

# Change and Creativity in the High-Technology Fast-Lane

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## The Shadow of the Technology Transition

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To all appearances, it seems that our society is undergoing a radical transformation due to the continuing development of technology and its proliferation into every area of our life. Institutions of higher education are at the center of this revolution as they try to incorporate the new technologies into the classroom. For those of us in the field of teaching, instructional technology, media centers, language laboratories, and other high-tech fields, it sometimes seems like a struggle to keep up. Technology that was new three years ago is already outdated and technology that is being installed today, in many cases, has an anticipated life span of only three years into the future, if that much. Processes are no longer linear: planning, implementation, evaluation, and reassessment are happening simultaneously. We find that the leisure does not exist to even sit back and appreciate our achievements, much less learn everything we need to know.

The rapid pace of technology development is a form of what Arnold Brown calls "accelerated obsolescence". He writes: "As more and more information is generated, specialists and technicians find that the information they possess becomes more quickly outdated. The more specific and technical their knowledge is, the more likely it is that they will have to unlearn in order to learn again the future." In discussing the reaction of those in education facing these changes, he says, "Perhaps even more insidiously, the rapid advance of technology is making more and more educated people less able to understand their world."<sup>1</sup> The Pew Higher Education Roundtable sponsored by the Pew Charitable Trust, noted in 1994 that "no [academic] institution will emerge unscathed from its confrontation with an external environment that is

substantially altered." As education strives to meet this demand, the Roundtable discussion emphasizes that technology may be the single most significant transformational ticket to success in an increasingly competitive market where colleges and universities are facing budgetary problems and increasing student populations. What this translates into for the academy is that we must make what we have work and work *now*. Yet this pressure can lead to what Brown calls a new "occupational illness:" "techno-stress." As he puts it, the main symptom of techno-stress is "the radical lowering of morale and all the ensuing problems and symptoms, both societal and within the individual."

Certainly, those of us whose work is inextricably bound up in technology—whether we are technical support personnel, administrators overseeing technology services, or teachers attempting to use the new technology in the classroom—live daily with mounting expectations to accomplish seemingly huge feats in short periods of time. In the process, it is easy to become afraid someone or some group to whom we are accountable will realize that we may not really know what we are doing, even while we are expending huge amounts of capital and labor. How can we break out of this cycle? The answer lies in learning to reframe our questions, to slow down our own internal pacing, and to keep our eyes on our relationship with ourselves and others first.

## Administrative, Technological and Human Challenges

The challenges facing the administrative infrastructure supporting technology used in classroom instruction are enormous. There are also numerous technological impediments to successfully implementing the use of new technologies in the classroom. However, the greatest challenge that we face is how skewed our human relationship to the machine has become. This is a sampling of some of the problems we face in these areas:

- *Hardware and software standardization in the computer industry is almost non-existent, leading to incompatibilities in hardware configurations and between different software packages.*
- *Some software is not designed for educational settings. For instance, Windows 95 cannot be made tamper-free in computer lab settings.*
- *It is not yet possible to support seamlessly all pedagogical needs through currently available and affordable technology.*
- *Past models for training are inadequate to meet the needs of institutions in which computer literacy among faculty can be uneven. Faculty members often desire one-on-one*

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training which is specific to their course content and needs. General-use, large-group training sessions are often a waste of faculty time and staff resources, even though they reach larger numbers of people. However, technical support staff already overtaxed by the demands placed upon them to support the hardware alone are not able to reach all faculty individually to do training

