The Enemy Within

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As in the case with most wars, the end of the Persian Gulf war marks a new beginning with new approaches to old political problems, new diplomatic alliances, new economic challenges, and in this particular instance, the pursuit of what President Bush calls the New World Order. The end of war also brings with it a turn inward as the major combatants put down their weapons and rebuild or direct their energies toward pressing domestic concerns. In the case of the United States, the president has already articulated a wide-ranging domestic agenda from crime control to the environment to transportation to education.

The shift in emphasis from foreign policy and defense to domestic issues has taken on a special character as the speedy and complete victory over Iraq has emboldened political leaders and enhanced the confidence of the American people. The country is filled with the sentiment that by winning the war in the Gulf, we now have the chance to achieve similar victories here at home. The current logic is that if we can outfit our soldiers with $23,000 night vision goggles, we surely can provide our grade schoolers with $2,500 computers; if we can rebuild Kuwait City, we can rebuild our inner cities; and if we can spend $500 million a day on liberating a distant country, then we can spend an equal amount liberating this country from infant mortality, homelessness, and AIDS.

Unfortunately, war-related euphoria almost always collapses into the realities of the domestic scene as the energy, sense of mission, and bravado of military conflict dissipates amid the tangled web of partisan politics, endless debates over priorities, and the intricate patchwork of problems that have many solutions. We quickly come to realize that it is far easier to defeat Hussein than it is to defeat illiteracy or clean up the environment or bring an end to the scourge of drugs.

The question thus becomes, how do we transfer the enormous national will that surfaced during and after the Persian Gulf war to the sea of domestic problems that in many respects are more a threat to our national security than the territorial designs of a Middle Eastern bully? One answer may be that this country has to begin to think in terms of domestic wars and domestic enemies. One need only remember that in the 1950s the Russian Sputnik pushed Americans into a frenzy of science and engineering education in order to meet the Soviet threat. We clearly defined the education of our youth as something akin to the training of soldiers ready to do battle with their counterparts in the Soviet Union. We set goals, marshalled resources, brought competing constituencies together, and, most importantly, got excited about solving a pressing social problem.

But in 1991 who is the enemy, where is the war, who are the domestic Norman Schwartzkopfs? The most troublesome facet of post-Persian Gulf America is that we will have all this excitement and confidence and goodwill and do nothing because we are unwilling to recognize what the comic strip character Pogo did - the enemy is us.

While this may seem a dismal evaluation of America during the heyday of good feeling, there are many opportunities to transfer a military victory into domestic victories. One critical element is good leadership. What America needs now more than anything is leaders at all levels who are able to equate domestic problems on the same level with war and point out the national security threats from ignorance, social decay, violence, and inequality. It would be a shame for those brave men and women returning from the Gulf to a grateful nation only to find months later that we saved a far-away country, but were unable or unwilling to save our own.
The “desert storm” has passed, but the Middle East remains suspended in the vortex of turbulent changes engendered by global and regional pressures. Stemming from the region’s historical geopolitical significance, global pressures in the form of Western involvement have stimulated rapid economic development, irreversible social changes and unstable political modernization, transforming the Middle East in uneven and unpredictable ways. Even while attempting to advance the prosperity of their peoples, Middle Eastern nations have sought to preserve their individual cultural identities in the face of relentless external pressures and the fundamental changes they have wrought. In the process, their social fabric and body politic have been riven with deep-seated tensions.

The headline-grabbing crises sparked by Iraq’s reckless invasion and annexation of Kuwait sharply underscored the explosive volatility of these deeper tensions in contemporary Middle East. The riveting “Nintendo” pyrotechnics of the ensuing Gulf War and the astonishing incompetence of the huge Iraqi military, armed to the teeth with some of today’s most sophisticated weaponry, sharply illustrated the dangers and paradoxes inherent in the clash between modern technology and archaic cultures. Although not unique to the Middle East, but grossly misunderstood in the West, the deeper tensions in the region result from the encounter of societies organized around traditional religious beliefs with the relentless encroachment of a secular global culture, from the class, religious, and ethnic divisions that typically emerge in societies undergoing economic development and political modernization, and from the dynamism of mass political participation and the rigidity of authoritarian political institutions. Like all historical transformations, the profound social, economic, and political changes and the tensions they produce offer both challenges and opportunities to the region’s leaders and peoples.

By international standards, the level of social and economic development in the Middle East is modest. Relative to the region’s low socioeconomic level in 1960, however, economic growth and social development (especially health and education) have been impressive in the three decades since. According to the World Bank, Gross Domestic Product (GDP) for the region averaged an annual growth rate of about 5%. In the 1970s, the rate of GDP growth for Saudi Arabia and Iraq averaged an astounding 10% and 11%, respectively. More significantly, economic prosperity fueled popular expectations of increased job opportunities and improved living standards, to which all governments in the region responded by substantially expanding the service sector. Overall, the brisk pace of economic development doubled per capita incomes since 1960.

Economic success in the Middle East has not been without its problems, however. Coinciding with the onset of world-wide recession in the early 1980s, economic growth began to slow measurably due to a combination of factors. Inflationary pressures created by the rapid development of the previous decade shrank national and individual earnings in real terms. For non-oil producers, debt-service ratio increased as their demands for imports continued unabated. For OPEC countries, oil revenues shrank in real terms because of the reduced value of the dollar, the currency in which oil payments were made. Energy conservation measures in industrialized countries reduced demand for OPEC oil, while the entry of Britain, Norway, Mexico, and the Soviet Union into the world oil market further cut into OPEC oil revenues. Finally, conflict within OPEC over pricing and cheating by members on production quotas undermined the cartel’s monopoly over the world oil market. In 1986, the market crashed, as world oil prices plummeted from $35-a-barrel in 1981 to $20-a-barrel in 1986. This was most dramatically evident in the precipitous drop in Saudi Arabia’s oil revenues from $113 billion in 1981 to $19 billion in 1986.

