WILD·DUCK REVIEW

Literature, Necessary Mischief, & News

"In literature it is only the wild that attracts us. Dullness is but another name for tameness. It is the free and wild thinking in *Hamlet* and the *Iliad*, in all the scriptures and mythologies, not learned in the schools, that delights us. As the wild duck is more swift and beautiful than the tame, so is the wild – the mallard – thought."

– HD Thoreau

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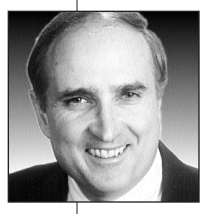

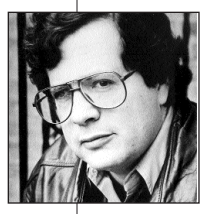

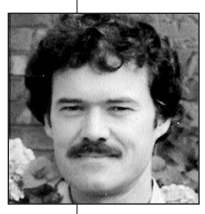

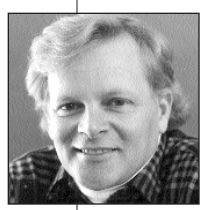

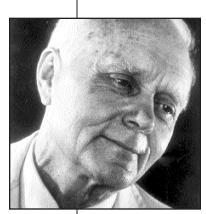

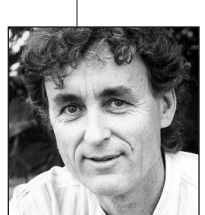

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Special Issue on Education

Letter from the Editor

Much of *WDR*'s Winter issue focused on population and immigration–the subject of a hotly disputed Sierra Club ballot vote–which forced to the surface a wider problem facing us all: The perceived rub between social justice/equity issues related to population/immigration and the ecological consequences of unabated growth and development in the real world.

Working to reframe the debate through an ecological worldview–a context which scales the human enterprise to the health of ecological systems in any given place–a number of us gathered in San Francisco at a press conference in support of ballot Measure A. We called for deeper attention to the consequences of unsustainable population growth for California in particular; and, for ways to think about immigration that do not arise from small-mindedness, racism, xenophobia, or greed. But, rather, re-examine the ideas of local/global political economies which drive dislocation and make injustice inevitable.

Of course, it was a tall order to reframe the debate and will continue to be a tall order for some time. Measure A failed in the April vote, and, for the time being, immigration will not be reinstated in its historic, near thirty-year place as an essential component in the Club's attention to and advocacy for population stabilization.

Interestingly, the insurmountable 'wall' many of us found ourselves up against–as Gary Snyder astutely emphasized in his *WDR* essay–is the deeper issue of our collective *maturity* and our still too-inchoate sense of both carrying capacity and an integrated, working-living membership among the human and nonhuman on 'Turtle Island'. At stake, as Snyder put it simply, is whether we will actually *grow up* and *be here*–whether we will learn to live together with ecological wisdom for the long run.

Implicitly, and until we do, it seems to me that we will not understand, in the Goethean sense, the objective causes and motives that will create our laws and set the standards of our time. Instead, we may very well remain dislocated from the land and from each other, immature and dilettantish, increasingly vulnerable to a current of trends as we drift passively within the larger patterns of demographics and economics, each of us carrying the 'correct' passions of viewers and consumers who may be pleased or displeased but always dangerously ill-equipped to think freely about the world being made.

Indeed, in the absence of an ecological worldview and in the presence of a political economy that dismisses physical limits, it becomes too easy to forecast a casual, fatal, dystopian drift into the hypermodern smoke and mirrors of George S. Trow's *Within the Context of No Context*, or Aldous Huxley's *Brave New World*, each of us willfully choosing layer after layer of remove through the pleasures of remove, with each of our pleasures increasingly virtual, increasingly derivative, and imperceptibly cold, imperceptibly sadistic.

Which brings into focus the questions of this issue of *Wild Duck*: Looking not only at crises *in* education but *of* education, how the issues of educational 'development' are currently characterized and to what ends. Many in this issue ask what kinds of intelligence we might cultivate, what kinds of knowledge are worth pursuing, what capacities of imagination are worth developing, if, indeed, we *are to grow up afterall* and live here sanely, with ecological wisdom for the long run.

As David Orr writes in *Earth in Mind*, it is worth noting that the destruction of ecological systems has *not* been the work of ignorant, unschooled people. Climate instability, losses of biodiversity, diminished or corrupted water and topsoil supplies, endocrine disrupters, genetic manipulations, and so forth, have all been accomplished by those who have succeeded in our educational system, with advanced degrees. He concludes, "My point is simply that education is no guarantee of decency, prudence, or wisdom. More of the same kind of education will only compound our problems. This is not an argument for ignorance but rather a statement that the worth of education must now be measured against the standards of decency and human survival. . . .It is not education, but education of a certain kind, that will save us."

Art creates its own laws and sets the standards of the time; dilettantism follows the trend of the time. . . .Because the dilettante's urge to create derives solely from the effect which works of art have on him, he confuses this effect with objective causes and motives. And so he now believes it possible to use the emotional state into which he has been transported as a means of being productive–which is tantamount to trying to produce a flower by means of its fragrance. For the dilettante, the essential element of art and the basis of his own work is what speaks to the feelings; this, to be sure, is the ultimate effect of all artistic creation but it also presupposes the mustering of all art' s resources."

–Goethe, 1799
"On Dilettantism"

For many in this issue, it is alarming to watch the widespread commercialization and corporatization of K-12 education across the U.S., Mexico, and Canada. Particularly when every child's future as a global citizen is framed as a future that "will or won't be competitive," in a win-or-lose 21st century. Inceed, such cant is commonly held up to educators, administrators, and parents as the carrot and stick for increased spending on computer technology in the classrooms, take-home laptop rental programs, purchasing of software programs, and getting your child started early with "computer literacy." In the May 25, 1998 issue of *Time,* in conjunction with Karen Tumulty and John Dickerson's article, "Gore's Costly High-Wire Act," Al Gore responds to the question: Should schools be wired to the Internet? Gore writes: "The President and I could not agree more. Access to the basic tools of the information age is no longer a luxury for our children. It is a necessity." He credits computers with higher student performance on standardized testing and greater student communication about complex problems, and cites a lack of technology as yet another "hurdle" perpetuating the great divide between "poor and rural communities struggling to keep up with richer ones." "Already," he says, "America is sharply divided between those with access to computers and the Internet and those without it." In conclusion, he appeals to parents: "We must give our children–all children–the chance to succeed in the information age, and that means giving them access to the tools that are shaping the world in which they live." What Gore and others do not ask is what questions need to be asked, what knowledge pursued, in an Information Age that shows no sign of intellectual resistance to a political economy that is, in the most basic of ways, oblivious to the natural world and to the cultural life of people.

As Luke Mines recently reported in "Globalization in the Classroom" (*The Nation*, June 1998), a government-sponsored, Clinton Administration- and corporate-financed program named "Virtual Trade Mission," (VTM) introduces students to the "wonders of the global economy" and the potential of "Big Emerging Markets" in Mexico, China, and Indonesia. One video urged students to join 'Team America' in the sales of military wares in the developing world. Promoters of VTM are unabashedly ambitious after a successful pilot-program. Commerce Secretary William Daley highly commended VTM during a recent speech at Harvard, saying, "We must resolve to build a domestic consensus for open trade. . . .The younger we start to make the case, the better. . . .We hope [the VTM] expands to every state, and we reach every child in America."

In the May/June issue of *Sierra* magazine, an article by Bruce Selcraig, "Reading, 'Riting, and Ravaging: The Three Rs, Brought to You by Corporate America and the Far Right," exposes corporate influence in classrooms across the country. In it, Selcraig writes, "Environmental education is mandatory or strongly encouraged in about 30 states, but schools are starved for cash. In response, corporations have flooded schools with thinly disguised propaganda." And, "Without exception, every teacher I interviewed said that most of their students' lives revolved around malls and television and that the kids were astounded at simple revelations about nature."

CONTINUED PAGE 36

COVER ART BY SUZANNE OLIVE
Erythronium tuolumnense, the Tuolumne fawn lily, has been place on List 1B by the California Native Plant Society as rare, threatened, or endangered in California and elsewhere. Limited to Tuolumne County where it grows in habitats of broadleaf and upland forest, the Tuolumne fawn lily is most threatened by logging, vehicles, reforestation with herbicides, and horticultural collecting.

Letters to the Editor

PEARCE CONTINUED

Jerome Bruner once said the great beauty of human language is its metaphoric capacity. . .that we could represent the world to ourselves metaphorically, mutate our metaphors and change ourselves in the world. Bruner came up with that very beautiful and brilliant insight thirty

or forty years ago.

There is a book by a medical doctor living in Seattle, Leonard Shlain, called *Art and Physics: Parallel Visions in Space, Time and Light*. In it he says art is always presaging what will happen in the whole scientific, social world. He gives the most incredible defense of this idea over the past 600 years–how art has always shown exactly what will happen in the scientific and social structures a century later.

The great Margaret Mead once said, "No education that is not founded on art will ever succeed." I think the beauty of the Waldorf system is that they don't teach art–it's not a subject. Art is the way by which everything is taught and learned. Art is "high play" and only through high play does real learning take place. Yes, this is the way to a real life. The rest of it is conditioning to another's employ, another's motive, another's idea of life.

• • •

LETTTER IN RESPONSE TO WINTER 1998 ISSUE:

March 4, 1998

Letter to the Editor,

It appears that Professor Joanna Macy has been deeply influenced by the multiple choice examination, one of the more exquisite academic genres of our age. I refer to her version of a poem by Symeon the Theologian, in which she has substituted the words "Earth" and "planet" for "Christ" and "God." Since the first Amendment does not extend to the dead, there is no limit to what can be done in this line; entire religious traditions lie before us. We must make them "mirror what we want, and think we are," thereby finding values to sustain us. New editions of holy ("holistic") books will substitute blanks for all proper nouns. For "God" and "Christ" Wall Street may wish to substitute "Global Economy" and "Free Market," for that will mirror what Wall Street wants and thinks it is, and will sustain its values. Ardent Catholics undoubtedly will wish to refer to "the Buddha" as "the Pope." The intellectual possibilities of "The Great Turning" are perfectly stunning. We can call it Virtual Religion.

–Wendell Berry

April 6, 1998

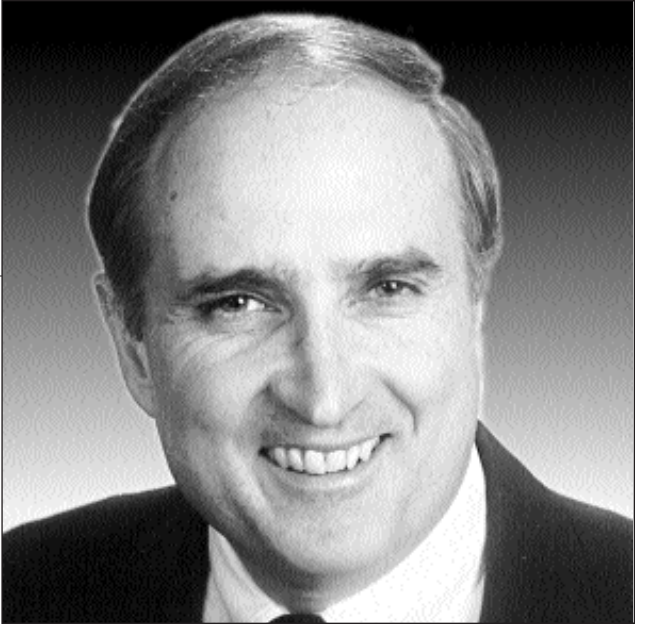
Letter to the Editor,

Let me remind Mr. Berry that, when I replaced two words in Symeon the Theologian's poem, I stated what I was doing and why. The substitutions were deliberately chosen to honor and continue Symeon's boldness in presenting a new vision of the holy, a millenium ago. For him, a Christian abbot, to identify his body–his hand, his foot, his "ugly," "shameful" parts–with Christ, with God, was as shocking to the Church as my insertion of Earth and planet is to Mr. Berry. Symeon was banished from his monastery for life.

To shift the locus of the sacred from disembodied realms to everyday life–from transcendence to immanence–involves departures from tradition. The resacralization of Earth and body takes us in the opposite direction from "virtual reality," with which Mr. Berry tags me–and is essential to the great turning from the Industrial Growth Society to a Life-Sustaining Society. Unless based on reverence for life, the alternative institutions we create will fail to carry us through; for, yes, institutions do "mirror what we want and think we are," just as Wall Street and the global economy mirror our greeds and our alienation.

–Joanna Macy

"So That All the Other Struggles May Go On"



DAVID ORR, PH.D. *is Professor and Chair of the Environmental Studies Program at Oberlin College, and author of Earth in Mind (1994), Ecological Literacy (1992), as well as over 90 articles. He is co-editor of The Campus and Environmental Responsibility, co-edited with David Eagan (1992), and The Global Predicament co-edited with Marvin Soroos (1979).*

His educational background includes a BA from Westminster College, a MA from Michigan State University, and a PhD in International Relations from the University of Pennsylvania. His awards and prizes include a National Conservation Achievement Award, a Lyndhurst Prize, the Benton Box Award, and an Honorary Doctorate. He serves as Education Editor for Conservation Biology, and is a member of the editorial advisory board for Orion Nature Quarterly.

Of Earth in Mind, E.O. Wilson writes, "As a rule economists understand economics, ecologists the environment, and educators teaching. David Orr is one of the rare authors who understands all three, and in these finely etched and admirable essays he delivers the revolutionary credo necessary, in my opinion, for the long-term survival of our species."

We cannot easily or legitimately escape our culpability in the larger problems of our time. The important planning questions have to do with how this college might be energized to rethink what institutional success means at a time when the entire human enterprise is in jeopardy.

Editor's Note: "So That All Other Struggles May Go On" was written by David Orr in response to a recent planning guide for Oberlin College called "Broad Directions." It is reprinted here by authorial permission.

Within the lifetimes of students now attending Oberlin College, world population will double to 10-12 billion people, human actions will drive into extinction perhaps 20 percent of the species now on the earth, and the emission of heat-trapping gases will force global climate into a less stable and probably far less desirable state.

Surveying these and other global trends, 102 Nobel laureates in science and 1600 other scientists from 70 countries signed, in 1992, the World Scientists' Warning to Humanity, which reads in part:

> Human beings and the natural world are on a collision course. . . .If not checked, many of our current practices put at serious risk the future that we wish for human society and . . . may so alter the living world that it will be unable to sustain life in the manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring about.
>
> We the undersigned, senior members of the world's scientific community, hereby warn all humanity of what lies ahead. A great change in our stewardship of the earth and the life on it is required, if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated.

A substantial and growing body of scientific evidence amassed since 1992 confirms the view that humans are at or near critical thresholds of planetary stability and ecological carrying capacity. Humankind is now in the first truly global crisis that concerns our survival as a species, the terms by which we might survive, and what it means to be human.

No problem mentioned by the world scientists is unsolvable in principle; all can be solved if we have the wit and will to act with intelligence, foresight, and dispatch.

One all-too-common response to the warnings, however, is to deny their validity. The extreme right has done this by ridiculing, obscuring evidence, and confusing the larger issues in question. The political left often denies by attacking science and inconvenient evidence as reflections of gender, power, and ethnic background. More sophisticated forms of denial take the form of excuses that we do not have the time or expertise to worry about issues beyond our specialization, especially those that make us uncomfortable in polite circumstances. Some even say that humankind has always triumphed in the past and ergo will do so in the future. Beneath all forms of denial is the hope that someone else will figure it out or that technology will save humankind in the nick of time.

Denial is not just an individual behavior–institutions do it, too.

The document that came from our recent exercise in strategic planning, for example, contains no mention that global environmental trends are pertinent to Oberlin's future. Broad Directions for Oberlin's Future carries no hint that global change has anything to do with the educational mission of the College or that it might radically alter the lives and career prospects of Oberlin students. In its silence about environmental and global issues, the document could have been written 40 years ago.

Broad Directions calls for higher faculty salaries and more time for scholarship. It is filled with familiar and undefined phrases about diversity, multiculturalism, and social empathy, without saying what these words have to do with the preservation of biological diversity. It may even confuse egalitarianism with real cultural diversity. It certainly does not say what social empathy has to do with empathy toward our fellow creatures in the natural world and to the generations ahead whose prospects are jeopardized by rapid global change.

We read, for example, that every Oberlin student should learn how artists think. But nowhere are we told that all students should know how the biophysical world works and why that knowledge is important to their prospects.

We are enjoined to celebrate our diverse social, artistic, and intellectual life together, but nowhere does the document note the central fact of our existence: that, aware of it or not, we are part of an ecological community.

The document recommends steps to promote health and wellness but makes no reference to the fact that human wellness in a sick environment is temporary at best.

What would it mean for Oberlin College to face the mounting evidence that humankind is in real danger of mutilating the home we call earth as well as our own humanity?

First, it would require an attitude of utter candor and intellectual fearlessness to overcome the complacency, self-congratulation, and busyness that sometimes characterize this and other colleges. We cannot easily or legitimately escape our culpability in the larger problems of our time. The important planning questions have to do with how this college might be energized to rethink what institutional success means at a time when the entire human enterprise is in jeopardy.

Second, taking long-term global change seriously would require us to think more carefully about what our students will need to know to live lives of service at a time when ecological stability can no longer be taken for granted. Among other things, they will need to know how to:

- power civilization by a combination of high efficiency and technologies that capture cur rent sunlight, thereby reducing the likelihood of severe climatic change;
- reduce population growth while safeguarding basic human rights;
- preserve species and entire ecosystems;
- grow their food sustainably, which means preserving soils, groundwater, and biological diversity while safeguarding human health;
- eliminate waste and pollution;
- restore degraded ecosystems;
- develop economies that can be sustained with in the limits of natural systems;
- comprehend systems dynamics and long-time horizons;
- create artistic and cultural symbols necessary to redefine the human role in nature;
- create the political basis for an ecologically solvent democracy; and
- create a just distribution of power, wealth, and opportunity in a world increasingly divided between rich and poor.

Third, a vigorous response to global change would require us to think openly about things now taboo,

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AN INTERVIEW JANE HEALY

JANE HEALY, PH.D. *has worked as a teacher, reading specialist, professor or administrator throughout all levels of education, from preschool to graduate school. She is a graduate of Smith College, holds a MA in reading from John Carroll University and a Ph.D. in educational psychology from Case Western Reserve University. Her postdoctoral work has focussed on developmental neuropsychology. She is now widely recognized as an author, lecturer, and consultant in applying brain research to learning situations in the classroom and home.*

Her award-winning books have been translated into nine languages: Your Child's Growing Mind; A Guide to Learning and Brain Development from Birth to Adolescence; Endangered Minds: Why Children Don't Think and What We Can Do About It; and How to Have Intelligent and Creative Conversations with Your Kids. Her current book, Failure to Connect: How Computers Affect Our Children's Minds–for Better and Worse, is forthcoming from Simon & Schuster, September 1998.

Jane and her husband, Tom, lead active outdoor lives in Vail, Colorado.

The following conversation between Jane Healy and Casey Walker took place May 20, 1998 with the production assistance of KVMR, a community-supported radio station in Nevada City, California.

Casey Walker: Let's begin with your notion that the child of today lives in a world that is alienated, and that the habits of mind in that world have physically changed their brains in ways that are antagonistic to the goals and values of education.

Jane Healy: That is my thesis in *Endangered Minds*, and I think that is why the book has touched such a resonant chord with educators and parents. The brain has certain, very clear developmental needs. You don't have to be a neuroscientist to notice that children tend to behave in certain ways at certain ages, or that their system is telling them that they need to do these kinds of things. Our contemporary culture is interrupting that flow, if you will, and intruding upon the child's world and the child's brain. Certain very, very salient stimuli such as television or Nintendo or computer software have the potential to disrupt that process in a way over which the child has very little control. The alarming thing to me is that adults are not only unconcerned about this, for the most part, but actually welcome these intrusions by thinking that they are going to make their kids *smarter* and *better purveyors of data and information*. This kind of thinking certainly illustrates the abysmal ignorance in our contemporary culture of the real needs of the growing child.

Will you speak to how vital interactive conversation, interior dialogues, and so forth, are in creating the child's neurological capacity for reason, reflection, abstract thought? And, how contemporary culture impedes this kind of linguistic development?

Yes, language is one of the very important brain shapers throughout childhood and adolescence. Of course language is tied to other factors. Motor development is very closely tied to language, interestingly enough. Some new studies show that a child's speech is more closely related to his or her motor system than was previously realized. Now, for children, speech is the means by which we learn to mediate our own behavior, obey rules, control what we do, and anticipate what will happen next. All these patterns are tied to the motor system. Sophisticated instruments show that even when adults are thinking, their lips and tongues and larynx are actually moving as they 'talk silently' to themselves. And, for a child these connections are much more overt. Each time such actions are repeated by the child, the brain wires itself up a little more so that it becomes easier for the child to repeat that action the next time. This process, called *neuroplasticity*, underscores the extreme importance of what we encourage kids to do in any developmental period.

It's wonderful to know that the brain comes into the world endowed, really, with all of the neurons it's ever going to have. But, the weight and the size of the brain increases as a function of making connections and developing strong synaptic bonds between cell groups. For example, making neural networks by using language for thinking actually increases the size and dimension of the brain–all of which enables the child to use these connections more automatically. It also builds the habit of language mediation for use in elementary school , high school, and in life as an adult. It's troubling that there is so little language, oral language particularly, in the child's world today. What comes to the child from television, even from Sesame Street, doesn't count as language usage because the brain isn't processing the language as much as it is processing the more dominant and constant, visual stimuli.

I appreciated your curriculum for wisdom at the end of Endangered Minds: "Conversation, thought, imagination, empathy, and reflection." It becomes quickly apparent that wisdom, the practice of wisdom, is not associated with so many childhood activities geared to simple absorption and consumption.

Yes, very much so. It's easier to absorb and consume, and if that's what is stuck in front of your face all day every day, you may actually miss the experience of learning to use higher levels of imagination, reflection, and empathy. What we see in children today is very interesting because teachers report not only drastically increased incidences of Attention Deficit Disorder (ADD)–which signals problems in control systems, in rule governed behavior, and in the ability to plan and monitor and guide our own behavior–but also increased incidences with children who are having trouble with social empathy, who can't negotiate rules on the playground.

Kids are more willing to hit than talk?

Yes, which can be explained in part by what they see modeled, but is also a function, I believe, of the fact that they haven't had the time to learn to interiorize their own actions. In other words, they can't reflect on their actions, they can't picture them ahead of time, they can't imagine what the result will be, and they can't imagine the future because everything has been brought to them in an instant–and, if they don't like it, they flick the button. This has been said over and over and over again, but the fact that it is being said over and over and over again, particularly by teachers, suggests that there may be some truth to it.

I also appreciated your emphasis not only on the negatives of "too many" images through TV, videos, and computers, but on what then goes missing from a "healthy childhood."

Yes, children are exposed now, of course, to a great deal of inappropriate stimulation and information. I believe at least some of the over-excitement which clinically presents as Attention Deficit Disorder may actually be an anxiety response to sexual or violent material that is far beyond the child's level of understanding. Certainly ADD problems do mirror anxiety, as well as other causes. I need to be clear in saying that there are certain brains that have constitutional difficulty in paying attention, but unfortunately our culture is not helping those brains develop strategies for attention and it may be pushing some kids off the deep end who wouldn't go there otherwise.

The exposure of children to inappropriate adult-type material is interesting in terms of the developmental stages in the brain, and I've been particularly concerned with this while teaching late elementary and young adolescents. The pre-fontal cortex–which is the part of the brain that enables us to put abstract material into perspective, to manipulate ideas and understand the odds, say, of something happening–doesn't experience its most intense growth spurt until late childhood, and, in many cases, through adolescence and into the twenties. It has been confirmed that children who are exposed to material meant for adults don't actually have the brain structures, nor the practice in using them, to mediate or make sense of what they're seeing.

It's just overwhelming. . . .

Yes. I think overwhelming is a good word to use for what the media is doing to youngsters. A lot of our children are really functioning at the level of *survival* rather then being able to explore the world in their own good time–missing the types of stimuli, the types of information, and the types of relationships with cause and effect that the young brain needs to slowly knit together to make the fabric of adult intelligence. Children are being inundated–whether it be loud music, too much visual stimulation, or premature pressure from academic learning inappropriate to developmental need–and these children are in a 'fight or flight' mode much of the time.

These kids are besieged first of all by adult expectations, and by adult neglect in helping them to develop the brains that will help them meet those expectations. It's really no wonder that we have a lot of very nervous, very unhappy, very depressed, and very stimulus-seeking children. And it's exactly what we adults can logically expect from childhoods interrupted by this kind of battleground.

I'm curious, too, because all of this implies not only a socially diminished person, but one who is less capable of perceiving the natural world, the way life works at large, too. It creates an atrophying of capacity to perceive 'Self' or 'Other' across the board.

Yes. I would say there is an atrophy of the capacity to *reflect deeply on both issues*. And, if we think of that in terms of the upcoming body politic, we should be very concerned that everything is quick, everything is resolved in these kids' worlds. The brain has certain critical or sensitive periods in which skills or capacities apparently require stimulation in order to develop. While we are a long way from understanding this process, neuroscience suggests strongly that if the child's developmental needs during these periods are not met, we may

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ural world, as opposed to the teachings of much of this century which are aimed at accommodating the natural world to our needs? Is it not time that schools moved, as put by Teilhard de Chardin, from "an anthropocentric to a biocentric orientation of consciousness"?

As independent schools, we often refer to ourselves as "communities" and often speak of how we are to get on with each other, our responsibilities to each other, respecting each other's space and needs. It is essential that all schools begin to enlarge this dialogue to include the larger integral community of which we are all a part. Again, in the words of Teilhard, "We have a complex of traditions that must be turned toward a creative interaction with the functioning of the earth. The one thing necessary is to appreciate that the earth itself and all its living and non-living components is a community. There can be no sustained well-being of any part of the community that does not relate effectively to the well being of the total community."

On Huxley's island, the birds call out "Attention!" Our responsibility as educators and curricular architects is to carefully choose that to which our schools will pay attention. We pay attention to SATs and GPAs and dress codes. We pay attention to great thoughts and historical periods and geometrical theorems. But we do not, typically, pay attention to our physical place. We do not pay attention to our place in that place. We must expand the concept of citizenship that we teach to include a larger community and our search for relationship to include a deeper connection to the world. Of course our school is not an island, just as none of us are. Yet it is manageable to study and it is real, not remote or abstract. The very living on this land and the broadening of our spheres of responsibility, helps to teach those modes of living, habits of the heart and mind, which will promote sanity and teach connectedness.

Just as it is shallow and hypocritical to teach justice while turning our backs to injustice, or to praise diversity while practicing exclusivity, it is the work of all schools to not only teach the uniqueness of each and the interdependency of the whole, but to honor these concepts in daily practice.

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DODGE CONTINUED FROM PAGE 35

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do understand, though, that marijuana is a mind-altering drug and therefore illegal, and that tobacco is a mind-altering drug, highly addictive, and legal, and that alcohol is a mind-altering substance, addictive for some people, and legal. The only thing I don't understand is why.

I'm beginning to suspect that Uncle Sam has a drug problem, and while I think it'll probably take a 12 Million Step Program to clean him up, he should take at least the first two standard steps: admit he has a problem that he is powerless to solve; and surrender to a higher power–in this case, the will of the people.

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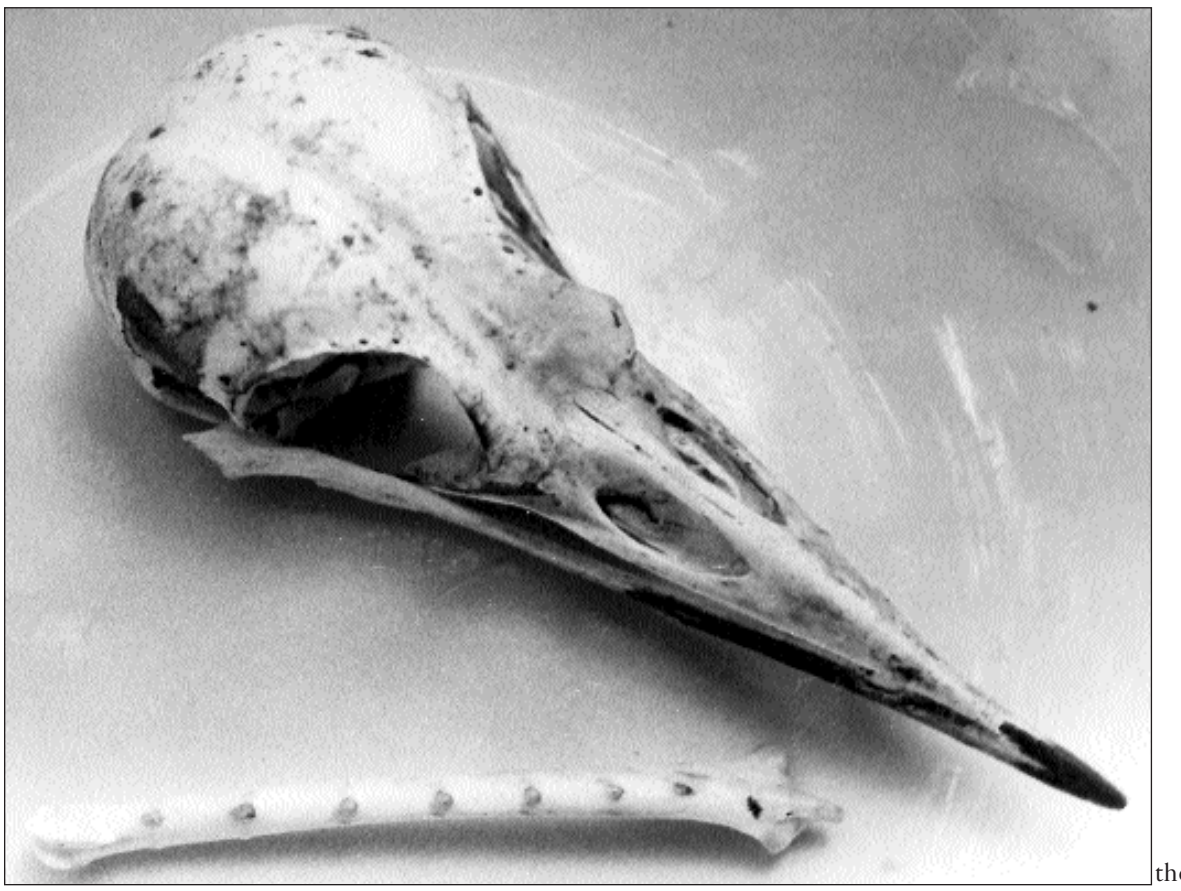
[See Part II in the next issue of *WDR*.]



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HANK MEALS

"*Appreciating Anemone*"

BY GEORGE KEITHLEY

In the Sacramento Valley and on the low slopes of its many adjoining canyons–Mill Creek Canyon, Deer Creek Canyon, both home to the Yahi and Yana tribes for several hundred years before the present century, and Butte Creek Canyon with its aptly named Hell's Kitchen–the soil is thin and porous and the terrain is strewn with lava rock. Nevertheless, a remarkable wildflower thrives in this environment. Splashing the creekbanks and the open meadows with its colors, anemone grow throughout this region in wild profusion.