- *Old administrative structures and protocol are ill equipped to respond to the demands placed on them by new technologies.* Technology divisions in institution after institution are constantly undergoing "reorganization" in response to growing demands and the installation of new technology. In the language laboratory field, we often see a situation in which a lab has been considered the territory of the foreign language department with a lone faculty member supporting it part-time. When computers are installed, computer-skilled personnel may be required. However, the need may not be immediately recognized or understood by administrators and faculty who use the facility. If the organization does finally hire someone computer-skilled, the computer-related technological and pedagogical challenges may overwhelm the facility.
- *Decisions about hardware and software expenditures must be based upon availability, rather than upon a pragmatic short- and long-term plan for implementation.* Those of us who work in state universities know it is often feast or famine. At one institution where I worked, we were given funding to put in a new computerized classroom. However, no funding was promised for the project beyond this initial capital infusion. In addition, the faculty in my department so sorely lacked knowledge of technology that they were unlikely to have the initiative to develop their own materials. I feared we would have a room full of hardware with no software to run on it. Plus, if I did not spend what I had been given, it would be taken away. Therefore, I made the decision to purchase \$30,000 of pre-packaged software in English and foreign languages as part of the project. I attempted to work with faculty in its selection to the degree that this was possible. This decision had many high up-front risks. However, at that time, with no promise of any further funding, it seemed to be the only choice.
- *If faculty develop materials, then the very foundation of traditional teaching methods must be thought out anew.* Administrators and technology support staff can encourage these changes, but cannot force them. It is only just beginning

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to dawn on all of us that there are no quick fixes in technology. Advocating its use behooves us to look closely at issues such as how students learn, how their learning styles interact with materials developed, how to merge modality and pedagogy, and what our classroom goals are, among other important questions.

- *Dialogue among the many constituencies dealing directly with issues related to technology in higher education is often limited both by time and space.* Ironically, even as the information superhighway provides a means to bridge time and geography, thus facilitating communication, real communication between technology support staff, faculty members, and higher-level administrators can be sparse. This problem can even manifest as latent or direct hostility between factions within the university. Faculty believe precious resources are being funneled away from faculty positions and other traditional academic investments into administrative and technology personnel. In some cases, this leads faculty to become resistant to even engaging in dialogue about the possibility of incorporating technology into the curriculum. They may also believe the appearance of technology in the university is a sign that higher education is becoming increasingly vocationalized, with the traditional liberal arts being downplayed and even denigrated in some institutions.
- *Administrators see budgets being cut by legislators or being squeezed by rising expenses.* They are struggling to respond to demands by parents and students and, in state-funded institutions, to make sure degrees will lead to gainful employment. Often, as administrators make difficult choices, they can appear to be on the offensive or become defensive and non-communicative. Administrators and legislators may also succumb to the downsizing fantasy that computers will save money by replacing faculty positions.
- *Technical staff who give direct support to the faculty members and students feel put upon and misunderstood as they run around at a breakneck pace trying to make all the pieces fall into place.* Seeing their work as service to the community and the educational endeavor, they bend over backwards to try to make things work. When the limitations of the hardware and software prevent them from satisfying instructors' needs, they often become defensive or demoralized, particularly when they may find themselves blamed by faculty and students for the failures of the machine. Technical support staff can also become increas-

ingly impatient with their clients who do not yet understand the complexities of the process. These frustrations can subtly effect the atmosphere when working with faculty, thus causing further communication problems.

- *Middle managers are often given directives to launch huge initiatives and technology installations in addition to serving more and more faculty and students, without being given more resources to support these new endeavors.* In the absence of money for more personnel, the assumption is often made that staff can take on more and more responsibilities with fewer and fewer resources. In such an environment, when middle managers ask for more support, they can find themselves doubted and criticized by their superiors, the faculty they serve, and even their own employees. The end result can be a deep polarization between all these constituencies. Fear, confusion, resentment, and an instinctual need to find someone—anyone—outside of oneself to blame can arise and stultify real innovation.

## Slave to the Machine? Asking Ethical Questions

All these constituencies are responding from out of the haze of techno-stress, part of which, according to Brown, is a perceived lack of time. In fact, he notes, we actually have *more* time than we used to. All of us have experienced the phenomenon that we can accomplish more, faster just by using email. But, Brown writes, this can be as disturbing as it is wonderful: "...the new technologies are disorienting. They have a profound effect on our biologically and culturally ingrained perceptions of time and space. Advances in communications technology now mean that everything happens instantaneously everywhere....one will always be linked closely to the job, unobstructed by time or space." How many times have you noticed employees carrying beepers who never wore them before? One man I know who calls himself the "plumber" of one university's Unix system, told me how he was once awakened up at five in the morning because an administrator was trying to get access to his email and the system was down. He had to go into work immediately in order to get the system up and running again. We are increasingly becoming electronically leashed to our jobs and allowing the pace set by the machine to drive us apart and make demands on us which cut into needed personal time for ourselves and our families. Technology, heralded as potentially the single, most profound unifying force in human experience when used without care for human needs, may actually isolate us as we continue toward increased stress, resentment, and fear.