Economic prosperity also created deep social divisions and explosive political tensions which were now intensified by the economic slowdown. Across the
region, economic slowdown not only dashed expectations of continued good fortune raised by the prosperity, but also exposed the uneven benefits it bestowed. The oil-rich Gulf states, for instance, enjoy one of the world’s highest living standards which cannot be matched anywhere in the region. This has become a special source of seething discontent in the region’s less fortunate countries, where the rich conservative rulers of the Gulf states are viewed as violating the Koranic injunction concerning the responsibility of the rich to share their wealth. Additionally, these countries have not only been directly hit by the recession, but have also witnessed a sharp drop in valuable foreign remittances from their citizens working in the Gulf states, because these states have retrenched the large expatriate labor force in response to the same region-wide recession. Saddam Hussein readily exploited this discontent, as he sought to give his invasion of Kuwait an aura of populist Pan-Arab legitimacy.

Within individual countries, economic prosperity improved health care, increasing life expectancy. But the limited success of family planning programs in Egypt, Tunisia, Turkey, and Morocco and their total failure in other countries of the region have contributed to rapid population growth, vitiating any sustained benefits of economic prosperity for the people. Moreover, the shift from agriculture to manufacturing and industry encouraged massive rural-to-urban migration, swelling the population of cities. More dangerously, the teeming urban populations, hurt by the recession-induced cutbacks in government consumer subsidies, have become readily susceptible to violent political mobilization by the growing numbers of both religious and secular extremist groups. One such group assassinated Egyptian President Anwar Sadat in October of 1981. Others, financially backed by Libya, Syria, Iran, or Iraq, and even by local merchants hurt by the cut-backs in consumer subsidies and channeling money to them through the tightly-knit informal networks of the bazaars, have constructed elaborate infrastructures, providing social services and economic support to the alienated urban masses. In Palestinian refugee camps in Lebanon, for example, extremist groups have established secular and religious schools for children, literacy classes for adults, vocational training for unemployed youth, as well as extensive but informal financial networks which channel credit and capital for business enterprises. Popular political support for extremist groups in the Middle East is thus rooted neither in the supposed fanaticism of these groups nor in the ostensible irrationality of those who support them. Instead, it stems logically and rationally from the precarious material conditions and harsh realities of daily existence fostered by the abject failure of Western-supported authoritarian regimes in the region to even recognize the need for, much less secure, a semblance of distributive justice in the face of impressive macroeconomic development and overall prosperity.

Reinforcing the social inequities that spawn political extremism are the class divisions fostered by state-led strategies of economic development. As elsewhere, these strategies have been the key to economic prosperity in the Middle East. But also as elsewhere, they have proven to be a double-edged sword. On the one hand, state-led growth policies created new social classes — an urban working-class dependent exclusively on wage labor, a sizable lower-middle class of traders, shopkeepers, and other self-employed entrepreneurs engaged in low capital-intensive enterprises with small profit margins, and a rapidly growing educated middle class comprised of government bureaucrats, professionals, and big businessmen and industrialists often closely allied to Western multinational corporations — who perceive their long-term prosperity tied to the continuation of these policies. On the other hand, the structural imbalances inherent in economic development undermined the legitimacy of state-led growth policies. In particular, the private sector and allied middle-class groups now saw their futures threatened by the continuation of these policies under regimes becoming increasingly authoritarian in the face of growing discontent among the lower- and lower-middle classes. These political pressures, combined with the 1980s’ recession and the demands by Western donors (e.g. the United States) and lending agencies (e.g. the International Monetary Fund) for structural adjustment, have forced Middle Eastern states to institute infitah (economic liberation). Entailing a general move from planned to a market economy, shift of investment resources from the urban to the rural sector and from the public to the private sector, increased foreign investments and production for exports instead of domestic consumption, infitah hurts all groups, but those in the lower socioeconomic ladder more than others. This unequal impact of economic liberalization has accentuated sharp income and lifestyle differences and intensified class antagonisms.

Religion and ethnicity also fragment Middle Eastern societies. However, religious and ethnic conflicts in the region, as anywhere, are not immutably rooted in visible differences in language, behavior, and lifestyles. These characteristics define the social boundaries separating groups engaged in competition and identify the political criteria on which status and resources are to be allocated. For instance, Palestinians are Arabs, and there are Christian as well as Muslim Palestinians. But the consolidation of a separate Palestinian ethnic identity
occurred as a result of their inferior social, economic, and political status in communities with which they came into contact throughout the Middle East. Also, religion and ethnicity interact with each other, and with class divisions, to create multiple identities. Which identity is invoked will depend on the social context of political conflict. For instance, Israeli law guarantees the rights of all citizens, but the law is applied differently for Arab and Jewish citizens. In the context of Arab-Jewish conflict, then, socially constructed ethnicity becomes the basis for applying the same law differently. In the context of Israeli politics, however, social bases of support for the major parties show the political relevance of the historical distinction between Ashkenazi and Sephardic Jews. The former, traditionally dominating Israeli social, economic, and political life, tend to vote for the liberal Labor Party. The latter, traditionally predominating in lower-middle classes, tend to vote for the conservative Likud Party. Sephardim, moreover, had more in common culturally with Palestinians who remained in Israel after 1948 than with the Ashkenazim with whom they shared little except their Jewish identity. Over the years, however, forced by the Ashkenazim’s negative stereotyping of all Arabs, Sephardim have made a concerted effort to differentiate themselves from the Palestinians. They have also moved up the socioeconomic ladder as Palestinians from the West Bank and Gaza have taken over the lowest of menial jobs in Israel. Finally, there is growing evidence that the recent influx of large numbers of Russian Jews, many of whom are middle-class professionals, may exacerbate class and ethnic divisions in Israel.

