Journal of the
Union Faculty Forum

A Publication of the
Union University Faculty Forum

Vol. 24
Fall, 2004
Faculty Forum President's Letter

While Union remains a teaching liberal arts university, one reason that Union has developed and maintained a reputation for high academic quality is because our faculty are developing into and setting the standard as teacher-scholars. The Journal of the Union Faculty Forum or JUFF is produced under the able leadership of Roger Stanley and is one means of sampling the rich variety of research and creative work produced by your colleagues. I encourage you to read this issue and consider submitting some of your work for inclusion in next year's JUFF.

Just as these faculty contribute to our stellar academic reputation, you can also contribute to Union's reputation through your participation in Faculty Forum. The Forum serves as a vital link of communication between faculty and the administration, but more importantly it is a means for faculty to discuss common concerns and make recommendations about ways to improve the University. This year the Forum is making a special effort to study honors, tenure, faculty structure and governance, and health care. The other officers and I invite you to participate and bring your knowledge, experiences, insights, and abilities to these and other important discussions.

Please join Bill Nance (Vice President), Julie Glosson (Secretary), Roger Stanley (JUFF editor) and me as we work to make Union University Excellence-Driven, Christ-Centered, People-Focused and Future-Directed.

[Signature]
A Word from the Editor

In comparing this year’s publication with the 2003 incarnation of JUFF, I am struck by the active role which scientists and writing faculty obviously have with regard to in-house publication. Though two of last year’s contributors have left Union either permanently or temporarily (Glenn Marsch for Pennsylvania and Jenny Brooks White for motherhood), it’s good to see colleagues Salazar and Fant stepping up in these respective academic areas with contributions. JUFF misses poetry this year, and we encourage submissions in that realm; you may not know that faculty from the School of Business as well as the obvious folks from our English Department have published verse here in the past. While no Christian Studies professor graces the current issue (two were featured in 2003), I am heartened to have already received one potential article for JUFF 2005—and it was from a theologian. Similarly, dean Tom Rosebrough takes the lead from his faculty member Carrie Whaley (2003) by being included this year; his article has another tie-in with last year’s selections, as it shares with James Huggins’ past contribution a genesis in the faculty scholarship series.

Come with us in these pages as Gene Fant travels abroad—not with students in this case, but with his family as he relives the historical horrors of the mid-twentieth century. Yet he does this in an engaging, anecdotal style reminiscent of his fine work for the Jackson Sun. For the first time since becoming editor, I put myself on the line with the bookend article—another travel piece of a sort, this time to our own past-haunted American South. The article was originally commissioned for (but never used by) the Unionite, so I offer it here to close out the issue.

In-between there are two articles which certainly prolong the historical motif, though one is not by a historian per se. Judy LeForge engages the Volunteer State’s history of lottery implementation to shed light on what might be the possible pitfalls of our latest manifestation of this phenomenon, as voted into existence recently. Tom Rosebrough then uses a similar historical lens to track the theory and pragmatics of pedagogy as exemplified in the dynamic eighteenth century, offering valid comparisons with today’s educational methods.

Our final two contributors submitted multiple articles to us, and it was hard to pick because each is so competent in his/her field. Michael Salazar has had one recent acceptance by a refereed journal, but I chose “Molecular Dynamics . . .” for its relative accessibility to non-scientists and wish him well with its consideration for yet another journal. Melissa Moore knows, I am convinced, most all there is to know about children’s writing (she even will give the phrase “kiddie lit” a pass most days), and I hope to be able to publish an updated version of her second submission in 2005 or beyond.

Thanks to Marjorie Richard in College Services (indeed the whole team there), to Provost Carla Sanderson, and to the Center for Faculty Development. Readers—trustees, administrators, and most of all fellow faculty—enjoy.

Roger Stanley
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My Birthday Epiphany

by Gene Fant

I spent my fortieth birthday in the Nazi work camp at Flossenbürg, Germany, near the Czech Republic border. I am not ninety, though; I am barely forty, for that day was the summer of 2003, when my family and I walked in silence through the gates of the camp to wander among the monuments and the levels of death.

Most of the camp has been cleared, but the barracks are still there, as is the oven building. The camp surrounds a staggered-level granite quarry, and a beautiful garden has been planted all around the grounds. Across the pit, I could see the only other visitors at the camp, an elderly couple.

