What Every AECT Member Needs to Know About Systemic Change: The Beginning of a Dialogue

By Charles M. Reigeluth

There is a massive change sweep ing across the world, stimulated by the advancement of powerful information technologies, and it will affect every one of us in AECT in ways that are more far-reaching than we may expect, for it is changing the rules. It will influence whether we as an organization lead our field or are relegated to its backwaters. It will influence whether we as individuals are successful in our careers or find ourselves progressively less effective. It will influence the quality of life for those we serve.

This change will affect us whether we are developers or technologists or consultants, whether we work in the corporate sector or in higher education or K-12, whether we design for live instruction or multimedia or the Web, whether we design custom instruction or utilize learning objects. It will pervade all aspects of our work, from the ISD process to instructional methods and theory to multimedia design. It has begun to affect AECT, evidenced by the recent restructuring and refocusing of the organization.

What is this massive change? Why is it so important to AECT and to each of us? What should we do about it? In the spirit of making AECT and its annual conference more participatory, the purpose of this column is to continue a dialogue about these questions. To participate in this discussion, just point your Web browser to *http://ide.ed.psu.edu/change/surfing.htm*. There was an opportunity to initiate this dialogue in Atlanta through the CHANGE Council sponsored program.

What Is this Massive Change?

Those of us who wear glasses all the time often forget we have them on, thus we view the world very differently than we would otherwise. In a similar way, we are often unaware of the powerful influence that mindset and culture have on the way we see the world. For the past century, an industrial-age mindset has pervaded the ways we do things in all aspects of our lives (Bell, 1973; Toffler, 1980). Some of the "key markers" of this mindset are shown in the Industrial Age column of Table 1. These key markers were first adopted by business and industry in the late 1800s and early 1900s, but they eventually spread to all of our social systems, including government, medicine, and, yes, education (Bell, 1973; Toffler, 1980).

However, advanced technologies are forcing and enabling a total departure from the industrial-age key markers. Businesses are finding that to survive they must become more customer-oriented. They must customize their products and services to differing customer needs, hence doing away with mass production, mass marketing, and mass communications. They must respond quickly to changes in the marketplace, meaning that the people who interact with the customers need to be the ones to make the decisions, thereby making centralized control and bureau-

Table 1: Key markers that distinguish industrial-age and information-age organizations

Industrial Age	Information Age
Standardization	Customization
Bureaucratic organization	Team-based organization
Centralized control	Autonomy with accountability
Autocratic decision making	Shared decision-making
Adversarial relationships	Cooperative relationships
Compliance	Initiative
Conformity	Diversity
One-way communications	Networking
Compartmentalization	Holism
Parts-oriented	Process-oriented
Planned obsolescence	Total quality
CEO as "king"	Customer as "king"

Adapted slightly from Reigeluth & Nelson (1997).

cratic decision-making obsolete. Businesses must reorganize work around processes that provide value to the customer, rather than around departments and small tasks (Hammer & Champy, 1993). These and the other key markers shown in Table 1 represent a markedly different mindset from the industrial-age mindset and require different ways of doing things. These markers are being widely adopted by businesses (Drucker, 1992; Hammer, 1996) and are already spreading to other societal systems, including governments (Osborne & Gaebler, 1992), medicine (McLaughlin & Kaluzny, 1994), and, yes, education (Banathy, 1991; Fiske, 1991). AECT's reorganization around new directions and their willingness to support the profession with a stronger electronic presence represents their initial response to the need for change. But is it enough to restructure? How can we address the deeper needs in order to make a real difference?

For education and training, a focus on the "customer" means a focus on the learner. We know that different individuals learn at different rates and have different learning needs. Yet our industrial-age paradigm of education and training entails teaching a large group of learners the same content in the same amount of time. Why? To achieve "production efficiencies" and because this allows valid comparisons of students with each other, which meets an important need of the industrial age: sorting students, separating the laborers from the managers. After all, we couldn't afford to—and didn't want to—educate the common laborers too much (or they wouldn't be content to do boring, repetitive tasks, nor to do what they were told to do without questions). When you really think about it, our current paradigm of training and education is not designed for learning; it is designed for sorting (Reigeluth, 1994).

But assembly-line workers acting as automatons are becoming an endangered species in the United States. The corporate restructuring movement with its emphasis on total quality (Deming, 1986) and process reengineering (Hammer & Champy, 1993) requires ever-increasing numbers of employees who can take initiative, think critically, and solve problems. To meet this need in industry and to create a more humane society, we now need a focus on learning instead of sorting. We need to focus on learner needs rather than teacher and administrator needs. This is a radically different mindset about education and society in general. But how is it different?

Given that different people learn at different rates, when an educational or training system holds time constant, achievement must vary. Some students master the material and others don't. The alternative is to allow learners as much time as they need to attain the knowledge; that would be a learning-focused system. And it forces us to question some basic assumptions that typically go unchallenged. Should we continue to have classrooms of learners who are all learning the same thing at the same time? Should we continue to have courses and grade levels tied to seat time? Should we continue to have norm-based assessment and record-keeping systems? Or are these relics of the industrial age that no longer meet the needs of either society or the learner?

What do you think? Is society undergoing a massive change represented by the key markers in Table 1? If so, can you describe how the information-age markers listed differ from the industrial age markers?