In the Middle East, as anywhere, class, ethnicity, and religion combine in complex and mutable ways to produce highly volatile social conditions in which multiple identities can propel political conflicts in unpredictable directions. And because most states in the region are run by authoritarian regimes (Turkey and Israel are the only liberal democracies, although Turkey has also experienced military rule), peaceful channels of political expressions are virtually nonexistent. Social conflicts legitimized in the idiom of religion and ethnicity inevitably explode into political violence, increasingly pushing the coping abilities of these regimes to the limit. In Iran in 1979, they exploded in a revolutionary upheaval which overthrew the Shah, bringing Ayatollah Khomeini’s Muslim fundamentalist regime to power. The Iranian revolution posed a dangerous challenge to both the politically and socially conservative regimes of the Persian Gulf and the politically conservative but socially progressive regimes elsewhere in the region. The former responded by repressing political dissent, especially after 1987 when Iranian pilgrims visiting Mecca for the hajj instigated violent demonstrations, and by creating the Gulf Cooperation Council to coordinate mutual security arrangements against revolutionary threats from Iran. Other regimes have responded by a combination of intensified repression (Syria and Iraq) and limited reform (Algeria, Egypt, and Jordan). The success of these strategies remains uncertain.

In general, the tension between social turmoil engendered by dashed expectations of continued prosperity and rigid political institutions unable to move things forward again makes all Middle Eastern governments vulnerable to popular disaffection. Some form of political liberalization to accompany the current wave of economic liberalization in the region seems almost certain. Labelling them as democratization is risky. Successful democratization requires sustained economic prosperity to satisfy the demands of newly-enfranchised groups. With a reported global shortage of investment capital, it is uncertain if Middle Eastern economies can grow fast enough to meet increased popular demands. Moreover, democracy requires a culture which tolerates diversity of views, including distasteful ones. No Middle Eastern country, not even Israel with its much-vaunted commitment to democratic values, comes even close to fostering such a culture, protestations from the region to the contrary notwithstanding. Further yet, democracy ultimately rests on the sanctity of individual rights, including the right of one individual to discriminate against another. Neither government nor people will tolerate such rights in a region where group identities supersede individual autonomy and political animosities run deep. The plight of the Kurds is tragically symptomatic of this. Absolutely no one in the region has come to their support. Finally, the push for liberalization in the Middle East, ostensibly being spearheaded by the historical carriers of liberal values, the secular Westernized middle-class, may yet turn out to be the most ironic of twists in Middle Eastern political development. Tentative steps toward political pluralism in Algeria, Egypt, and Jordan indicate that Muslim religious fundamentalists, for whom anything Western is anathema, will readily capitalize on the popular disaffection with inftah and insensitive Western-supported rulers to emerge victorious in the great game of democratic elections.

It may, therefore, behoove any would-be peacemakers, especially outsiders who scarcely understand the nuanced complexities of Middle Eastern societies, to heed carefully Princeton historian Charles Issawi’s apposite aphorism: “God sent Moses, and he couldn’t fix it; He sent Jesus, and he couldn’t fix it; He sent Muhammad, and he couldn’t fix it.”
Is There a Future for Science in a Scientific World?

by Catherine (Brennan) Lauwers, '76, and James Brennan, Department of Biology

A quick survey of local newspapers over a two-day period recently revealed five articles based on scientific advances or problems. Although such items could be read by average readers, they would certainly appeal more to those with a healthy interest in science and they surely would be better understood by those with current formal course work in science. The articles involved such concepts and terminology as “DNA, polymerase chain reaction, AIDS, alpha interferon, tumor necrosis factor, gene therapy, white blood cells, artificial insemination, fertilization clinics, weightlessness, basic research, microgravity, oncology, colon carcinoma, and cancer genetics.” Readers may be scared off by terms such as these and just stop reading. The vocabulary may even remind them of their old science textbooks. It has been estimated that there are more new words in a high school science textbook than a student learns in two years of a foreign language.

An atmosphere that is so heavily committed to and controlled by scientific activities demands that citizens, as well as their leaders, possess a healthy skepticism about scientific (and especially un-scientific) discoveries and pronouncements. It is important that observers, as well as practitioners, be aware of the scientific method of analysis. A foundation knowledge in a number of different disciplines is important, along with at least a limited vocabulary of commonly used terms.

Critical thinking, problem-solving, evaluation skills — these are the skills the layperson needs to participate knowledgeably in a rapidly changing world. There is probably some merit to the old idea that formal courses in the sciences may provide mental exercises to sharpen a student’s thinking ability. The traditional goal of providing exposure to a spectrum of recognized fields of study is also likely to carry some importance for a “complete” education. However, the real merit to studies in the sciences may lie in a more practical arena.

Our society is so strongly based in modern scientific advances that anyone who wishes to understand the many processes that have a direct effect on an individual’s life must have the ability to read and understand rudimentary scientific presentations. To form opinions on scientific advances and their utilization, not to mention making judgments about expenditures of tax money for scientific studies, each educated citizen must possess some ability to interpret the phenomena in question.

A plethora of recent reports and studies have decried the dismal level of scientific knowledge of today’s students. By the third grade, half of all U.S. students don’t want to take science anymore. By the eighth grade, 80% dislike science.