Ignoring the warnings in names such as Dry Creek and Devil's Gulch, this cheery-looking flower blossoms in late spring, after the last rain we'll see for five or six months, and it's still plentiful in early summer; no easy feat as temperatures rise above a hundred degrees, vernal pools with their multitudes of tiny pond life susceptible to the slightest changes in climate vanish, and wild grasses turn to straw.

Along the banks of the quick-flowing, west-running creeks that carve these canyons, the predominant colors are the vibrant green of vines, the deep green of catalpas and broad-branching shady oaks, and the surprising pallor of the tall sycamores–many are forty or fifty feet high–their trunks bone-white or grey, a ghostly presence among the darker trees.

Where there are long narrow meadows to either side of the swift-spilling water, these grasslands, which are frequented by magpies and plump meadowlarks, are patrolled by hawks from early morning until sundown. By the end of April the meadows already are losing their spring green; now, in June, they're quickly bleaching out, soon to achieve a uniform tan which they'll wear for another six or seven months, until the winter rains begin greening again.

Against this background of green-turning-to-tan, the anemone present themselves often in banks of a single solid color–either sky blue or bridal white; or a particularly lush pink that deepens and intensifies toward the end of petal; or, my favorite, a vivid red that nevertheless seems to contain a suggestion of both the pink and the blue within it.

There are more than a hundred species of this flower, and some of them grow in abundance in the northern Mediterranean region, including Turkey, and further east, in parts of Iran. In fact, the soil and climate in some regions of ancient Persia were not unlike the growing conditions in the upper reaches of the Sacramento Valley today, a land that supports not only olive groves, with their dark-shadowed wood and silvery leaves, but also sturdy pomegranate an pistachio trees, walnut and almond orchards which form long tunnels of deep shade, and flocks of sheep cropping the grassy buttes.

The anemone growing in the fertile flood plain of the Sacramento River, and just above it in the parching canyons, is such a common sight it might easily be overlooked. But it invites a close observation. Each flower has a starburst corolla of elongated petals which are separate, never fused–I normally count seventeen to nineteen petals–radiating from a slightly nubby button-like fruit.

The individual blossom is especially noticeable for two reasons, the first apparent at a distance, the other on closer inspection. First, the anemone is vivid when other colors are fading in the intense warmth of the season–the golden poppies have disappeared, overcome by tall grasses; the variegated, silky-textured wild iris are brown and shriveled–so it's sure to stand out on a creekside or at the base of a barren canyon wall.

Also, when we approach, it's clear that the petals are displayed distinctly independent of other growth on the plant–the nearest leafy whorl is located inches below the bright blossom, poised atop its slender stem. It is, finally, this distancing of the anemone blossom from its other foliage which affords this colorful and durable flower the full attention it deserves.

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including the narrowness with which we define liberal arts, the unexamined assumptions implicit in our technological fundamentalism, the controlling assumptions hidden in a curriculum organized by departments and disciplines, and the anthropocentrism that limits our willingness to see ourselves as only a part of a larger ecological community on a long evolutionary journey. Our students will need to think in patterns and systems, yet–rhetoric to the contrary–we still emphasize disciplinary specialization. They will need a kind of lateral rigor to combine knowledge from different fields, yet we still educate them as if rigor were exclusively vertical and meant going deeper and deeper into a particular discipline. They will need a larger sense of beauty that insists on causing no ugliness, human or ecological, somewhere else or at some later time. Yet we still educate them as if art, science, morality, and the long-term human future were unrelated. The relevant planning questions have to do with how we might create the resources, time, and intellectual tolerance to question the reductionism and anthropocentrism buried in the organization of our academic and institutional life.

Fourth, taking the long-term human future seriously would require developing ecological literacy throughout the entire College, from students through trustees. We have a model in the continuing effort to develop and upgrade our computer literacy. We have other models having to do with gender, sexual orientation, and racial equality that have been institutionalized in policy guidelines and administrative procedures. The planning question is how we might institutionalize the capacity to think and act across discipline boundaries as if evolution, ecology, thermodynamics, and the long-term future really mattered.

Fifth, taking the long-term seriously would change how the institution operates. We have a moral interest in making certain that campus purchasing, investments, and operations of the physical plant do not undermine the integrity, beauty, and stability of the world our students will inherit. With that obligation in mind, could Oberlin take the lead to declare, say, a 10-year goal to become the first college in the world to power itself by a combination of greater efficiency, emerging solar technologies, and hydrogen? Why not? The limits are no longer technological or even economic, but those of imagination and commitment. Through the imaginative commitment of our purchasing and investments could we help leverage the emergence of a genuinely sustainable economy in the Oberlin region? And could we incorporate such things into the curriculum in ways that cross disciplinary boundaries while having a practical effect on the world? Why not? The important planning questions have to do with how we might imaginatively calibrate our stated values with our real institutional behavior and do so as part of a larger effort to teach our students that the world is indeed rich in good possibilities.

Oberlin is a distinctive institution largely because its early leaders were willing to risk the very existence of the College for large ideals. We have drawn on the moral capital they created ever since. It is fair to ask what we are willing to risk and what moral capital we will leave behind. Our predecessors risked it all for human equality. That struggle continues, but it is now subsumed in a far larger struggle to ensure a habitable planet for coming generations so that all the other struggles might go on. Future generations–the presumed beneficiaries of our strategic planning–will care not a lick for how we stacked up against the conventional indicators of institutional success. They will measure us, rather, by our foresight and for what we were willing to risk on their behalf.

HANK MEALS

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WALKER CONTINUED FROM PAGE 2

Within higher education, signs of the corporatization and digitalization of education appear in the press almost daily. *USA Today's* cover story of June 4, 1998 reports on the ambitions of the Western Governors University, which is supported by the pooled resources of Governors in seventeen states and Guam, a no-campus university, which expects to service 100,000 distance-learning students by 2006. WGU has its academic offices operating out of Denver; its bookstore out of Chicago, its administrative offices out of Salt Lake City, its library out of the University of New Mexico; and the "back office" of registrar, bursar, and so forth out of Washington State University.

As David Noble argues in "Digital Diploma Mills: The Automation of Higher Education," the technological transformation of universities is not just about technology but about corporate profits–the commercialization and commoditization of instruction. His findings include groundbreaking discovery of speculative, proprietary deals made over the past few years between UCLA and Home Education Network, between UCBerkeley and America On Line (AOL), and between the University of Colorado and Real Education. Each carries far-reaching implications for faculty intellectual property rights and for the ethos of intellectual freedom associated with the university as a public institution. Noble argues that the commoditization of university instruction is not our only worry in the "sell-out of the university," but follows an earlier (and highly lucrative) phase involving the corporatization of university research.

Another rising specter is the much-delayed and beleaguered CETI deal between all 23 Cal State University campuses and a changing consortia of corporations dubbed the "GTE Team." Covered at length here by four Humboldt State University students, and by Jim Wood, the CETI deal poses as the largest "sweetheart" deal yet between the private and public sector. Further, as Jim Wood's CETI update outlines, legislative action may be quietly laying mandatory corporate deal-making groundwork as well.

Clearly, education as a whole stands to be revolutionized top-to-bottom–either as a training ground for an accelerating, win-or-lose global economy, or reclaimed by a thinking public as the institution upon which intellectual freedom and human maturity depends. May this issue of *WDR* on Education aid in the scrutiny of current trends and unexamined assumptions. And, may we begin to rethink education in today's world, where ecological and cultural knowledge has yet to create our laws and set our standards.

–Casey Walker

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actually close down some of those developmental windows.

This doesn't have to be a scare story for parents of preschoolers. What it does mean is that although human windows are wide, they may close. And, if a child reaches adolescence without ever having been exposed to reflective thought, language as a medium for planning and organizing behavior, or appropriate social learning, it may be true that these will be very difficult or even impossible to acquire.

What of the idea that much of the brain's development depends on interaction with the natural, physical world, that what we learn there and the acuities developed there, cannot be substituted by an artificial or mediated environment?

There is a lot in neuroscience research that would confirm that idea, and there is certainly a great deal in developmental psychology that says the same thing. For example, a child who is working with a set of maple blocks, is putting them together to figure out how to make a tower, build bridges, or construct houses is experiencing the world very differently from a child who is manipulating two-dimensional shapes on a computer screen. I deal with this at some length in my forthcoming book, *Failure to Connect*. I'm interested in looking at what computers are doing to the growing brain, and I believe there are profound consequences to depriving children of these, if you will, "ecologically valid experiences in the real world." I believe they are going to come out with a very different sort of brain than a child who is trying to experience all of this on a two-dimensional screen without physical cause and effect relationships. Parents will say to me, "Well isn't the mouse a hands-on learning experience? Isn't this a cause and effect?" No! The machine is opaque. The television is opaque, the computer is opaque. The child can't see the mechanisms of cause and effect. If I'm building a block tower or a bridge and I put too many blocks in the wrong place or I don't balance them right, it will fall over. There is an immediate lesson not only in cause and effect, but also in a lot of principles that I'm going to need to know later when I study physics.

Replacing hands-on with some kind of a "virtual learning" experience will, in fact, be appropriate later on when a child is moving into more abstract thinking. But for age-appropriate computer use, we have to think very hard about what is right for the younger child. Nobody has really looked at this in terms of technology of any kind. What is right for a fifteen year old is not going to be right for a five year old.

Isn't imagination also at stake if a child does not play with objects he or she can use as a symbol for something else–the block that becomes a boat on the carpet that becomes an ocean?

Yes. Much of human endeavor and creativity–as well as academic skills such as solving math story problems and understanding what we read–hinge strongly on visual or mental imagery. We need to be able to create and retain imagery, and also create imagery by calling up an image in our minds, moving it around and doing something with it, without seeing or physically touching anything. This ability seems to develop through a rather long process in which the child first externalizes the behavior by working with objects in the outside world and by interacting with people through oral speech. Only by about age seven is that all starting to come 'inside,' enabling us to use our minds without talking out loud, or without having to look at something that is physically in front of us. I believe the media are depriving children of the opportunity to practice and potentially even to learn how to make mental images–a recipe not only for a short attention span, but, frankly, for a very shallow mind.

"A lot of our children are functioning at the level of survival rather than being able to explore the world in their own good time–"

HANK MEALS

Also lost is a critical sense of context for experience, yes?

All of the media tend to be very decontextualized as far as the child's experience is concerned. In *Endangered Minds,* I have a chapter criticizing Sesame Street. Although Sesame Street's producers are gradually improving its format, the program still retains too many flashes of decontextualized information which jump from one scenario to another far too quickly for the child's growing brain. Computers just exacerbate the same problem.

How do you respond to criticism of the values, assumptions and goals of traditional academia?

I might at some level agree with many of the critiques. I think that certainly the next century is going to require not just more *advanced skills*, but *deeper level skills*, and by that I don't mean technological skills. We're going to need much deeper levels of reflection to contemplate the awesome developments happening now in biotechnology and in the possibilities of machines taking over our intellectual and/or personal lives. We particularly need to educate our children to apporach problems and develop creative solutions for problems they haven't faced before.

Now, if we think critically about the ways "schooling" has been traditionally interpreted, we can see one of the things we've done wrong is to cut off reflection and innovative thinking. Children are not allowed to sit and think. They are constantly rammed through a curriculum to see how fast we can move them along. As they're marched from activity to activity, even the schedule of the school day doesn't allow time for anyone to reflect. And coming up with solutions or new ideas to new problems is quite different from the type of thinking required to be successful on some of the so-called achievement tests. The goals of schooling as they've been too-narrowly interpreted are very, very out-of-sync with what's going to be needed in our thinking for the next century, and, in fact, is desperately needed right now.

That doesn't mean, at least in my mind, that our academic goals are necessarily wrong. To wit: reading, numeracy, an understanding of the "basics" of science and history, the ability to relate in a group of learners or workers–all of those things will continue to be important. The key word is "understanding," not just a forced march through a set body of subject matters. Moreover, a new set of "basics" are rapidly becoming important. Visual literacy is just one example of new types of thinking that should force us to broaden the curriculum. But, textual literacy is not going to go away. Children who can't reflect and who have never been able to pause long enough to be able to solve a difficult problem are going to be far down on the literacy scale.

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It's a bit of a conundrum if a healthy brain is a brain that is interested and challenged and interacting with its environment and yet today's schools are full of kids who basically find reading so "hard" or "boring" that they disengage from what teaches coherence, reflection, and analytical skill.

This is very true. You might ask which is the chicken and which is the egg. If you can't analyze and you can't cohere your thoughts, and you have trouble reading, then sitting down with a book isn't going to be a way of learning any of these things. If we want children to read, parents and teachers must prepare their brains–limit exposure to electronic media, read to them, talk and listen to them, and allow them the gifts of play and imagination. The brain has its own wisdom and it doesn't necessarily choose to read at age four and five, which is the time our public schools seem to think that kids should be doing it these days. Just because a child can sound out words doesn't mean that he or she can read.

A related issue I propose in *Endangered Minds* is what I call the "starving executive" in the brain. Because the lobes of the prefrontal cortex, or the "executive system" as it is often called, are among the last to develop in our brains, the "starvation" of appropriate experience leading up to its use is frightening. Are we going to have an entire generation of people who cannot manage their own behavior, manage their world, plan ahead, reflect or abstract ideas, or relate appropriately to moral and social and ethical issues? Our research is inadequate in explaining how experience or lack of it impacts the development of the pre-fontal cortex.

Yet, research strongly links Attention Deficit Disorder problems we are now seeing with the pre-frontal executive system. I believe that we're already seeing a manifestation of this "starving executive" in our youngster's brains. If it continues to starve until it's twenty or thirty years old, it may be too late.

Do you take on these questions in your upcoming book?

I went further than I had in *Endangered Minds*, which explains neuroplasticity and how the brain is altered by different kinds of environments. In *Failure to Connect,* I look much more at specific applications of computer technology at different ages and how they may be used for better or for worse. I am not anti-computer, but I am very opposed to inappropriate uses at the wrong ages. I believe that for children under age seven, any use is inappropriate. Interesting things will be happening as we get better software, but I've tried to examine all of these issues from the perspective of a developmental neuropsychologist, and tried to ask questions I don't believe are being addressed elsewhere: At what age, and how, should children be introduced to these kinds of technologies? How do we use these different ways and kinds of learning without interfering with the human interaction that plays such a critical role in any learning process?

HANK MEALS

In your mind, does the burden of proof, of resistance, then fall on critics and educators who can interpret the hard science, what is happening to the brain, what it all portends?

Yes, that is true; but the hard science, unfortunately, is hard to come by. First, these studies are very difficult to do. Morally and ethically, we can't deprive human brains of certain kinds of stimuli for clinical study. Secondly, there is very little funding to look at normal development. No one is particularly interested in this because it *doesn't seem to be a crisis*! And, much of what we are hearing now in the name of the *brain* is actually hypothetical, projected from the few things we do know. Brain research thus far has only given us clues, not prescriptions, about how we should raise our children and teach them. We can hope that within the next few years we'll have more of a meeting of the minds. I'm very happy to see some very reputable neuroscientists trying to draw links between what we know and what practitioners out in the field are trying to do for children. However, it's very, very easy to misinterpret brain literature, and we have to be very careful to use only good science to bolster the arguments we make.

Many people see the real difficulty of resisting economic forces, market forces, which increasingly perceive "childhood" as an extremely profitable enterprise.

Yes. There is a lot of very big money out there that wants all children to have all media and learn early on to be good little consumers. Childhood is becoming an extremely profitable enterprise and it certainly appears that it's not to the benefit of the children.

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BEFORE IT PASSES

ANITA BARROWS

Later, when we think back
to this time

we will say we did not look long enough

at the mothlike insects swirling at noon
under the branches of the redwood, flaxen wings

catching the sun We will say
we did not practice one another's languages,

we did not learn to listen
beyond the noises we made, for the small

insistent stirrings
of those who wanted us to know them.

We lived, arguing & imagining.
We thought our lives were separable

from the life of the cornstalk, the many-eyed bluebottle.
.
How will we explain this, who

will be there to hear us? We staggered

between our confusion & our hunger.
If mountains stood in our way we blasted through them.

We traversed the breathing grass
on roads we believed in. Now & then

we were pierced by a startling immensity.

Will anyone ask us, will we ask ourselves
why we did not sit patiently enough

quietly speaking together or in silence

watching the shifting mosaic of leafshadow on leaf,
stroking the dog's

broad silken head, gathering
what abundance there is–the grass

bleached in places
but strewn with fallen plums–

tasting the sweetness still with us to be tasted

~

nobody denies that drug barons have amassed staggering fortunes, along with the power that accompanies such wealth.

If you think we're winning the war on drugs, check out the 1997 United Nations World Drug report. It estimates the international trade in illegal drugs at $400 billion–more than motor vehicles, soybeans, or steel. Nor was a penny of that $400 billion directly taxed; such clear profit is one of prohibition's built-in economic incentives for the private investor. According to the same U.N. report, over the last ten years of full-court pressure from anti-drug forces, world production of opium tripled and production of cocoa leaf doubled. Over the same period, marijuana production also doubled, which squares with local law enforcement estimates that marijuana cultivation in northern California increased by about 170% while prices for top-quality sinsemilla rose from $2500 to $5500 per pound. The University of Michigan's annual "Monitoring the Future" Study, the standard measure of adolescent marijuana use-rates for more than 20 years, asserts that in 1995 42% of all high school seniors had "experimented" with marijuana, and according to Bureau of Justice statistics an estimated 70 million American adults have used marijuana at some point in their lives.

When there's legislation that makes 70 million American citizens felons, that law begs reconsideration. If we accept the BNDD's probably inflated claim that 60,000 citizens were using marijuana before its prohibition in 1937, and that at least 70 million citizens have used it since it was made illegal despite about $70 billion in anti-marijuana expenditures, we've spent approximately $1000 for each new user. The stone mortal fact is that prohibition doesn't work, especially in a relatively democratic country with a strong libertarian tradition. The only end prohibition accomplishes is turning drug abuse, a medical problem, into a police problem, creating a totally untenable situation that President James Earl Carter, in a 1977 address to Congress, described this way: "Penalties against a drug should not be more damaging to an individual than the use of the drug itself. Nowhere is this more clear than in the laws against possession of marijuana in private for personal use. The National Commission on Marijuana . . .concluded years ago that marijuana use should be decriminalized, and I believe it is time to implement those basic recommendations."

While it's remarkable that the BNDD was able to make marijuana illegal in 1937, it seems downright astounding that the prohibition has been maintained for 61 years. To pull it off, the Feds and their corporate cohorts employed their traditional four-part strategy: lie, obfuscate, intimidate, and lie some more. The first step, as noted earlier, was to demonize marijuana. The Hearst newspapers did so literally–"Haseesh (sic) Goads Users to Blood Lust"–but, more insidiously, they constantly associated marijuana with Hispanics and African-Americans, reserving a particularly virulent racism for African-American musicians of the '30s, claiming their marijuana use led them to create what the Feds characterized as "voo-doo trance music," or what came to be called jazz. In turn, BNDD director Harry Anslinger, testifying at the congressional hearing to ban marijuana, cited the Hearst newspaper accounts as if they were fact, claiming with a tent-meeting fervor, though clearly without a clue, that "Marijuana is the most violence-causing drug in the history of mankind."

The only dissent witness at the 1937 hearing was W. C. Woodward, a physician/lawyer representing the American Medical Association. (How times change: In 1996, when California's Medical Marijuana Initiative passed with a 55% majority, the Feds promptly threatened to pull the license of any doctor approving marijuana for a patient; the AMA's reaction was to roll over on its back like a puppy and pee all over itself.) Back at the '37 hearing, however, Dr. Woodward had the temerity to point out that the government had not presented any "competent primary evidence" to support its claims that marijuana was addictive, that the number of marijuana users was increasing, that it caused crime, or that many school children were habitual users.

Representative John Dingle's response was typical: "We know that [marijuana] is a habit that's spreading , particularly among youngsters. We learn that from the pages of the newspapers." Hearst newspaper accounts, which make today's tabloids seem models of journalistic probity, constituted the sole "competent primary evidence" that marijuana was harmful. Hard science: nothing like it. The raw audacity of the media/government snow job on the American people would be almost admirable in the annals of criminal deceit if millions of citizens hadn't also done hard time as a result–like five years for the possession of a single joint in Texas, or my high school friend who did seven years in Folsom for selling an undercover agent two ounces of weed in 1966.

The government/corporate/media alliance against marijuana didn't go completely unchallenged. In 1938, New York City's Mayor Fiorello Le Guardia, who privately doubted BNDD claims, appointed a scientific committee to study the social, psychological, and medical aspects of the marijuana problem that, according to newspapers and Anslinger, was ravaging NYC. The Le Guardia committee–comprised of internists, psychiatrists, pharmacologists, public health experts, and the Commissioners of Health, Hospitals, and Corrections–published its findings in 1944, much to the embarrassment of Anslinger and the BNDD. The Le Guardia committee found no evidence of acquired tolerance; no evidence that marijuana prompted homicidal rage or "sexual overstimulation;" no evidence of significant personality changes among users; no evidence that marijuana was associated with major crime. No evidence. Nada. Zip. Zero. Just as embarrassing, the *American Journal of Psychiatry* claimed that its studies revealed the habituation to marijuana was substantially *less* than addiction to alcohol or tobacco, both legal, with the latter supported by federal aid to farmers.

By 1948, Anslinger and the BNDD (which would soon morph into the DEA) were faced with far too many facts that contradicted their claims, and therefore were forced to change the lie. The American public was now informed that the drug once claimed to incite murderous rage and sexual licentiousness in its users actually produced a "zombie-like" state, no doubt abetted by that "voo-doo music" drifting out of Harlem.

In the '60s, when about 30 million children of the middle-class included marijuana in the cultural sacraments of sex, drugs, and rock-and-roll, the government's lies became bare-assed obvious. No rampaging psychokiller rapists. No zombies with cold-sweat cravings for the next joint. Goofy fun, the munchies, intensification of the senses, new grooves, maybe the occasional shiver of paranoia–a massive example of personal experience directly contradicting the government's claims that marijuana was Satan's highway to insanity, claims that did little to bolster one's confidence in the credibility of elected officials or the wisdom of their drug laws. People got stoned to go howl with laughter at *Reefer Madness* and other propaganda films. Parents, with a cigarette in one hand and a drink in the other, railed at their kids about using drugs, and the kids laughed at them or sneered at their hypocrisy.

In 1970, Congress responded with its customary intelligence and passed the Controlled Substances Act, assigning psychoactive drugs to five schedules. Marijuana, along with heroin, was assigned to Schedule I, the most restrictive. By legal definition (that is, the government's), Schedule I drugs have a high potential for abuse; cannot be used safely even under a doctor's supervision; have no medical value; and are deemed so dangerous to society that they can't even be used in research–which means, conveniently, that the basis of their legislative scheduling can't be challenged by any new scientific studies. However, in keeping with the long-standing policy of incoherence, the rationale for marijuana prohibition changed. The government reasoned (pardon the oxymoron) that the 70 million citizens who had somehow managed to use marijuana safely without a doctor's supervision, and who hadn't turned into sex fiend ax-murders or zombie imbeciles, might dispute marijuana's assignment to Schedule I, so the government advanced a new argument: marijuana, perhaps relatively innocuous itself, was a "gateway" to using "hard" drugs and other illegal intoxicants.

The "gateway" argument does make a twisted sort of sense: once you smoke marijuana and discover that the government has lied about its effects, you might rightfully assume they're lying about other illegal drugs, or even the effects of legal drugs, or if they've ever done radiation experiments on unwitting U.S. civilians, conducted secret wars, or protected the interests of large campaign contributors. True, the gateway argument holds some mud if, like the government, you support your point by asking multiple drug users what they used first: marijuana, cocaine, heroin, or amphetamines. However, if you add caffeine, tobacco, prescription drugs, and alcohol to the list, it becomes immediately clear that if you want to keep kids from going through the hellgate that leads to "hard" drugs, you best add coffee, tea, colas, cigarettes, cigars, beer, wine, bourbon, and a whole bunch of commonly prescribed pharmaceuticals to Schedule I.

Since 1970, marijuana laws–or their enforcement–have softened somewhat, though they still don't make much sense. In California, possession of less than an ounce of marijuana is considered a misdemeanor, punishable by a small fine. Possession of more than an ounce is a felony. In Humboldt County, growing ten plants is usually deemed to be for personal use and makes you eligible for diversion (go to drug education classes and don't break the law for a year, and its expunged from your record). Growing 11 plants sends you to court with a felony cultivation charge. So, if I understand it correctly, I can buy an ounce of marijuana and, if caught, pay a nominal fine, but the person who sold it to me would get jail time. In other words, you can buy it but not sell it. And if I grow ten plants that produce five pounds, I'm eligible for diversion, but if I grow 100 scrawny plants that only produce five pounds then I could face a federal charge with a mandatory ten years in prison. I'm not sure I grasp the logic there. I

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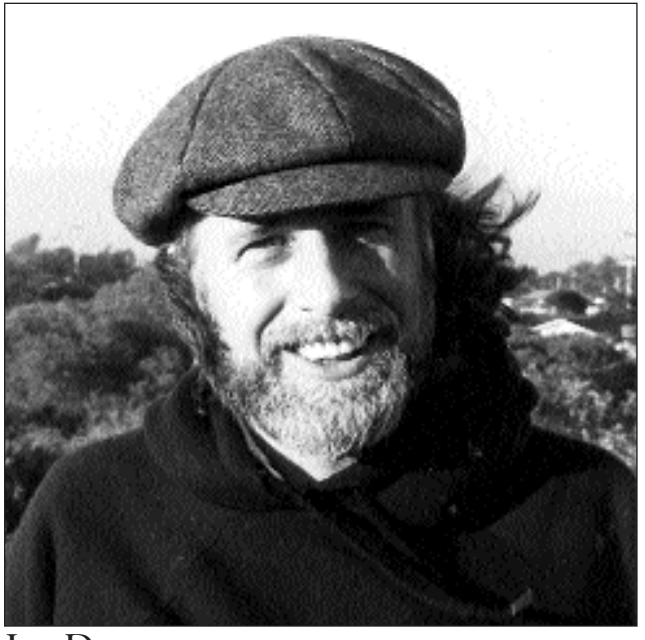
"Getting Real on Drugs"



JIM DODGE *was educated at CSU Humboldt and earned his MFA at the University of Iowa Writer's Workshop. In 1970, he returned to the Pacific Coast, working first as a shepherd in Humboldt County, then moving to Root Hog Ranch in the coastal hills of Sonoma County where he spent the next fifteen years living on the isolated homestead with his brother, Bob, and Victoria Stockley, his covivant, and an extended family of kindred spirits. He & his friends founded Leonard Charles and Associates, an environmental consulting firm. Jim is a part-time lecturer in the Humboldt State University English Department. He has published numerous stories and poems, essays, and articles, as well as three books of fiction: Fup, Not Fade Away, and Stone Junction. An elegy for his brother, Bob, titled "Bathing Joe," was reprinted in the Winter 1998 issue of Wild Duck Review. "Getting Real on Drugs" is the first of a two-part 'rant.'*

America lost the War on Drugs long before it officially started, mainly because our federal drug policy is duplicitous and incoherent. The policy, formulated and ratified by the corporate bagmen comprising Congress, essentially serves the interests of people and organizations who can afford million dollar "campaign contributions." In late twentieth century America, only the seriously clue-challenged should be shocked that money is power, or that because the large multinational corporations have the large money, they wield inordinate influence. The more cynical among the citizenry believe that the federal government merely fronts for corporate rule and, increasingly, serves as a soap opera to entertain the populace and deflect attention from the twisted commodity spectacle that passes for American culture.

Consider the prohibition of the cannabis plant in both its psychoactive (marijuana) and commercial (hemp) forms. Despite a 5000 year history of industrial, medicinal, sacramental, and recreational use–all without evidence of undue social or medical concerns–in 1937 the federal government unilaterally prohibited the production and use of cannabis, a ban imposed only three years after the repeal of alcohol prohibition. The years of alcohol prohibition (1920-1933) had proved disastrous, creating (as prohibition always does) a new criminal class of producers and black marketeers that, understandably, didn't pay taxes. Prohibition necessarily required new or expanded law enforcement agencies to police those activities made criminal by the ban, which is always a boon for those with badges. Further, Prohibition loosed a general sense of outlawry among those citizens who deplored such restraints on what they construed as the essential human freedom to explore altered states of consciousness–or as my late brother was fond of claiming, the inalienable right to get fucked up.

Given the spectacular failure of alcohol prohibition, it might seem illogical–even moronic–to immediately outlaw another drug, especially marijuana. No temperance group was clamoring for its ban. No scientific evidence suggested that marijuana was anything but a mild euphoric that sharpened the senses, stimulated appetite, suppressed nausea, forestalled melancholia, and offered general ontological relief. Cannabis, in various forms, was prescribed by doctors, and had been for 150 years. While cannabis was an ingredient in various elixirs, tonics, and patent medicines, evidence suggests that the only folks smoking marijuana with any commitment in the early '30s were Hispanic migrant workers in the southwest and black musicians in Harlem. Moreover, hemp–which contains such low levels of THC that it's hardly worth smoking–had been a common agricultural crop since the days George Washington grew it. In short, no compelling social reason suggested that marijuana or hemp should be banned. However, the people pushing marijuana prohibition certainly had their reasons, among them Puritanism, racism, and a desire for huge, powerful profits.

Follow the bouncing dollars:

> $$$ In 1931, Andrew Mellon (of Pittsburgh's Mellon Bank), then working for the U.S. Treasury Department, appointed his son-in-law, Harry J. Anslinger, to head the newly organized Bureau of Narcotics and Dangerous Drugs (BONADD or BNDD–both pronounced "bonehead").
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> $$$ In 1933, alcohol prohibition was repealed. As the transition from alcohol prohibition to legality neared completion in 1936, several federal agencies that had been heavily staffed during the booze ban found their funding (and thus their bureaucratic power) threatened.
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> $$$ In 1937, a few months before marijuana prohibition was imposed (by way of a tax act), Du Pont's annual stockholders' report urged investment in petrochemicals from which new synthetic fibers–notably nylon and rayon–could be manufactured. ("Plastic,"the older man's advice about the future to young Dustin Hoffman in *The Graduate*, is arguably the best one-word summation of the second half of the twentieth century.) Plastic can also be derived from the cellulose hurd that comprises 80% of a hemp plant's mass. Hemp fiber was the natural rival for synthetics, and competed with wood pulp in paper production.
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> $$$ Mellon Bank of Pittsburgh was the primary financial backer of Du Pont. By astonishing coincidence, this was the same Mellon who had appointed his son-in-law Harry Anslinger to head the BNDD.
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> $$$ A few months after the Du Pont report, Harry Anslinger helped push through marijuana/hemp prohibition, claiming in William Randolph Hearst's newspapers, notorious for their yellow journalism, "If the hideous monster Frankenstein came face to face with the monster marijuana, he would drop dead of fright." (Which may be why, to this day, the most potent marijuana is affectionately known as "killer.")
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> $$$ Hearst's papers helped promote marijuana/hemp prohibition with lurid headlines like "Marihuana Turns Boys into Fiends in 30 Days." Hearst had two reasons to back the ban on weed: he possessed extensive timber holdings that could be more profitably converted into newsprint and toilet paper without hemp's competition; secondly, he hated "lazy marihuana-smoking Mexicans" because Pancho Villa had liberated some 800,000 acres of Hearst's timber holdings during the Mexican Revolution.
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> $$$ So from 1937 to the present, 61 years, the possession, use, sale, transportation, and "manufacture" of marijuana has been a felony. Du Pont, the Mellon Bank, and Hearst Publishing prospered, while millions of Americans were sent to the slammer for their desire to alter consciousness–or, more exactly, for possessing a means to do so that the State, with a little help from *its* friends, had unilaterally declared illegal. Of course, human suffering isn't calculated in corporate ledgers, and campaign contributions are merely a cost of doing business, easily passed on to the consumer.