Around the upper rim, a guard tower has been converted into a chapel steeple, a few yards down from the Jewish prayer house. At the center of the quarry’s floor is a huge mound of human ashes. Next to it is the “death triangle” where prisoners were shot by firing squads. Near the oven is a wooden ramp used to shove the bodies into the oven, saving both time and effort. As I walked, I thought many times of Dietrich Bonhoeffer, the theologian who wrote The Cost of Discipleship and the most famous casualty of the camp’s last few days.

Near the oven, my wife said, “What a contrast with Neuschwanstein.” Two days previously we had visited King Ludwig II’s fairy tale castle (the inspiration for Walt Disney’s “Cinderella” castle). The village where it’s located was packed with tourists from all over the world. We paid to park, we paid to use the restroom, and we paid for souvenirs. We had to purchase tickets for the tour well in advance, receiving an assigned time for our tour. We then had to climb a fairly steep hill to reach the castle gates and wait for our turn to enter.

To call the castle “splendid” is a tremendous understatement: the view of the Alpine lake and valley below, the magnificent artwork in each chamber, the fairy bridge over the gorge. Each turn of a corner took our breath away.

There were at least a half dozen languages being spoken around me, but I think all of them could be translated as, basically, “Wow! What would it be like if I were the king (or queen) and this were my castle?”

As I walked through Flossenbürg, I never once thought, “What would it be like if I were a doomed prisoner in this camp?” There were no lines of tourists, no turnstiles, no fees to park. For most of the afternoon, I felt as though I were in a forgotten corner of the world. Since that afternoon, as I’ve read newspapers and watched the news, I’ve often felt as though Flossenbürg has become a forgotten page of history.

Jewish wisdom teaches, “Thou shalt love thy neighbor as thyself” (Leviticus 19:18), which Christ Himself reiterated in the Gospels as a part of the greatest commandment for His followers. What a tremendous ethical observation that is, one that is echoed by numerous ethical systems throughout the world: govern yourselves as though you and those around you are one and the same.

How arrogant are we humans to walk through a castle and imagine ourselves as royalty? How foolish we are to walk through a concentration camp and imagine that those “poor people” were not really like us. At Flossenbürg, the prisoners were not all
Jews; some were intellectuals (like me) and Christians (like me) and sons (like me) and brothers (like me) and fathers (like me). They were individual persons, not massed, faceless groups.

As Ellie Wiesel has reminded us, six million Jews were not killed in the Holocaust; rather, a single Jew was killed by a single German six million times. Wiesel’s reminder, though, condemns humanity, not just Germany, because most people throughout history could substitute their own group’s label for that of “Jew” and another group’s label for that of “German.” My own ancestors, both Irish and American Indian, certainly could have inserted their names in that first blank. All of humanity is blood-bound by suffering and oppression.

Most of the prisoners at Flossenbürg were young and healthy, so I’m told, since it was a work camp and not a death camp. “Only” thirty percent of its prisoners died while interred there. I now wonder how many prisoners spent their fortieth birthdays there, lugging rocks and bodies while wondering whether they would see birthday forty-one. I ate pizza for lunch that day, chatting with our Tunisian waiter about world events. I went to bed that night having kissed my children goodnight. My evening prayers of thanks have never been more heartfelt.

While my family walked around Flossenbürg, the elderly couple approached us in front of the monument to the dead of Poland. She pointed to my five-year-old twins and said in broken English: “You teach them. This never happen again.” I could barely keep from crying as I saw the earnestness on her face and wondered what personal story she might tell about the camp.

Since I’m a professor, I’ve taken to heart those words, “you teach them.” Higher education, especially in the West, strains against a strong tendency toward elitism. Let’s face it: less than one percent of the world’s population holds a terminal degree. As a professor, I am among the educated elite. My ivory tower is not unlike Ludwig’s fantastic castle. I live at ease, in comfort. However, the moment when I forget that I am human, and that I am like the woman at the shelter or the man in the turban, is the moment when I have forgotten what I have learned about history. Such forgetfulness is what allows persecutions to continue happening over and over again, with people like me turning blind eyes and backs.