One report (National Assessment of Educational Progress) found that only 7% of 17-year-olds have the science skills necessary to perform well in college-level science classes. A report by the International Association for the Evaluation of Educational Achievement found that in a field of 13 countries, U.S. high school seniors having two years of physics ranked 9th, seniors in advanced chemistry ranked 11th, and in biology, the most popular science course in the United States, our students ranked last.

Is it any surprise then that only about 15% of American adults know that the Earth orbits the Sun in one year, or that 43% know that electrons are smaller than atoms, or that 37% know that dinosaurs lived before the earliest human beings? Is it surprising that astrology dictated the schedule of a president of the United States?

For the many reports identifying this “scientific illiteracy,” there are as many that propose to explain the causes of the education deficit.

In a speech delivered before the Council of Scientific Society Presidents, former Secretary of Education Lauro Cavazos listed five reasons for the lack of a solid foundation of science knowledge among students. For one thing, schools at all levels devote too little time to science. A second reason is that science presented in a science curriculum is fragmented and specialized rather than interdisciplinary. Third, the methods of instruction include too little “hands-on learning.” Fourth, textbooks don’t use relevant or applicable problems and examples. Finally, teachers aren’t appropriately prepared or qualified. Elementary teachers take too few science courses while in college and one out of two high school teachers is assigned at least one class outside his or her degree area.
More and more, educators and scientists alike are calling for a science curriculum that emphasizes the process or methodology of science rather than description and terminology. “Science education should emphasize ideas and thinking at the expense of specialized vocabulary and memorized procedures,” affirms a 1989 report by “Project 2061,” the American Association for the Advancement of Science’s taskforce charged with designing models for a national science curriculum.

So far Project 2061 has produced a survey of the needs of science education for the future without a new curriculum. The new curriculum is on the way, but the preparation is purposefully slow. The National Science Teachers Association has also mounted a massive attempt to produce a new curriculum that has already been tested in California. Their program is called “Scope, Sequence, and Coordination” and has received $8.6 million for implementation at five other centers.

Of course, there is a core bit of science — basic principles and laws — that students should learn and understand, but memorized facts can change. A first grader can tell his mother that Pluto is now closer to the sun than Neptune, even though she learned differently in college just ten years ago. Facts, scientific concepts, and the resulting technology can change rapidly.

The Department of Commerce has identified “emerging technologies” which are projected to have a total economic activity of about one trillion dollars by the year 2000. These technological frontiers include advanced materials, superconductors, advanced semiconduc-

tor devices, digital imaging technology, high-density data storage, high performance computing, optoelectronics, artificial intelligence, flexible computer-integrated manufacturing, sensor technol-

ogy, biotechnology, and medical devices and diagnostics.

Chemical warfare, amniocentesis, CAT scans, recycling efforts, Patriot missiles, FAX machines, pesticides on lawns, food additives, AIDS transmission, waste management — these are all issues that graduates of the seventies have had to face in the more than a decade since their last science class at Bridgewater State. Did their science classes in the sixties and seventies prepare them at a personal level to cope with these everyday contacts with science? Are these former students equipped with the knowledge and skills to consider, evaluate, and perhaps vote intelligently on issues regarding the environment, information processing, energy, space, drugs, defense systems, biotechnology? Did they receive the kind of education that insures understanding and thus support for technical progress?

Some of our graduates from the past who are now seasoned teachers are incredulous when they are told that the change occurred with the advent of a new set of general course requirements. With the installation of the requirement for two science courses in different disciplines (only one being a lab course), Elementary Education majors began to follow the same science course exposure as other non-science curricula.

If new teacher certification regulations are implemented for the Commonwealth, future teachers will be required to obtain a bachelor’s degree in a traditional liberal arts or sciences discipline. It is possible that such students will obtain degrees in science curricula that have barely one or two science courses more than the 1960s teachers had. These courses will be concentrated in a major discipline, rather than spread across several subject areas.
The wisdom of the new certification requirements seems to lie in the idea that it is blatantly ridiculous to attempt to teach students to teach subjects at any level if they do not have an in-depth exposure to the knowledge of the discipline.

An old axiom of educational technique states that "we teach as we were taught." Thus, it is difficult to see major changes in the material presented in scientific disciplines without major efforts to revise courses and curricula. Max Planck, a well-known physicist, said in his autobiography, "A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it."

In the thirties and forties, biology courses could present a survey of the whole science and demand that students commit most of it to memory. However, it is impossible to continue to present even a substantial core of biological conceptual knowledge in the 1990s. The field is overwhelming in terms of the amount of knowledge and we cannot continue to superimpose new knowledge on top of the traditional array of information for general courses.

Neither can we expect secondary schools to pick up all of the traditional subjects that must be left out, although that is clearly one way to provide broadened coverage. There is some justified concern that students will not select an adequate array of courses if left to pick their own in a college curriculum that does not specify required courses.

At Bridgewater, over the years the Biology curriculum has added new courses while dropping some traditional ones and making others optional that were formerly required. Some faculty worry that we are allowing students to leave without everything they need — and yet our course list has grown so long for future teachers that it is not reasonable to expect that a four-year stay will be long enough for a student to finish the program.

Now that curricular revision is under way at elementary and secondary levels, it is probably an inappropriate time to think about curricular revision at the college level as well.

This seems to be true for two reasons: (1) students will be coming to college with different science preparations and (2) future teachers will have to be prepared for the new techniques and approaches to science in the public schools.

Adjustments to the new world of science will be difficult for a traditional college like Bridgewater, but there can be little doubt that adjustments will be made during the next ten years. If a pattern is followed that can be predicted for the rest of the world, it is likely that greater changes in course and curricular structure will occur than we have seen in the last thirty years.