When this begins to happen, we need to ask one another: "Is access to information so pressing that we should put aside simple human needs like sleep in order to get it? Is this the most healthy response to the pressures of the shifting terrain all around us?"

Malidoma Patrice Somé writes in his book, *Ritual, Power, Healing and Community*:

Industrial culture lives with the essence of two extremely dangerous phenomena. One is the good side of production; the other is the danger of what happens to the tools for production when they are devoid of any spiritual strength. Technology can and is supposed to be attentive to what liberates the person toward taking care of the higher level of existence. But to me, the role of technology must be to attend to the lower part of human existence, since a thing devoid of the spiritual cannot help reach out to the spirit. The spirit liberates the person to work with the things of the soul. Because this reaching out to the spiritual is not happening, the Machine has overthrown the spirit, and, as it sits in its place, is being worshipped as spiritual. This is simply an error of human judgement. Anyone who worships his own creation, something of his own making, is someone in a state of confusion.

As we make new commitments to the use of technology, we must seek an approach that is first and foremost ethical, or infused with soul, to use Somé's terminology. We can do this by rethinking the kinds of questions we ask ourselves as administrators. Here is a sampling of the type of questions we typically ask ourselves. As you read them ask yourself: do these questions convey a sense of empowerment of the users of the machine? Do they address issues related to the care of each and every individual we serve, supervise, or report to? Or do they seem to imply that we are at the mercy of the technology we are attempting to harness?

- How can we use new technology in ways that are demonstrably pedagogically effective?
- How can we keep up with the pace of recent installations of new hardware and software in our schools and universities?
- How do we develop effective and clearly articulated policies, procedures, and training and find adequate staff

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to support even the bare minimum of what the new technologies promise?

- How do we establish realistic expectations and negotiate issues of accountability and ownership of high-tech resources?
- How do we train and retrain even ourselves on the upslope of this quantum learning curve?”

These types of questions will not lead us to the practical answers we are seeking. There is a sense of urgency behind them.

First we need to discard the goal- and results-oriented paradigm which they are based on and return to a process-oriented model of formulating hypotheses, creating solutions, and evaluating results. The first step towards a processual model of growth and towards healing our collective “techno-stress” is clear, nonjudgemental acknowledgment of and communication about the realities we are facing in this day and age. Once we have acknowledged the truth as individuals and as a collective, then we can transform what has become for many a cycle of anxiety in the face of apparent decreasing control to one which is fundamentally empowering. We can do this by first recognizing that what feels like a pressure-cooker is really the vortex of human creativity. Every painter and writer knows that there is a chance that each creative work produced might not be a guaranteed success. This is why writers write and read constantly—they journal, they jot, they edit, and they pour over another’s works. This is why painters doodle and draw and gaze upon endless landscapes, still lifes, and faces. These artists are stoking the fire that catalyzes inspiration into form with clarity and vision.

The understanding is that one cannot come without the other—the finished product will not materialize without the exploration and exercises that preceded it: once one work is complete, it flows into the next. The artistic paradigm is based primarily upon process, with the goal as a product of that process. As educators, if we are truly teaching our children how to creatively problem-solve and synthesize many points of view into their own, then it behooves us to model this behavior, these activities of creation, in the workplace.

A shift from chasing after the fantasy into accepting responsibility for the reality will free us up to see ourselves as catalysts of change, as opposed to slaves of the pace set by the machine. These realities include:

- Technology is here to stay, no matter what the monetary cost.

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- Technology will not replace teachers or save money. In fact, is going to cost everyone *more* at the outset.
- Technology has already significantly impacted and will eventually radically alter the way we teach and learn in ways that we can only imagine today.
- Technology will not solve all of our pedagogical problems. In fact, we should retain many of our old methods, including the use of the comfortable old book.
- We are involved in a huge social and technological experiment in which each of us—individuals, families, whole institutions, even countries—are both guinea pig *and* scientist.
- When we speak of long-term change in how we teach, how we support technology, and how we learn, we are talking about generational and historical change which is likely to take a decade or two, not a few years. The three-to four-generations represented today in our institutions are merely a bridge to the future. As a group, we have not reached the other side and are merely establishing the foundation for a future that will be lived by our great-grand-children and their children.