As a testament to the stunning incoherence of U.S. drug policy, consider this: In 1933, G-men could bust an illegal distillery and celebrate afterwards with a few joints of Panama's finest; four years later, G-men could bust you for that same joint and party later with a few slashes of sourmash whiskey. What the scenarios share is G-men busting some illegal mind-altering substance. Because laws are merely moral opinions if you lack the power to enforce them, the law enforcement industry has benefited immensely from marijuana prohibition.

Behind the G-men and other cops stand the entire American judicial and penal systems. For instance, 600,000 citizens were popped or cited for marijuana offenses in 1997, and currently about 62% of federal prison cells are occupied by marijuana offenders. Somebody had to put them away and somebody has to keep them there, all on the taxpayers' dime. Actually, many dimes: it costs $20,800 annually to maintain an inmate, or roughly the price of a year's study at a first-rate college. While hemp's competitors may have initially profited most from the cannabis ban, the law enforcement industry has been the most consistent beneficiary, and is certainly the largest beast oinking at the Federal trough, where last year ('97) $4 billion was slopped to over 50 agencies.

However, the truly tall cash accrues to the international drug lords. These drug magnates have become so obscenely rich they threaten to destabilize entire countries, not only through the straight-up corruption which inevitably accompanies prohibition, but through building larger, better equipped armies than most small countries and, in a few cases, better air forces. Heck, if you're making $10 million a week tax-free and feeling a little threatened by war-on-drugs rhetoric, why not buy that boxcar of grenade launchers or a used jet fighter? According to drug legend, in the late '80's a representative of the notorious Cali cocaine cartel approached Colombian officials with a deal: in exchange for immunity, the cartel offered to pay off Colombia's entire national debt–in cash. The story may be apocryphal, but

"An Open Letter on the Double Binds in Educational Reform"

By Chet Bowers

Liberal and conservative educational reformers have always shared the same deep cultural assumptions that inspired the promoters of the Industrial Revolution. With the Industrial Revolution now entering its digital phase, with its emphasis on transforming data into an economic resource, the seeming antagonism between educators and market values is ending–like the final reconciliation between estranged members of an extended family. This interpretation of the current convergence of educational and corporate values may shock readers who have been "educated" to think that the values of a liberal education have always been based on a social vision fundamentally at odds with the materialism and economic values of the market place mentality.

Hank Meals

If we examine the deep cultural assumptions that underlie past and current thinking about educational reform, which requires assessing the connections between these assumptions and the ecological crisis, it is easier to recognize that they are also the same assumptions that provided the conceptual direction and moral legitimation for the Industrial Revolution. What we are now witnessing is not the surrender of educational values that kept the instrumental and profit-oriented values in check, but the inevitable convergence of ideas and values that shared a common origin in the formation of modern consciousness.

There is a statement in Kirkpatrick Sale's recent book, *Rebels Against the Future* (1995) that is especially useful in clarifying the shared lineage of a vision of how the world's cultures needed to be transformed. The success of the Industrial Revolution, Sale notes, required that "all that community implies–self-sufficiency, mutual aid, morality in the market place, stubborn tradition, regulation by custom, organic knowledge instead of mechanistic science--had to be steadily and systematically disrupted and displaced. All of the practices that kept the individual from being a consumer had to be done away with so that the cogs of and wheels of an unfettered machine called "the economy" would operate without interference, influenced merely by the invisible hands and inevitable balances. . .of the benevolent free market system (p. 19, italics added).

An examination of the deep assumptions encoded in the educational metaphors of liberal and conservative reformers reveals that their view of the educated person would be similarly dependent upon the market place of ideas, expert systems, and consumerism. That is, the influence of traditional, self-sufficient communities would have to be undermined in order for the individual to become "educated." The Industrial Revolution required a radically different form of individualism, one that took-for granted the following assumptions: that education leads to the individual becoming an autonomous, rational thinker capable of judging the merit of community traditions (including patterns of moral reciprocity); that progress is linear and that the high-status knowledge learned in the classroom represents the most evolved stage of cultural development; that de-contextualized print-based knowledge and forms of communication are more reliable and culturally advanced than what is learned in face-to-face relationships; that the veracity of ideas and values should be determined in an open, competitive environment (the educational version of Adam Smith's "invisible hand"); that the narratives, processes of inquiry, and technological innovations learned in classrooms should be based on an anthropocentric view of the world; that the epistemology of science and the systems of expert knowledge provide the most reliable forms of knowledge for rationally managing the internal and external world–and that the resulting systems of commodification should be globalized. The following context-free metaphors of educational reformers can easily be matched with the above list of attributes: individual freedom, empowerment, rational thought, progress, democracy, scientific management, moral relativism, and the individual construction of reality–which now is to be based on accessing vast amounts of data.

Missing from the list are the values, forms of knowledge, and patterns of intergenerational communication that would enable the individual to rely upon the non-commodified patterns of community life. As current educational and industrial goals contribute to the continual expansion of the commodification process into more areas of individual and community life (it is now moving to the genetic level), the direction that educational reform now needs to take becomes increasingly obvious–and urgent. The transformation of knowledge, skills, relationships, entertainment, nurturing, healing, and so forth into commodities leads to the loss of local knowledge of environmental possibilities and limits, and thus to the loss of cultural diversity. The globalization of a technological and consumer oriented form of culture also contributes to the downward trend lines in the viability of natural systems. Educational reform must avoid contributing to these trends, which brings us to considering how education can strengthen the non-commodified patterns of community life and promote the advancement of knowledge based on ecologically informed root metaphors.

As I have discussed specific educational reforms in previous books, I shall summarize specific reforms that take account of criticisms of modernity found in the writings of Wendell Berry, Charlene Spretnak, Sim Van Der Ryn and other thinkers who are identifying more ecologically constructive pathways to cultural reform and regeneration.

1. Educational reforms should be based on an understanding that new knowledge and technologies need to be assessed in terms of whether they strengthen the non-commodified aspects community life–and thus in terms of their ecological footprint.

2. Educators at all levels need to understand how the language of the curriculum reproduces earlier forms of cultural intelligence. They should be able to recognize how the process of analogic thinking and the use of iconic metaphors reproduce the deep cultural root metaphors that were constituted before there was an awareness of environmental limits. They should also begin the task of organizing knowledge on the basis of root metaphors that take account of our embeddedness in cultural traditions and natural systems.

3. The curriculum needs to foreground the nature and extent of the commodification process, as well as the patterns of community life that have not been commodified. In addition to mentoring in the non-commodified activities, responsibilities, and skills that sustain community, the curriculum needs to introduce students to an understanding of how to assess the ecological footprint of other cultures.

4. The curriculum needs to include an understanding of the cultural amplification characteristics of different forms of technology, as well as an understanding of how these characteristics strengthen or undermine the self- sufficiency of communities. It is also essential to understand the influence of different technologies (particularly computers) on the forms of knowledge and social groups that will be privileged.

5. Curriculum reform should introduce students to an understanding of the strengths and limitations of the scientific method. In addition, the connections between science and the Industrial Revolution, the ecological and cultural implications of the re-emergence of Social Darwinism, and the limits of an eco-management approach to the ecological crisis, also need to be central concerns of any reform effort.

As most educational reformers are dependent upon the earlier forms of cultural intelligence reproduced in the language/thought process they take-for-granted, the problem of how to initiate these reforms becomes especially daunting. Feminists discovered that in spite of the educators' claim to be the chief spokespersons for Enlightenment values and rational thought educators were unable to recognize on their own the many ways in which the root metaphor of patriarchy influenced the structure of knowledge and the systems of social privilege. While an increasing number of educators include environmental issues in their courses, pressure from outside groups may be needed to awaken them to the double bind of continuing to base the organization of knowledge and justify the purpose of education on the same root metaphors that are the basis of the three hundred year effort to globalize a market centered form of culture.

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AN INTERVIEW DAVID NOBLE

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His previous books include America by Design: Science, Technology, and the Rise of Corporate Capitalism; Forces of Production: A Social History of Industrial Automation; A World Without Women: The Christian Clerical Culture of Western Science; and Progress Without People: New Technology, Unemployment, and the Message of Resistance. His most recent book, The Religion of Technology: The Divinity of Man and the Spirit of Invention , is published by Knopf, 1998.

Noble's groundbreaking and important essay, "Digital Diploma Mills, Part II: Confidential Agreements Between Universities and Private Companies Pose Serious Challenge to Faculty Intellectual Property Rights" is available on-line at: http://communication.UCSD.edu/dl/ddm2.html

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The following conversation between David Noble and Casey Walker took place on May 12, 1998 with the production assistance of KVMR, a community supported radio station in Nevada City.

Casey Walker: Will you begin by describing the historical context for today's restructuring of higher education top to bottom with the commoditization of research and instruction?

David Noble: Yes, I'll back up a bit because many people ask, "Well what's new, haven't the universities been doing this for a long time?" My first book, *America by Design: Science, Technology, and the Rise of Corporate Capitalism*, gives a history of the rise of the electrical and the chemical industries from the end of the 19th through the first third of the 20th century alongside the transformation of many institutions, including higher education. Two chapters titled "Higher Education as an Industrial Process," draw ties between the hiring of college graduates in significant numbers, primarily engineers, and the attempts of industry to refashion education to meet employment needs and to gain control of scientific invention–the lifeblood of industry. In fact, these new companies were called science-based because, for the first time, their welfare depended upon keeping abreast of and getting control over ever-new developments in science.

First, companies tried setting up their own laboratories–Bell labs, Dupont, AT&T–and invented industrial research to predict and anticipate new developments. But, ultimately, they realized that universities were going to remain the wellsprings of scientific advance and they'd need to somehow "integrate" the universities within the industrial structure. In the 1890s, all sorts of ways were invented for institutional leverage–such as equipment gifts, grants, consultations–to influence and define what was being done in the university. The problem was a lack of guarantee that what came out of the university would be in the company's direct interest. This was always a problem. The bigger companies like AT&T didn't worry much, but smaller companies needed more guarantee of a return on their money.

During the beginning of World War II, the nation's scientific expertise was marshaled for the war effort–especially radar and microelectronics, the Manhattan Project, proximity fuses for anti-aircraft artillery shells, and automatic gunfire control (this is where cybernetics comes from). With it came the beginning of a contracting system between universities and the government, a system now considered routine. The question arose then: if the universities and industry are now working for the government, what's in it for them? Vannevar Bush, director of Raytheon, AT&T, and Merck, proposed that all patents on research should go to the research contractors. He was well-known as professor and dean of MIT, the leader of the Office of Science and Research Development, and author of the famous treatise called, "Science, the Endless Frontier." He also directed programs such as the development of the first atomic bomb. After the war, contractor patent ownership became extremely controversial, and was vigorously opposed by many New Deal democrats. The end result was a kind of discretionary compromise dependent upon particular negotiations, but, by-and-large, the contracting system remained and became the norm. Everybody in a university now has some sort of government contract. Yet, the contracting system was attacked in the 1960s, especially since so much of it was Department of Defense: MIT was 80 percent DOD. Those attacks push universities back toward industry, and away from government.

In 1980, a sea change occurs through a reform of the patent law with the the Bayh-Dole amendment–the result of intensive lobbying by both the universities and their industrial brethren to once-and-for-all give patent ownership to the contractor. Much of the political work was advanced by an organization called the Business Higher Education Forum set up in 1978, which was a coalition of CEOs from universities and industry. Their main political agenda was to change the patent law as well as provide tax breaks to companies that gave money to universities. The whole thing was engineered to create a much closer relationship between universities and industry at public expense.

Is this happening about the same time many university presidents and chancellors are being asked to sit on the Boards of Directors for private industry?

Yes, this is when the significance of these ties really begins. It had always been the case that university presidents sat on local boards, but in the 1970s they began sitting on Fortune 500 companies and multinational corporations. With research, we found that university presidents were making several hundred thousand dollars in retainers and fees from their positions on corporate boards–it was not an honorific position. But, even more important was the creation of a community of mutual interests across the university and industry divide. It's not simply the rape of universities by industry–that's really a misunderstanding. It's the same guys looking at these two different institutions as two pieces of the same puzzle.

Was there a shared ideology beyond the profit motive?

One of the main inspirations–the main commonality between industry and the university leaders–was a common hatred of government regulation. They first banded together in common defense against government regulation and started traipsing down to Capitol Hill together in the 1970s to testify for one another against regulation of the universities. Starting around 1974-75, the Business Round Table and other trade associations, especially the Chemical Manufacturers Association, gathered strength and tried to turn the tide on regulation, but Toxic Substances Control Act was passed in 1975, and OSHA in the 1970s as well. University and industry people really saw eye-to-eye on it all in a way that was profoundly ideological and profitable, with a new emphasis on the "market."

Partnerships based primarily on research really took off at this time. A number of companies set up private deals with universities–Ed David, who worked for Exxon, was one of the leaders with the Industrial Research Institute folks, and was part of a very potent political force. They went after anti-trust regulations because they wanted to be able to work together in industrial consortia with the university. This is when they started setting up research parks at the universities.

Again, however, one of the main issues was proprietary control. So, the lobbying to amend patent law proceeded and gained steam with the Business Higher Education Forum set up in 1978, and culminated in the Bayh-Dole amendment and a few subsequent amendments which automatically gave the contractor ownership of patent. I just can't exaggerate it–this was the major sea change. Even Admiral Hyman Rickover, who set up the nuclear navy, called it the biggest give-away in American history.

Universities were now in the business of patent licensing. Yet, because universities don't work patents–they don't manufacture things–the universities became, in effect, patent holding companies. They could, since they owned the patents, license these patents to their friends in industry. Now it was a whole new ball game.

With changes in anti-trust law and in corporate tax law, companies could now come into universities, write off everything they gave, work together with other corporate partners, and, most important, get a guarantee that they would own what came out. A new contracting system was established whereby companies would give the university some money, the university would do the research–the bulk of which is still paid for by the tax payer–and gain exclusive patent licenses. The capital required by companies was really a very small amount of the total budget. For most universities, over 90 percent of research is paid for by the tax payer, and that remains the case today.

In return for that money, a contract is signed which gives the company first right of refusal on exclusive licenses to the patents that result from university research. The public image was that companies gave to the universities as "benefactors," when, in reality, the subsidy was going in the opposite direction–big time. The companies all understood this. In the business press it was very clear that the companies were able to spread the risks and the costs because the taxpayer was bearing the brunt of this–all of which the public doesn't understand. Instead, the real measure of a company's donation is what it would cost the company to reproduce in-house all they are buying. At the university, the staff is paid for, as is the student help, which does a lot of the work, as are the laboratories, the research libraries, the plant, the equipment, the buildings, and so forth. The company doesn't pay for everything that already exists and is maintained at taxpayer expense. Companies are making off like bandits!

"Writer and Photographers Force Us to See Human Costs of Free Trade"

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Book Review

Juarez: the Laboratory of our Future

by Charles Bowden
introduction by Noam Chomsky
afterword by Eduardo Galeano

Every now and then you come across a book that when you finally finish and put it down, you can only glance out the window and say to yourself, "Well, this changes everything." *Juarez: the Laboratory of our Future* is one of those books. A *Silent Spring* for global economics, the photographs and words in this book are an on-the-ground inventory of the devastating and inhumane impacts of the global free trade that is being sold to us, like pesticides once were, as yet another benign modern miracle.

For those of us raised in the fecund comfort of late-20th century America and stroked with abstract tales of international business and trade, *Juarez* is a jarring and frightening glimpse behind the curtain of what we call the Mexican-American border. Behind that border is more than just another country. According to reporter and author Charles Bowden, behind that curtain is the future.

Leading our steady march into this future is the new global economy that fills our stores and home shelves with so many things so cheaply–electronics to clothing to footwear to auto-parts to hamburgers. But under the made-in-anywhere-but-the-USA labels and the soothing numbers of the GNP is, simply, a slave economy. And that slave economy is coming soon to a community near you.

For now, that slave economy is being perfected in cities like Juarez, where the human results of free trade can already be catalogued: shanty towns, pollution, murder, gangs, drug trafficking, government repression, and a poverty so thorough and absolute that few Americans can comprehend or even accept its reality. Bowden writes:

"Politicians and economists speculate about a global economy fueled by free trade. Their speculations are not necessary. In Juarez the future is over thirty years old, and there are no questions about its nature that cannot be answered in this city." (80)

Bowden compiled this book under the belief that seeing is at least the first step to believing, and with the goal of bringing a taste of Juarez home to the country that has done so much to make that city possible. Unfortunately, though, this is a coffee table book that won't end up on many coffee tables. But it should. It should especially sit on the coffee tables of corporate waiting rooms. But it won't. It should especially appear on the coffee tables of anyone who marvels over how all those exciting new free-trade agreements have brought us such cheap and abundant goods, and it especially should sit open on the coffee tables of those who gripe about the damned Mexicans (or Asians or Eastern Europeans) stealing all our jobs and crossing our borders. But it won't.

It won't because although this is a coffee table book full of stunning photography threaded with marvelous pieces of writing (besides Bowden's riveting descriptions, the book includes a strong introduction by Noam Chomsky and an afterword by Uruguayan author Eduardo Galeano), the pictures and words in this book are a long and grueling walk through a bad neighborhood – images, none of which you will see on the evening news, of murder and rape victims, police violence, and sprawling scrap-wood neighborhoods laced with ditches flowing with raw sewage and backdropped by belching American-owned factories.

These images were shot between 1992 to 1997 by a group of native street photographers Bowden came across in his explorations of the U.S.-Mexican border country. These gutsy photographers–they have been beaten and are regularly threatened, all in a country where in the last 15 years 40 journalists have been killed –scour the city for photographs for little or no pay. They are instead driven by a need to record their world: a world where 325 maquiladoras (foreign-owned factories) employ some 175,000 workers, most of whom make $3 to $5 a day working long hours and live in one of the most impoverished, polluted, and violent places on earth. In Juarez, at least 150 girls who work in the maquiladoras disappeared in 1995 alone. Most of them were raped and murdered as they walked to and from work.

This is a frightening neighborhood. And this book is a hard look into that neighborhood. But don't ignore this book, for that neighborhood, Bowden warns us, is our neighborhood:

> "Juarez/El Paso constitutes one of the largest border communities on this earth, but hardly anyone seems to admit that Mexican side exists. Within this forgotten urban maze work some of the friskiest photographers still roaming the streets with 35 mm cameras. I think that they are capturing something: the look of the future, and the future to me looks like the face of a murdered girl. The future is based on the rich getting richer, the poor getting poorer, and industrial growth producing poverty faster than it distributes wealth." (61)

Unlike in, say, the old South, our late 20th century slave economy hides its slaves and the plantations behind borders and the euphemisms of global economics. So-called "free-trade" agreements, international trade organizations, and multi-national corporations not only encourage and worsen the slave-camp conditions in cities like Juarez and countries like Mexico, but by overriding the authority of governments and vaporizing borders for trade while reinforcing borders for labor, they force U.S. workers closer to that future. GM, for example, plans to close two dozen plants in the United States in coming years although it has become the largest private employer in Mexico.

That's why, according to Bowden, places like Juarez are previews of coming attractions for the American worker–"the laboratory of our future":

> "Here, transnational corporations, the new and inventive substitutes for governments and empires, make a stand against the growing and violent future in order to maintain profits by beating down labor. Juarez is a new and invigorating charnel house erected by a dying order. And its ferocity can be seen on the faces of the family Carranza or in the thousands of dull-eyed workers spilling out of Third World factories after a long, ill-paid shift. . . .We do not want to look at Juarez, we do not vacation there, we do not speak of the place. When it briefly comes to our attention, we dismiss it as a grotesque exception to what matters, what is, and what will be. . . .This is an opinion I do not share." (48)

Bowden's distinctive and searing prose is the duct tape the holds your eyes open and forces you not just to look at but to really see the unbelievable images of a city where since 1995 crime has risen 30 percent (a world record shared with Mexico City) and where in 1994 alone a million poor and dislocated people settled to find work. Stats like that are illuminating enough in themselves, but this book isn't about numerical, logical, economic arguments like that. Although there are plenty of staggering numbers and infuriating quotes spewed by business and political leaders that suggest the deliberateness of a laboratory experiment in the conditions in Juarez, "There are ways to measure the deep movements of an economy that are more accurate and timely than the bond market," Bowden says (70). Ways like photos of children competing with animals for food scraps foraged from open dumps, of police beating union organizers, of the charcoaled body of a man electrocuted while trying to illegally tap into a power line to get electricity for his family.

This book is Bowden's attempt to render that reality for the people who can, maybe, hopefully, do something about that situation. And the future.

> "It is time for everyone to talk. It is time for everyone to talk despite the thickets of racism, of foreign-policy considerations, of the growing and ominous military presence on the border, of the barbarism festering in our agencies that expresses itself in the mistreatment of illegal immigrants from Mexico. . . .It is time to talk and the photographs are the talking points. They are singular and actual. They are metaphors for nothing. They slap us in the face. They are Juarez and now Juarez exists in many places, and until we have the courage and decency to speak, Juarez will plant itself in more places. Juarez is the future, but the future, in part, is in our hands and we can make of it what we will. . . .This is not darkness onthe edge of town. This is going to be our town. And not because the dreaded Mexicans are coming but because we are planting ruin about the world and calling it our economic policy."

This changes everything.

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Ken Wright *is the author of A Wilder Life: Essays from Home (Kivaki Press, 1995) and is currently finishing a second book, Memoirs of a Pleistocene Man. His essays and reviews have been published in various regional and national magazines including Sierra, Backpacker, Wild Earth, and The Bloomsbury Review. He also teaches journalism and creative writing courses at Fort Lewis College in Durango, Colorado. He and his family live in the San Juan Mountains.*

have forgotten–how we are connected to nature and how every damage we do to nature comes back to haunt us.

Our vulnerabilities have changed . . .

Yes, we don't feel vulnerable. So now, for instance, we have economists speaking about a "healthy" economy when the GNP rises, yet GNP increases also occur when repairing the damages we have created–the costs of healthcare, clean-ups and so forth. So, we can say that abstraction has led us into our dilemma and consciousness is a double-edged sword. It does not mean that this cannot be overcome, but we have to temper our ability to abstract with our sense of connectedness. We have to reconnect with nature. In fact, to me, this is the root meaning of religion–from the Latin *religare*, to reconnect. We have to reconnect with the whole. Reconnecting with nature, with the spiritual world, is the essence of Deep Ecology.

The capacity for abstraction also gives us the mental images with which we can project and anticipate the future. We can say, for instance, if I make 10 thousand dollars a year, I can just eke out a living; if I make 20 thousand it's better; if I make 50 thousand that's even better; 200 thousand is even better! We just project out in a linear way without seeing that when something is good at one stage, more of the same is not necessarily better. This is especially true with material consumption. Our linear thinking just projects out and out, saying the more the better. Economists are the primary culprits here, saying "the more growth, the better it is." If you look around in nature and look at all kinds of processes of growth, it is easy to see that unlimited growth exists nowhere in nature, except in things like cancer and other diseases. But, economists think that unlimited economic growth is a good thing. It's absolutely crazy. It is that kind of linear thinking not tempered by anything, that defies the laws of nature and gets us into trouble.

No one should bash linear thinking though, anymore than the material aspect of life. When you leave this room to go home you need to think in a linear sequence–you have to make it through the door, you have to make it to your car, and then there is a certain procedure you do to drive your car, all of which is extremely necessary. But, there are creativity and intuition to add to our understanding of thinking, just as there are patterns and processes to add to our understanding of life. In the emergence of new structures, of new order, creativity is very much linked with emergence and it is a non-linear process.

When we speak of educational reform, and certainly of your work here with the Center for Ecoliteracy, how do you describe the reforms you aim for?

I have worked in education all my life, but with schools in particular for the last seven years through the ecoliteracy program. The starting point was to help with the great challenge our time–the challenge of creating sustainable communities. It is a tremendous challenge and we need to do it in business, in politics. So, I concentrated on education, and, in particular, on primary education. My daughter was about six years old when I started the Center for Ecoliteracy, so I was motivated as a parent to look at primary education.

We saw that if we want sustainability, our children need to become ecologically literate. We all need to understand the basic principles of ecology, and learn to live according to the cycles of nature, valuing diversity, flexibility, relationships, networks, community, cooperation,

> In my synthesis, the 'pattern' of life is a network pattern that is described with the technical term, *autopoiesis*, an autopoetic network. The 'process' of life, and here it gets really interesting, is *cognition*. This is an emerging theory that for the first time really overcomes the Cartesian split because we can now say, matter is part of the structure of life and cognition is part of the process of life."

partnership–all of that. All these principles can be seen as principles of ecology. Very early on, when I gave talks to teachers, I explained that to understand the principles of ecology requires a new way of thinking, which is "systems thinking." To understand ecosystems means to understand them as communities that have maximized their ecological sustainability by organizing themselves in a certain way, by passing all the matter and energy through the ecosystem, and so on. We can learn a lot from nature just by observing how ecosystems organize themselves. But, in order to understand how ecosystems organize themselves you have to think in terms of relationships, in terms of context, in terms of processes, and so on. So, you need systems thinking to understand ecosystems. When I presented this to the teachers, I was surprised to find very enthusiastic acceptance of systems thinking–even more so than of ecology. I realized that over the last ten years or so, a lot of research and studies have shown teachers in a systemic way how children learn, how the brain works by seeking out patterns. A child does not come to school empty in the morning, but brings her own world and then connects everything to that world. Only what is meaningful to her will be remembered. And so, again, we have to think in terms of connections. The ideas of constructivist learning, multiple intelligences, and so on, are really systemic concepts. So, "systems thinking" is necessary not only for understanding ecosystems, but also for understanding learning.

One aspect of learning that is also emphasized very much these days is the social context of learning. In other words, learning that takes place within a community. When you have a community of learners and the emotional climate that goes along with such a community, then the child really learns well and flourishes. Community, then, is another element of ecoliteracy. So, you have ecosystems, the study of nature; the experience of ecology in nature; then you have learning theory; and you have community. Finally, what learning theory suggests is to have a curriculum that does not do math for fifty minutes, then social studies for fifty minutes, but that is integrated around a common focus. This is often called project-based learning.

At the Center for Ecoliteracy we promote the idea of a school garden as a central project for learning. The kids garden and experience ecology, the life cycles of plants, the cycles of nature, the cycles of the seasons, by gardening and by learning the basics of organic agriculture and sustainability. Then they harvest the food and cook in their school kitchen. All art, writing, history, science, and math lessons are integrated with the processes of the garden. This kind of systems thinking is the very core of ecoliteracy.

How would you characterize the sensibility this education is enculturating?

I would describe it as a "sense of place," in the same way bioregionalists use the term, or people like Gary Snyder and David Orr. It is a sense that we are a part of the larger whole, we are part of the surrounding ecosystems. We are connected through processes of exchange and we are also part of a social community and part of a culture. So, this notion of *place* includes both the ecological and the cultural.

What core questions interest you, and have taken you from physics and philosophy to the biological sciences?

First, I went from physics to philosophy. When I was a student I was very much influenced by Werner Heisenberg, who wrote a classic, which I read when I was seventeen or eighteen, called *Physics and Philosophy*. That influenced me very much–the whole philosophy of Quantum Physics. After getting my Ph.D. and doing research in physics, I wrote the *Tao of Physics* as a philosophical book comparing physics and Eastern philosophy. I talked about a whole new emerging worldview, or new paradigm, in the *Tao of Physics*, calling it an ecological worldview. After writing the *Tao of Physics*, I thought that this new physics with its different worldview could be a model for the other scientists just as the Newtonian physics had been a new model in its time. It took me several years to realize that this idea was a fallacy, because when we describe the world at large we have to recognize that the world is living and that physics cannot say anything about living systems. Therefore, the new physics could not be a model for economics, for medicine, or for education. So, I began looking for a broader framework. Not surprisingly, ecology and systems thinking turned out to be the broader framework. I began to explore these broader areas and have done so for a long time now.

What are you working on now?

After writing the *The Web of Life*, I became interested again in science–in the details of how to describe genetic networks, systems science. I expect to stay on this path for a few years. My ecoliteracy work is my activist, educational work. I do these in a two-to-one ratio: two thirds writing and thinking, and one third ecoliteracy.

Is your curiosity taking you into linguistic intelligence, or the cognition of the immune system and nervous system?

Yes, the second much more. I am very interested in the immune system, which I wrote about some in *The Web of Life*. Recently I met a young immunologist and cancer researcher at Stanford University who confirmed my view that the immune system is the alpha and omega of cancer research. We will not understand cancer until we understand the immune system. Future therapies will mean not only *strengthening the immune system*, but, also, *reeducating the immune system*. At present, all this is still very speculative. How can we help to reeducate the immune system? These are really novel ideas.

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Furthermore, the deals being made between corporations and universities are secret because they are proprietary. So, even though you have a public university–like Cal State or the University of California–if you were to go to them and say, "We would like to see a copy of the contract between University of California and Monsanto," they will say you can't because it's proprietary. It's an amazingly sweet operation, which fueled what I'm calling phase one: the wholesale commercialization of the research function of the universities.

Which also coincided with the new, globalizing political economy of telecommunications, computers, and biotechnology–whoever owned the cutting edge in these industries owned everything?

Right, exactly. In the 1970s the industrialized countries started to understand that their ace was no longer in the heavy industry of earlier times, but in these new industries, the so-called knowledge-based industries, such as computers and telecommunications, and, towards the end of the 1970s, biotechnology.

Again, all of these industries had been spawned under the aegis of the DOD–all of it developed under massive public subsidy. Biotechnology was pretty much created by the National Institute of Health. Artificial Intelligence and telecommunications were created in large part by the military. So, now that these technologies had ripened, the companies could come in to do some harvesting. For spare change, they could link up with universities and become the exclusive licensees.

Most people don't know much about patents, but they are, in essence, a limited monopoly for a certain number of years–seventeen years. Now, the university can only own the patent if the researcher–the inventor–surrenders the patent to the university. Since this can be tricky, universities started to adopt what they call an "intellectual property policy" to spell out exactly who gets what. For awhile there was a transition period with a lot of litigation and negotiation around who would get what piece of the action.

Ultimately, the universities moved in the direction of companies–and began requiring their employees, as a condition of employment, to surrender their patent rights. Today, if you go to work for a university, it is understood the university owns the patent. You might get a piece of the action, but you have to surrender your patent to the university. This was a subversion of the patent law that first happened in the beginning of the century. When GE and AT&T started hiring people to come work in their research labs, they had to figure out how to get a hold of these patents because patents are issued to the inventor (thanks to Thomas Jefferson). Essentially companies could be held hostage by their own employee. So, they made all sorts of policies. It was finally tested out in court, and the courts upheld the contract between companies and employees even though that contract essentially gave away the constitutional rights of an inventor.