I teach world literature each semester, and this fall I’ve found a renewed passion for the place that course should hold in a true liberal education. In our literatures, we are confronted with the shared humanity of each individual person in this world. We all love and mourn, laugh and weep. We all have stories to tell, and in those stories we should be led to see each woman as a daughter, a sister, or a mother; each man as a son, a brother, or a father. As a neighbor. As myself.

So that it will never happen again.
Historical Overview of Lotteries in Tennessee

by Judy LeForge

On November 5, 2002, Tennesseans decided by constitutional referendum to allow a lottery in the state. According to the approved referendum, the legislature is to determine how the state lottery will be implemented and administered. As Tennesseans are affected by this action, perhaps it is instructive to review the Volunteer State’s past experience with lotteries.

Then, as now, the lure of instant wealth was attractive to Tennesseans. Lotteries actually arrived in Tennessee before its statehood in 1796. The state’s first recorded lottery occurred in 1787 when Tennessee was still a part of North Carolina. Proceeds from it were used for “cutting a way from the south end of Clinch Mountain to Bean’s Lick.” By 1888, historian James Phelan wrote that in early Tennessee, lotteries “were as common as church festivals of the present day.”

There were three types of lotteries: (1) private, (2) quasi-public, and (3) public. A private lottery was one offered for private gain without any government control. This kind of lottery was primarily used by individuals to dispose of property. Compared to an auction or direct sale, disposing of private property by means of a lottery usually effected a greater return. Consequently, early newspapers were filled with private lottery advertisements. One man advertised a lottery in Nashville’s Clarion on April 11, 1809 whose prizes included “house and lot in Springfield, on which a two story house with a number of convenient rooms; a Negro man, Charles, and his wife, Fanny; and a good London silver watch.” Another advertisement offered twelve cows, eleven pairs of fine shoes, and thirty-two volumes of “well selected” law books.

Private lotteries also were used to encourage business. It was not unusual for a merchant to sell goods by lottery. For example, in Flowering of the Cumberland, Harriett Arnow wrote about such a merchant: “The buyer of ticket was assured of getting some little something for his money, and there was always the chance that he might get gold ear bobs, a locket for his lady, or a set of saws for a cotton gin.”

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2 James Phelan, History of Tennessee: The Making of a State (Boston: Houghton Mifflin and Company, 1888), 279; Lotteries served an important function in the early development of the country through the Civil War. For instance, the first permanent English colony in America, Jamestown, was funded by a lottery started in London by James I. Lotteries were most active during the period following the adoption of the Constitution and before the establishment of an effective means of local taxation. From 1790 until the lottery prohibition movement, 1820-1878, lotteries established and funded numerous civic improvements and educational institutions such as Harvard, Yale, Princeton, and Columbia. Between 1790 and 1860, 24 of the 33 states financed hospitals, orphanages, libraries, courthouses, and jails through lotteries.

3 Nashville Clarion, August 18, 1809.

However, private lotteries contained no safeguards, and prizes seldom matched a
winner’s needs. In an 1829 opinion of Tennessee Supreme Court Justice John Catron,
private lotteries constituted gambling:

No man who sells a lottery would get credit for being honest; every experienced
mind presumes cheats of some kind, the article sold and gambled for put off at
two, three or four prices, their real qualities misrepresented, brass passed off for
gold, unsound property for sound....  

The General Assembly reacted to the ills of the lottery by passing an act in 1809
preventing the drawing of private lotteries.  The legislature contended that such lotteries
had “become a serious and alarming evil, relaxing the sinews of industry and encouraging
habits of idleness and dissipation ....” This act provided for punishment of double the
amount proposed in the lottery for any person drawing, setting up or advertising a lottery.
Half of the amount went to the involved party who sued for it and the rest for use of the
poor in the county. Those without the means to pay the fine received a six-month jail
sentence.

The quasi-public lottery for private gain required legislative approval. An
individual was allowed to use this scheme “to pay debts.” A financially distressed citizen
would use a lottery to “sell” his property with a provision for his creditors. In 1826,
Thomas Jefferson, who faced financial problems in the last year of his life, petitioned the
Virginia legislature for permission to hold such a lottery.