Science majors will be exposed to in-depth studies in concentrated areas, without an attempt to provide a broad survey of the field. While this seems to counter the need for preparation as an educated person who is adaptable to a number of different areas, it is not anathema to that goal. The fundamental techniques of the field will be learned and scientific principles will be developed through pursuit of model research projects. Solid, hands-on learning will be involved, while reading of current literature in the field will be required in an atmosphere of critical thinking and problem solving.

If the best approach possible is developed, each student will work closely with faculty each year in an interdisciplinary program that not only correlates studies in easily allied fields, but in more difficultly contrived patterns as well. With careful planning, biology courses can be integrated with arts, social sciences, and humanities. Weekly seminars with all four or five of a student's instructors could provide a true interdisciplinary experience and assessment of progress.

Non-science majors will also need more exposure to science, including in-depth studies along with a general approach to methods of study in science and the significance of such studies. Here, as with science majors, a coordinated and well-planned interdisciplinary effort will be essential for future graduates.

Maybe there will be no effort made to look forward to these changes, but if there is not, we are likely to find that the fears of the nation in regard to the demise of science are justified.

Bridgewater was well ahead of its time when Louis Carmel Steams introduced our first science course (Gardening I) into the Normal School curriculum in 1908. Over the years the reputation of strong science has been a part of the Bridgewater tradition. It is difficult to imagine that this tradition will not continue during the years to come.

If the past is a good predictor of the future, there will be significant changes in science education as the nation strives to maintain a position of educational excellence in a changing world. 
Advising in the 90s

by Barbara Apstein
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No less than yearbooks, old college catalogues provide a window on the past. Not too long ago, while engaged in one of my periodic efforts to create additional bookshelf space, I unearthed a Bridgewater State College catalogue from 1971, and, leafing through it, tried to imagine what the College had been like before anyone had heard of car phones, C.D. players, junk bonds, or yuppies.

The 1971 catalogue is less than half the size of its modern counterpart, but then, it seems that everything was smaller twenty years ago. Bridgewater in 1971 had 3,500 day students; this year there are 5,300. Tuition was $200 a year for Massachusetts residents. Girls favored mini-skirts and long, straight hair. Some of our most popular academic programs — Aviation, Management Science, Computer Science — didn’t yet exist.

Some of the changes are less obvious. For example, the 1971 catalogue has only a few sentences on counseling: “Each freshman is assigned to a faculty advisor. Additional guidance by a professional counselor may be arranged through the office of the Dean of Students.” In 1971, we thought that was adequate.

The 1990-91 catalogue devotes several pages to advising, and reveals a far more thoughtful and comprehensive approach. The creation of an Academic Advising Center marks the recognition that counseling is a full-time job which requires a professional staff: the current director is Tom Walsh, who works with associates Kirk Avery and Helena Santos as well as five faculty members. The Center focuses on the needs of the College’s most vulnerable population, the freshmen. Walsh and his staff examine the admissions folders of all incoming students, attempting to learn all they can from grades, test scores, recommendations, essays, and other data, in order to assure the best possible placement. For example, Julie, whose test scores suggest an outstanding mathematics aptitude but who is timid and hesitant, is encouraged to undertake calculus. Hector, whose high school record reveals a reading disability, is steered away from a program heavy in reading. Mark, who has a heavy work schedule, is advised to carry four courses rather than the standard five. The advisers are keenly aware that events occurring outside of school can have a powerful impact on academic performance, and occasionally they are in a position...
to intervene. For example, a faculty adviser was recently able to help arrange a student's relocation from a difficult home situation into the dorm.

The Advising Center has also embarked on some innovative projects, most notably the Accelerated Calculus Program. Director Walsh and Mathematics Professor Jean Prendergast were intrigued by the possibility that students could improve their performance in math by working in groups. A research study conducted at the University of California at Berkeley had addressed the question of why Asian students experience more academic success than members of other groups whose S.A.T. and other test scores are comparable. The Berkeley researchers discovered that, unlike the other groups, the Asians studied cooperatively. With the help of a FIPSE (Fund for the Improvement of Post-Secondary Education) grant from the U.S. government, Walsh and Prendergast enrolled 60 students from among those groups deemed especially likely to benefit from the cooperative approach — commuters and minorities. These students meet to work on calculus in groups of five for several hours each week. An instructor is present, but in a passive role; she intervenes only when the students themselves have reached an impasse and are unable to move ahead. The results of the Accelerated Calculus Program have been impressive. The participants enjoy working cooperatively; in addition, their grades not only in math but also in other subjects have increased by an average of one letter grade.

There are probably a variety of reasons for the increased emphasis on advising at the College in recent years. The pool of 18-year-old applicants has declined, making retention of students more important than it once was. Events of the past decade have shaken our confidence in the superiority of American education. Studies, reports, and task forces remind us almost daily that American children are less well-educated than their counterparts in other industrialized countries. If these young men and women are to achieve their full intellectual potential, it is clear that colleges must do more than offer a curriculum and assume that the students can do the rest on their own.

The increased time and energy the College has devoted to advising has clearly paid off. Ten years ago, 44% of Bridgewater's freshmen dropped out before the end of their first year. One can only imagine the boredom, frustration, and bitterness which that figure represents. With the advent of the Advising Center, however, the rate of attrition began to decline, and by the end of this year it is expected to be approximately 16%.
The Missing and the Mission

by William C. Levin
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It is Christmas time in a small town in mid-America during World War II. George Bailey (Jimmy Stewart played the character in Frank Capra’s now classic 1946 film *It’s a Wonderful Life*) has for years run the local savings and loan since his father’s death. He still hopes for the exotic and adventurous travel that he dreamed of when he was young, but now he is trapped by the responsibilities of his life. He has a wife and children, a large drafty house, and thousands of details to attend to in the operation of his business. But when an envelope full of cash intended for deposit is lost, the savings and loan is threatened and George Bailey sees his life coming to nothing. Despondent, he decides to jump into the river, only to be saved by his guardian angel, Clarence Odbody (played by Henry Travers). Clarence gets the clever idea of granting George Bailey’s wish “that I’d never been born.” Together they tour the town seeing what it would be like if George had never lived to influence the lives of others.