Did organized labor engage with these inventor/patent rights?

No, none of these research outfits were organized, and it's what industry has done now throughout the 20th century. There was a transition period for the university, but now it is pretty much the norm that if you go to work for a university, the university automatically owns the patents. Perhaps you'll get some return on the revenues, but patents are held by the university. On the other side of it, the university holds the patents and can grant licenses to those patents–licenses which can be exclusive or non-exclusive. If you get an exclusive license, it is, in effect, the patent's monopoly.

So, I own a patent, let's say, for a certain process. I give you an exclusive license, which means that you and you alone can work that patent under that monopoly for those number of years. I still hold the patent, but I transfer the benefits of that patent to you and you pay me for that license. Also, if I own a patent and someone else steps in on it, I can sue them. Or if I want to license it non-exclusively, I can charge usage fees. Universities are now in a position to do this kind of business.

Doesn't it presuppose a complete change in the faculty's relationship to research and education, a radical change in the purpose of the work?

Right. The faculty are now no longer simply pursuing research as a contribution to human knowledge or as an aid to education. They are now, essentially, the producers of products. Products are called inventions which are then patented–which is where the commodity comes from–and you have something that can be bought, and sold, and owned.

For companies today, there is a contractual guarantee that they have proprietary control, a guaranteed return on their investment. Universities, by way of their contract with their employees, now have guaranteed ownership of the results. So, the universities, in effect, are now a conduit for a massive public subsidy of industry.

Where is the volume of criticism? Where is the judgement on the non-commodifiable values of education from within the academy?

Well, I think a lot of faculty members were bought off with money. A lot went into business on their own. There is a study that came out not long ago–Sheldon Krimsky at Tufts University, has been doing this for many years–which showed that one third of people in biotech own an equity interest in the contracting firm. Greed is part of it.

But, critics were silenced too. I was vociferous in my criticism, beginning in the mid-1970s, and it finally led to my firing at MIT. A lot of other people suffered a similar fate. There was a real and intentional purge of criticism. Ralph Nader, and Al Meyerhoff (from Natural Resource Defense Council and California Rural Legal Assistance), and I set up an organization in 1983 called the National Coalition for Universities in the Public Interest to try to sound the alarm. We held congressional hearings and did a lot of litigation. But, I have to say, we failed because people couldn't hear it.

Our criticism occurred during the Reagan Revolution when the market would save everything, and people weren't used to hearing about the universities being party to mischief. We couldn't get foundation support because they all loved the universities. So, it was a real uphill battle. Even when litigation uncovered a lot of illegal activity–such as retainers, tainted research, scientific fraud, or theft–no one looked at the problem systemically. One scientist might be found a bad boy, but no one saw the corruption of the entire community.

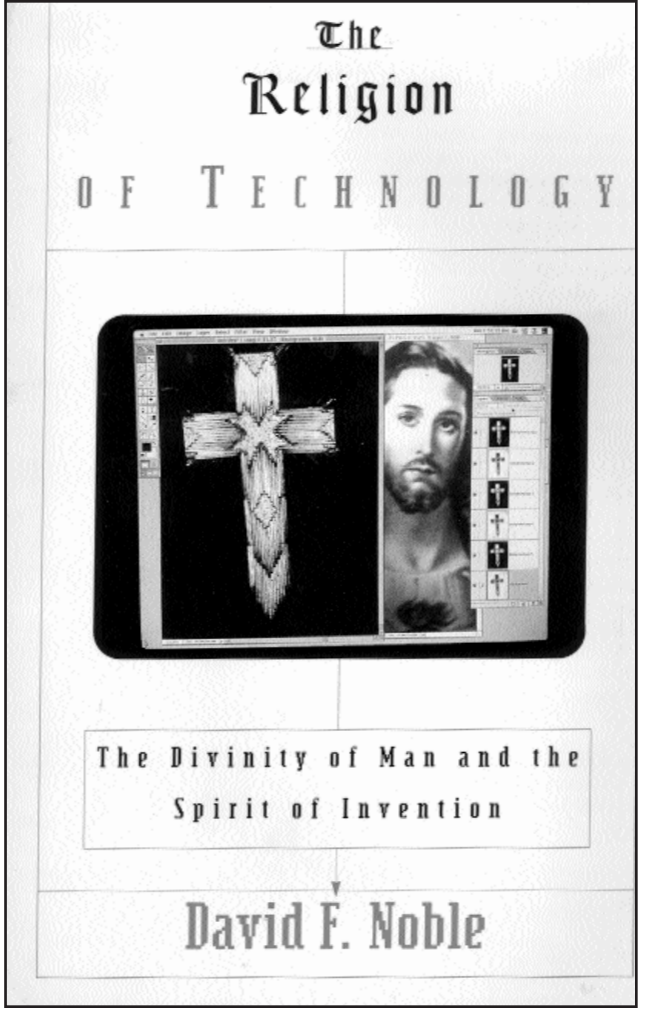
I once did biochemistry in a lab when discoveries were shared amongst scientists. With the new era of industry/university contracts, labs became shrouded in secrecy and everyone had proprietary interests. Fraud, theft, secrecy all became part of the new regime, the commercialization of research. Administrators too, now in bed with companies, could easily become involved with insider-trading on research. The university president of Cornell sits on the board of General Electric and the university has a deal with G.E.. . . he's sitting on both sides of the negotiating table! Closer to home, the president of UC Berkeley is a director of Wells Fargo Bank, and UC Berkeley's bank is Well's Fargo.

You would think the media would have a heyday–what did they do with it?

You would think! One of our big challenges was to get the journalists to see that the universities were just like any other business. But, when a university president or a scientist spoke there was a certain kind of legitimacy that the reporters deferred to.

As you argue in <u>The Religion of Technology</u>, we conferred a certain holiness, an irreproachability to the men/motives of science and technology, centuries ago.

Right, exactly. During big congressional hearings that were beating up on MIT, Cal State, and Stanford for selling research to Japanese multinationals–hearings with the late Ted Weiss the congressman from New York–a reporter from The New York Times called me up and said, "MIT now has decided that they are going to give a priority to US companies and will preclude doing certain things with foreign companies." I said, "I don't believe that for a second. Why don't you give me that contract, the boiler plate that they've come up with?" He said, "Well, if I ask them for it, then they'll think I don't believe them." He actually said that! I would drop dead today if MIT ever did such a thing. I would never presume to write about deals without getting the contracts. For all these reasons, it was very, very difficult to get people to pay attention, and I have to say it's over. We set up the Coalition to bring pressure to bear on the universities from the outside, using the media, using the congressional hearings,and litigation. We failed. Here we are in 1998, twenty years later, and that phase has been pulled off.



"A prodigious accomplishment. . . A detailed, gripping, and convincing work of social history, which adds detail, sinew, and emotion to our understanding of issues that are usually considered only in the abstract."
– James Fallows, *New York Review of Books*

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HANK MEALS

Will you explain the economics of funding, the cutbacks in spending, that also drove schools into private contracts?

Yes. People would often say, well what's wrong? Doesn't the university need money now that the state is cutting back? We'd say, well why is the state cutting back– it's political! The state is cutting back to force universities into the corporate embrace. In Canada, all this was quite explicit, and sets up what I call phase two: the commoditization of the instructional function.

While phase one was proceeding, all the attention was on research. When the press did write about universities, all they wrote about was research, and never mentioned education. In fact, some university presidents considered separating research functions from educational functions–essentially, get these kids out of here, we've got work to do! The result was a real impoverishment of the educational function of the university. We did a lot of work on this problem by documenting the reallocation of funds. Universities had to build up their commercial infrastructure, laboratories, and so forth for its research function. We'd see new buildings going up for material science and for things such as new polymer research while in the classroom you couldn't get chalk. Staffing was cut, class sizes increased dramatically, and tuition started outpacing inflation–all in1980, all with new contracting systems supported by the Bayh-Dole amendment.

Again, we were able to show that universities were dipping into tuition, which is the largest pool of unrestricted funds available to the university, in order to pay for commercial infrastructure. Additionally, many of these researchers were contracted without teaching responsibilities. Students and their parents ended up paying more for less as the educational function became blatantly impoverished.

Now, with the rush toward technologizing for on-line education, there is new attention to the instructional function because it too can be commoditized. Essentially, in the first phase, research activity was converted into inventions, patents and licenses, and now, in the second phase, educational activity is being converted into educational or instructional products such as CDs, software, websites,or "courseware," which is then copyrighted and licensed. It is a parallel process with high stakes for the future of education.

Much of the argument for technological courseware has to do with access. On-line education poses greater educational access to people who are geographically or physically limited from being on campus, and reinforces cherished ideals for a democracy based on an informed citizenry. There is something to it, but these students as a population are greatly exaggerated for the purposes of creating a new "market." Pedagogically, the advantage doesn't exist for on-line education, and the economics of it in terms of cost of instruction are, thus far, unambiguously more costly. But, the real motive here is clearly a profit motive on the part of vendors of hardware (IBM, Apple, Compac, etc.), software (Microsoft and Lotus, etc.), and content providers (primarily publishing companies such as Simon and Schuster, Prentice Hall and the like), who envision a ready-made market of hundreds of billions of dollars.

The vendors are big players, and so are university administrators–again, you have the same kind of corporate/university interlock as before. Personal interest is present as well as an ideological one: "on-line education is the future." Administrators want their institutions to look state-of-the-art and progressive too, because there is an intense competition among universities for students.

So, universities are into this "market" in a big way. They are also trying to get a piece of the action. University administrators are setting up their own companies to peddle software, or trying to get into the "distance education" market by trying to get their university's courses "on-line." Today, this is where I would say the real action is as far as the commercialization of the university.

Yet, just as universities had to wrest patent rights away from research faculty, now the universities have to wrest copyrights away from teaching faculty. Faculty are the legal "authors" of their course material and, constitutionally, are the owner of the copyright to that material. In order for the universities to get into the commoditization of instruction business, they have to own copyrights to sell the course material and license it to distributors. That is the war zone right now. Universities are in a transition phase, trying to figure out how to get hold of the copyright by forcing the faculty to sign agreements on an ad hoc basis and paying them some kind of sum to establish precedent. And, since so many of the faculty have no job security–over half the people teaching in universities are adjunct–they are in a vulnerable financial position to agree. One thousand or three thousand dollars looks like a lot of money to many teachers for digitalizing their work, even enough to give up their copyright! As one person put it rather cynically, "Well, if you have 80 people looking for a single job, or 150 people looking for a single job, how many of them would not sign such a contract?" Most of them would. Much of this is taking place with instructors and adjunct professors–untenured people.

Ultimately, this will all move, I think, in the same direction as patents. As a condition of employment, faculty will have to surrender their copyright to the university.

Do you think that will force intellectual, creative people outside the university?

Well, that's a big problem for the university. One of the reasons universities have traditionally upheld faculty ownership is because they know the creative process would be blocked otherwise, and that they would lose people. So, they're in a bind. We're in the process now, really at the beginning of something. I think new people coming into the system will eventually know no other reality. It will be just as it is when you go to work for a company. If you work for *The L.A. Times*, then *The L.A. Times* owns your copyright. It all becomes routinized and no one will give it much thought. Over the years, through attrition of tenured people, they'll move toward a short contract faculty. Which, again, over half of the faculty now are already in that position. Fewer and fewer people are getting tenure. So, de facto, tenure is being phased out. Universities will probably cut deals with the aristocrats of the faculty. That would probably be the smart thing, rather than go to war with the faculty.

Let's turn to the orthodoxies you've identified in A World Without Women, and The Religion of Technology. Will you describe the social struggle for "divine knowledge," the spiritual belief in state-of-the-art technology?

Yes. There's a profound faith that whatever the immediate sacrifices, there will be ultimate deliverance. This is a religious faith. I'm rooting it in the Christian tradition, where science and technology are means of transcendence. In my book, *Progress Without People*, published in the early 1990s, I tried to understand the roots of why people didn't resist more. I traced it back to what I call the "ideology of progress," which is going back to the late 18th and beginning of the 19th century. It's a history of anti-Luddism, past and present. We carry an ideology that we can't stand in the way of progress, which is an idea rooted in an expectation of the future at the expense of the present.

All of which is rooted in a flight from the "human condition" toward salvation?

Right, the human condition is to be gotten away from. Our eyes are elsewhere and the real prize is not here. In *The Religion of Technology*, I root it in the mythology of the divinity of man–that Adam was divine–half-angel, immortal, omniscient–before the fall, before Eve. Eden before Eve is the model, the patriarchal model. Eve, as woman, was the pollutant to everything that once was right. Human beings were mortal gods, as Bacon put it. The Christian idea of a recovery of that perfection symbolized by Christ and the resurrection of Christ is the dominant myth of our culture. So, the idea that we could, by whatever means– through devotion, grace, asceticism, renunciation of the flesh and the world– recover what is our real birthright,our angelic birthright, and overcome all these impediments of mortality, is a mythology that runs very, very deep in our culture. I'm arguing that science and technology became a means about a thousand years ago, ideologically speaking, toward that recovery of divine man. Therefore, whatever the costs to the planet or to our existence today, the real end is beyond all of this, away from the earth.

Will you describe the influence of Christianity, of this kind of thinking, on NASA?

I was sitting in the NASA archives in Washington, reading a lot of the stuff that is in *The Religion of Technolo-*

there is. Show them a plant and they'll tell you exactly what is in the plant–the proteins, the enzymes, amino acids, oxygen, nitrogen, carbohydrates, and so forth. All molecules, and nothing else. So what more is there? The answer that systems science gives is that beyond material components there are patterns of relationships between those components and processes involving those components. In short, systems thinking adds two additional perspectives to the perspective of material structures: the pattern perspective and the process perspective.

What is destroyed when you break a plant into pieces? When you tear off a leaf, you don't destroy the molecules–they are still there–but you destroy the relationships among the molecules and you interfere with the processes at work. In *The Web of Life*, I propose a definition of living systems in terms of those three perspectives: the pattern perspective; the structure perspective; and the process perspective. Traditionally, biology has approached life only from the structure perspective, but you have to understand all three to understand life.

Now, you could define a living system also by saying, "Living systems are chemical systems that contain DNA." However, if you take a dead plant or a piece of bone, DNA is still in it. About half a year ago there was a report on the cover of *The New York Times* about a German team of scientists who analyzed the DNA of the original Neanderthal skull, the one found in the Neander Valley. It was a skull that had been dead for over 100 thousand years, and they could still find DNA in the bones and extract its sequence of genes. So, obviously, the definition of life in terms of DNA doesn't work. You would have to say that a living system is a system which contains DNA *and* which is not dead. But, then you would just say: "A living system is a system is that is not dead." That is a tautology. So, we see that a definition of life in terms of structures is not enough. You need to add the relationships among the components, its patterns and processes.

In my synthesis, the 'pattern' of life is a network pattern that is described with the technical term, *autopoiesis*, an autopoietic network. The 'process' of life, and here it gets really interesting, is *cognition*. This is an emerging theory that for the first time really overcomes the Cartesian split because we can now say, matter is part of the structure of life and cognition is part of the process of life. The relationship between matter and mind becomes a relationship between structure and process. This is a very new and very clear way of seeing things.

Then we add the complexity of the symbiotic–that the organism is also responding and changing in relation to its environment.

Yes. There are several steps to come to this. When you look at the processes of life, to say that it is cognition is not enough. There are also a lot of physical things going on. Every living system takes in nutrients from the environment, and there are processes of metabolism–we

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feed on energy and matter from the environment and we excrete waste. Every living system does that. So, you have to study how a living system subjects itself to a constant flow of energy and matter, and you see that a living system is what is an *open system* in terms of energy and matter. The detailed study of the physics and chemistry of open systems has resulted in a theory called the theory of *dissipative structures*, by Ilya Prigogene. He describes in a mathematical theory how this process of metabolism works, with feedback loops and so forth. Part of that detailed theory of dissipative structures is the recognition that every living system occasionally encounters points of instability. Although living systems are very stable–they maintain themselves in a stable state–they also encounter instabilities and at the point of instability there my be a spontaneous emergence of new forms of order. These points of instability are referred to as bifurcation points, and the emergence of new order is the basic dynamic of development and evolution. It is interesting that you have to deal with open systems to understand evolution. Only open systems can develop and evolve toward ever greater diversity and complexity.

How do you explain to yourself the ecological and cultural state we're in?

We are precisely at a bifurcation point as a global culture, at a grand scale.

Why are our evaluative, conscious minds so ignorant beside our desire for novelty, growth and technology?

Well, that is very difficult to say. I think what you can say, when you look at evolution, is that very often there occurs a great advance, a great invention. Then that very thing that was a great advantage eventually becomes a problem, for which another great advance is needed. For example, in the first two billion years of evolution there were only bacteria. These bacteria existed in a very hostile environment with meteorites, radiation, volcanic eruptions, and so forth. They needed to supply themselves with energy and protect themselves from the ultraviolet rays of the sun–there was no air, no atmosphere, no ozone layer. Those bacteria invented, over two million years, practically all the life processes. The photosynthesis processes in plants are done by structures called chloroplasts that, originally, were bacteria which invaded and evolved a symbiotic relationship within plants. Of course, we also have plenty of bacteria in our bodies that do things for us today, such as digestion. So, bacteria invented photosynthesis, fermentation, rapid motion, all these things. When they invented photosynthesis, the first photosynthesis did not involve oxygen. It takes quite a lot of energy and sophistication to split a CO_2 molecule. When oxygen-based photosynthesis was invented using sunlight, CO_2, and water to produce sugars and other chemical compounds, it was a tremendous evolutionary advantage because there was plenty of CO_2 around. Yet, oxygen, which is a product of this photosynthesis, is a very toxic gas in great quantities. It leads to corrosion, to combustion, to a lot of destructive processes. At first this didn't play a role because the planet is huge and the oxygen was very scarce. But, over millions of years, oxygen built up and was one of the first big pollutions. The entire planet was polluted with this toxic material, oxygen. Thus, the original great invention became a problem. The solution was that bacteria then invented an incredible trick–to make this polluting gas a necessity for further evolution. They invented oxygen-breathing which produce CO_2 as an end product, creating a balance between photosynthesis and breathing.

Similarly, we could say that by evolving language and consciousness we had a huge advantage because we could form communities, we could communicate much better than other living organisms, so it was a huge evolutionary advantage. However, what this also developed was the gift of abstraction. Of course, the gift of abstraction is what we are engaging in right now–we are thinking, using images and conceptual thought. And abstraction is also necessary for all art, music, poetry. Shakespeare, Mozart, and Bach would not be possible without abstraction. Yet, the downside of abstraction is that we have abstracted ourselves out of nature. We tend to be aware of ourselves as isolated egos and we don't see–we

AN INTERVIEW FRITJOF CAPRA

The following conversation between Fritjof Capra and Casey Walker took place on April 22, 1998 in Berkeley, California.

Casey Walker: Will you begin by describing how you look at technology and education, what questions you ask?

Fritjof Capra: We have a program asking questions about the use of computers in schools. It is called "Learning in the Real World," which is largely independent, though connected to the Center for Ecoliteracy, and offers a clearinghouse for articles and discussions about the use of computers in schools. As we found at the Center for Ecoliteracy, it is often assumed in projects of "educational reform" that the more computers there are, the better. In response, we now have collected the major articles that express a critical view. I recommend a very good article that appeared in last July's *The Atlantic Monthly*, by Todd Oppenheimer, which critically reviews the whole field of computers in education. *(Editor's note: for copies call The Atlantic Monthly at 212.830.1900)*

How do you respond to the use of evolutionary theory to explain technology as part of our species' development toward a post-biological phase?

That, to me, is utter nonsense. The natural environment in which we live, as well as each of us, are living systems. Societies are living systems, communities are living systems, even parts of living systems are again, in themselves, living systems. So, we are not moving beyond the world of living systems and if we do it is to our detriment--we will just destroy ourselves. That is the great danger. What I'm part of is a movement that advocates sustainable communities; that is, communities that live in accordance with the principles of organization displayed by living systems. So, I don't buy that at all.

Do you critique the illusion of greater democracy that is promoted both by the computer industry and by today's political premium on face-value 'diversity'?

Yes, Jerry Mander has made this critique very eloquently in *The Case Against the Global Economy*. We get a sense of personal empowerment, say with a PC, because we can do a lot of things with it. When I travel to important seminars, I take my Power Book with me because it has all my lectures, my addresses, notes, and so forth. So it is extremely valuable. But, while we look at our personal empowerment as democratic, the international financial markets that are guided by computers are establishing a centralized system of economic control that is extremely anti-democratic. For any one thing an individual can do with a computer, a large corporation can do so much more that it all becomes counterbalanced. If you could imagine with a stroke of magic that we could get rid of all the computers today–if they became dysfunctional–we would be much better off. There is no doubt that the world would be much more democratic without computers.

Will you speak to democracy as a function of belonging to, participating in a real place?

Democracy is part of community and computers are community-destroying. Although people say the Internet forms new communities, these are different kinds of communities which are not the face-to-face communities democracy needs. With increasing economic and political centralization, computers destroy diversity and destroy democracy.

Now, if you look at life from a very broad perspective and you look at human nature from an evolutionary perspective, then you do see that the emergence of humans is inextricably linked to the emergence of technology. Technology is a human trait–as are reflexive consciousness, language, and many other things. The use of tools and the development of language, of abstraction, and, also, of self-awareness, go hand in hand in evolution, and, of course, are not limited to humans. Most primates use tools and have rudimentary language and some form of self-awareness. All this cannot be separated from the use of tools and therefore cannot be separated from technology.

Anybody who says that he or she is against technology, per se, is against human nature. The question is not technology–yes or no?–the question is what kind of technology. Technology is part of human nature and we would be less than human if we didn't use it. When you ask what kind of technology to use, you have to then realize that every technology has advantages and disadvantages; it is not neutral. This starts with the wheel, the bicycle, the car, the telephone, the television, and includes everything. But, being against a certain form of technology does not mean being against all technology. Christine von Weissacher, in Germany, spoke eloquently when she said, "When a caveman picked up a rock to use it as a tool, looked at it, and then threw it away, he wasn't against technology, he was against an inappropriate technology and he looked for a better rock. And when he found a better rock, he used it."

Another angle on critiquing technology is one I learned from Helena Norberg-Hodge. She was always amazed by the harm and waste of technology in organic, ecologically whole cultures like the Ladakhi culture, which now enthusiastically goes for transistor radios, computer games and whatnot. Why are people in these cultures so attracted by these gadgets? The solution to this puzzle is that if you don't introduce the whole context–including the negative side effects–when you introduce technology then all anyone sees is just the miracle of it. If you grow up without high-tech and somebody gives you a little box, and you push a button and see an image–that is a miracle, that is magic. How are you to know that any number of women in Asia have gone blind in the production of these gadgets?

It is harder work to evaluate what technology is displacing, what is silenced or ignored, and its hidden costs. Doesn't the work of "ecoliteracy" enable us to remember what is in place and to debate the greater values of conservation?

Yes, I think it makes you aware of context. Ecological thinking or systems thinking, as I call it, is thinking in terms of context, in terms of relationships, in terms of connectedness; so you get the whole picture.

In your book, The Web of Life, you write of the process of autopoiesis, which shares the same root as poetry.

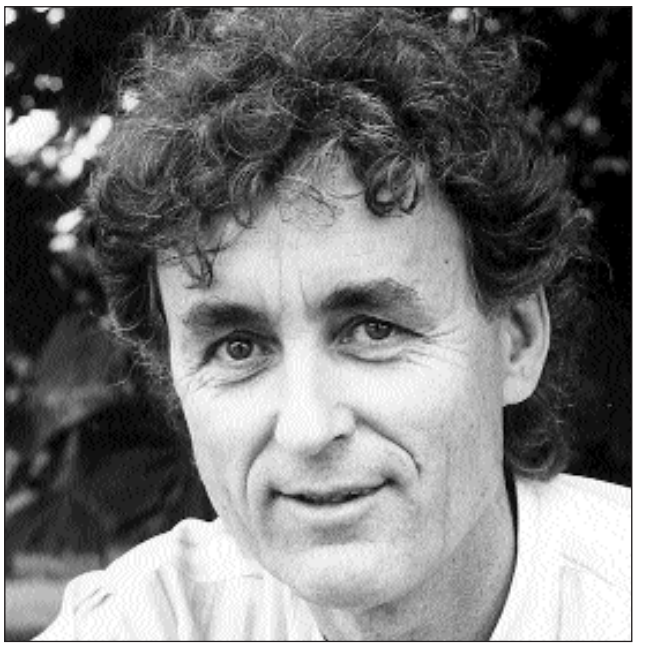
Yes, *poiesis* is a Greek word meaning "to make." Autopoiesis means self-making. It describes the pattern of organization of all living systems and in particular of cells. In a cell, each component contributes to producing the other components. Each component of the cell is produced by the network of processes within the cell and within the boundary. And the boundary, too, is produced by the same network. So the entire cell makes itself.

You've also documented a rethinking of classic assumptions in science–of determinism, of linear processes, of splits between mind and body. Will you describe the new understanding of mind and cognition as the essence of life, and what that implies?

Let's begin by asking, what is life? What is a living organism? What is the difference between a leaf and a rock, between a cell and inanimate mineral? People have studied these questions for hundreds of years and found there is an *irreducible wholeness* to living systems– living organisms, social systems, or parts of organisms in living systems. In the early part of the century, the first systems thinkers expressed this insight in the phrase, "The whole is more than the sum of its parts." That became the defining slogan of systems thinking.

What does it mean? There are several shifts of thinking that are in that phrase, "The whole is more than the sum of its parts." First of all, the sentence itself notes a shift from the parts to the whole. In classical science, when one encountered a complicated phenomenon, the rule of thumb was to look at its pieces, study its parts, then explain the whole as a function of those parts. This worked perfectly in understanding the world from a mechanistic point of view–as when Descartes said the world is essentially a machine and can be treated as such. It still works building or repairing machines. In a machine, there is no spirit, there is no soul. Descartes made a strict division between two realms: the realm of physical objects, or matter, and the realm of the mind. He called matter the "extended thing" and mind the "thinking thing." Ever since Descartes in the seventeenth century, that split between mind and matter has created a lot of problems in medicine and biology and all kinds of fields.

Now we are shifting from the parts to the whole. Instead of breaking things down into pieces, we try to understand the principles of organization in integrated wholes. We can ask, what does 'the whole is more than the sum of its parts,' mean exactly and concretely? In what sense is the whole more than the sum of its parts? You can find many biologists today who will tell you that ultimately all things consist of molecules–that is all



FRITJOF CAPRA, PH.D., *physicist and systems theorist, is well-known as the author of three international best-sellers, The Tao of Physics, The Turning Point, and Uncommon Wisdom; and as cowriter of the screenplay, MINDWALK, a film based on his books. His most recent book, The Web of Life, was published in 1996.*

His educational background includes a Ph.D. in theoretical physics from the University of Vienna, and did research in particle physics at the University of Paris, U.C. Santa Cruz, the Stanford Linear Accelerator Center, University of London, and the Lawrence Berkeley Laboratory at U.C. Berkeley.

In addition to research in physics and systems theory, Capra has engaged in a systematic examination of the philosophical and social implications of contemporary science for the past 20 years. He serves on the faculty of Schumacher College, England.

He is a founding director of the Berkeley-based Center for Ecoliteracy.

gy, and I got really spooked by the overwhelmingly evangelical, otherworldly aspect of our space program–that we are leaving the earth, that we are going into heaven where we belong! We also look at artificial intelligence as a transcendence of the flesh toward a disembodied perfection, and court the idea of transferring our divine selves, or the divine part of our mortal selves, to an enduring, silicon based medium.

Still embracing Descartes' split of mind from body.

Yes. Embracing the idea that our mind is the God in us and the body is just debris. The first part of *The Religion of Technology* is the thousand year history of these ideas, and the second part of the book is the contemporary world acting it out. If the book succeeds, it's showing that it's still the same thing today–nuclear weapons and Armageddon.

However, I must say the most potent and scary stuff is what's happening today in genetic engineering. Jeremy Rifkin writes about it in his new book, *The Biotech Century*. Recently, I received a brochure for a conference at UCLA on the engineering of the human germline: sperm and egg. Not long ago, while I was writing *The Religion of Technology*, the germline was a moral firewall in biogenetic engineering. They were playing around with somatic gene therapy, which would change the genetic endowment of the individual patient but not for the progeny. Once you start messing around with germ cells, you're changing the genetic line, which is the eugenic dream come true. Tampering with germ cells was the firewall everyone agreed we could never cross. Yet, here we are two years later, with James Watson, French Anderson, and Leroy Hood–a lot of the people I talk about in my book–sitting up on the panel at UCLA with House ethicists saying these things straight out, and I'll quote from the brochure: "This talk examines the techniques used to engineer genetic changes in various organisms and considers their technical potential for refinement into tools for safe, reliable germ line engineering in humans. The potential scope of human germ line manipulations in coming generations is also considered." And then, "Germ line engineering may enable us to obtain the benefits of a century of genetic science. We now have the capacity to develop techniques to reliably and safely introduce DNA constructs into germinal cells and could begin to conceive and design genetic therapies to ward off diseases and improve the quality of human life." It's here.

Now, how do you alert people–the public– to these dangers, and how will people see them for what they are? I write my book, or Jeremy writes his book, or Andy Kimbrell writes *The Human Body Shop*. People are sounding alarms, but there's the prevailing mythology that however dangerous this all looks, it's still a recovery of the human birthright to participate in Creation. The believed story is that Adam participated in Creation and had knowledge of Creation, natural knowledge, not moral knowledge, and was immortal. Here we have much of this all wrapped up into one with biotechnology and the technologies changing education. We can become immortal, our minds can live forever! We can essentially reconstruct Creation–Jeremy calls it the "Second Genesis"–and create our progeny in our image, just as God created Adam in his image, directly.

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Incidentally, when I give talks on this now, I carry with me a tape by Richard Seed, the guy from Chicago who, last January, announced that he was going to proceed with human cloning. If you listen to what Seed is saying explicitly–and he sounds like God on this NPR interview–he says it is the destiny of human beings to become one with God, that we were created in the image of God. Genetic engineering and human cloning are the first serious steps in becoming one with God. He says it just like that, straight out.

This country is the most powerfully religious country on earth. By far. No other country has the numbers like we do here, nor the power to impose those beliefs as we do. The U.S. was, afterall, the repository of the radical reformation. So, here we go! That it's happening here is really no surprise. I think that, consciously or not, we subscribe to this mythology as a culture so powerfully that a criticism of it is seen as irreverent, as a heresy, which makes any serious, rational, ethical discussion about it all next to impossible.

What of countering it all by considering education as the process for understanding self in relation to the human and non-human "condition" as a wild process?

Yes. There needs to be a wildness or, say, an unpredictability in education. That is, you're talking about an interaction between people that, if it's authentic, can't be packaged. Also, the effects are mutual. The teacher is as transformed by it as the student. The grading process and the programming of instruction is an anathema in education; I've always believed that. I wrote an attack on grading when I was a graduate student and I've never wavered. I like the word wild in relation to education.