The third type of lottery, the public lottery, also sanctioned by legislative act, included schemes to build colleges, academies, roads, jails, Masonic halls, and to improve river transportation. At least eighty-five public lotteries were authorized from 1794 through 1831. The state considered it within its proper domain to sanction

5 State v. Smith, 10 Tennessee 271, 283 (1829).
6 Chapter 39, 1809 Tennessee Public Acts; Also see Edward Scott (comp), Laws of the State of
Tennessee Including Those of North Carolina Now In Force in This State. From the Year 1715 to the Year
7 Chapter 39, 1808 Tennessee Public Acts.
8 Ibid. A provision was included which made all titles to “houses, lands, plates, jewels, goods and
other things” acquired by lottery to be declared void. Person having a “scheme of a lottery published
previous to the passing of this act” were exempted. Although the 1809 act banned private lotteries, the law
may not have been very effective. Apparently, “underground” lotteries still existed after the act was
passed.

9 The eleven quasi-public lotteries were Willie Barrow and Clement McDaniel (1819); Arkey Partee,
Perry Cohen, William Bartee (1822); Thomas White, John McCracken (1824); David Robinson (1825);
Samuel Hogg, Richard Jones, Jr. (1826); Col. Robert H. Dyer (1829). In the latter case, the state was
attempting to get its money back—it had loaned Dyer $3,000 in 1825 to build a canal in West Tennessee.
The project failed with Dyer’s death the next year. Lewis L. Laska and Severine Brocki, “The Life and
Death of the Lottery in Tennessee, 1787-1836,” Tennessee Historical Quarterly 45 (Spring – Winter,
1986), 98. Also see Robert H. White, Messages of the Governors of Tennessee, 1821-1835 (Nashville,
1952), 92-93. Apparently, legislative approval of such lotteries cured the defective title otherwise received
by winners: Concerning Thomas Jefferson’s personal use of a lottery, see Thomas Jefferson Randolph,
Works of Thomas Jefferson (Charlottesville, 1829), 428.

lotteries which were in the interest of all citizens and to make provisions for the honest execution of these lotteries. As lottery overseer, the state’s role also reflected the need to coordinate lottery projects whose impact would extend beyond local boundaries. Legislative authorization also placed constraints on dishonesty in lottery administration by imposing regulations. For example, trustees for the lottery were well known and respected citizens appointed by the General Assembly. The trustees, in turn, picked the lottery managers, who were required to enter into bond with the county court and to take an oath of honesty. For their efforts, the managers were awarded “reasonable” compensation.\(^{11}\)

In Tennessee, the method of obtaining authorization for a lottery involved a citizen or group of citizens petitioning the legislature. If a legislative committee recommended the lottery, the measure was voted on by the General Assembly. Not all lottery petitions, however, were approved by legislators. According to an 1809 “Report of the Committee of Grievances” of the State Senate,

The petition of George Bernard praying that he may have leave at some future period to propose a lottery to defray the expense of opening a road from Nashville to New Orleans. The prayers of which petitions your committee beg leave to report they find unreasonable and such as should not be granted.\(^{12}\)

Most public lotteries were authorized to help establish academies or colleges. In fact, lotteries were a fixture in Tennessee higher education. For instance, in 1809 Nashville College received $20,000 from a lottery, while Cumberland College gained $30,000.\(^{13}\) However, a lottery authorized in 1810 to benefit East Tennessee College (today known as the University of Tennessee) was not so successful. Because a sufficient number of tickets were not sold, no drawing occurred. Due to lack of funds, the University was forced to close for ten years.\(^{14}\)

Although early lotteries in Tennessee were used to build schools, roads, jails, and to improve river transportation, there were problems with them. As time went by, the increased number of lotteries surpassed the demand for them. In addition, mismanagement of lotteries, and the boycott of them by some citizens who became suspicious of fraudulent managers, also contributed to their lack of success. By 1826, the

\(^{11}\) Ibid., 99, 100. Although the trustees were responsible for the lottery’s success, usually blocks of tickets were sold to dealers (brokers) who re-sold the tickets at whatever mark-up they could. Out of this grew established mercantile houses, some of which, in time, were transformed into stock brokerage firms or private banks. See Henrietta M. Lawson, “S. & M. Allen – Lottery, Exchange, and Stock Brokerage,” Journal of Economic and Business History 3 (1930), 424-45, 430; Hugh G. J. Aitken, “Yates and McIntyre: Lottery Managers,” Journal of Economic History 13 (1953): 36-57.