The Pew Roundtable discusses this shift in perspective on the part of university and college communities quite pointedly from a consumer-oriented perspective: “The problem is that faculty—and hence the institutions they serve—have approached technology more as individual consumers than as collective producers.” We are involved in a great creative collaboration of immense proportions. This shift in perspective will free us from the cycle of feverishly blaming ourselves or trying to find someone else to blame for our so-called inadequacies, bad decisions or lack of knowledge. Once freed from the shame-blame cycle, we can start to ask questions that give priority to human relationships:

- How do we find sane ways to make the machine serve our creative process, rather than becoming an unwitting slave to the machine?
- How do we, as administrators and educators, approach establishing sound programs for curriculum enhancement and implementation of faculty development programs while acknowledging that we cannot realistically keep up with the exponential changes in our workplace?
- How do support personnel and middle managers establish policies and procedures for the use of the technology which supports educational objectives without setting up unrealistic expectations in our patrons and without unreasonably taxing our employees and ourselves?

A question holds within it intention; human intent is the catalyst for all creative endeavors. If the questions acknowledge the physical and creative capacities *and* limitations of the human actors, then the solutions come in and of themselves and healthy boundaries and expectations can be established. If each one of us begins to approach questions and solutions with a different mind-set, with a set of goals which include a desire to caretake ourselves and others, then eventually we will begin to change the terrain all around us. This might take courage in some institutions. It might require standing up to administrators and legislators who want to be told an untruth in order to feel safe or be validated. They may want to hear their own illusions parroted back to them so they can report to their boss or their governor that they are being more efficient, downsizing, staying on the cutting edge, increasing teacher effectiveness and efficiency. All of this may be coming, but not tomorrow, and not next year.

## Some Solutions and Approaches

In the meantime, once we have slowed down and listened to the clamor of those who say they cannot stretch their resources any thinner, program implementation and creation of an infrastructure supporting our exploration can and should include varied responses. In the face of rapid technological growth, these approaches can be based upon face-to-face relationships and the reality of the rapid rate of change. They can be based upon a process-based model and recognize the realities of human limitations over and above trying to effect or prove quick returns on large infusions of capital. Part and parcel of this philosophical and reality-based approach is letting go of what we are not capable of incorporating into our repertoire *today*. If you cannot accomplish everything on this list, then choose only those components that you are reasonably certain you can accomplish successfully. Many of these ideas have come directly out my own experience in which I realized that I was burning out my own creative resources and serving no one in the long run. They also have grown out of making mistakes. Many of these ideas came from technical support people, faculty members, and administrators. They are based on a pragmatic, reality-based, self-empowering approach to this great challenge. They may not be appropriate for all individuals and institutions. Nor may every institution have the means to carry all of them off. But they are a list from which we all can cull what is possible based upon our own resources, philosophy and energy:

- Set moderate goals based upon what you have now, not

what you think you will need. Do not take on more than you and your staff can handle, if you are an administrator. Learn to say "No," and explain why. If you are going to take on any more, straining already overburdened resources, insist that such projects be put on hold until adequate support is available.