Sometimes we are called upon to justify ourselves, to evaluate how we have spent the time and breath given us. I have been thinking about these things because recently we took it upon ourselves at Bridgewater to do the institutional equivalent of a life review in our evaluation of the college’s mission. Perhaps the celebration of our 150th year as an institution of higher learning has brought on the institutional equivalent of a mid-life crisis. But even without this significant marker in our history Bridgewater would be reviewing its mission, for as anyone who has been conscious during the last few years knows, conditions in the Commonwealth have been changing so rapidly and profoundly that we all are forced to take stock.

Be assured that no institution can have taken more seriously than we have the need to examine what it has done in the past, and can and ought to do in the future. We have tried to cumulate the story and statistics of Bridgewater’s history and accomplishments, knowing the result would fill volumes, but that it could never tell the whole story of the life of this place. On the other end of the scale of detail, we are refining our mission statement. It is a demanding project because it is limited to a compact and carefully crafted few sentences designed to make clear precisely how we value education, preparation for life and careers, and the needs of our region and the wider communities to which we are responsible.

In addition we sponsored and hosted a two-day national conference sponsored by Bridgewater State and the American Association of State Colleges and Universities in which the only subject was the missions of colleges like ours. Experts from around the country made presentations and led workshops on shaping and fulfilling mission, and our own administrators, staff, and faculty were central to the process. A book summarizing the work of the conference will be published. Clearly we are taking seriously the task of defining our mission.

Having taken part in much of this effort, I cannot escape the feeling, however, that there is still a place for what I would like to call “Odbody’s technique for life review.” What would the region look like if Bridgewater State College had not been here? We could begin by citing the data for the increased earnings rates and tax payments generated by our graduates, the high percent of them who stay in the area to work and raise families, and the provision of educated citizens who attract businesses to the Commonwealth and bring knowledge and responsible citizenship to local communities. These are true, but to me, less compelling than the individual stories of the difference Bridgewater has made. Let me sketch a few for you, and though I identify them by first name, each stands for many others whose experiences they share.
This year I had a visit from Jean, a former student who attended Bridgewater in the early 1970s. She was the first in her family to attend college and, like many Bridgewater students, worked summer and part-time jobs to pay for her education. She took five years (including some evening courses) to finish, but graduated with honors and now is in charge of a state housing program. She also told me about a friend of hers who graduated the same year and manages a nursing home for a large company. Neither woman had been raised with the idea that she would get to go to college, nor a sense of herself as competent in administration or business. Would either have gotten where they are today if Bridgewater had not been available? They say no.

Another student who I have gotten to know well over the years, Robert, has become a wonderful high school teacher, and has sent many of his best students on to Bridgewater to learn to be teachers. Would the community he teaches in have one less excellent teacher now without Bridgewater? Everyone in his family had previously gone to work in a local factory. He knows the value of the work they do, but this is a man who says he was born to teach. He claims that without Bridgewater he would not have a job about which he is so passionate.

Lastly, there is Maureen, a woman I interviewed recently for a study of "non-traditional" students at Bridgewater. Just after high school she got married and worked in a medical lab (a job she hated) while her husband finished college. When they got divorced the children were in their early teens. She wanted to prepare herself to do something for the rest of her life that she would look forward to in the morning, rather than dread. Since she pieced together enough support from her ex-husband, family, and part-time work to go to Bridgewater, it should be no surprise that she would insist on getting nothing but "As." This would have been unlikely without a Bridgewater nearby. I am as convinced of it as she is.

You will have to take my word for the fact that I could go on and on like this, and my colleagues could take over when I ran out of stories. The process of evaluating the mission of the college is as frustrating as trying to make sense of one's life. We have been here so long and done so many things. But when I think of Bridgewater as the sum total of the difference we have made, then our mission can be told in the thousands of stories like the one Frank Capra told for George Bailey. I hope they all get told by the people for whom Bridgewater has made a difference.
Charles Fanning
Irish-American Scholar

Charles Fanning of Bridgewater’s English Department is a man on a mission. An Irish-American scholar with five books to his credit and numerous published articles and papers, Fanning has spent his professional life exploring and explaining the literary contributions of the Irish who settled in the United States.

Fanning’s work on the Irish experience in America has been both a joy and a struggle. While he is excited and proud of his scholarly accomplishment, Fanning is also saddened by the prejudice shown toward the work of Irish-American writers. For example, Fanning points out that the writings of James T. Farrell of *Studs Lonigan* fame have been long overlooked by the American literary establishment and in some cases vilified by Anglophile New York critics who relegated Farrell’s work to the level of dime store novels.

To counteract the injustice done to Irish-American writers, Fanning recently published *The Irish Voice in America: Irish-American Fiction from the 1760s to the 1980s* (University of Kentucky Press) which is the culmination of eleven years of research tracing the numerous strands of writing by the Irish in America. As Fanning proudly states, Irish-American literature is the largest body of ethnic writing in this country, yet Fanning adds with some sorrow that to most Americans, even second and third generation Irish in the United States, this writing is largely unknown and under-appreciated.

Fanning describes his work as part of a renewal of interest in Irish culture in the United States, a renewal designed to replace harsh stereotypes with pride. Today there are numerous signs that Fanning is not alone in his attempt to revive Irish culture in America. Irish step-dancing, courses in the Gaelic language, and historically-informed concern for the so-called “troubles” in Northern Ireland, point to a revival of Irishness in this country.