\(^{12}\) Journal of the Senate of the State of Tennessee of 1809, Committee Reports.


General Assembly imposed a one-half of one percent tax on lottery proceeds. With the growth of towns, the size of lotteries appeared to have increased concurrently, creating more possibilities for fraudulent practices.\(^{15}\)

In addition to frauds in the lottery system, another growing concern was the effect lotteries had on individuals. Incidents of citizens squandering their money and becoming vagrants, resorting to drunkenness to drown their despair, and committing suicide to escape their financial shame were social ills frequently listed in the preambles of legislative acts to limit lotteries. The *Western Methodist*, a Nashville publication, often denounced the vice of gaming, relating stories of gifted citizens who squandered their money and were led to drunkenness.\(^{16}\) Lottery drawings were sometimes described as spectacles where “[C]rowds of people, chiefly the poor, foregathered around the lottery offices every day, and in the grog-shops to hear the results, and alcoholism was on the increase because the winner always treated the crowd.”\(^{17}\) Whatever the reasons for the lottery’s decline, by the late 1820s anti-lottery sentiment had reached an irreversible mark.

In January 1829, the lottery received a stunning blow from Justice John Catron in the companion cases *State v. Smith* and *State v. Lane*.\(^{18}\) Catron held that participating in a *private* lottery was gambling. His opinion laid down what is generally regarded as the definition of a lottery today: “Whenever money or other valuable thing is hazarded and may be lost, or more than the value obtained, and dependent upon chance, the transaction is gambling.”\(^{19}\)

The decision in *State v. Smith* in 1829 was the death knell for all lotteries in Tennessee. Soon, the state became the first in the union to abolish them entirely. Initially, private, non-sanctioned lotteries were rendered illegal by an 1829 law. In reality, this law was a clarification and codification of the *Smith* case. Considering the Tennessee Supreme Court’s dim view of lotteries, the next legislature adopted an act to repeal the laws allowing lotteries to be drawn in Tennessee. On October 19, 1832, the General Assembly enacted a law making the sale of any lottery ticket illegal.\(^{20}\)

During the constitutional convention of 1834, the Committee on Private and Local Legislation, chaired by West H. Humphreys, offered a report stating that authorization of lotteries was a power the legislature should not have. In the view of the committee, a prohibition to that effect should become a part of the law.\(^{21}\) Citing the Supreme Court

\(^{15}\) Laska and Brocki, “The Life and Death of the Lottery in Tennessee,” 105, 106.

\(^{16}\) *Western Methodist*, November 15, 1883, Vol. 1, No. 3, 1.


\(^{19}\) *State v. Smith*, 10 Tennessee 282 (1829).

\(^{20}\) Chapter 30, 1832 Tennessee Public Acts 44. A jail term of at least three months was imposed on first offenders, twice that for repeaters.

decision in *State v. Smith*, Humphreys concluded that all acts authorizing lotteries were nothing short of legalized gambling.\(^{22}\)

Although the report noted that lottery petitions generally promoted projects which were advantageous to the community, it questioned the justification that “bad means are proper to be used to obtain good and laudable ends.” If used to excess, the committee contended, the lottery “seduces men away from the steady gain of honest industry in pursuit of the captivating idea of a vast prize,” and “ends in the sudden evaluation of a few, by the destruction of thousands, fortune, and morals.”\(^{23}\)

Management of lotteries was considered another evil. According to the committee report, “The granting of one Lottery is a precedent for another. If a special favor is extended to one, it may be claimed with equal justice by a second and a third. The spirit is thus got up, and the whole State is filled with lottery tickets.”\(^{24}\) The committee suggested prohibitory language which differed only slightly from that which finally appeared in the new Constitution: “The legislature shall have no power to authorize lotteries for any purpose; but shall pass laws to prohibit the sale of lottery tickets in the State.”\(^{25}\)