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- Estimate that initially, only a small handful of faculty will use the technology to its full capacity. Then, set a goal that over a period of two years, a slightly larger and less skilled group will have been brought on board. Assume that in the next 2-7 years, the use of technology will continue to grow at a modest, but steady rate.
- Make no promises that technology will solve every pedagogical problem, replace any teachers, cost any less, facilitate self-paced learning without instructor contact, or respond to every classroom need. Insist that for every twenty to fifty computers installed, one-half to one technical support position will be needed to support it.
- Assume that your capital outlay will be high per user for the foreseeable future, but that over a period of 5-10 years as teaching styles and curricula are reengineered to include the growing capacities of the technology, the cost per user will decrease gradually.
- Target training programs within specific disciplines, rather than trying to train large user groups from mixed disciplines. The more area-specific the training, the more faculty and staff will be able to see how the new technology is applicable to what they do.
- Set up a small training area within the faculty or staff member's own division, area, or building where users can be trained one-on-one or in very small groups so that they feel comfortable and shielded from having to publicly learn computer skills.
- For users who are unaccustomed to using Windows or who are technology-adverse, introduce them first to the use of the Web, inviting them to search topics of personal and pedagogical interest.
- Use mentoring programs, interest groups and demonstrations by faculty already using technology to encourage discussion about how the technology can change approaches to teaching and curriculum design. These groups can also be used to disseminate information and generate interest in the uses of technology in the class room and the curriculum.
- Use email conversations with interest groups to keep engagement high among developing computer users.

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- Allow the faculty member to be the creative force initially and provide adequate administrative and technical support for their endeavors. Do not expect faculty members to become technical experts instantly, but provide them with a cadre of professionals who are.
- Resist the impulse to always try to make the faculty member's requests work immediately if it involves moving large pieces of equipment or wiring, loading networked software, reconfiguring hard drives or networks, or creating new programs. Suggest that you work with the faculty member and the tech support people to see if it is feasible to do this for the following semester or the following year.
- Provide faculty members with a one- or two-course release for rethinking their curriculum. It takes time and thought and sharing with colleagues to break down years of pre-technology experiences. Old habits take time and focus to change.
- Include technical support personnel in meetings with faculty and in the training process so that faculty and staff can discuss the problems in getting technology to work. This will increase faculty awareness of the limitations of technology and what the staff are able to do, and will decrease staff frustrations.
- Bring support staff to meetings with administrators so that the latter hear problems and complaints from the people who are on the front line. If all parties are in direct communication, rather than in communication through intermediaries, those with the power to disseminate money and positions will be able to see the positive benefits of their choices and those in lower positions will feel listened to. In addition, technical support people can educate administrators in the limitations of the technology, thus helping those in positions of authority to establish expectations that are realistic and pragmatic.
- Target and support all levels of technology, from the faculty member who is developing complex multimedia or Web-based class materials to those who simply want creative ways to use wordprocessing programs in the classroom.
- Provide adequate funding for technical support personnel so that they can work at a human pace. In this way, they can more effectively serve their faculty clients and faculty will see more successes in the classroom because the chances of things running smoothly will be higher.

- Hire a cadre of professionals who straddle the technological and academic fields, who can serve as simultaneously as pedagogical and technological consultants. Ideally, these consultants should be fully versed in the entire spectrum of instructional technology—from the use of audiocassettes and VCRs to multimedia and Web mirroring. Beware hiring individuals who are multimedia aficionados and see it as the panacea for all teachers.
- Purchase software which can be used across disciplines first, such as word-processing software for foreign languages or composition programs which can be used by many disciplines, then purchase software based upon very specific needs and goals.
- Lastly, as a profession, whatever our role, we must start putting pressure on the software and hardware producers to find standards which are compatible with educational settings and to set prices which will not lead to the financial ruin of our institutions. Products should not be put on the market before they are ready and upgrades to outdated versions should be provided at minimal cost. As a pressure group, educational institutions and state and federal governments need to stand up to the corporate conglomerates and say “No!” This does not mean we should not buy their products, but we need to make clear that these organizations must invest in our children’s future, not suck dry the very institutions which are designed to nurture them. Yes, we are part of the marketplace, we are consumers of products, but we are non-profits and are far more impoverished than Microsoft and other conglomerates.

## Conclusion

There is a great deal of talk among economists, agricultural experts, and others about how to develop a sustainable future for our planet. I am proposing the extension of this idea not only to our environment, but also to our work places and ourselves. Sustainability means enabling us to support our families, our communities and ourselves emotionally, physically, and spiritually, while we also generate and support other creative projects at work. Technology does and will continue to serve us as a fantastically useful, creative tool. If we first set moderate expectations of ourselves, others, and our institutions, then this working paradigm will slowly infiltrate everything we do and will support different learning styles and needs in ways traditional teaching has not been equipped to do ever before.

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