In my classes, students have to be lulled away from their anxiety about producing, and lulled into the idea that we're getting together, maybe we're reading something in common and discussing it, but that's it! Socrates didn't give grades, from what we know; he had dialogues with people and that was it! I like the impulse. We are so out of it, given the content of education today, and it's just getting worse and worse.

Yet, the socratic ideal, whether we acknowledge it or not, is still widely revered. I was on a panel once at the University of Iowa on the commercialization of the university and research. It must have been six or seven years ago. The place was packed and I was being baited. I was on the panel with the general counsel for the University of Chicago and administrators, so it wasn't necessarily a friendly crowd. Someone asked me, "What do you think is the aim of a university?" I had my wits about me and just said, "Self-knowledge." The place came to a standstill–there was no rejoinder. I saw people looking at each other saying, "What did he say?" And that was the end of the discussion! No one challenged it, which is very interesting. Self-knowledge is really still the high ground and it's unassailable. You can't say, "What do you mean self-knowledge?" It's unassailable. So, maybe, there's a lesson in that.

But, when I talk to my students: "Self-knowledge, thanks a lot, but how do I get this job?" I have to say, students here and everywhere just don't feel they have the luxury to indulge it because they're dead if they do. But, let's face it, what's going on now is not education. When you try and get some education going people say it's subversive–Socrates was tried and condemned, let us remember, for corrupting the youth of Athens and for religious heresy!

It's mindboggling when the real conditions, the real terms of vitality, sanity, all that we're longing for emotionally, physically and psychologically are already present. It's a failure to pick up the obvious.

Yes, but the challenge is that people don't experience their existence in that way. I was just reading a review of an Iranian film about a guy who's driving his truck around trying to pick up someone who would bury him after he kills himself. He picks up a few people and he doesn't tell them what he wants them for. He just offers them some money as they drive, explains that he's going to end his life and just wants a decent burial. They get into a discussion about the purpose of life, the meaning of life, and whether it's worth living or not. A passenger, a laborer, asks, "Could you really imagine never tasting a cherry again?" It's called "A Taste of Cherries." It's the same sort of thing! No, we live in a culture that is a milieu of distraction from attending to what's before us.

Much of the value of your recent "Digital Diploma Mills" Conference at Harvey Mudd College, is attention to the fact we're accepting Life as an economic transaction when we accept education as an economic transaction. The social and ecological consequences to such a worldview are nothing less than what I call a "participatory totalitarianism."

Yes. You were talking about presence and this idea of the obvious. There is no question in my mind. The power of ordinary people and the humanity of ordinary people is something I firmly believe in. Whenever I'm talking with economists, we're talking about people trying to "maximize their advantage," and all of that. So, I say, "Well, I was riding my bicycle to work and this guy in an eighteen wheeler stopped to let me go by–explain that."

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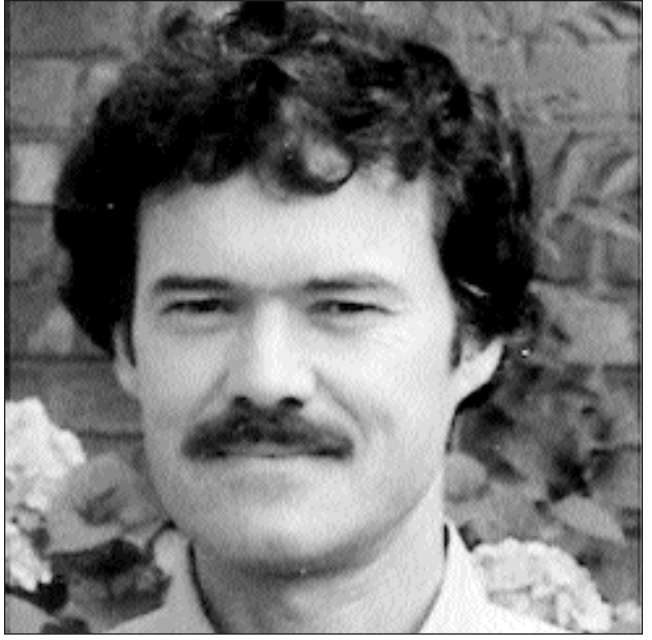
AN INTERVIEW DAVID KIDNER



DAVID KIDNER, PH.D., *is the author of "Culture and the Unconscious in Environmental Theory," which appeared in Environmental Ethics, Spring 1998. He began his career as a chemical engineer designing refinery equipment for British Petroleum, but quickly changed course with a degree in psychology and a PhD in experimental personality theory at London University. Since then, he has taught in various academic institutions,including schools in Vermont and Colorado, and most recently at Nottingham Trent University. Much of his work there has involved team teaching, doing joint work with sociologists, cultural theorists, physicists, and others. At the moment he is completing a book on the relation between the psyche and the rest of the natural world.*

The following interview comes from a written correspondence between Casey Walker and David Kidner during May 1998.

Casey Walker: Will you begin by describing the tendencies and dangers of both a mechanistic, scientistic model of 'ecology' and one which sets the natural, biological world, quite literally, "outside" cultural discourse?

David Kidner: My feeling is that ecology, like any approach, needs to be used with awareness of its strengths and limitations. Obviously, ecology can point to some of the interrelations which define the natural world in a way which the other biological and natural sciences can't; and to this extent it's useful to an environmentalist agenda. But I think a danger is that we equate an environmentalist appreciation of the world with an ecological world view, forgetting that there's so much about the natural world which can't be recognised or articulated by ecology. This, I think, is an example of one of the great delusions of industrialism: that the scientific world view and its various popularised extensions represent not merely one model of the world, but rather the way the world really is. We make ourselves so comfortable within the secluded sphere of modern industrial society that we forget that anything can exist outside it–the 'Other', as cultural theorists like to call it. This 'Other', or 'wildness', or whatever term we use to point to it, is something that we desperately need to hang on to if it is not to disappear substantially as well as conceptually.

Of course, the opposite danger becomes apparent when we try to articulate the 'forgotten', mute dimensions of nature. There are no words or concepts which can articulate it! We can, though, point to it indirectly. As environmental theorists and practitioners, we have to struggle on the fringes of socially defined realities, using words, concepts, and approaches with awareness of how they tie us into these existing realities, but striving all the time to go beyond them.

In your essay, "Culture and the Unconscious in Environmental Theory," I especially appreciated the line: "A self which is natural is also, necessarily, one which is cultured."' Will you discuss the problems of self, or relation, as we know them, which contribute to loss of both natural and cultural integrity?

I see the problems of modern selfhood as thoroughly interwoven with apparently separate social and environmental problems. This isn't an easy idea to summarise; but briefly, I suspect that there's a close relation between the sort of subjectivity which is allowed and encouraged in the modern world–and I think that Christopher Lasch's notion of the 'culture of narcissism' is useful here–and a world which is increasingly domesticated and manufactured. As children, many of us (certainly on this crowded little island) learn that the world is essentially dead, a 'natural resource,' rather than something alive and intelligent; and so as adults, the tendency is for us to treat the world as dead– which, of course, tightens the vicious circle further as the next generation grows up. Children, I think, naturally tend to reach out into the world for nurturance and meaning; and if they are frustrated in this aim, then there is a turning inwards away from the world which in part defines modern individuality.

What is lost in this widening divide between a self-made-narcissistic and a world which is experienced as dead is that fragile, intangible realm of culture, which is both part of a healthy self and part of the rest of the natural world. In a healthy society, I'd see individuality and what is outside the individual meeting through what Geertz calls the 'web of meaning' which is culture. One of the problems that we face is that, not only have cultural structures been largely displaced by economic ones (and, even centuries before that, they'd already become fossilised and oppressive); but we've even lost the sense, the ability to envision how culture can bring the world to life. We're aware only of a sort of vacuum, a sense of loss, without knowing quite what it is we've lost.

Will you elaborate upon our capacity for 'separation' and 'relation,' not only as a function of "life processes," but as essential to psychological maturity?

Well, 'psychological maturity', I think, has a lot to do with being allowed to grow up; and the way we grow up is through a sort of mutual growing-together of the structure of selfhood with the structure of the rest of nature. Ideally, the end result of this process is that we become integrated into the world– not through abandoning our individual identities, but by articulating and developing them into the world. As humans, I see culture as essential to this process: given the nature of our central nervous system, we are, as Geertz argues in *The Interpretation of Cultures*, dependent on an appropriate web of stories, beliefs, mythologies, spiritual structures, rituals, and so on in order both to realise our own individuality and to feel fully part of a world which makes sense–not just intellectually, but in terms of feeling, spirituality, physicality. In other words, we feel part of the world 'in our guts' as well as in our heads. We need cultural structures the way runner beans need poles to climb up, otherwise we flounder around without direction.

Modern industrial society has a good deal of power and insight, of course, and this is positive if it's framed within a larger sense of the natural world; but it has pretty much allowed the mediating realm of culture to collapse. This has dire consequences, most obviously, for the natural world, which comes to be experienced merely as a sort of backdrop to human life; but it's also, I think, very damaging to individuality, since we become unable to grow-up-into-the-world, to feel ourselves as part of a realm which is enormously intelligent and sacred. So, by default, we become 'grown up children'; we have bigger toys, bigger desires, bigger comforts; but our attitude to the world doesn't really develop. We act powerfully in the world, but not with it.

How is awareness of the unconscious and symbolic tied to our re-integration of culture and nature? What questions, memories, awarenesses of being are critical and how do Jungian theories offer insight?

This is an area which is particularly difficult to talk about, as, by definition, it is beyond consciousness and rationality. My feeling is that the first step is the awareness that there is so much of which we are dimly aware, but which we can't express through 'normal' language. When we are somewhere magnificent and isolated, for example, we may have all sorts of feelings which we can't put into words: we may become entranced, or weep, or just watch, or whatever –but we'd have difficulty commenting on or explaining our feelings and behaviour. Some indigenous cultures, of course, were much more advanced than us in these respects: feeling part of the world, self-expression becomes a celebration of the world, not a celebration of the ego.

But we can't just 'co-opt' the practices of other cultures, or 'design' rituals consciously. Appropriate cultural forms emerge, I think, like weeds in between paving stones–organically, unconsciously, rather than in a planned way. We might begin, for example, by acknowledging our need to return to places which mean something to us, which resonate with ourselves in powerful ways, and by beginning to articulate, somehow, these needs and these practices. This is something which we have to open ourselves to rather than actively and purposefully 'making' something 'happen'.

As for Jung, he was one of the very few writers, at least to my knowledge, who appreciated the role of culture in articulating these otherwise mute experiences. He saw the archetypes of the collective unconscious, for example, as 'the hidden foundations of the conscious mind–the roots which the psyche has sunk–in the earth.' He was quite clear that the place where the earth met the psyche was in this deeply unconscious and usually denied area of selfhood, and that the only way we can begin to express this meeting was through spiritual and mythological awareness–what I have referred to as 'culture'. So we can see that our fulfilment as individuals and our alignment with the earth are at root the same process. We can't have one without the other!

Will you critique the ways modernity over-identifies us with rationality and consciousness, and how a technological/discursive system closes us off from 'missing' the arational or developing awareness of the way Life is/could be? And, would you evaluate the use of technology/computers in education along these lines?

I don't see the emergence of modern consciousness –and in particular, its alignment with a rationality of technique–as being problematic in themselves, but only if they dominate a subjectivity so that alternatives are excluded. In other words, if 'rationality' were framed within a more holistic and inclusive subjectivity, so that we remained fully aware of its partial 'correctness' and its status as a model of reality, then it would not express itself destructively. By analogy, we intuitively recognise that ecosystemic health has something to do with balance, with integration, with biodiversity;

twins of medical technological childbirth followed by television, both of which deny appropriate sensory stimuli for growth and substitute the radically inappropriate stimuli which brings about a totally conditioned mind. Huxley's *Brave New World* was timid, a lollipop, compared to the type of conditioning that comes with interfering with the natural processes of a mother, child, and community.

So, these are the three issues. First, we have to realize that education really begins in the womb and that the first three years of life are when ninety percent of it takes place. Secondly, never waste effort or energy on trying to bring down institutions, but put every bit of effort and energy into doing what must be done for as many children as can immediately be reached. Look to the tangible and real need in a child, in a family, or in a neighborhood.

Let's turn to the idea of intelligence–what we are yet to understand–with a systemic function between the body, the heart, and brain.

Yes. To me, the most exciting single thing happening–which I touched upon in Evolution's End throughout the whole last part of the book–is about the heart. The medical and scientific world is just now producing evidence to verify much of what I explore through my last three books: the intelligence of the heart. Hard core researchers, including the National Institute for Mental Health, have massively ignored these questions.

I thought I had put it together pretty well–what the heart actually was and what was going on–but I was a babe in the woods. I knew nothing. In 1995, I came across the Institute of HeartMath in Boulder Creek, California, and found that they were gathering together research from all over the globe. They brought me up to date on neurocardiology, which is the general title of the newest field of medicine. Oxford University brought out a huge, thick volume of medical studies from all over the world entitled, *Neurocardiology*, which includes studies that haven't worked their way into the journals yet. Discoveries in the field of neurocardiology are, believe me, far more awesome then the discovery of non-locality in quantum mechanics. It is the biggest issue of the whole century, but it's so far out and so beyond the ordinary, conceptual grasp, that a lot of the people doing the actual research are yet to be fully aware of the implications.

Close to a century ago, Rudolph Steiner said the greatest discovery of 20th century science would be that the heart is not a pump but vastly more, and that the great challenge of the coming ages of humanity would be, in effect, to allow the heart to teach us to think in a new way. Now, that sounds extremely occult, but we find it's directly, biologically the case.

I can't in a brief time share with you the full implications of neurocardiology except to say three things. First, about sixty to sixty-five percent of all the cells in the heart are neural cells which are precisely the same as in the brain, functioning in precisely the same way, monitoring and maintaining control of the entire mind/brain/body physical process as well as direct unmediated connections between the heart and the emotional, cognitive structures of the brain. Secondly, the

HANK MEALS

heart is the major endocrine glandular structure of the body, which Roget found to be producing the hormones that profoundly affect the operations of body, brain, and mind. Thirdly, the heart produces two and a half watts of electrical energy at each pulsation, creating an electromagnetic field identical to the electromagnetic field around the earth. The electromagnetic field of the heart surrounds the body from a distance of twelve to twenty-five feet outward and encompasses power waves such as radio and light waves which comprise the principle source of information upon which the body and brain build our neural conception and perception of the world itself. This verifies all sorts of research from people such as Karl Pribram over a thirty year period, and opens up the greatest mystery we'll ever face.

Roger Pennrose, for instance, in England, has just recently come out with a new mathematics to prove that where dendrites meet at the synapse–of which you've got trillions in your body and brain–is an electromagnetic aura. And, we find that the electromagnetic field of the heart produces, holographically, the same field as the one produced by the earth and solar system. Now, physicists are beginning to look at the electromagnetic auras as, simply, the organization of energy in the universe. All these are operating holographically–that is, at the smallest, unbelievably tiny level between the dendrites at the synapse, the body, the earth, and on outward. All are operating holographically and selectively.

The next discovery is of unmediated neural connections between the heart and the limbic structure, the emotional brain. Now they've found that neural connections go right on up through the amygdala or the cingulate cortex into the pre-frontal lobes. Now, the pre-frontal lobes, or neocortex, are the latest evolutionary addition to the human brain because they were only rudimentary until, perhaps, 150,000 to 40,000 years ago. They are what we call the "silent areas" of the brain simply because we are using only the lower part of them so far. The higher parts of the pre-frontal lobes are not even complete in their growth patterns until age twenty-one, which is about six to seven years after the rest of the brain is complete–when we thought the whole show was over.

And yet, if you look at Demasio's recent work in *Descartes' Erro*r, he writes about the role of emotion in reasoning and about the lowest levels of the pre-frontal lobes. He talks constantly about the pre-frontals being the whole show, but he's talking only about those parts that are developed in the first three years of life and the great, long dormant period following. Around age fifteen, the pre-frontals undergo a huge growth spurt and begin a massive, rapid growth which isn't complete until about age twenty-one. It is that area that then remains silent and unused.

At twenty-one, Rudolph Steiner said the true ego is designed to come down into the system and begin what he called the exploration of the higher worlds. Now, of course, that hasn't happened historically because of the entrenched positions of the lower structures of the brain system itself (which means that the entire thing is biological). We resort to philosophical concepts and moral, ethical issues–but we're really always talking about the biology of our body and brain.

Even Paul MacLean at the National Institute of Mental Health, who is one of the brightest in brain research over the past fifty years and is still doing research in his eighties, spoke of the pre-frontals as the "angel lobes," as the origin of all the higher human virtues. That is exactly what Demasio was pointing out in *Descartes' Error*, and yet both are only talking about the lowest of the pre-fontal structures, which complete themselves in the first three years of life, and not of the new growth that takes place between fifteen and twenty-one.

For this reason, I am the arch-optimist of all. I think these discoveries, the implications, are terribly exciting. Of course, our whole cosmology will shift dramatically when we realize what I call the "holographic heart." But, you see, at the very time we're moving into a period of total chaos and collapse, this other incredible thing is simply gathering. I think of Ilya Prigogine's comments that so long as a system is stable, or at an equilibrium, you can't change it, but as it moves toward disequilibrium and falls into chaos then the slightest bit of coherent energy can bring it into a new structure. What you find in Waldorf families, and people who read *Wild Duck Review*, and others, may seem small, but they will be the islands of coherent energy which then bring about the organized, entrained energy for a new situation. I will think it will happen very rapidly.

In the next issue, I expect to work with the idea of one's capacity for metaphor as one's capacity for a full life.

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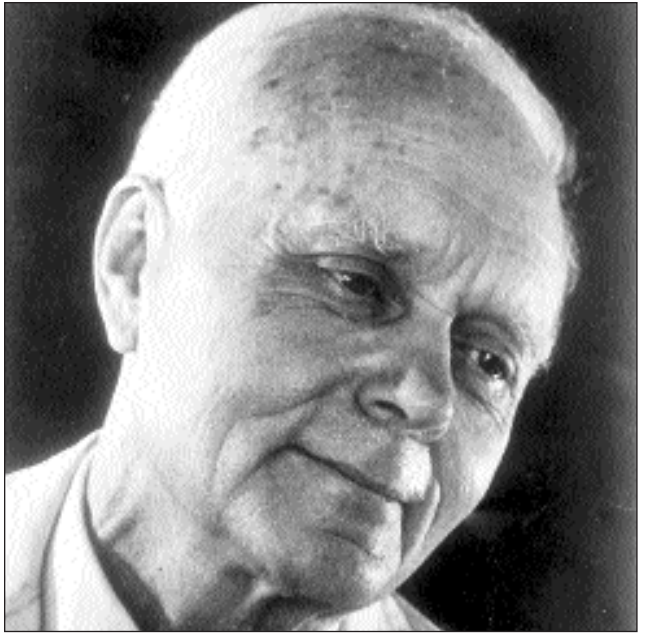
AN INTERVIEW JOSEPH CHILTON PEARCE



JOSEPH CHILTON PEARCE *is well-known as author of six books: The Crack in the Cosmic Egg; Exploring the Crack in the Cosmic Egg; Magical Child; Magical Child Matures; Bond of Power; and Evolution's End.*

Also well-known as an exceptional public speaker on human intelligence, creativity, and learning, Pearce has presented over 2,500 programs to date at most major universities in the United States and various institutions worldwide. His most recent addresses have been as a participant in a closed symposium on computers in education, U.C. Berkeley; in a closed symposium on educating for healthy children, Columbia University Teacher's College; at a conference on education in Bangkok, Thailand; and two addresses at a medical conference on birth-bonding in Chiang Mia, Thailand, sponsored by W.H.O. and UNICEF.

The following conversation took place between Joseph Chilton Pearce and Casey Walker on May 20, 1998 with the production assitance of KVMR, a community-supported radio station in Nevada City.

Casey Walker: Will you begin by assessing education as we know it today?

Joseph Chilton Pearce: Over the past thirty years I've given some 2,500 talks to thousands of people on these issues, and it seems our whole nation's mental set is too locked into a radical denial over education. I'm pessimistic because of our capacity for denial–what 14th century Spanish Sufi, Iban Arabi, called "our enormous capacity for self-deception"–and our simple desire to maintain things as they are. The other criticism, of course, lies in looking at schooling as a concept. I don't think it is at all correctable as it is.

I recently received a beautiful paper from a school teacher who spent twenty-five or thirty years right in the front-line trenches, in the classroom. She gives the perspective that armchair generals sitting back in their ivory towers just don't have. Her title tells it all: "Torch This Tower." She states there is no facet of the American school situation which is at all redeemable and believes we ought to eradicate the entire thing down to the very rock bottom, clear the grounds totally, and rethink what do we do from here. This has been my position for years and years.

If we look at any system and find that it has an error within it, we can address the error and consider the possibilities of correction. But, if the entire system from beginning to end is one whole, integrated, total error, then there is nothing that can be done. There is nothing, zero. That, I believe, is the American school situation today. Nothing can be done.

Further, the school system produces–as John Gatto claims–exactly what the system needs to keep itself going, and that is uncorrectable. We can't change institutions. And, we can't give the public an answer to a question they are not asking. People simply aren't asking the questions that everyone is rushing around with answers for.

My one exception would be a Waldorf education, and I think the original Montessori had a lot of great, great value. But, I would champion a Waldorf approach as a true educational procedure. Unfortunately, Waldorf is beginning to modify and accommodate, little by little, and take on some of the dreadful errors of the public school system in order to survive.

In its original, genuine sense, Waldorf is not preparing the child to be a dollar commodity in the marketplace, but is meeting each stage of a child's life with the environment that allows the child to be fully and completely and wholly a child at that time. My statement has always been that the three-year-old is not an incomplete five-year-old, but a complete, total and whole three-year-old. If a child is given all the nurturing to be here as a three year old, they'll be the perfect five year old later on, and so on.

The first thing I would say about any true educational system is that it is not founded on the notion that we are preparing a child for life. The theory we are preparing the child for life, or for the future, is a terrible travesty which betrays every facet of the human being. We don't prepare for life, we equip the child with the means to live fully at whatever stage they are in. The idea we're going to train a child at seven to get a good job at age twenty-seven is a travesty of profound dimension. It makes for a world where every 78 seconds a child is attempting suicide, as is true today. It is this kind of terrible despair we breed in our children when we don't see the difference between preparing and equipping our children to be present to life.

Will you speak to the neurological damage in modern children, as you've described in Evolution's End, which renders them "ineducable"?

It's been ten years since I wrote *Evolution's End,* and, believe me, the situation today has worsened by thousands of percentile. Most people involved in educational reform are speaking of curricular programs when the truth of the matter is the children they are dealing with now are, by and large, damaged past the point of educability in any real sense. The public has yet to recognize this is so. The clearest indications of such damage recently came out of Tunbingen University in Germany with a twenty year study of four thousand people. It shows three significant findings as a result of the failure to furnish appropriate sensory stimulation for growth. First, there has been an average of one percent per year reduction in the sensory sensitivity of the human system and the ability to bring in information from the outside world. Compared to children twenty years age, the children we are looking at now are comprehending or registering information from their environment at eighty percent, which simply means they are twenty percent less consciously aware of *where they are* and *what is happening around them*. Secondly, the kind of stimulus that does break through the reticular activating system in the ancient reptilian brain, the brain stem, is only highly concentrated bursts of over-stimulation. That is, the only signals they're really bringing in from their environment are those bursts of stimuli which are highly charged. If it's sound, it must be a loud sound. If it's touch, it must be an impact. If it's visual, it must be intense. Subtleties cannot catch their attention because they are not sensitive to their environment. One comparison is that twenty years ago a child or young person was able to differentiate 360 shades of red, and today are down to something like 130 shades, which means the subtleties are lost to the pure, heavy impact of red now necessary to penetrate the reticular system. Once we look into the whole developmental system, the implications are profound.

The impediments to proper development from birth on are attributable to a whole raft of causes–from technological childbirth, a failure to nurse, day care. Often what occurs is a substitution of proper care with highly inappropriate, massive over-stimulation of non-growth stimuli of the kind a child gets with the average day care, exposure to the television and music meant to pacify and entertain him or her.

Has an actual, physical atrophying been documented?

Yes, it's a physical atrophying of the whole sensory system. This is right in line with Marcia Mikulak's work that I wrote about in *Evolution's End.* Fifteen years ago, she found there was anywhere from a 20-25% reduction in sensory awareness of the technological child as opposed to the pre-literate, or "primitive" child in the grass shacks of the jungles.

The third finding of the German study is that the brain is maladapting on a level which seems almost genetically impossible. That is, the brains of these young people are not cross-indexing the sensory systems, so there is no synthesis taking place in the brain. Sight is simply a radical series of brilliant impressions which do not cross index with touch, sound, smell and so forth. There is no context created for sensory input, each is an independent, isolated event. It explains why so many kids get intensely bored unless they are subject to intense input.

On hearing a certain sound, it doesn't bring up all sorts of memory patterns and other senses that resonate with it. They are single shot affairs in the brain system. All of this is from the failure of appropriate stimuli and the massive over-application of inappropriate or high level, artificial stimuli. Now, Jerry Mander and I just spent a weekend in New England at a conference with a medical doctor, Keith Buzzel, studying the effects of television and computers. There is simply an unbelievable amount of medical research on the neurophysiology of television viewing that shows a serious breakdown in the whole genetic encoding. Bruce Lipton, a cellular biologist and brilliant man, has pointed out that the internal emotional state of these children is radically altering the whole DNA structure.

So, I can't talk about education, the future and so forth, unless I'm willing to deceive myself about the halt and reversal of damage now being done to the majority of children in the first three years of life. If we could just get that across! Appropriate nurturing in the first three years of life is critical. Of course, there are always a small number of people who are aware and trying to do something about it, but most err in trying to change institutions with hundreds of billions of dollars of vested interest in the television industry, in medical technological childbirth, and all the rest of it.

I was in Thailand last year at a birthing conference put on by the World Health Organization and UNESCO. Thailand imported our American way of birth and television about thirty years ago, and they are now in complete shambles–their family structure destroyed, their schooling in shambles, their whole social structure collapsing. They were once called, "The Gem of the Orient, The Land of the Smiles." Few will look at the fact that Thailand imported our two deadly

and if a single species drives out all the others, then this is not an ideal situation. Just as we talk of an exotic species 'colonising' an area, so I think it makes sense to talk of subjectivity being 'colonised' by technological rationality. In both cases, the wholeness of the system is destroyed, alternatives are eliminated, and a simpler arrangement substituted. Of course, we might expect that a subjectivity-made-sick by being thus colonised would inevitably be corrected by its inconsistency with the natural world; but a major problem, as I see it, is that this correction is being postponed by our power to physically reconstruct the world to be consistent with our conscious idea of it. As a result, the correction is unlikely to occur until enormous damage has been done–unless, of course, we somehow manage to regain our wholeness in a way which is capable of challenging our colonisation.

As for computers: I would see them as one particular, albeit very powerful, development of technological rationality. As such, I would only see them as problematic if they displace other ways of thinking and knowing – which, of course, they are likely to do given current social conditions. As we all know, digitally constructed images of reality are already replacing existing natural realities; and this has to be seen, I think, as part of the long-term historical project of modernity to construct a 'human' realm which is separate from, and independent of, the natural world. Academia has often colluded with this delusory project by proposing the idea that nature is 'culturally constructed,' or that nature is merely a 'linguistic category,' or that environmental problems should be seen in terms of 'competing discourses.' Given that the reductive, separative tendencies of rational thought are so strong, it becomes even more important that schools and colleges should also facilitate experiences of an integrative and embodied character. For example, I wouldn't see any problem with using computer-generated models of natural processes so long as the contrived and partial character of these models is made clear, and students are also directly exposed to the natural world in a way which validates their embodied experiences.

I especially appreciated your point that we will be limited to an 'environmental correctness' that is dispirited–focusing on activities which are destructive–until we develop myths, rituals, and religious beliefs that develop our sense of self-in-nature. Will you describe the healthiness of a middle ground in culture between self and nature, and how we might best 're-member' it?

If environmentalism aligns itself with the increasing list of 'things we mustn't do', then we are condemning our children to a very grey world indeed, as well as colluding with the industrialism which generates the conditions that make these tabooed behaviours 'destructive.' Rather than trying to live in an 'environmentally sound' fashion under imposed conditions which make such living impossible, we need to challenge those conditions at root. My own feelings about this began to emerge when I realised that I didn't much care for those clinically tidy Swiss villages where there was nothing out of place and where everybody recycled everything; and in my sneaking admiration for one of Edward Abbey's characters (or it may have been Abbey himself!) as he drove along in his pickup throwing beercans out of the window! (Yes, this needs qualifying; and I'll elaborate if you want!). Under existing social and demographic conditions, our attempts not to destroy may sometimes be subtly destructive. Wildness is one of the most fragile, as well as one of the most elusive, attributes of the natural world; and if our efforts to 'save' the world are founded *only* in rationality, then much that we don't now recognise will become extinct.

There are all sorts of dimensions to the problem of why consciousness has become so constricted, and how we can begin to realign it with the natural order. To avoid this issue of *WDR* running to several volumes, let me focus on just one aspect–the extent to which the concepts and words we use resonate with, are consistent with, the natural order. I don't think there's much doubt that in the 'Euro-American' world, over the past several centuries the relation between language and thought, on the one hand, and natural processes and structures, on the other, has become more distant and nominal as the 'human' world has tried to make itself increasingly independent of 'nature.' As a result, the concepts we use have lost much of their previous meaning: they have become 'literalised,' as James Hillman has said. I referred briefly to an example of this in my paper: the notion of 'mothering,' which today is often understood merely as relating to biological motherhood. The alienation of motherhood from culture was rather nicely expressed recently when a mature student I was talking to told me, "I don't think I've ever had a culture–I've just been a Mum!" In other words, the intuition that 'motherness' can be a quality of the world–that we are born into a world which is, or, in many places, used to be, nurturant, provident, a source of solace and inspiration, among its other qualities–has largely been lost, along with the cultural structures which expressed such intuitions. In contrast, I remember one of my students in Colorado: she was a Navaho woman, and during my Human Development module she took a couple of weeks off to have her baby. When she returned, she gave a presentation about the ceremony which she and her child had undergone to welcome the child into the tribe–a ceremony which was attended, she said, by 163 relatives!–blood relatives, ceremonial relatives, and so on. I thought–' what a wonderful, nurturant context to be born into!' Ours, of course, is a social and psychological loss as well as an 'environmental' one: mothers are often seen as solely responsible for 'socialising' their children, the world itself not being seen as a source of learning. The term 'mother', as Hillman implies, might better be regarded as a metaphor which connects many aspects of our lives, implying that family affections are continuous with an 'environmental ethic'. Of course, as is widely appreciated, many native American cultures embody exactly this sort of recognition. It is a recognition which still lingers in us in the unconscious: as psychodynamic theorists such as Jung and Ferenczi realised, terms such as 'mother' possess unconscious significance far wider than their conscious literalisations. In the psyche as well as in the landscape, there remain powerful potentialities for diversity and relation, if only we could release, or, better, articulate them. An appreciation of this sort of point, I think, makes it clear just how interwoven an environmentalist agenda must necessarily be with one of personal emancipation.

Will you elaborate upon your line: "Wilderness preservation, although undoubtedly necessary as a stopgap measure, may in the longer term, therefore, further the covert colonization both of humanity and of the natural world."