Charles Fanning takes pride in the role Bridgewater State College has played in the Irish revival. Fanning notes that Professor Vincent Gannon of the Music Department taught one of the first Irish literature courses on an American college campus years before Boston College and others began develop-
ing programs about the Irish experience. Even today, Fanning and his colleague in the English Department, Maureen Connelly, offer one of very few two-semester course sequences on Irish literature in New England.

Yet for all the success Fanning has had advancing the cause of Irish and Irish-American literature, he continues to see the persistence of traditional stereotypes. Contemporary examples of Irish-bashing include a recent cartoon in a local paper showing a beer-guzzling Irishman with a shamrock on his shirt and the children's animated movie An American Tail presenting the Irish (mouse) immigrant as a corrupt politician. Moreover, Fanning is also disappointed in the general apathy of many college students with Irish-American backgrounds who seem unconcerned by negative stereotypes and in some cases eagerly advance those stereotypes.

Fanning, however, is most critical of fellow authors such as Mary Gordon who in her highly praised novel, Final Payments, continues the Irish-bashing by filling her book with drunken priests, repressed pietistic spinsters, and neighborhoods of malcontents and right-wing yahoos. In Fanning's view, the work of authors like Gordon reflects a new wave of anti-Irish writers and critics who seem bent on continuing to present the Irish in a negative light.

But while there is much to be concerned about in terms of anti-Irish writing, Fanning is quick to point out that not all of the recent writing on the Irish is in the Gordon mold. Contemporary Irish-American writers such as Elizabeth Cullinan, Thomas Flanagan, Maureen Howard, and William Kennedy are favorites of Fanning. In novels about the Albany Irish such as the famous Ironweed, Kennedy uniquely combines earthy realism and poetic vision, and Flanagan's Year of the French is one of the great historical novels of our time.

Although writers like these win Fanning's praise, the real literary hero is this unsung scholar from the English Department. Charles Fanning has made an invaluable contribution to Irish-American heritage. By presenting the proud tradition of Irish writers in America, Charles Fanning is certain to receive the recognition of his academic peers and the gratitude of the Irish-American community. Bridgewater is indeed fortunate to call him one of its own.
Turning fifty proved to be anti-cathartic. Nothing happened. My fear was that life would just get flatter and grayer. There was little left to do but turn inward. When my attention engaged in reflection, the truth that slowly emerged was how much ambition had been generated into the outer world by me and people like me. My notion of my own actions had been blurred. Rather than simply being in it, I was truly of it. My voice had been raised in the realms of the world, the flesh, and the spirit. Above all, I wanted to be heard. Then something shut down at fifty. It was as if one of the soldiers in the armies of Arnold’s “Dover Beach” suddenly laid down his arms. The rest of them seemed to keep on fighting, but to me came the realization that only by retreating from the fray could I cease being controlled by it.

Many learn to drop out long before half-a-hundred years old, but those of us gifted with a voice are tempted to keep on talking. After all, it was in the word that life was born, and now that we see it clearer, we think we can make it re-born, not so much in our own image, but one we had handed to us from one noble thinker or another. I, like many articulate ones, spoke my hand-me-down theories from pride. Then came anger that no one was listening, envy that others instead were heard, despair things would not be shaped as they ought, greed for an opportunity, and, inevitably, gluttony and luxury to assuage failure. This observation is not a confession but a simple explanation of why the anti-climax of life’s pirouette after five decades caused hardly a stir. At fifty, I no longer hope to speak conclusively, possibly because after that many years of being passionately of it, the repetitive, fated quality of the debate is obvious.

Looking back, I wondered how my life came to be as it is. In John of the Cross’s Dark Night of the Soul is an answer. Four concepts shape the individual and must be calmed before one can be quiet. They are: fear, grief, joy, and hope.

Fear may strike a chord to those born in or near 1940, the year before Pearl Harbor, as I was. First came the Holocaust and soon the Bomb. Both of them blitzed me from the newsreels when I was a child. What sticks especially are those haggard souls staggering out of liberated death camps in black and white images moving across the screen. The message that came with them was that they can do anything to you—anything—and, in turn, make you do exactly what they desire. We simple children wanted to howl our disbelief and outrage. Later on some did, but to what avail? The Nazis were only one evil in a century whose dance is death. Wars, rumors of wars, and plagues have characterized my fifty years. The serial killer is definitive of something in human nature in my time.

My generation’s reaction to our fear was multiple, with the existential philosophy, hatred of our rock of despair, holding sway in the 1950s. No values became the value. The next decade flirted with self denial and Orientalism, as if to say: you cannot hurt me; I already have obliterated myself. What followed was yet again another war. The fears unleashed in the twentieth century scrambled our thoughts. Outside of technological advances, what have we contributed that is not beholden to, or claimed by authority from Freud, Marx, and Darwin, the great warriors from the past century.

My ethnic background also comes under fear. Whether in the melting pot of old, or the cultural diversity of the new, my people got opportunity, but not respect. In college, my sociology teacher once called me to her office and, when I told her I was second generation, defined for me what I was and what I could and could not do. There have been walls and ceilings ever since. When I looked for work in academics, I received blatant comments on my name, and my wife was once turned down for a job by her alma mater because I was both Italian and Catholic. The fear is of being ashamed. I was sent out to make peace with a society from which, in some ways, my family was set apart. It was a partial success. The worst of it is that I have little patience with those who refuse to learn English and use it well. I sometimes feel as cold as the ice that greeted me. No one in America has been taught to be guilty about the early ethnic groups, and I don’t feel guilty about the later ones either.
By grief, John’s second concept, I mean loss of the splendid self-love which comes from something still yearned for yet irretrievably gone. It is a shiny feeling and warms me, but it is also essentially dramatic with little real power. It comes both in and out of one’s personal darkness, and is lost, except for the memory powerful enough to recall and hold the new voices of entitlements at bay. Believe it or not, even at fifty, I am essentially happy and do not much grieve. St. Paul said the past is all garbage anyhow.

