction through distance education courses. The diagram on the following page illustrates five of the most common type of transmission modes used for telecommunications: twisted copper wires, coaxial cable, fiber optics, microwave, and satellite.

Although they are the least expensive of the five, twisted copper wires are limited as a delivery system. Audio material can be sent via this system, while most distance education programs are designed with a video component in mind. Coaxial cable ("coax") is more expensive than twisted copper wires and the broadcast networks used this delivery system until the mid 1980s. Fiber optics is the third delivery system commonly used in telecommunications. This technology received a lot of coverage in the industry because of the multiple options it provides. A glass fiber strand encased in a cable can carry multiple video or audio messages at a rapid rate of speed. One limitation to this system is that the fiber-wire has to be physically in place, which requires a substantial upfront investment.



Microwave is less expensive than fiber optics, but it is more limited in what it can do. A microwave relay has to be set up at various points throughout the system, which is quite unfeasible when more advanced technologies are increasing in number. Satellite technology allows for regional, national, or international transmission of messages in "real time."

Telecommunications organizations have learned to pool their resources so that satellite time can be shared, thus reducing the cost to all parties. A few years ago I published a research paper explaining how satellite technology both helped and hurt the traditional TV networks. It helps them by allowing networks to produce a better product, for example, live interviews with people scattered across the globe. It hurts the established networks because it also means that newer companies have access to this same technology to produce more innovative, interesting shows of their own. As a result, affiliates can pick and choose among more options than in the past. In fact, in the case of cable and direct broadcast satellite, affiliates aren't even needed.

These new technologies are not only changing the way educational materials are being delivered, but the entire telecommunications landscape is evolving at such a rate that no one, including the Federal Communications Commission, knows for sure how it will eventually look. In fact, House Speaker Newt Gingrich has recently started questioning whether the Federal

Communications Commission (FCC) itself is needed in future. He advocates a self-regulating marketplace in telecommunications.

THE ROLE OF THE LIBERAL ARTS AND HIGH-TECH COMMUNICATIONS:

In a program of distance learning (or any media project for that matter), there are two key positions. The content expert is responsible for the message, what the ancient Greeks would call the "logos". Getting this message disseminated in a technically competent manner is the job of the media expert, sometimes called the technical expert.

A media expert is skilled at the technical strengths and weaknesses found within a system; he or she knows how to make a content expert comfortable with unfamiliar technology. In a collaborative effort, the two bring their knowledge together to produce a desired user-friendly product.

Notice the term "collaboration" was used rather than "compromise". That's because collaboration leads to a better end result than compromise. Compromise means one or both parties give up something in the process. Collaboration, on the other hand, is concerned with the concept of "synergy", which means that the two parties are able to arrive at a creative conclusion that neither party could attain independently.

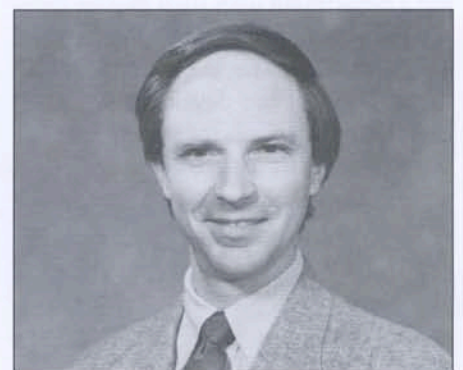
Stephen Covey uses the idea of a man and woman coming together to explain

how synergy works. Neither one could produce a child independent of the other, but jointly the two produce a unique entity that otherwise would not exist. What applies to the physical relates to the social and mental. When people bring their ideas together with other creative individuals, synergistic thinking develops and ideas that neither party would conceive separately begin to unfold.

This process requires a certain level of trust on the part of both the content expert and the media expert. If the media expert tells the instructor, "that won't work on TV," the person needs to realize if the media person knows the business, then there's no need to try to fit a round peg in a square hole.

An exciting thing about being an educator at the turn of this century is being on the cutting edge of technological changes as they are implemented. Principles that have endured for generations are just as relevant in an age of "high tech" as they were when speech was the primary form of communication.

New communication delivery systems mean nothing if they're not relevant to people. Delivery systems such as fiber optics and satellite transmission mean that more people will be able to receive material in a timely, efficient manner. It is up to educators and media professionals to see to it that these resources are utilized with care. No one knows what education in the year 2025 will be like. Some readers of this article will be here to find out.



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