The 'wilderness preservation' approach implicitly recognises that human activity, under existing social, technological, and demographic conditions, is often destructive of the natural order. Even our best intentioned efforts to act positively to 'save' undomesticated parts

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Under existing social and demographic conditions, our attempts not to destroy may sometimes be subtly destructive. Wildness is one of the most fragile, as well as one of the most elusive, attributes of the natural world; and if our efforts to 'save' the world are founded *only* in rationality, then much that we don't now recognise will become extinct."

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of the world often result in our losing what we're trying to 'save.' For example, John Rodman has pointed out that proposals to preserve the San Bernadino National Forest by replacing trees killed by smog with smog-resistant varieties seems to subtly undermine their own intent. When even well-intentioned action to preserve the natural order emerges out of a rationality which only partially expresses that order, then it isn't likely to be successful. Debarring human action of any sort within an undomesticated area recognises this, and so, I think, is necessary at present.

But separating a humanity-colonised-by-technologism from the rest of the natural world in order to protect the rest of nature is obviously less ideal than reintegrating a healthy humanity within a world which will thus become whole; so our long-term aim, I think, should be to achieve this reintegration. For this to happen, we will first have to acknowledge our own immersion in and dependence on the natural order. At the moment, there's not much sign of this; so I'd side with the 'wilderness preservationists.' Nevertheless, a danger of the wilderness preservation approach, I suggest, is that it implicitly accepts the view that humanity is intrinsically destructive, and so loses sight of the possibility of a healthy humanity having a healthy relation with the rest of the natural world. As the domestication of the world spreads, it is crucially important, I think, that we obstinately insist on a vision of a healthy world in which humanity plays a full part, however far we may be from that scenario at the moment. If we don't insist on this vision, then we are accepting some of the most basic assumptions of industrialism–for example, that humanity and nature are necessarily in conflict, and that nature is something which is outside ourselves.

What are the key tasks, as you see them today, in educational reform? How might we develop a 'symbolically informed education' and, thus, as you say, a "fertile vision of what could be"?

Well, I'm not an educational specialist, so I'll tread carefully here! But in general terms, I think we need a form of education which makes clear the partial and provisional character of existing knowledge structures, so facilitating the emergence of alternatives, and, in particular, those alternatives which arise from an embodied experience of the world. For example, I'd argue that we should continue to teach conventional science, but that we should also look at what science ignores, what its political implications are, how subjectivity may lead us in other directions, and so on. In other words, science should be taught as a set of useful principles and partial truths rather than as a total description of the way the world is.

As far as 'embodied experience' is concerned, I don't think that a few days in the wilderness will be adequate. Ultimately, an education system can only be as good as its cultural context: children, like the rest of us, need ways of articulating their experiences of the natural world so that these aren't eventually steamrollered by an emphasis on science and economics. In the absence of such a context, perhaps the best we can do is to honestly address these issues with them. In my experience, children have a remarkable capacity for articulating their feelings about the natural world if only we let them; and it's our job as educators to make sure that they have the space and encouragement to develop these feelings towards forms which eventually become sufficiently well-established that they can resist the challenges of a near-hegemonic industrialism. These forms, after all, are the 'green shoots' of a healthy world, and we need to zealously protect them against the claims of entrenched powers and interests to possess a monopoly of knowledge.

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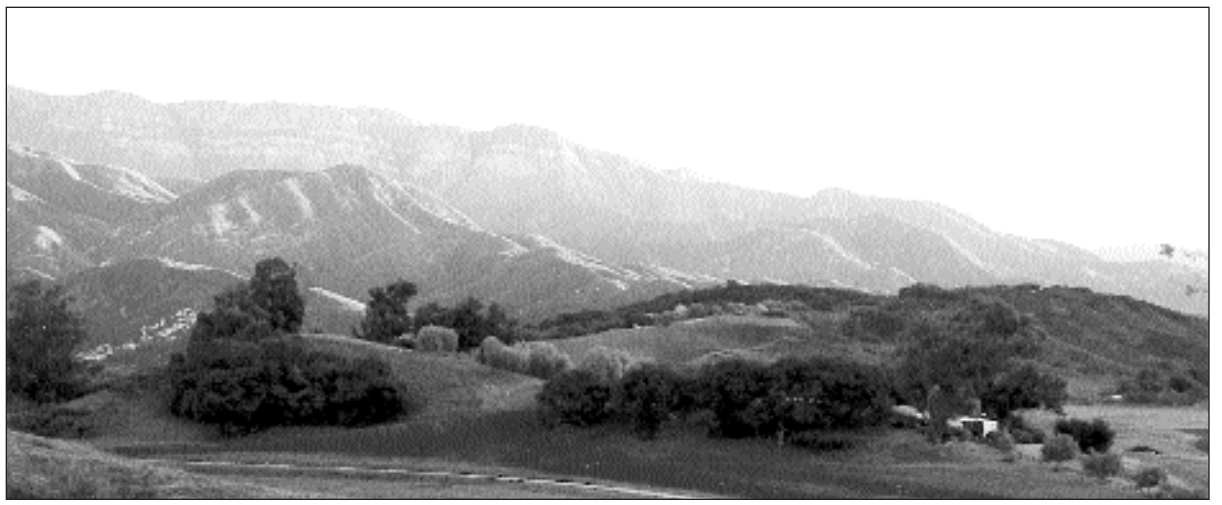
–David Kidner

"Island"



I live on an island, inhabited by a few natives and, by design, left largely wild. Tourists come through. Most stay three or four years, moving on to other islands, some into the heart of the mainland. My job is to give them the tools they will need, the knowledge, skills and values that will sustain them and their children after they move on. It is fundamentally subversive work, for they often come seeking one thing and leave seeking another. If I do a half-decent job, they will leave with a profound sense of what they do not know along with those skills of both mind and heart which will enable them to approach life with a sense of inquiry and purpose.

I direct a small, independent high school, The Happy Valley School, an educational community of about 130 people. We occupy 450 acres of land in the hills above the Ojai valley in Southern California. Seventy-five teenagers, grades 9-12, from a dozen different cultures, live on the land along with about twenty adults. Another two-dozen day students and an equal number of staff commute up the hill from the valley each day. It is not by chance that I call it an island, as one of its founders was Aldous Huxley, that truly eco-literate author of the novel *Island*, who wrote: "Never give children a chance of imagining that anything exists in isolation. Make it plain from the very first that all living is relationship. Show them relationships in the woods, in the fields, in the ponds and streams, in the village and the country around it."

Fortunately, for our purposes, our community does seem an island. Commanding spectacular views, the land sits as a peninsula jutting a few hundred feet above the valley floor. With oak covered Sulfur Mountain to the south and the expanse of the Los Padres National Forest gracing the northern horizon, the Upper Ojai Valley is a stretch of ranches, groves, and cultivated fields. Walnuts were grown and harvested for over one hundred years on part of our land, the grove only recently removed due to age: the burls now dashboards, the trunks armoires and end tables, the rest firewood. The school buildings sit low in profile on the up-thrust hills that dot the land. Verdant in winter and bronzed in summer, it is both a physically and emotionally expansive setting, dominated by the Topa Topa bluffs, a breaking wave of rock prized locally for its remarkable "pink moment" at sunset.

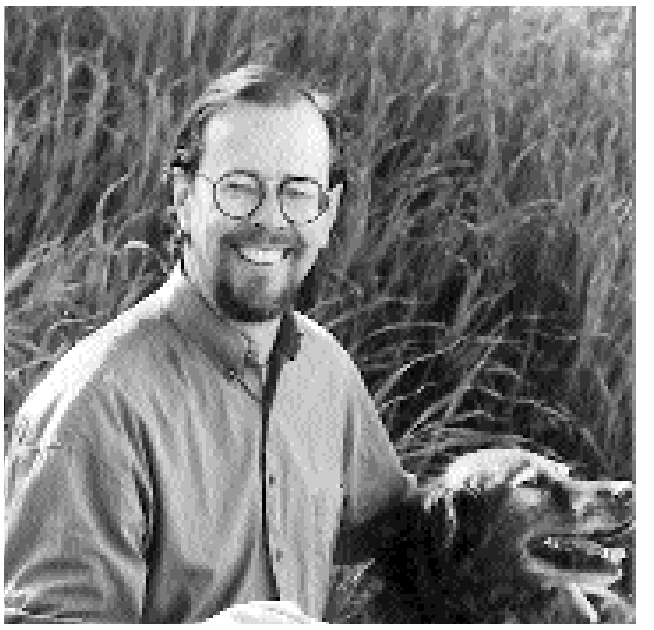
The bulk of the land is left as it has been for a very long time, given to the coyotes, snakes, hawks, bobcats, and the burrow dwellers that keep them all happy and well fed. Like the two-legged members of our community, they live their lives in predictable patterns, creating corridors that we respect as theirs, they pretty much leaving us ours in return. The herons, egret, ducks, and occasional evening deer have the vernal pond staked out. It is a community of boundaries, visible and invisible, and, as such, it is becoming the textbook for learning to live in place, the perfect classroom.

Friends and acquaintances often seek my opinion as to whether this school or that one would be best for their child. Of course they are usually thinking in terms of college placement, AP classes, or some other advantage, so they can be taken aback when I reply: "At its heart, each school teaches what it values." The true curriculum, often the hidden curriculum, of every school is the worldview that it articulates in its choices and in its practices. At Happy Valley, we choose to send home written evaluations, so students may not be so grade driven, but process driven. Justice is meted out by a Disciplinary Committee of elected staff and students, so as to promote fairness and collective values. The celebration of beauty, diversity and wonder is purposefully emphasized as part of our Mission Statement. At each opportunity we seek to connect students to their talents, their wisdom, their goals, and their environment. Like many schools, like the larger culture, we struggle to teach the value of diversity at a time when unity has become so very essential.

Also spoken in our Mission Statement is our wish to "foster appreciation for the interdependence of all species and a spirit of responsibility and reciprocity toward our land and our planet." In articulation of this goal we are committed to the creation of an eco-literate curriculum, not just as theory, but as practice. We realized that in order to begin to foster an eco-literate curriculum, a school must first examine itself, beginning with an evaluation of its land. For us this entailed a master map of the entire property, some understanding of the history, use and misuse, a study of water tables, wetlands, habitats, wildlife corridors, native plants, introduced species, soil, erosion, and current agricultural practices.

A two-week intensive was held on the land, with over 150 teachers and students of Permaculture convening to focus on this piece of earth. Included in the project were the custodial and maintenance staff of the school, teachers, students, residents, invited neighbors. From this gathering a permanent Land Committee was formed, which is meant to serve as a steering committee for our ongoing efforts.

Our own process and program became our course of study. Students, led by interested parents, did energy audits of the school, did waste audits in the kitchen and



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classrooms. Recycling, of paper, of water, of compostable material, of green waste, of aluminum, glass, cardboard, and clothing, became part of our dialogue. The food we eat in the kitchen and that which we grow on the land came under scrutiny. (I might add here that the most wonderful aspect of a Permacultural approach is its focus on living in an edible landscape.) Project Days were held when gardens were planted, fruit bearing trees were planted, an herb garden was begun behind the kitchen. A schoolwide land-based day was organized to include sowing seeds, creek studies, art projects, haiku workshops, and a walking history of the land.

The following day, the entire school drove twenty miles to the ocean to learn where the water that runs through our land goes, and to gather in piles the flotsam and jetsam which accumulates at the river's mouth after it passes through our valley. It was a lesson lost on few.

Certainly what we, as educators, choose as course work within the school curriculum also speaks of our priorities. We choose readings, set assignments, and convey to our students what is essential to learn as much by what we exclude as what we include. Individual courses may focus on ecological studies, population and cultural geography, biology, economics, and ethics, yet it is essential to teach that sustainability is more than just "not polluting" or "learning to appreciate the natural world." The community itself must bring the teachings to life through its practices and processes. Schools and students must learn to see themselves as systems within systems within systems. We must promote ecology as more than science, as just a study of systems, we must promote it as both an ethic of responsibility and reciprocity and as a lifestyle which promotes a sustainable future, habits to be taken when it is time to go.

Huxley wrote of his fictional islanders: "(their) modest ambition was to live as full human beings in harmony with the rest of life on this island at this latitude on this planet." How much wiser would our educators be and how much saner would our future be if all children grew to learn that they are integral components in a biological community? What sort of discipline would be practiced in schools if everyone were taught to accommodate themselves to the greater discipline of the nat

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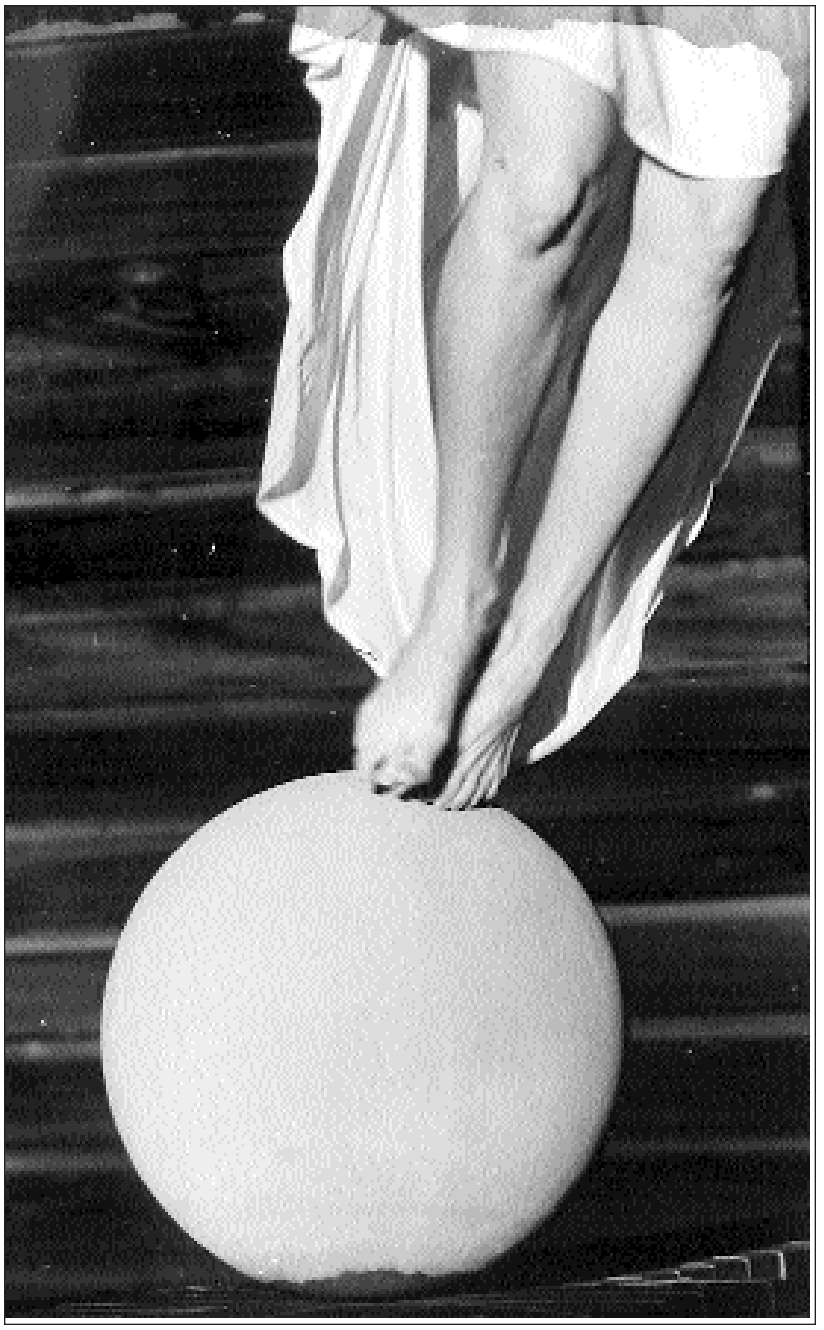
Also, teachers owe them a decent grade, usually meaning a B or an A. Look around at the average grades at most colleges and universities. Whether it's a community college or Stanford, the average grade is typically a high B. Students understand the game very well. This is the game they've been taught, what they've grown up with. That's how society is supposed to work, so why should going to college be any different? The consumeristic paradigm certainly promotes a high degree of passivity among students. Again, that's partly why we keep seeing unprecedented levels of disengagement and boredom among students in the UCLA freshman surveys. The consumer paradigm of higher education doesn't encourage active thinking and a love for learning. Learning itself become a a market commodity, bought and paid for.

Of the modern/postmodern split, you write, "But something bothers me about modernism's advocates engaging in a rear-guard action against postmodernism, because doing so strikes me as utterly futile in the face of an overpowering cultural transformation that shows few signs of petering out. The institutions of modernity are rapidly withering in their influence, while the forces of popular culture and power appear to be staging an irrevocable revolution of Western post-industrial societies. . . .I'd say those longing for the good old days of modernity might have a chance of success but for one minor detail: technology." Why? Will you discuss how 'adopting the guises of postmodernity and technology' may or may not be two-stepping the same paradigm that collapses our imagination as a society?

So far, conservatives have 'won' in the K-12 schools by defining academic quality in the same terms as any other business enterprise. They've persuaded society to buy into the premise that educational quality can be quantified by results for individuals, schools, and states on standardized achievement tests. We tend to believe the only way to improve education is to set a standard, have a test, publicize and compare the results from school to school, and flunk the kids and schools who don't fit the standard. The whole accountability process reduces the very complex and ephemeral nature of learning into a rote and mindless numbers game. And then we wonder why 12th graders don't do well on advanced math performance in international comparisons. There's so much emphasis on passing the state mandated basic skills tests that they don't learn the interesting stuff. But, hey, that's what the public wants, right? That's back to basics.

There is a similarly inspired backlash in higher education. That the way to fix problems with higher education is to return to the good old days of rigid standards and better surveillance and control of the whole learning process. But that vision no longer corresponds to the real nature of knowledge and power in the culture at large. As Lyotard put it, it's the end of the 'age of the professor.' The age of the professor has ended because of the democratization of knowledge and information made possible through technological advances, particularly the Internet. Recent advances in information permit anybody with a computer and a modem to fairly inexpensively have the same information about a field as the experts in that field. So how does higher education adapt to this revolution without simply becoming a credentialing agency, whose only real function is a social and economic gatekeeper issuing degrees in exchange for tuition payment?



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In my view, part of the answer is to embrace and exploit the new technologies. Recent critiques of the role of technology in education argue that it doesn't measurably affect how much is learned. But that misses the point. The point is whether exploiting new information technologies helps to engage students in learning. The old ways, where a professor stands up in front of a class to deliver information, completely violates the current sensibilities of many learners. This is why so many students are completely bored by the whole thing. The role of the professor, then, changes in this light. Instead of his or her principle role as a deliverer of information, the professor becomes an expert in a particular field who guides students in their own acquisition of information about that field. But even more important, the professor helps students apply that knowledge as part and parcel of the learning process. Invention, creativity and imagination are the real emphasis, the whole point! Information per se is meaningless. It's a commodity, acquired relatively cheaply by all learners with access to the right technologies. But how you interpret that information, how you dream up new ways to apply it, how you make interesting connections between one information set and another– that's real learning, and that's what higher education should be focused on.

We've seen some interesting developments in response to this realization about the culture's changing views toward information and application. At Harvard, for example, medical students used to learn their scientific information during the first couple of years and then began to apply that knowledge in clinical rotations during subsequent years. That was the old paradigm: that information can and should be divorced from its application. Inspired by work at the University of New Mexico medical school, Harvard medical students now learn their scientific information while in the clinic, working under supervision of the faculty. There's no reason any subject can't be tackled this way, whether it be math, history, journalism or chemistry.

As matters stand in higher education, the love of learning has been whitewashed out of the system, replaced by a behavioralist, standardized program of student evaluations, multiple-choice tests, FTEs and other reductionist bottom-line approaches. I'm simply asking how a love of learning can be re-instilled. Turning backward isn't the answer. Creatively applying new technological tools may be a part of the answer. For example, instead of a history paper on the enlightenment philosophers, how about a multimedia presentation? How about permitting students to work in teams with each individual on the team responsible for a portion of that presentation? In my experience teaching Xers, for instance, they *were* engaged by new technologies. The effect, it seems, was to ignite interest in learning in a way that corresponded to their sense of the way the world worked. Technology may be that link for them.

What of the non-neutrality of computers, of courseware, of telecommunications which promote a kind of thinking and interaction that further decontextualizes people, places, and natural systems at a time when deeper thought, more specific fidelities are most called for?

To be sure, I find many traditionalists who fear that technology is part of the problem, that it simply feeds into spectacular culture and more superficial ways of thinking. I sympathize very strongly with that point of view. But I think we need to resist falling into that trap completely. Just as technology itself can't be a fix for what ails higher education, an anti-technological "fix" doesn't seem to be a viable answer either. Again, the problems I've seen have little to do with students' ability or teachers' capacities for excellent teaching. In far too many students, I see a problem of a profound disconnection between their expectations of what higher education should be versus the expectations of the faculty and institutions. Let's face it, many if not most students are utterly bored by school as we know it. While colleges and faculty often obsess over *what* should be taught, we need to pay a lot more attentions to the *hows* of learning and teaching. The infamous culture wars over what should be taught were never very relevant to most of higher education. A lot of teaching in the trenches at ordinary colleges and universities has been concerned with getting students to read their textbooks, complete homework assignments on time, and pay attention in class.

So, no, I don't think technology is *the* answer. But some of the most promising developments I've seen to re-engage students in learning has been to combine technological tools like multimedia and the Internet with traditional teaching techniques. Does technology-dependent teaching have a danger of encouraging superficiality? Yes. But, hopefully, that's why we pay good teachers to be good teachers, not to let that happen.

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AN INTERVIEW

HEATHER-JANE ROBERTSON

Ed.com cannot help us reclaim through information or competition what we have lost as individuals, families, and citizens. Our children and our schools will become either what we make them, or what we let others profit from. When we rethink what is worth knowing, we would do well to remember the words of H.G. Wells: "Human history becomes more and more a race between education and catastrophe."

–Heather-jane Robertson
No More Teachers, No More Books

The following conversation between Heather-jane Robertson and Casey Walker took place May, 1998, with the production assistance of KVMR, a community-supported radio station in Nevada City.

Casey Walker: Will you describe your goals in writing No More Teachers, No More Books?

Heather-jane Robertson: It was a challenge to write a popular and condensed version of what is going on in education for someone who doesn't know very much about this subject, isn't immersed in it, and might learn important things that will change the way they operate in the world–that's what I was hoping.

Will you give a general survey of how GATT and NAFTA have contributed to the corporatization of education?

I would argue that at this stage the most 'above the line effect' has been negligible. The extent to which NAFTA or GATT, or opportunities presented thereby, have provided motives for some of the things that have been done isn't entirely clear. Yet, I would say that at this stage, in fact, the most profound effect of these agreements is the "softening up" of the minds of citizens to believe that global, corporate economics is now the "way of the world"–as if the asteroid of economic globalization has landed and there is nothing anyone can do about, there is no alternative. The softening up of resistance is, I believe, the most profound effect.

I am impressed too with the chilling effect globalization has had on the "production of knowledge" at the university level. Obviously, people are increasingly told that the ownership rules of their ideas and their courseware have changed dramatically. Again, however, whether these examples are primarily the mind-altering effect of economic agreements, or whether they are the legal ramifications of them is unclear.

It is common for most people, I think, to perceive free trade as carrying an air of benevolence or democratic good will, when, as you make clear in your book, the emphasis on competition and free trade has "economized" education in unprecedented ways. Will you address the inherent conflicts between free trade/business and public good/education?

Yes. In fact, a Business Education Partnership conference was just held here and its theme was the "Good Corporate Citizen Reshaping the Landscape." Oh, boy are they ever–isn't that just fabulous!–and they don't intend it as ironic. In the very simplest of terms, no corporation stays in business by putting children or education first. It can't. That doesn't make it evil. It just makes us really stupid if we don't understand that the primary obligation of every corporation is to sell a product and watch the bottom line. A corporation is accountable only to stockholders, shareholders, and not to public education in any other way. To imagine that we can collapse our purposes into theirs or that we have exactly the same goals is incredibly naive.

Business talks about wanting to bring the "Real World" to kids. Well, point one of the real world is that we are here–education and business–to do different things! I could construct an argument to get rid of privatization, corporatization, entirely, but it's easier to bring to the public's attention to the significant differences in purposes and motives. Understanding these differences is a good, first step.

Will you describe the misnomer, "partnership," between education and business?

It isn't a partnership. It can only be, at best, an accommodation, and, from the public point of view, a wary accommodation. I argue that at least from a Canadian perspective the historical role of government–brokering private and public interests by negotiating the social contract and the distribution of wealth–has changed. We are seeing the capitulation of governments as they abdicate that role of brokership to private, corporate interests. I don't call that a partnership. A partnership suggests equal kinds of power and shared goals. I do think we could come to a negotiated compromise, but you can't do it without government, without public interests.

How do you explain the ubiquitous loss of political defense for public good –are special, monied interests that powerful in Canada?

Governments have played powerless. There is a funny reciprocity going on. Sure the lobbyists lobby, and it would be one thing if governments were up front and said they had been lobbied to death and were going in that direction. In a Canadian context, the most common thing we hear from government is that they have "no alternative." I am arguing, as others do, that the government does too have an alternative. No gun is to its head that will stay there– and government always has the option of going public about the way in which groups are trying to manipulate them. As a matter of fact, that's how the government can get the public on its side. But, most are choosing not to do so and act as their own lobbyists, so to speak. Regrettably, the outcome is the same, right? Whether the government makes deals enthusiastically or does it while saying they have no alternative, the outcome is identical.

Will you speak to the ways in which a "crisis in education" is amplified for and by corporate interests and profit?

Oh, yes. The American issues in education reform are particularly in-your-face in that regard. Starting with the most recent era of "A Nation at Risk," corporate America got its first major pot-shot at schools. It continues, although it's been modified in some important ways. People did a pretty good job of disputing some of the most outrageous claims. However, five years ago we heard direct corporate criticism along the lines of, "You're doing a really bad job of the last part of the 20th century." Now the criticism is, "Only we can help you prepare for the challenges of the 21st century." But, the effect, again, is the same, right? Criticism of either kind is very, very alarming to the public.

I've found public opinion data that shows the farther away a person is from a real school, the worse he or she thinks schools are; and the closer to a school, the better he or she thinks it is. In American research, in particular, public polls grading the nation's schools show Ds, grading state schools shows Cs, community schools show Bs, and a local child's school is likely to show an A. We can see in that pattern the extent to which the media, which covers the criticism, ends up making people believe that even if they had a really good experience with public education locally, they just got lucky. This idea makes it very difficult to resolve problems from the point of view of local schools. It doesn't matter how good a school is, it won't change the public's perception of what "most schools" are like.

Will you speak to the role of standardized testing, the ways in which state, national, and global rankings underscore 'crises'?

Yes, testing is such an important piece of this discussion. As I sent chapters off to my editor, his first comment was, "You got kind of carried away on testing. When we get toward the end of the book, we'll come back to it and have you cut that section back." Yet, as we got further into the book, he said, "I take it all back, now I understand how standardized testing becomes *the*

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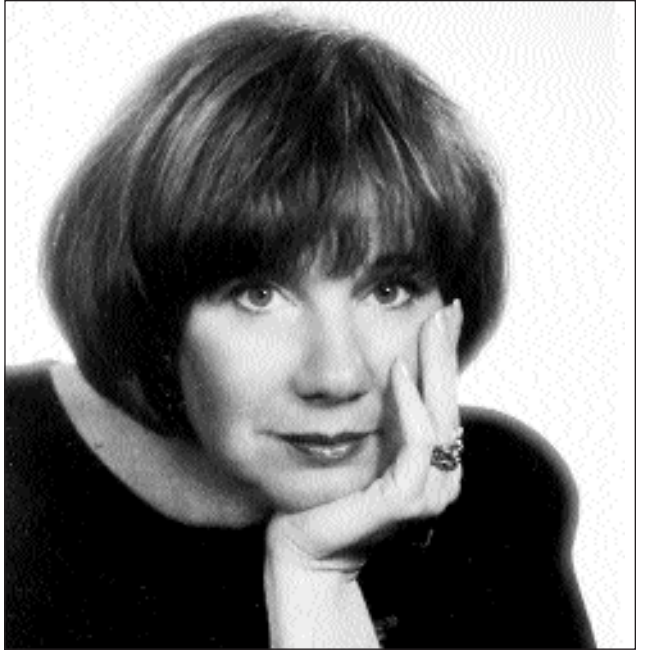
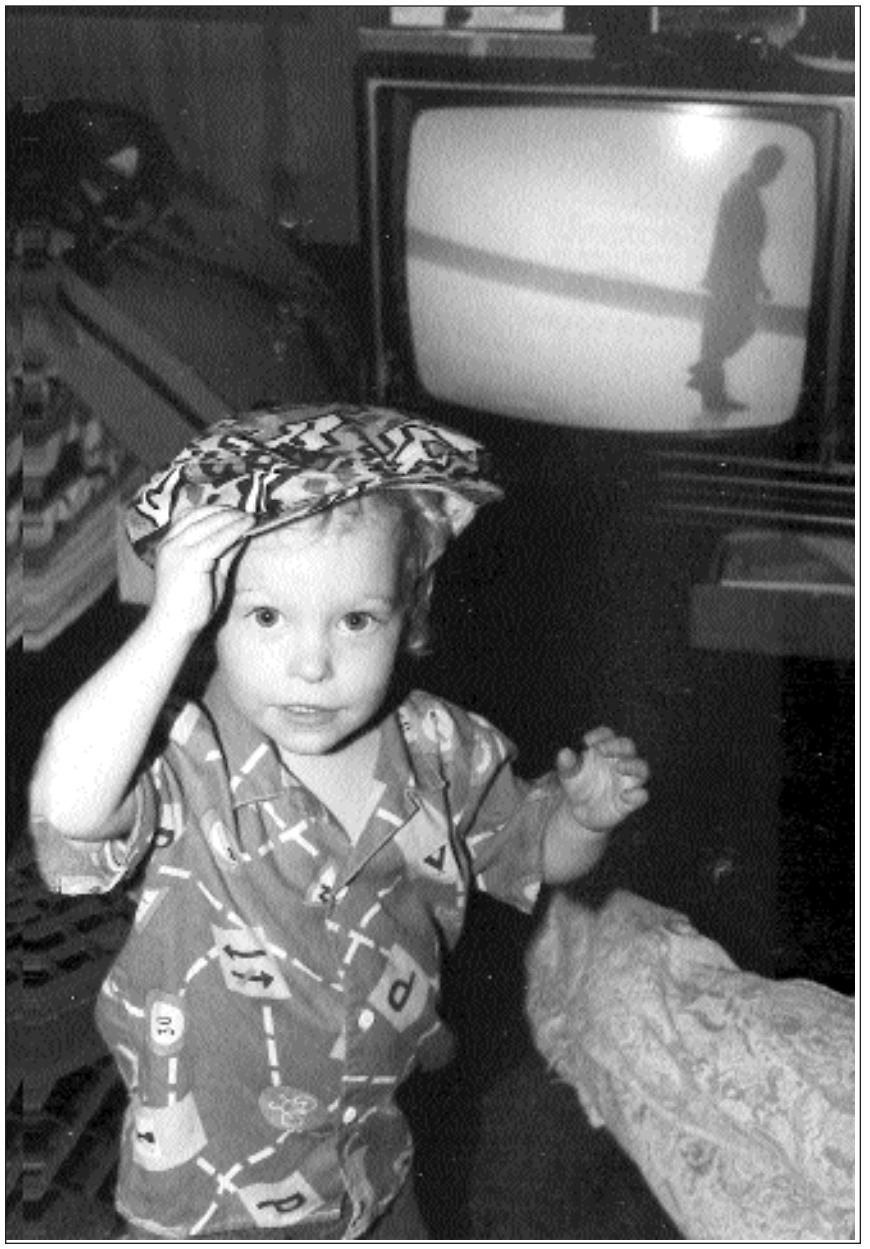


HEATHER-JANE ROBERTSON *is director of professional development services for the Canadian Teachers' Federation, an executive member of the Canadian Centre for Policy Alternatives, and a commentator on educational issues frequently consulted by the press and broadcast media. She has written widely on educational issues, and is co-author, with Maude Barlow, of the bestselling Class Warfare: The Assault on Canada's Schools. An essay by Barlow and Robertson, "Homogenization of Education," appears in The Case Against the Global Economy, edited by Jerry Mander and Edward Goldsmith.*

Of No More Teachers, No More Books, consumer advocate Ralph Nader writes, "Heather-jane Robertson's critique of the looming corporatization of the public schools should touch the nerve of every North American who wants to preserve democracy, justice, and equity in education. The relentless accumulation of evidence–much of it from the mouths of the corporatists themselves–impels parents, teachers, students, and other readers to rise, defend, and improve public education in their communities."