That leaves joy and hope, two seemingly odd gifts to dismiss from one’s life before coming to rest in the God whose perfect love casts out fear. Joy means excitement, what lifted me up. John’s point is that only in aridity can God mold, otherwise the proud self, bewailing its ailments and singing its joys, wriggles free from His firm hand and is lost in its own confusions. It is a hard lesson, but then what has gone up in my fifty years has inevitably come down, and vice versa, as one assumes it does for all people. The batterings of happiness and misery must be rebuffed before the soul can come to rest. I once prayed with some friends who lived on the street. They were pretty much unafraid and did not grieve over the past. What did they want? Peace of mind. Amen to that.

To find hope in John’s list was a shock. When all else fails, there is always hope. But John of the Cross, whom I dub Cross John, declares this, too, must go. At first I gave John’s foursome a quick look and rushed on. John, however, is not just another granola guru to wile away the time with magical obscurities. He is hard. So is life at fifty when it’s flat, especially when you’ve done everything you were taught to, judged not, put yourself in other people’s shoes, given way to the braying hordes that insist you do so, and come to find there are no rewards. What you really have done is repeat history and recapitulate Original Sin, particularly if in the back of your head is the hope that I, the grand exalted and now separated-from-the-rest-of-them I, is eager to live as he chooses, finally. Such a hope is a snare founded in pride and followed in sequence by the rest of the seven deadly sins. Everything goes round and round, so that at fifty it appears as if nothing has meaning. Nothing does until one is removed from the battle. I only wish to tell what experience was at a key point in my life, not to sermonize. I doubt my thoughts and feelings are original. It is commonplace that men and women feel taken aback at fifty. A simple reason is that fifty is enough; there is nothing new under the sun. Perhaps at this age, we conclude we have done our best and ought to see at least a sliver of the great light. If the moment of this turning is allowed to restrict us, or if we can only continue by the delusion we are still nifty at fifty, we have lost an opportunity. My effort is to describe my experience of the moment. What will develop from it is unknown to me.

Still there is the lovely admonition of Ecclesiastes to “enjoy yourself with the wife of your youth.” That one I try to live up to, possibly because the wife of my youth is my last best flesh and blood guru. I did seek counsel of a spiritual adviser recently, and he, God love him, told me: “Jung said it’s all outer ‘till fifty, then all inner.” Another formula. What else I do specifically is unimportant. Abstractly I try to pick up the cross laid down for me. What exactly that is, I am not yet sure. I think it is the Cross of sin (the wages of death), not so much my sin but the sin of those I see stumbling. St. Paul put it thusly: “I fill up in my flesh what is still lacking in regard to Christ’s afflictions, for the sake of his body, which is the Church.” In order to carry that burden, I suppose God has been weeding out my fears, vanities, excitements, and false hopes. I most likely will have to stop figuring and simply be whatever I am. I will have to stop trying to be better than I am.

What this acceptance will mean for me is to be ordinary. Maybe seeing the blaze of one’s commonness is the beginning of the loss of self which prefigures agreement with the divine. At least it feels that way in my spirit at fifty, shut down on various passions and newly aware of old truths.
Reducing Waste Products in Electroplating

The surfaces of many common metals are often coated with a very thin layer of a “precious” metal, creating an attractive and rust-proof product. Examples of such products range from the proverbial “silver spoon” to sophisticated coatings on computer components. The process of electroplating involves the passage of controlled electricity through a solution of the metal (silver, gold, platinum, etc.) which forms a uniform coating on the object. Unfortunately, electroplating processes also generate chemical waste products which must be treated properly or disposed of legally in a landfill. Dr. Vahé Marganian and graduate student Russell Haschke of the Department of Chemistry are investigating the nature of such waste products. Plating baths tend to build up impurities in them as they are used. In time, the bath must be disposed since the level of impurities exceeds health and safety standards. Specifically, the Marganian-Haschke team are investigating such impurities in the electrodeposition of nickel from nickel sulfamate solutions. Low-level concentrations of impurities are being studied by such techniques as Ion Chromatography, Ultraviolet-Visible, Infrared, and Atomic Emission Spectroscopy. Such investigations lead to a more fundamental understanding of the formation of impurities, the extension of the lifetime of nickel-plating baths, and the reduction of hazardous waste products.

Toward a Theory of Drama

Contemporary literary theory is one of several interests of English Department Professor Jadwiga Smith. Smith’s point of departure is the work of European philosopher and literary critic Roman Ingarden on the intersubjective structure of artistic objects. Ingarden argued that all literary works have a common structure or skeleton on the basis of which individual readers build their interpretations. He opposed such contemporary theories as deconstruction, which claims that there is no common ground in interpretation between author and reader and that consequently each reader has total freedom of literary interpretation. Prof. Smith’s latest book, *The Aesthetics of Roman Ingarden: Toward a Theory of Drama*, is a theoretical inquiry into the essence of stage plays. How much of the common skeleton which Ingarden postulated is present for every reader or viewer? Smith argues that plays possess four levels or strata, each one essential and all four interdependent. The first element is sound, without which a play becomes pantomime. Second are the larger units, words and sentences, which begin to generate meaning. Smith’s third element is “aspects,” what the work gives the viewers as the basis for the concretization of the object, which occurs on the fourth and final stratum, “represented objects,” the fullest version of the play.