Do education and training systems and organizations such as AECT need to undergo similar changes reflected by those key markers? Please go to *http://ide.ed.psu.edu/change/surfing.htm* to contribute your ideas to shaping our field and AECT's future.

Next we will explore some of the implication of these changes for your work personally and for AECT as an organization that can best serve you and our field.

Importance to AECT and Us?

What are the implications of these changes for us? Do they have any importance at all for our jobs? Should they influence what AECT is and does?

Our field is very diverse, and so are the jobs of AECT's members. Some focus more on hard technology, others on methods of instruction (instructional theory), and still others on the ISD process, often with specializations on particular parts of the process, such as front-end analysis, evaluation, or implementation and change. So let's take a look at implications for each of these.

Technology. In most educational and training settings, hard technology is not typically used in a way that entails changing how things have traditionally been done—the key markers that are reflected. In light of the need for the paradigm shift discussed earlier, one could say that technology's role typically has been to do the wrong thing better, rather than to do the right thing. This role is understandable, given that the "system" has made it difficult for technology to play any other role. Furthermore, this role has been a peripheral one, relegating technology to being a supporting actor in the learning process. But to have a system in which different learners are all doing different things at the same time, technology would likely play a leading role— thereby, enabling it to make a much more powerful contribution to learning, and making the role of instructional technologist considerably more important. However, to attain this, instructional technologists will need to develop new skills and perhaps even a new (information-age) mindset about learning and instruction. For those of you who focus your work on

utilizing hard technologies, what do you think about the implications of the paradigm shift on your work? What are the implications for AECT? We encourage you to go to *http://ide.ed.psu.edu/change/surfing.htm* to contribute your ideas to shaping your job, your field, and AECT's future.

Instructional theory. In most educational and training settings, the methods of instruction tend to reflect many of the industrial-age key markers, such as standardization, centralized control, autocratic decision making, compliance, compartmentalization, and one-way communications. For example, a single method of instruction is typically used for all learners for a given topic or skill. To meet the needs of learners in the Information Age, instructional designers must utilize instructional methods that reflect information-age key markers, such as customizing the instruction, fostering self-regulated learning and shared decision making, focusing on real-world problems (holistic tasks), and building cooperative relationships through learning teams (see Reigeluth, 1999, for a variety of such information-age instructional theories). For those of you who focus your work on instructional design, what do you think about the implications of the paradigm shift? How can AECT be more responsive to those needs? We encourage you to go to *http://ide.ed.psu.edu/change/surfing.htm* to contribute your ideas to shaping your job, your field, and AECT's future.

ISD process. We use ISD processes to design instruction or identify other interventions needed to solve performance problems. Typically, these ISD processes also reflect many of the industrial-age key markers, such as centralized control, autocratic decision making (by the designer), and compartmentalization. Does the ISD process also need to change significantly to better meet the new needs and conditions of our employers or clients in the information age? Perhaps we shouldn't try to do all the analysis before doing any design, but should think in terms of "just-in-time" analysis for each of the series of decisions that designers need to make. Similarly, perhaps each decision should be evaluated as soon as possible after it is made ("zero-delay" evaluation). Perhaps organizational change concerns (including implementation and management) should be anticipated and dealt with during each decision ("ongoing change"). In this manner, analysis, synthesis (design), evaluation, and change (ASEC) would be conceived as a cycle that is done for each design decision made during the ISD process (Reigeluth, 1996). Furthermore, shared decision making might incorporate the notion of "user designers" (Banathy, 1991; Carr, 1997) by involving in the decision-making process all the people who will have a stake in the new instruction. Technology could be used in creative ways to take this idea beyond the mere involvement of users on the design team. For example, design teams (including all stakeholders) could create flexible, computer-based, learning tools, like intelligent tutoring systems, that learners could use—while they are learning—to create or modify their own instruction. This concept is like adaptive instruction, except that the learners would have the capability to request the computer system to use some instructional strategies, as well as the computer deciding on some strategies based on learner input (Reigeluth & Nelson, 1997). These are but a few of the fundamental

changes that could be made to the ISD process to reflect information-age key markers rather than industrial-age markers. What do you think? How could AECT facilitate the effective use of these processes? We encourage you to go to *http://ide.ed.psu.edu/change/surfing.htm* to contribute your ideas to shaping your job, your field, and AECT's future.

What Should We Do about It?

If indeed there is a fundamental shift taking place in all of society's systems, including education, that reflects a radically different set of key markers, and if indeed we believe these changes are important to our jobs, our field, and our organization, what should we do about it?

One implication is that perhaps we need to learn more about how our work needs to change: the methods of instruction we use; the ways we use technology to serve those methods; the ISD processes we use; the ways we help our employers or clients to rethink the ways they foster learning.

Another implication is that perhaps we need to focus our research on these issues. A third implication is that perhaps we should provide consulting/facilitation services on all the above.

What do you think? Are these implications indeed important? Are there other implications for what we should do? And what role should AECT play in each of these activities? If AECT is to survive, what needs to be done to make it agile and responsive to its constituencies' needs? Should it coordinate a series of publications or offer workshops around the country throughout the year? What do you think? Again, we encourage you to go to *http://ide.ed.psu.edu/change/surfing.htm* to contribute your ideas to shaping your job, your field, and AECT's future.

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