Technology suits everybody at once: those for whom public education's failure is an attractive business opportunity and those for whom little public space fits their grand ideological plan. Whether you're on the McWorld side, or the Jihad-tribalism side, technology fits perfectly. You can totally control what kids experience if you can control their technology–or people think they can."

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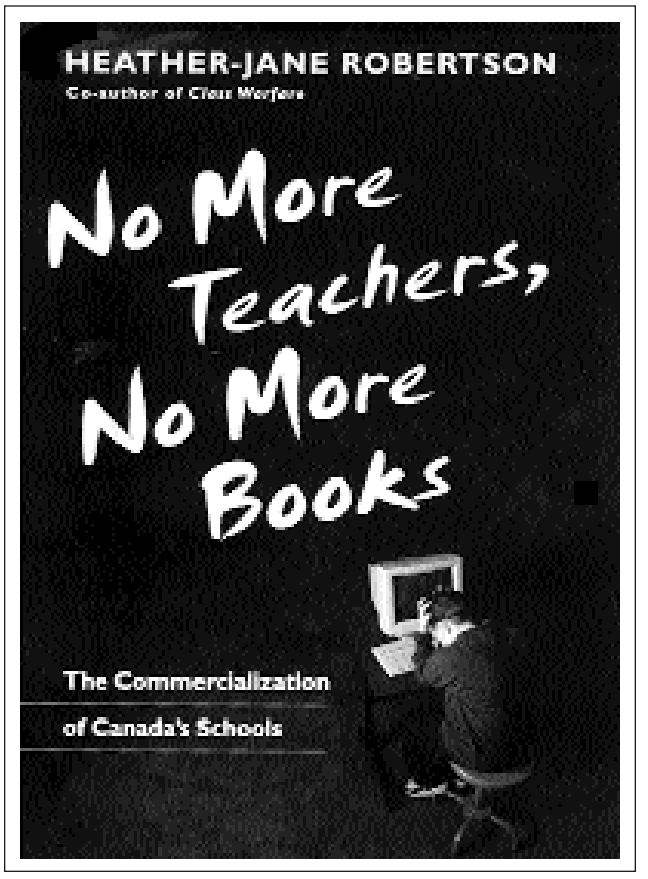

most powerful mechanism to justify everything else that's going on."

Testing frames success and failure and controls content. It can be used to justify absolutely any position that has already been chosen in policy. If you want a longer school day or a longer school year–it doesn't matter what you want–you can point to the most recent test results and say, see? In *No More Teachers, No More Books*, I give some mindboggling examples of alleged 'cause and effect' reasoning by politicians, and how blatantly they manipulate test results. Testing also becomes extremely important data for marketing once you set up schools to compete with each other. And, it is a clear way to separate the one third from the two thirds for a two-class society. What could be easier, cheaper, more efficient?

Of course, curriculum can be reshaped at the same time because one of the things we can say for sure about standardized testing is that the only correct answers are standardized answers. Standardized answers require standardized thinking, and, therefore, standardized teaching. That means, surely, an absolutely inarguable sequence of events. But, what if we ask, "Okay, do we support the idea of standardized thinking–where, for whom?–it becomes obviously problematic. The whole idea of "standard" used to be based on its usage as common, or including the lowest common denominator, and now it's getting used to imply 'higher.' If you have a "standard" now, by definition you have people who are "sub-standard."

Will you describe the larger context of education now as an economic transaction, as a process of preparation for an economic life in the global city of the 21st century?

Yes. We've drifted from the idea that education is the process through which you think about what kind of future you want to make personally, and how you intend to make the future different for yourself and other people. In contrast, we've moved toward the idea of training: telling people what the future will be and making them adapt, fit into it as a human being. Many see people in general as a helpless human beings whose purpose in being placed on earth, apparently, is to cope and adapt. There is a profound difference between education and training. The slide from one to the other is the most powerful mechanism of ensuring that, in fact, we let somebody else decide what the future will be and we'll just be "flexible and adapt." Flexible means it doesn't matter what you do to me, right?

Right. In this light, I appreciated your anecdote about kids being graded on their sense of humor–punished, as it were, for taking resistance seriously.

Isn't that scary? Their Orwellian cheerful flexibility. I just found that so chilling! Training is part of the larger context, and the thread that goes with it is the thread of scarcity–not scarcity as we know it to be in resources or limits to growth or biodiversity and all real things of limitation–but scarcity of well-being. If you set up a situation in which you manage to convince people that there isn't enough to go around–there is not enough education to go around, there is not enough good will to go around, there is not enough safety to go around, that all kinds of things tangible and intangible are in scarce supply, then, of necessity, you've concluded there will only be winners and losers–and of course everyone wants their kid to be among the winners.

Yet, if everyone could win, then you don't have a scarcity model and the whole thing falls apart. If you really believe everyone can learn it becomes quite different too. An impossible dilemma is set up when parents come to believe that their moral choices will condemn their children to losing. Obviously, that's too much to ask of the individual parent.

A similar dilemma is written on the wall with biogenetic engineering. Parents may begin perceiving they should give their children a biogenetic edge in a world of increasingly "advantaged," genetic terms for life.

Oh, that's true. That overlay hadn't occurred to me. "Which genes, which IQ would you like?" The scenario fits perfectly in the kind of world where it's very hard to imagine parents who, with the option of choosing another fifteen points of IQ, would choose fifteen points less. What is true in this "world," is that we have down-loaded moral responsibility to the level in which those decisions are most ambiguous, the hardest to make, and where the penalty will be paid most directly. This is exactly what we're doing with parent councils in Canada, right? We are down-loading the decisions to the parents of whether we will cut the music program or the drama program. Parent empowerment, isn't it?

It's surprising to me that faculty, teachers as a whole, have not responded or acted on the larger picture, what all this means. How do you explain their lack of engagement?

We could wish teachers did more. I have several theories, most of which I don't bother getting into because I have no evidence for them; but I do believe that at least in the demographics of Canadian teachers, virtually all of them are one generation away from poverty. Teachers are not the children of professionals, the well-to-do, middle class, but are often the daughters of farmers and laborers. Also, the kind of people attracted to education as a profession, in my opinion, have an issue around authority–they like it, in other words. They perceive the teacher at the front of the room, when they're making a career choice, as someone with authority. Only when they actually teach do they realize how little authority they have. The security against poverty and the desire for authority add together. Additionally, and perhaps more true of female then male teachers, is that they'd like to spend more time in

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'academic experience' ever.

My greatest fear for the future is standardization and conformity that our culture seems to be so attracted to. The postmodern rejection of modernity's norms transforms into just another, broader, more sweeping kind of conformity. Education has always been a force of social control in the United States, a means to impose order on disorder, a means to reinforce class and race distinctions, for instance. In reaction to the postmodern turn in the culture, I fear a backlash in which education may become more even bureaucratic and subject to the increasing surveillance and control of faculty, students and the whole enterprise of higher education. Conformity and standardization is the antithesis of what higher education should encourage, and it's a scary prospect.

You and others have identified a cultural sea change toward postmodernism since the 1970s which has 'delegitimized' modern belief in reason, science, and progress, and opened up a free-for-all for eclecticism and relativism, creating, as Lyotard names it, an "epoch of slackening." You warn that Generation X has grown up in a 'spectacular' culture of pleasure and entertainment where anti-intellectualism and vacuity are "ideals." To be 'cool' is to be post-all, beyond-all, not even 'present.' Will you elaborate upon your observations and what kinds of conformity, outcomes, are in place and deserve serious criticism?

Most of these observations about the postmodern turn can be applied to everyone in the culture. My larger point in my book is that these trends are happening to the culture at large, including higher education and especially to the students whom educators are trying to reach. We are all postmodernists now.

Just look around at the culture's re-embracing of traditional, pseudo-scientific belief systems as the means for understanding reality and assessing truth claims. And, who or what– whether it be the neighborhood church, the local newspaper, or the local community college– isn't uninfluenced by the hyperconsumer-amusement condition that defines postmodern existence?

For their part, Xers have grown up almost entirely in the postmodern age, and, as a generation, they tend to be sort of a purer form of the postmodern individual. The postmodern condition is a rejection of the common narratives of modern society–that such notions as reason and progress are good things, that the world ultimately makes sense, and so forth–but the result of the postmodern rejection can be utter comformity. A cool comformity that feeds spectacular culture and is fed by spectacular culture.

The conformity is channelled via a virtually perfected consumer society in advanced post-industrial societies like the United States. The rejection of one set of standards and narratives gives way to the embracing of another set of standards, which contradicts the very eclectical nature of postmodernity.

There's an urge toward the postmodern, and yet the society still struggles whether to re-embrace modernity. Modernity is by no means washed up, though it does seem to be withering. So, I think many people have ambiguous feelings about this stuff. We have a built-in need to reject and conform simultaneously. For many of us, our rejections assume small, sometimes quite superficial forms.

Which is an indication to me–probably obvious–of the privileged nature of style in the culture. There's little doubt that style and superficiality have won. They've won out over thinking itself. People don't have time to think, don't want to think, and virtually no aspect of the culture encourages one to think.

Even the notion of 'thinking' has been reformulated into mass-marketing concept, a commodity of fashion and trend, and even class. Take the latest ad campaign for Apple: 'Think Different,' showing photos of famous creative people like Einstein who rejected social norms. Thus, if I want to 'think different,' I can join a bunch of other people who feel safer conforming to that supposed difference. The 'radicals' among us find solace in the smallest forms of refusal, any more, even if it means substituting a Mac for Microsoft. Or, as another example, Microsoft's online magazine, *Slate*, recently embarked on a print ad campaign marketing itself as the 'thinking person's' website, or something like that, for the 'thinking people' who exhibit what *Slate* calls that 'insouciant smirk' toward the world. But we all know that thinking people is code for well-off and well-educated elites. Thinking is a matter of class and class is a matter of taste and style.

Many consider journalism and education– two of your chosen professions–as the last bastions in our society for public inquiry and critical thinking. Will you speak directly to crises in "knowledge and authority" as you see them occurring today in both media and education? How do these confound responses to ecological crises, and how do they confound a democracy by feeding a plutocracy?

In the postmodern mass media, we can find a common theme of conformity to the position that whatever Americans think, it must be right. It's government by opinion polls, and, increasingly, it's also news by opinion polls. Many news organizations, for instance, evaluate the journalistic worth of a story based on whether it fits into marketing plans and demographics and similarly bureaucratic judgments of what's worth telling readers and viewers. The once-rigid separation between editorial and advertising departments is becoming nebulous. It's as if Melville went out and did a survey of whether readers wanted to read about a white whale.

This is happening ostensibly for business reasons. More basic, however, is the continued democratization of knowledge and power. Modernity put knowledge and authority mostly in the hands of democratically inspired institutions– institutions that emerged in response to monarchy and religious authority–such as representative government, a free press, the scientific method, and the modern university. But those institutions as sources of knowledge and authority have been discredited and in some cases disintegrated by the larger culture. In the postmodern turn, knowledge and authority have become highly subjective and individualistic phenomena. Truth is whatever I think it is. The 'truth is out there,' and the government is trying to cover it up. The modern press and its foundational beliefs–that it's basic purpose is to promote free inquiry on behalf of citizens in a democratic society–is in a real state of crisis because of the largely cynical and disbelieving culture.

Consider how this applies to higher education. What's the purpose of higher education? When you try

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to answer that, you quickly discover that it's highly contested terrain. There are many unsettled questions, questions of basic principles and values. Students wonder, What is to be learned? Why am I supposed to learn it? Of what practical use is it? By whose authority is this knowledge deemed important? Why should I trust you?

You would think that this crisis of authority and power would result in the antithesis of conformity, but so far that hasn't been the case at all. I think you are absolutely right in suggesting the possibility of a plutocracy. Increasingly, the role of ordinary citizens has been reduced to that of consumers and passive observers of the amusement spectacle. That's what most ordinary people do. That's normal life. The interesting contradiction of the postmodern condition is that, while there is a pervasive cynicism toward common narratives, there is also mass conformity. That can't be good for democracy. The notion of a 'citizenry,' then, is essentially that of mass audiences pushing buttons for thumbs up or thumbs down after the 'performance' of a political campaign, the way Siskel and Ebert rate a movie. Nor can we ignore the class questions in this. If ordinary citizens are really just passive observers of a spectacle, the real job of government and policymaking and opinion-leading is left to elites–government by elites and for elites.

Will you address the rise of consumerism and "consumer sovereignty" as it has radically changed the expectations of students toward self, education, and life?

As I've suggested, certainly not all, but many, many students now think that by paying tuition, they are owed something, just as in any other consumer transaction. Teachers are supposed to sort of fill students up with 'knowledge,' and if student consumers don't obtain that knowledge it's the teachers' fault or the college's fault.

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AN INTERVIEW PETER SACKS

PETER SACKS *is a journalist, essayist, and author of* Generation X Goes to College: An Eye Opening Account of Teaching in Postmodern America *(Open Court, 1996). His essays on education and American culture have appeared in* Change Magazine, Thought & Action, The American Enterprise, *and* The New York Times. *He is a former staff writer at metro dailies on both coasts, covering economics, environmental issues and technology. He taught college journalism and writing for four years and also worked as an economist for state governments and consulting firms prior to his journalism career. He is currently at work on a forthcoming book about the effects of standardized testing in American society, scheduled for publication in the fall of 1999.*

The following correspondence between Peter Sacks and Casey Walker took place during April, 1998.

Casey Walker: One of the greatest strengths of your book, Generation X Goes to College *is its critique of our larger culture and the ways in which consumerism, entertainment, and entitlement have affected higher education. Will you briefly describe how these cultural forces present themselves and are reinforced on campus and in the classroom?*

Peter Sacks: Each of the forces you mention–a consumeristic frame of mind, a near constant need for entertainment, and a sense of being entitled–are wrapped up in the 'postmodern' break, a cultural shift away from modernism. Much of the dysfunction higher education must deal with nowadays is the result of this split. Scholars are in some disagreement about when this transformation occurred, but it's probably been unfolding for several decades. There seems to have been a sea change in student culture beginning in the mid-to-late 1980s, when these cultural changes seemed to become far more pronounced and accelerated. From my experience teaching at the college level, it seemed to me that consumerism, entertainment and entitlement were three, interrelated ways we could observe and analyze the postmodern break occurring not just in higher education, but throughout society.

How are these forces inimical to higher education as we've known it or expect it to be? How true is it that intellectual endeavor and education per se are opposed by the new interests of a "politicized and therapeutic community"?

Until recent years, I think, the bargain between institutions of higher education and students went something like this: you paid your tuition and that gave you the right to work your hardest in order to get the grade you deserved according to your level of performance. Success wasn't guaranteed. But what true-blue American consumer in the 1990s approaches any transaction this way? You pay your money and you expect something in return. In higher education, that 'something' nowadays are good grades and a degree. The implicit contract between institutions and students has been altered by the larger culture which puts the right to consume right up there with mom and apple pie as a value worth fighting for. Higher education hasn't been immune to this. There is a heightened sense of consumerism at colleges and universities and that sense is intimately connected to a sense of being somehow entitled to success. So, when we look at the problem of 'grade inflation'–the problem that grades are inflating without a corresponding increase in actual performance–that sense of entitlement is part of the problem.

In fact, it's only half the problem. The other half of the problem lies with institutions themselves, and this is the insidious part. College faculty are evaluated for tenure and promotion, it turns out, largely on the basis of classroom performance, which is almost always measured by student evaluations. It's where students fill out little forms, anonymously, and rate the instructor and the class. As I painfully discovered for myself, if those ratings aren't consistently glowing, you don't get tenure. Or, if you're, say, too tough a grader, some student consumer will go file a complaint with the dean or department chair. Many college faculty feel they won't be supported in that kind of battle and so they'll typically raise the grade and avoid the hassle.

College faculty are learning, as I did, that the best way to ensure that you receive good student evaluations is to dish out good grades; never upset a student with expectations that are too demanding; and otherwise nurture your students toward that expected 'success' with all your might.

Administrations enforce this new bargain on faculty under the threat of job security. Why? Administrators are running a business, or so they think. And that business is to maximize FTE's and budgets and they do that by maximizing enrollments. Most colleges are in fierce competition with each other for students, and they can't afford to lose them to tough grading practices.

In response to these trends, many college faculty at most public institutions have, out of professional survival, adopted an overly nurturing approach, in my view. It's sort of the 'success for all' theory of higher education. I think it's a way for educators to justify to themselves that they aren't really pandering to student consumers. So instead of calling it pandering, they see it as 'ensuring success,' which seems far more enlightened.

Of course, students ought to be given every chance to succeed. But that shouldn't mean faculty bending over backwards at every opportunity when, too often, the result is a slackening of academic quality and standards. This is what supposedly makes higher education different than buying a new car. By 'bending over backwards,' I mean the multitudes of course 'adjustments' and techniques faculty often use to nurse students along. College teachers are becoming very inventive with these techniques and they are as varied as the number of teachers vying for tenure or promotion. Among my pet peeves, for example, are what I've heard called 'study guides,' in which instructors will give students an item-by-item guide corresponding to page numbers in a textbook about points that will occur on an upcoming exam. And the exam is often multiple choice. Students come to expect these things and will howl and complain if a teacher doesn't give them a study guide.

What consequences do you see for education, for society, and what comparisons do you draw with Aldous Huxley's Brave New World*?*

Since the fall of the Soviet system, especially, Americans have taken a sort of 'I told you so,' attitude, feeding into the arrogance that the American way is the best of all possible worlds. We've been proud, too, that George Orwell's *1984* was wrong in terms of the United States. All but forgotten has been that other famous dystopian novel by Aldous Huxley. Americans may think they live in a democratic society, but that seems any more to be utter fantasy. The conformity that thrives in the consumer/amusement state has rendered mute the right to free thought we have on paper. It's no conspiracy. It's not a forceful imposition of power. It's far more insidious than that, as Huxley envisioned. In the endless pursuit of amusement, consumption and feeling good, the unintended consequences appear to be conformity, groupthink and the absence of critical inquiry. The 'democratic process' becomes just another part of the spectacle.

The expectation to be entertained in the larger society is a very pervasive and dominant force, creeping into activities that were supposed to be immune to its superficiality. We see it happening with religious services, for example, as ministers have to sort of jazz up and dumb down their approach in order to adapt to the their congregations' sensibilities. It's happening to politics, which have become just another sporting spectacle whose chief purpose now is to entertain its audience.

And, of course, it's happening in college classrooms. I think back to my early days of teaching full time in the early 1990s, when my culture shock of going from the world of professional journalism to teaching was at its most gruesome. I would look out into the class and see many young men with their backward baseball hats exuding this attitude that said, "Okay, do something to amuse me." As Curt Cobain once put it, "Here we are now, entertain us." It was a look of utter boredom and complete disengagement.

That was a first impression and it never really went away. I have countless examples of students' demands and expectations to be entertained, as if we teachers were supposed to be performers above anything else. How can educators realistically expect otherwise, considering the spectacle of images students have grown up with? It's a culture in which unreality has a privileged position over reality itself. Students would tell me this–that they'd prefer to watch a video than a live but boring professor.

I had a colleague once, for instance, who had a student sitting watching a portable TV set at his desk instead of paying attention to the class discussion. When the instructor asked him to turn it off, he responded, "Sure, there's nothing good on anyway." Imagine that!? Imagine the bald-faced lack of contriteness or absence of any embarrassment, that there's nothing that's not okay or out of bounds, even if it's a college classroom where certain traditional rules of decorum and sobriety–or at least a modicum of respect for others–are supposed to hold.

What does all this mean for the future? First, virtually all my students–and I think most professors would agree with this–had the ability to do well. For students, the problem isn't one of not being smart enough. Rather, there's a clash of expectations between the educational enterprise as many faculty have come to know it as a modern institution, and the more postmodern views of the newer generations in their questioning of the legitimacy of common sources of knowledge, authority and power. The culture is telling them one thing about reality and modern institutions are sort of stuck in another form of reality. That's the essence of the postmodern break. The higher education institute at UCLA, for instance, continues to find in recent years that college freshman are the most bored and disengaged from the

schools because they were pretty good students and got along with the system. The best little girl in the class was likely to become a teacher, at least a generation ago. Demographically, our average age of teachers is forty-three, forty-four. Add to it all the stress and workload for teachers–one fellow said to me, "Teachers are too busy teaching to be thinking about education." He was being sympathetic, rather than critical, but there is some truth to it. Education is an overwhelmingly involving, demanding profession to do well; and, if you're doing it well, it's unlikely that you have the time, energy, or wherewithal do become a political being. Or, if you do it poorly, it's unlikely that you're about to run out and try to defend it. I put all these theories together and see this is not the group from which rebels to the corporatization of education are born.

I sometimes use Elizabeth Kubler-Ross's stages of grief as a way to understand responses to crises, and I've watched the teaching profession go through those stages in different provinces across the country. Denial is incredibly strong everywhere. When crises were happening in Alberta, I couldn't get anybody in Ontario to pay attention: they never invited me out for a speech, nobody read my books. I couldn't get anyone here to pay attention, and then it all happened here. All I wanted to say was, "I told you so! Why weren't you paying attention?" And then it was somewhat too late.

The best emotional description now for most teachers is cynicism. Someone said, "A cynic is a brokenhearted idealist," and that really set me back. Despite all the things I have said about what brings people to the profession, most are idealists. When we see cynicism in a teacher, we are seeing someone with a broken heart. And that's where the grieving process comes in. A person in grief is not a political activist. The person in grief is usually in a pretty unhappy conversation with herself or himself.

Will you describe the ways in which kids, who cannot resist, are being identified as a new "market" in the schools?

I talked about this on a phone-in show a couple of days ago and a mother called in. She said, "Bah! I'm not worried about this stuff. I've got five kids in the system and they're smart. I've taught them well and they can sit down in front of all that corporate propaganda in the schools and it's just going to go right over their heads, they understand. They are not going to be touched by it. They're savvy." I said to her, "How is it that we as a society are at the point that we send our kids to school hoping that they'll ignore what's put in front of them?"

Even to imagine that the billions of dollars spent on advertising don't touch people–even kids– is charmingly naive and egocentric. Do people really think that marketers are that stupid? It's very interesting to believe that neither you nor I have ever been touched by a commercial and that our kids certainly wouldn't be. If we think kids ignore those kinds of messages, why do we bother funding 'stop smoking campaigns' or 'anti-drinking campaigns'? Where do we think kids' ideas come from!?

I read with great interest your chapter, "Big Business Targets Children," and of the marketing conference that promised participants they could learn how to "tap into" the market of 4.4 million Canadian kids spending $20 billion each year.

Yes. Going to that marketing conference, which took place in '95, is still incredibly vivid in my mind. I came home and literally couldn't talk to anybody for three days. I was the only person at the conference who was there with a critical mind. The rest were trying to get marketing tips. Nor did I want to stand up and challenge what they were saying, because I knew I'd get much better quotes if I just sat there like another little marketer, but it was absolutely toxic to my spirit to be there. I don't think anything has ever had that kind of effect on me before.

It wasn't just the greed, but the way there seemed to be absolutely no consciousness anywhere in that room–in the presenters or the participants. It was as if no one, anywhere, had ever found anything wrong with it, or would. Innocence is not the right word, and arrogance at least says, "I know this is bad, but I'm doing it anyway." Instead, there was the complete absence of imagination that anything said or contemplated might be horrible. It was like the marketing woman who talked about studying teen girls through one-way glass, who were being asked to talk about their period– when asked a question about it, she couldn't think of an answer that didn't violate *corporate privacy*! I thought somebody must *get it* here besides me, and I looked around the room, but no one had any sense of irony then or at any point during the whole conference.

HANK MEALS

It's chilling that the developmental stages of childhood–attachment/separation, attainment of power, social interaction, mastery/learning–are being used as vulnerabilities to purposefully exploit kids as consumers even in the classroom.

Yes, it is chilling. John Ralston Saul's book, *The Unconscious Civilization*, explores unconsciousness in society. What we are witnessing is a wonderful example of loss of consciousness. Ralston Saul asks, where did it go and how do you get it back? Very important questions. On one level, we can point to the people who anesthetize us, but there is still a moral problem of free will. If you and I have figured it out, how do we explain other people walking up and down the street who haven't, right? There is an obligation–some people talk about intentional citizenship, intentional consciousness–but there is, for me, a point of morality in which you choose to live consciously, despite everything. Why people choose otherwise, I guess, is much harder for me to understand.

Will you critique the "interactivity" of TV with that of computers, what this idea of interactivity means for the classroom?

There is growing evidence that, physiologically, psychologically, emotionally, and so on, that our dependency and our kids' dependency on television is toxic. Violence is the issue most often discussed, but there is

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a passivity in which everyone becomes their own version of a tele-tubby, yes? It's important to look at the ways a computer is like
interactive television. Of course, the idea that "interaction" is an appropriate word for pushing buttons and having computers do things in response raises some serious questions. Sherry Terkel pointed out that when adults go to a computer, we sit down with some kind of intentionality in our hands–we want to make the computer do what we have in mind. Either it will or it won't do as we wish, and it may frustrate us and we may change our minds, but we approach it with our own intent. She said kids sit down in front of a computer to find out what the computer *will let them do*. Isn't that interesting? Or, with a computer game, kids don't read the instructions, which would give them the possibility of intending to do something, but go into the game to find out what the game lets them do.

What would the parallel to television be? I guess, you want to see how the program is going to turn out, and you have no illusion that you can change it. From Marshall McLuhan's early work about the right and left brain, we saw how differently information is received by the brain in "light through" (TV and computers) vs. "light on" (film projected onto a screen). We are processing "light on" images through our left brain, through the rational, sequential side. The same images shown "light through," landed in the right brain which is far more passive, non-rational, and emotive.

Another important aspect to note is the experience one has on the Internet of things being endlessly lateral. If we think of it in three dimensions, I always have the feeling of going sideways on the Internet. I don't have that experience in a book at all, and not as much in watching television, unless you're surfing the channels. Ursula Franklin points out that the kind of reasoning involving "beginning to end" is critical to our minds, despite fair criticism of excess. Where are we without it? Just as a book has a beginning and an end, and it is a rectangle (think of the way we lay out city streets, think of the way we do planning), we are conceptually geared to understand "beginning and end" as being human in a universe that has cycles, sequences of seasons, sequences of times of life, and so forth. Unless we're prepared to give up linearity as being useful at all, we are welcoming an endless, sideways drift through our experiences in Internet technology.

Yes, rudderless fiction, rudderless narratives, the postmodern pastiche of self-invented 'self'–all of it mimics an extreme individualism gone awry. Will you speak to the loss of communitarian, Canadian culture, as you and Maude Barlow wrote about in the "Homogenization of Education"?

It seems to me that virtually everything having to do with computer technology is explicitly or indirectly contributing to a kind of individualism. There's a cable company here trying to sell a new television package and they have big plans to deliver the Internet over the television. They are selling their package as: "Me TV." Perfect, don't you think? We could endlessly personalize the kind of news we want, what kind of information we want, and if we actually interact with others, they will be people who tend to be more or less indistinguishable from ourselves in terms of their opinions. People can seek out people who, for some totally inexplicable reason, really care about Jerry Seinfield. In contrast, it is hard to imagine, especially without all the hype, that if you were interacting with your next-door neighbor, or if you were at a parent meeting at the

> Whoever controls which information and points of view will be considered pertinent, and which will be marginalized, controls public thought and private action. In the debate over public education, the terms of the discourse (as the academics like to say) have been set. We may talk about who has power, but not about who profits. We may talk about measuring outcomes, but not about assessing effects. We may talk about what is illegal, but not about what is unjust."
>
> –Heather-jane Robertson
> *No More Teachers, No More Books*

school, or in any other conversation with real people, that you could possibly sustain a conversation about Seinfield within that diverse group for very long. These Internet opportunities give us the chance to indulge the ways in which we are peculiar in ways that make it seem as if we aren't peculiar. There are over 200 sites on the Internet where anyone can discuss orchid raising. I wonder, what kind of life are we to have?

You write that " public sentiment is the only real barrier to privatization. . . .That teachers can be delegislated, underfunded, disempowered, school boards can be eliminated, kids have no political voice, parents are too disorganized and friends of the public good can be distracted and demoralized, but the public opinion itself still matters." How do you see working best with public opinion in all these matters?

Public opinion matters, more or less, every four years. As long as we have something resembling elections, then rulers cannot be utterly disinterested in public opinion. They can't afford that yet. On the other hand, increasingly, you can ignore it for three years, then court it in the fourth and you're okay.

How does one, like yourself, shape public opinion about education, and create a critical base to evaluate what is going on?

It's been demonstrated that in the short term, and superficially, you can bring the public "on side" and you can get them to pay attention for a little while if there is a crisis. In that very short term, you can change public opinion. Whether anyone can move public sentiment to the point it actually comes to understand the role education plays in a democratic society remains to be seen. I have no idea whether it can be done or not, but I have to believe it can. I have to behave as if it's possible even if I don't know exactly how to do it, or I'd go absolutely crazy. Giving people the tools to see the connections across all that is going on and to gain insight into motives doesn't, by itself, change public opinion. It does, presumably, give people who think of themselves as leaders the ammunition they need to affect public opinion. If information alone changed the world, I wouldn't have much of an argument about the Internet. I'm pretty clear information isn't the solution.

You've quoted Neil Postman's wonderful question in your book, "What is the problem to which more information is the solution?"

Yes, why have libraries languished all these years without people pounding down the doors demanding access to information? I mean it's very interesting when you think about it!

There's a weird fascination. Haven't you spent an hour in the Internet and said, "Shit! I went in there looking for X and I haven't found anything vaguely resembling it, and now I'm way over here, and, my god, it's a quarter past four already?" Practically everybody does that. It does seem as if our ordinary capacity to use and control our time goes on a holiday when we sit down in front of those things. I have to wonder where these experiences fit in Maslow's hierarchy? What are we taking care of when we're doing that? It's both about the 'self' and it's also about 'losing the self.' It is self-less in the sense that an hour or a couple of hours can go by and you've lost parallel tracks of other things–including what deadline you were trying to meet that sent you in there in the first place, right?

How do you explain the wide prioritization given to computers in schools, often at the expense of art, music, salaries and so forth, which ushers in the corporate presence?

There are multiple possibilities. One, as I try to point out, is that we're set up for it because we have a long history of infatuation with technology, with the desire to have something magic to solve our problems. We believed technology is a solution even before the industry started marketing it to us. What I discovered, and wrote about in *No More Teachers, No More Books*, is the money connection. Wasn't the tie between Silicon Valley/Hollywood and Bill Clinton's election campaign pretty interesting!? We are quite eager to have quick, clean fixes sold to us and those selling it are absolutely shameless. Politicians get to look like they're "doing something" by talking about technology because it's "the future."

Then, technology is such an expensive item that people are prepared to hold their noses and start the privatization process. It guarantees, for people who are determined to destroy public education, that public schools will always be judged as inadequate because they will never be able to afford the latest technology. A performance/acquisition bar is created that public education can never hope to jump. Technology suits everybody at once: those for whom public education's failure is an attractive business opportunity and those for whom little public space fits their grand ideological plan. Charter schools are sort of in that category, too. Whether you're on the McWorld side, or the Jihad-tribalism side, technology fits perfectly. You can totally control what kids experience if you can control their technology, or people think they can. You can have the ultimate Mormon curriculum or whatever else you're looking for. There are so many agendas going that are well-suited to more technology, except, of course, the interests of kids.

Is it your sense that few people connect education to community and democracy?

I don't think many do, or, if they do, only in very selective ways. Part of the problem is that the language of privatization has created education as a "service" which belongs to current parents of students and possibly students, but students are scarcely mentioned, and the public forgets the fact that we used to publicly govern it and we still publicly fund it. Somehow, the only legitimate voices about what should be going on in the schools are this year's crop of parents. Once we've accepted education as a problem for a certain group, a

"California Educational Technology Initiative Update, May 1998"

In a major development for the proposed public-private California higher education "partnership," CETI–the California Education Technology Initiative–the *Los Angeles Times* (April 17, pages D1, D5) reported: "Microsoft Dropped From University Partnership." After hearing several criticisms concerning this kind of arrangement, and seeing the continuation of Bill Gates' legal problems surrounding charges of monopolistic practices against Microsoft, the article stated that the California State University (CSU) system decided the "political costs" exceeded the benefits of continued participation by Microsoft. In addition, another proposed partner, Hughes Electronics, was also dropped since it, along with Microsoft, did not want to make the necessary financial investment in the deal.

However, as soon as the Microsoft and Hughes announcement was made, new CSU Chancellor, Charles B. Reed, announced that the CETI deal was still on with the other two proposed partners, GTE and Fujitsu, and that he was looking for yet new partners. Reed also indicated that he would seek further arrangements with Microsoft to purchase their computer products, although apparently apart from CETI considerations.

Where does the departure of Microsoft and Hughes leave us? Actually, in a similar place as before the announced departures, although with fewer public relations–and possibly legal–problems for the CSU administration. The major issues of CETI remain unresolved: how will CETI be financed, how much debt burden will the California State University system eventually bear, who will teach the courses and under what employment and financial arrangements, who owns the intellectual property rights to educational products such as lectures and class materials especially as they become part of much larger Distance, or Distributed, Learning (DL) schemes, the extent to which DL classes will finance the CETI operation, the extent of financing CETI from other sources of income such as selling of specific corporate products–including computer hardware, software, and telephone lines–to hundreds of thousands of CSU students, faculty, and alumni, the extent to which students will be pressured into taking DL classes to finance CETI, and the extent to which professors will be pressured to teach by DL classes with large enrollments so as to ensure enough "customers" for the corporate products?

All of these questions remain unanswered as the CETI deal continues unfolding. Yet all of these questions are currently just as essential to answer–and get the right answers from the standpoint of faculty, students, staff, and campus administrators–as they were when Microsoft was in the deal. The departure of Microsoft simply makes it easier to complete a CETI-type deal, but all the problems still need to be adequately resolved, or the entire venture should be abandoned.

A CETI Legislative Mandate?

Amidst the reassessment of CETI and the dropping out of Microsoft and Hughes, a bill now being considered in the California Legislature, Assembly Bill (AB) 2431, comes close to mandating both distance learning as a major instrument of California public higher education, and "public-private partnerships" like CETI. With a bi-partisanship of the bill's authors, and with the bill receiving early committee support, a contradictory scenario could occur whereby CETI would die a suitable death, yet schemes like it could be legislatively mandated! Most people in California, even many officials, do not know this bill is going smoothly through the legislature, as if there had been no public debate over CETI and distance learning, even though these topics have been the center of attention in such major publications as the *Los Angeles Times* and *The Chronicle of Higher Education*.

> It seems that, in effect, the proposed partnership would commercialize higher education, allowing profit motives, rather than pedagogical ones, to drive university policies regarding curriculum and employment. It is unnerving. . . .
>
> –James Wood
>
> "In California, a Dangerous Deal with Technology Companies" from *The Chronicle of Higher Education*, Feb. 20, 1998.

What does all of this mean? If passed by the Legislature and signed by the Governor, distance learning and public-private partnerships will be essentially institutionalized for California public higher education. It is one thing to have this kind of education and partnerships available should universities and colleges want to use them; but quite another matter to have them legally mandated. For those who disagree with this kind of mandate, especially without public debate over a law such as AB 2431, it is not too late to oppose the bill. Both the California Legislature and Governor can still be contacted with regard to criticisms of AB 2431.

Critical commentators of AB 2431 need not be confined to California residents. Given California's "leadership role"–for good or for ill–on issues of higher education, stretching from the 1960 Master Plan for Higher Education to one early 1990s budget-cutting strategy of attempted widespread departmental eliminations, California's higher educational policies are widely watched and often implemented throughout the United States as well as in other countries. Thus, any California legislation mandating distance learning and public-private partnerships between universities and large-scale corporations could serve as a model for other states to adopt, pointing to the potential national significance of AB 2431. So, for those who feel this kind of legislation does not represent the preferred direction for California and American higher education, now is the time to actively oppose it.

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Since 1992, Wood has been actively involved in supporting higher education against its many attacks. He has dealt with the California Legislature on behalf of SDSU and CSU, worked widely with television, radio, and newspaper media. His article regarding CETI, titled "In California, a Dangerous Deal With Technology Companies," appeared in the February 20, 1998 issue of The Chronicle of Higher Education.

He is the author of several books, including The Sources of American Student Activism; Sociology: Traditional and Radical Perspectives; and Social Movements: Development, Participation, and Dynamics.

For more information on AB 2431 call the Assembly Clerk's office at 916.445.3614; or, to express your opinion, write your district's assemblyperson.

education, who will teach the people to think for themselves? If Bill Gates owns our education, where do we get the Maya Angelous, the Betty Friedans and the Noam Chomskys? We The People must implement a vision of education that empowers the student and respects and honors the professor. We must implement a vision of education that challenges the student to think for herself, and provides the means for the student to critically question any dominant paradigm. We must change the face of education from the binary corporate agenda to a human face hungry for knowledge.

Stanley Aronowitz sums it up well in his article, "The New Corporate University": "At the heart of the fight for independent public colleges and universities is the insistence that education and culture matter. Universities remain the only site where anything approaching an education is possible, if not probable. They must be torn from their ever-narrowing instrumental justification. Education should encourage people to think further than their jobs. . . higher education must be viewed as a mode of life for people of all ages. . . .In short, the best argument for independent, mass, higher education is to create a critical citizenry, provide specialized training for jobs that really require it, and disseminate an intellectual and artistic culture. The term culture must be broadened to reflect an international perspective and the diversity of the U.S. population, and for this reason would be controversial for the austerity- and instrumentally minded. If the words sound strange to the American ear so does any radical idea." (Aronowitz, 35)

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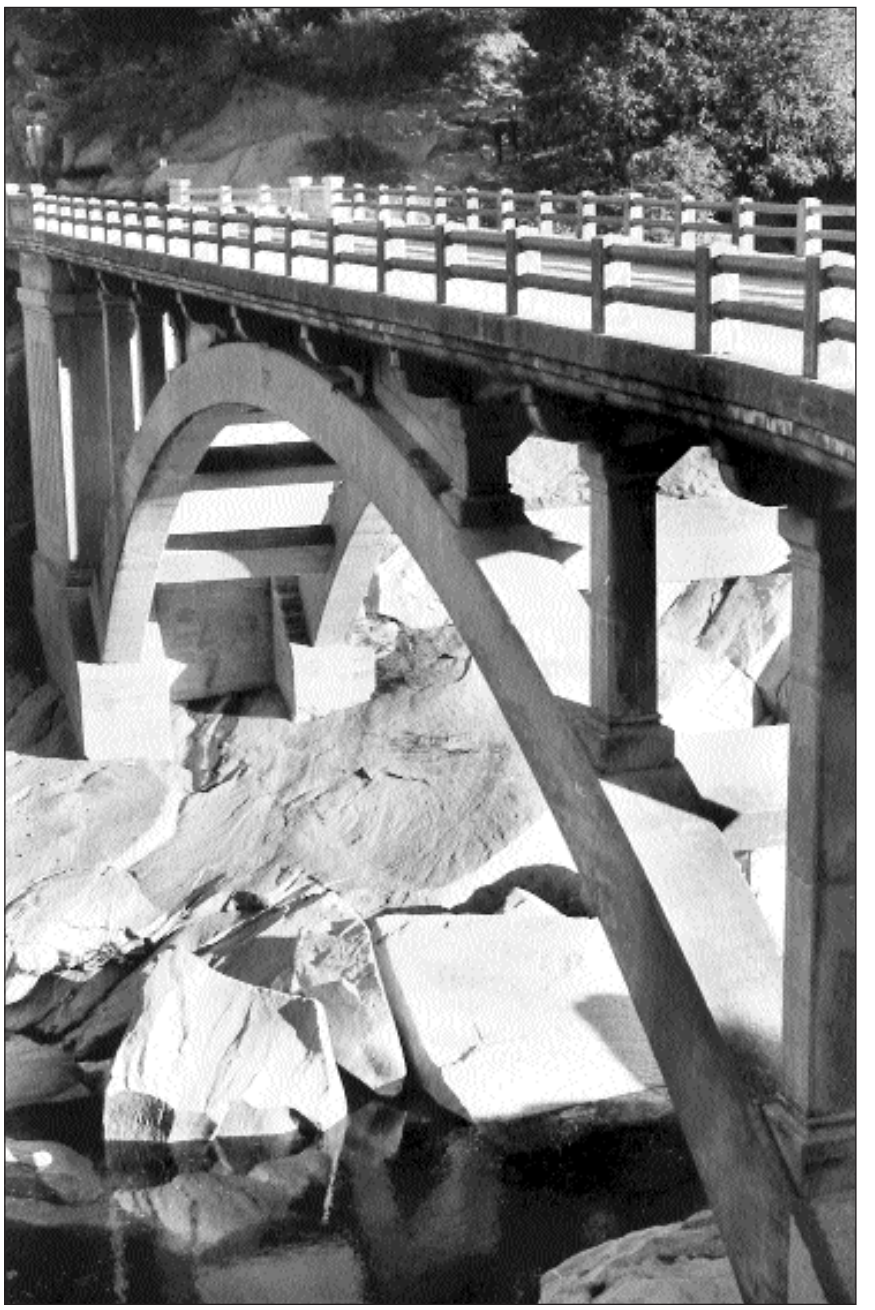

MOLLY GOOD

ROBERTSON CONTINUED

whole lot of people are let off the hook.

It's interesting to compare the problem of education to health care because there are still enough people around who remember what privatized health care was like in Canada, and know public health care is here by choice and requires protection. Nobody remembers ever *not having* public education. There is no big country next to us that doesn't have it–although most Canadians have no idea the extent to which privatized education has moved into the States. We've never had private universities in Canada, and we're getting them now for the first time. I suspect most Canadians don't know that many American universities are private. They don't see public education as vulnerable in the same way as health care; meanwhile, we're constantly encouraged to be concerned about health care.

There's a vulnerable, big link between what kids learn, or more importantly, what they don't learn, and what kind of citizens they will be, what kind of quality of life we will have collectively. It's very,very easy to lose that connection.

Where do you place hope?

I believe the only moral thing to do when faced with the abyss is to believe it can be stepped across–not because I have concluded rationally that a bridge can be built, but because it is absolutely immoral to give up. I'm very pessimistic. Somebody said, "Just because it's unthinkable, doesn't mean it's unlikely." It is unthinkable we would gradually sell off bits of our schools, and more importantly, bits of our kids to the highest bidder, but I don't see many things interrupting that flow. It seems to me the most probable outcome will be a Micro-World High. It's not quite inevitable, but it's likelier than anything else I can come up with. I keep asking, are we unconscious or unconscionable?

What of a radical shift in values and ethics toward an ecological worldview, one which provided the terms for vigorous, sustainable lives in relation to others?

Teachers may embrace a new ethic, but I don't think they'll start it. The classroom is, at best, manufactured in an artificial world and is embedded with all kinds of hierarchies that are not responsive to such a worldview. Until there is, outside schools, a rethinking towards some kind of harmony, a final acceptance that a society economically based on endless growth is insane, just completely insane, I don't know that we can expect that of the schools. In terms of degrees of freedom, the values of schools can, at best, run 10 to 15 percent apart from the dominant ideology. Now, if the outside world shifts, the schools will too, I think, and once they have permission to make that shift it could be fairly profound.

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"Education for Sale. . .Sold?"

I see in the near future a crisis approaching that unnerves me and causes me to tremble for the safety of my country. Corporations have been enthroned, an era of corruption will follow, and the money-power of the country will endeavor to prolong its reign by working upon the prejudices of the people until the wealth is aggregated in a few hands and the Republic is destroyed.

– Abraham Lincoln

In September of 1997, students at Humboldt State University discovered that the California State University system (CSU) and four transnational corporations (TNCs) were forming a partnership plan to provide a "technology refresh" to California's State University system of 23 campuses. Named the California Education Technology Initiative, or CETI, the partnership plan had been formulated four years prior to public notice in a back room deal between former California State University chancellor, Barry Munitz (known by many for his role in the S&L scandals), CSU's Board of Trustees, and CSU's campus presidents. During these four years, students, staff, and faculty were kept uninformed through exclusion, confidentiality agreements and secrecy. Not only were those who would be most directly affected by this decision kept in the dark, but so too those who would fund it, the tax-payers, and those who would determine its constitutionality, the California State Legislature. Further, the CETI deal between corporate interests and CSU, the largest public university system in the world, presented a precedent-setting contract for privatization of the public sector.

The rationale for CETI came from a perceived practical dilemma of California's population projections with increasing student enrollment, outdated technology, and weakening public funding. CSU administrators were called together under the auspices of such a "crisis in education" and formulated a responsive initiative coined "Tidal Wave II," requiring an Integrated Technology Strategy (ITS), or "technology refresh." Insofar as the $300 million required for the initial technology upgrade was too hefty a price tag for tax-payers, the problem and solution were both perceived as best met by the CETI proposal. By design, CETI would act as a father corporation, incorporating the CSU system within a team of transnational corporations. The "GTE Team," chosen by the CSU to fulfill this role, originally consisted of GTE, Microsoft, Fujitsu and Hughes Electronics. It would provide all 23 CSU campuses with the entire technological market: from Microsoft software, to Fujitsu computers, to hook-ups system wide through GTE phone lines and Hughes satellite systems. The GTE Team would provide approximately $300 million to CSU for no immediate fee to cover the cost of the initial system upgrade. In return, The GTE Team would expect an annual monetary payback of interest and maintenance costs, access to CSU logos for advertising purposes, and access to campus buildings for training, advertising and selling purposes. Yet, perhaps the most valuable asset for the GTE Team is the would-be "preferred access" to a market of approximately 340,000 students and 36,000 faculty and staff on the 23 campuses in the CSU system, all of which could be expected to turnover and grow with increasing population numbers and off-campus, 'distance-learner' demands.

As a note, generating new corporate tax-dollars for the state budget and education spending are considered out of the question as Governor Pete Wilson is doing his best to keep TNCs in the state by continually lowering, not raising, corporate taxes. So where does the CSU go? Corporations. Microsoft, Hughes, GTE, and Fujitsu. Only one of these corporations resides in California, the rest are out of town money-makers in search of action. Although CETI has not yet passed, and Microsoft and Hughes have since pulled out of the deal (April 1998), it has brought the trend of the privatization and commercialization of public education to an entirely new dimension.

Monopoly? Alarmingly, the implications of CETI for students, teachers and California taxpayers do not differ from the devastating consequences of other TNC/public education "partnerships," except, perhaps in magnitude. Clearly, CETI is a symptom of increasing transnational corporate dominion and control over all aspects of our society. We must ask: Do we participate in a society ruled by an inhuman structure, or will we change the face of education as we have rewritten history, and reclaim our sovereignty?

CETI is a perfect example of how Adam Smith's "invisible hand of the market place" is strangling education and free thought. Universities and elementary schools across the globe are becoming bastions of what we call "laissez-faire, neo-liberal, corporate theology." Without active, public criticsm and without a strong student movement promoting free-thought in opposition to corporations, many administrators frequently conclude, "If we can't beat corporations, join them." Commercial development and exploitation of public education through privatization by legalized "partnerships," automation, commercialization, and entrepreneurialization follow as easily as does corporate curricula and job training per corporate need. In the study of globalization, we find these fundamental shifts in power and direction are common themes. As schools face budget crunches and administrations continue belt-tightening, corporations rush to fill the void, to "rescue" the university while paying less taxes, lobbying extensively, and claiming the domain of "public good" for their own.

Rob Inerfeld asks a few key questions that must be debated and dialogued. "How much authority should we give to corporations to make decisions that affect our lives and communities? What role should students play in campus curriculum, investment and purchasing decisions? What alternatives are there to working for big corporations? How can we make our universities democratic? Why is an increasing amount of research being done for corporations? How is this preventing the original purpose of our universities? How is this related to tuition increases?" (Inerfeld, 8) Although we cannot answer all of these questions, following are insights on the privatization of education and the effects on the kind and quality of education.

To begin, we will look at the arranged marriages between corporations and universities which are made digestible to the general public through the use of positive, domestic language–and corporate, legal terminology–of "partnership." As Bernie Froese-Germain and Marita Moll point out, partnerships can take diverse forms such as School-to-work programs, private companies running schools on a for-profit basis, a "matching" of businesses with schools, commercial ventures with schools, education-related foundations, school-related fundraising, school sponsorships of charities and non-profit organizations with commercial implications, business-related involvement and curricula development, and the privatized management of publicly funded schools and their administration. (Froese-Germain, 1)

These "partnerships" are caused by several contributing and self-reinforcing factors. First, the continuing decline of government funding for education opens the door to a corporate model of production of education through a customized work force, curriculum development and product-profit control, all of which calls for a technology transfer. Second, an increasing focus on computer-to-student ratios–with most universities and elementary schools, including the CSU, aiming at a ratio of ten students to one computer–amplifies a new state of "need" for which computers become only the "tip of the infrastuctural iceberg."

Yet no concrete evidence exists which proves that

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"We are part of a group of 10-15 Humboldt State University students learning, teaching and working toward a fundamental change in education and the distribution of power in our society. We currently call ourselves the CETI Task Force, and actively oppose the California Education Technology Initiative and all other threats of transnational corporation (TNC) domination over our education, our society, and the education and societies of future generations."

We are continuing many projects and much research over the summer, as well as planning events for next year. We are looking for volunteer and funding support. If you are interested in providing either, or in obtaining more information, please email Michelle Kowsari, Trevor Hammons and Scott Brusaschetti at th6@axe.humboldt.edu any time."

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"technology transfers" actually lead to better 'prepared' or 'more educated' students. (Froese-Germain, 6) And, the Newspeak terminology of "partnership" is equally illusory. According to Erika Shaker, "The very terminology implies that both parties are on equal footing, and that any disparity in power can be corrected simply by calling this relationship a "partnership." Further, as partnerships are by nature ethical, all such partnerships are portrayed as beneficial, win-win situations to the public. But it is this power balance–or lack of it–which must be more closely examined in determining whether we are talking about real partnerships at all, or an entirely different kind of relationship." (Shaker, 18) It becomes obvious that this is not an equal relationship as corporations do not share a corresponding sense of risk or insecurity, and usually maintain the skewed balance of power on their behalf.

The CSU/CETI deal provides an enlightening example of how successful administrators aggressively support university-industry ties and partnerships. The former vice-president of MAXXAM corporation, Dr. Barry Munitz gave birth to the concept of CETI and did his best to have CETI quietly implemented before his retirement as chancellor to become CEO of the Getty Trust. Not surprisingly, CETI floundered when students and faculty found out about it, took action, and brought it to the attention of the California State Legislature where it was found unconstitutional on six separate accounts. Munitz provides one of the most extreme, but not unusual, examples of the economic natures of university chancellors, Board of Trustee members, administration, and campus presidents, many of whom supplement six-figure salaries by sitting on boards of directors of the very same corporations in relationship to the university. Indeed, as Barry Munitz writes in an essay, "Managing Transformation in an Age of Social Triage:" "Radical changes are occurring that will fundamentally alter the nature of the university and the governance model we have followed for the past three centuries. Not only are we testing the basic assumptions, we are also transforming traditional concepts of leadership expectations and management processes." (Munitz, 26)

In other words, the most efficient and profitable way to run a university is to run it like a corporation. Munitz and other corporate players readily proclaim, with little or no proof, that taxpayers are disappointed by the failure of the public education structure. Therefore, they claim, efficiency must be improved in order to give taxpayers their money's worth. Corporate leaders and university trustees use the perceived differences between public and private educational institutions to justify desperate moves toward the corporate privatization of public education.

In the new global order, and justified by the manic logic of global capitalism, public institutions of the welfare state are seen as 'free'–therefore worthless and valueless–as well as 'non-competitive' and therefore without quality. In contrast, private institutions are seen as competitive, cutting edge, full of capital value and quantity, as well as capable of meeting market demands. In the commercialized education industry, students and children are termed "clients," students and parents are termed "customers," and teachers and professors are termed "front line service providers." (Shaker, 15)

The "education crisis," or the claim that there is one, becomes the fundamental justification for the commercialization of education. This crisis, manifested or not, is necessary to prove that schools are "failing" and corporate involvement is the only form of rescue. However, this "non-analysis" approach removes from question whether or not education needs repair, or, if so, alternate solutions. Ironically, despite the rhetoric of serving society's needs, the budget crunches and belt-tightening that lead to corporate sponsorships are, in fact, cutting fundamental social programs such as multicultural, women's, and environmental studies, as well as adult education and child-care, through the corporate model of downsizing.

Commercializing the university is closely tied to the redefining of knowledge. Information becomes a commodity that can be bought and sold like any other product. This also implies that the quality of education goes up with the amount of money one is willing, or able, to pay. As academia's primary function becomes productivity, a complete overhaul of the university takes place to fit the corporate model. Expenditures are broken down into "essentials," or profit-making investments, and "non-essentials," or non-profit and non-revenue generating programs and people, regardless of social, cultural, or ethical importance. The new terminology heard in educational reform, "standards, knowledge, accountability, efficiency, competition and productivity" are not value-free. (Shaker, 19) Students of all ages are being deeply entrenched in corporate philosophy and values. As Erika Shaker asks, "What are the implications if all students are held accountable for not only the same information, but also the same interpretation of that information?" (Shaker, 18)

Technology transfer is itself a process of commercializing schools as corporations mold partnerships and deals with administrators in return for infrastructure, software, and money. There is an increasing pressure on states to commercialize education, primarily around the issue of technology transfer. According to Lawrence Soley, "Under this cozy arrangement, students, faculty, and universities serve the interests of corporations, not the public, as they sell off academic freedom and intellectual independence." (Soley, 40). In other words, corporations are in it for themselves. Student tuition and tax dollars go directly through research and development into the pockets of corporations that put down much less money, then own the patents.

It is important to note that this is not about improving the quality of education, this is about making money. According to David Noble in his article "Digital Diploma Mills," in reference to the commodification of instruction, "As in other industries, the technology is being deployed by management primarily to discipline, deskill, and displace labor." (Noble, 5) The main avenue is putting faculty and courses "on-line," whereby administrators have an increasing control of courseware. On-line classes are subject to "administrative scrutiny, supervision, regimentation, discipline, and censorship." Meanwhile, schools can hire less- skilled, cheaper laborers to deliver prepackaged "techno-courses." As a result, faculty become redundant, obsolete, and are laid-off, leaving their work behind with little or no compensation for it. This is all seen as the 'natural' development of capitalism and technology, an evolution toward 'cybereducation.' Ironic as it may seem, the byproduct of this "evolution" is that while students are studying their courses, their courses are studying them. Many virtual universities have disclaimers on their courses stating that information a student reveals in their class can be used for commercial purposes. Courses become courseware, instruction becomes software. As education becomes "the focus industry," replacing the healthcare industry, the education market may soon be dominated by Education Maintenance Organizations, or EMOs. (Noble, 3)

This brings us to a polarized struggle. On one side we have students and faculty fighting for the integrity of education. On the other side we have the creators and promoters of the multiversity (Multiversity refers to the concern that, with TNC involvement, a university will become a privileged business, focusing on corporate goals and ideals). The foremost promoters of multiversity are vendors of network hardware, software, and content; corporate training advocates; university administrations; and technozealots. Noble calls this struggle, "the classroom vs. the boardroom" for obvious reasons. Ironically, the justification for these corporate think tanks and promoters lay in the argument that privatization was "student driven," despite the fact that students are its strongest opposition. We believe Noble accurately reflects the primary fear of opposing students when he says, "Quality higher education will not disappear entirely, but will soon become the exclusive pre-

serve of the privileged, available only to the children of the rich and powerful." (Noble, 8) The rest of us will be left with the 'service university,' a routinized form of higher education that will be harmonized to the lowest educational standards and will be constantly measuring the worth in labor of its students, faculty, and staff. Thus we have the difference between education and training. To be educated is to be challenged to develop one's own thoughts, to be offered the skills to critically question the dominant paradigms, and to be given unlimited access to knowledge that enhances our minds and skills for our own use. Training offers the knowledge needed to enhance our minds and skills for the use of someone else, and teaches us never to question the rules of the dominant paradigm.

Not only are schools being privatized, commercialized, and automated, they are also being entrepreneurialized. They are becoming industrialized corporations themselves. Austerity, market demands and the service of those demands, rerouting campus finances, and direct commercialization are all contributing factors. CETI plays a very important role in the realm of globalization as well. It is the largest effort toward privatizing a university system in history, with CSU the largest public university in the world. Yet, perhaps even more important is that the CSU is in California–a place with the tendency to spread its actions to the rest of the world. In other words, if it happens here, it can happen anywhere.

As knowledge has been commodified globally, so has education. NAFTA has opened doors for TNCs, especially American Multinationals, to invade Canada's and Mexico's elementary schools and universities through economic influence. Mexico is especially susceptible to this form of mal-development. "Education investors are now looking at the $700 billion North American education market, instead of using nationally-specific figures because national boundaries no longer matter much in the discussion of investment, standards, or (global) workplace expectations." (Shaker, 19) Tellingly, The Asian Pacific Economic Conference (APEC) human resources development committee views "the primary value of education as economic development. Thus, as education becomes an exportable commodity, and trade barriers are eliminated, there has been a movement toward the aggressive selling-off of educational resources and services." (Kuehn, 13)

This is the triumph of the global marketplace for only a few. The rest of the world's inhabitants not profiting, but in actuality paying for it, suffer the brunt of increasing inequalities between the haves and the have-nots. This is the development of a two-tier system in education and in wealth on a global scale. Quality education will only be affordable to a few while the rest of the world will have to be content with training as employees for TNCs. Another heavy toll is the steady erosion of the welfare state and the social programs it provides. Finally, as Larry Kuehn states, "Education moves toward an exclusive focus on developing human resources for the economy and away from the goals of personal development and social responsibility." (Kuehn, 13) In other words, education and many other social programs are being harmonized, globally, to the least common denominator. In the new "Global Academy" capital looks to universities, in particular, to restore management, profits, productivity, and competition.

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As many citizens of the US are learning the hard way, through job loss and exportation, workers across the world are equally capable of manufacturing and producing commodities for our culture of consumerism.

For example, the University of Microsoft's graduates in India are equally qualified as engineers and programmers as Americans, but they are cheaper, and therefore more profitable to the corporations that educate them. However, as William Greider points out in his book *One World, Ready or Not*, as less people have purchasing power, due to unemployment and lower wages, and as we produce more commodities then ever, less people have the resources to consume them. Where will these commodities be sold if the educated work force, historically associated with higher wages, cannot afford to sustain global capitals manic production?

On the other hand, the privatization of education is not inevitable. Within the CSU system proactive responses of a rare combination of students, faculty, and staff has been surprisingly successful in deterring CETI. When we and other student and faculty organizations brought CETI to the attention of the California Legislative Committee, it was found to be unconstitutional. In April, two of the four corporations, Microsoft and Hughes Communications, withdrew from the "partnership." The official reason is telling enough. They claim that the CSU wanted more money than they were willing to invest. Yet, Barry Munitz' successor, Charles Reed, has vowed to continue the negotiation process and find new corporate partners, stating that those opposed to TNC money in California higher education had best "get used to it."

Student activism and mutual awareness-raising are, as we see it, the first steps in resisting and rethinking education's current crisis of corporate infiltration. Ovetz claims, "To call someone a student is to accuse them of defeat, of being reduced to a one-dimensional unwaged worker preparing for a life of work." (Ovetz, 144) We need to reclaim the definition of "student" as a life-long learner that benefits society as a whole, not a self-concerned automated corporate servant. Ovetz continues, "We often hear complaints that the majority of students are apathetic, passive, and even conservative because they are not joining. . . student movements. However, we cannot confuse the lack of participation in a movement with the absence of resistance. . .The power of a student movement(s) lies in the ability of students to recognize that there is not one way to resist and begin to make links between those that exist." (Ovetz, 143) Thus we need to "articulate alliances" and network with each other, which includes the understandably reluctant faculty and staff; to resist, and perhaps even revolutionize, the system that is being built to reduce and repress us. We must fight for our independence, which, as history has shown, will not be given to us otherwise. We must rethink and redefine our roles and language, and we must reclaim our culture from corporations that would like to patent it. Students, faculty and staff must demand the accountability of presidents, administrators, Board of Trustee members, and chancellors of their universities. Citizens and parents must remove corporate propaganda and advertisements, such as Channel One, from childrens elementary schools and classrooms. We must rewrite our schools charters and make them democratic institutions. We must weigh the costs and benefits of corporate sponsorships, and ask, how does this benefit education, and who does it benefit, Qui Bono? Corporations are not human and do not deserve the same rights and privileges; but, all of this needs to be understood and acknowledged by, We The People. If corporations rule

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