Complying with the constitutional requirement, the Twenty-first General Assembly of Tennessee on February 13, 1836, restated “that all laws which authorized any person or body corporate or politic to draw a lottery for any purpose whatsoever, are hereby repealed.”\(^{26}\) In addition, a new provision not contained in the 1832 act repealing lotteries was added. Attempting to negate the influence of lotteries originating in other states and countries, the advertising of any scheme was declared unlawful in Tennessee.\(^{27}\) This prohibition included the printing, circulating, and distributing of any written or printed scheme for the drawing of a lottery.\(^{28}\)

\(^{22}\) Kermit L. Hall, “West H. Humphreys and the Crisis of the Union,” *Tennessee Historical Society* 34 (1975); 48, 61. West H. Humphreys (1805-1882) was one of the tragic figures in Tennessee judicial history. Appointed District Court judge in 1853, he was impeached in 1862 because he also had served as a Confederate judge without resigning.

\(^{23}\) *Journal of 1834*, 159.

\(^{24}\) Ibid., 160.

\(^{25}\) Ibid., 156. The final provision, Article XI, Section 5 provides “... and shall pass laws ...” Other than referring to the *Journal of 1834*, it has been impossible to discern the delegates’ intent. Contemporary newspapers like the *Nashville Banner* and *Nashville Whig* simply reported the convention proceedings verbatim, with no editorial comment. Beyond Tennessee, *Niles’ Register* mentioned that lotteries were prohibited under Tennessee’s new constitution, but no comment was made concerning these provisions. *Niles’ Register*, LVII, October 4, 1834, 67.

\(^{26}\) Chapter 48, 1826 Tennessee Public Acts, 152.

\(^{27}\) Ibid., Section 3.

\(^{28}\) Ibid., Section 4. Soon to disappear from Tennessee newspapers were the enticements for those seeking an out-of-state fortune as advertised by the New York Consolidated Lottery, the Virginia Dismal Swamp Lottery, and the Maryland State Lottery. On February 19, 1836, a supplemental act gave further time to the proprietors of lotteries which had previously been sanctioned by the legislature to vend their tickets. The proprietors were given until the “first day of June next” to complete the same and drawing of their lotteries. Chapter 75, 1836 Tennessee Public Acts, 182.
The Volunteer State’s initial enthusiasm for lotteries was typical of other states at the time, such as Virginia, Louisiana, New York, and Maryland. However, by 1820 fraudulent lottery management practices in Tennessee led to anti-lottery sentiment in the state and a call for prohibition of such games of chance. It should be noted that other states also called for prohibition of their lotteries. In addition to charges of fraudulent management, Tennesseans believed that the social ills usually associated with lotteries outweighed the possible benefits. Citizens were so determined to bring an end to the use of lotteries in the state that they approved inclusion of the lottery prohibition in Tennessee’s 1835 constitution. Lotteries were also prohibited in the 1870 document.

One-hundred and sixty-nine years after the outlawing of lotteries, Tennesseans once again are looking to a lottery to cure their financial woes. While some anticipate scholarship money for college-bound students, others dream of buying that winning ticket that will put them on “easy street” for the rest of their lives.

Apparently, the lessons to be learned from Tennessee’s past experiences with lotteries either have gone unnoticed or have purposely been ignored. What Tennesseans in 1835 viewed as destructive and costly to society, the majority of voting residents of the Volunteer State in 2002 regarded as a positive way to deal with financial problems. Does approval of the lottery represent a dramatic change in the value system of Tennesseans? If so, when and why did this paradigm shift occur? In attempting to answer this question, some insight might be obtained from a recent “man on the street” interview in a small local newspaper. When asked whether or not she would support the lottery, a Gibson county resident replied: “Morally it might be wrong; financially it is right.” Apparently this resident, along with the rest of the fifty-eight percent of Tennesseans who voted for the lottery referendum, believes that “bad means are proper to be used to obtain good and laudable ends.” It will be interesting to see when or if Tennesseans in the twenty-first century come to realize the lessons learned almost two centuries ago.
Educational Precursors in a Revolutionary Century

by Tom R. Rosebrough

What type of government, she asked, have you delegates given us? To which he replied, “A republic, madam, if you can keep it.”

(According to a tale told by James McHenry of Maryland, about Benjamin Franklin being accosted by an anxious lady outside Freedom Hall in Philadelphia after the historic signing of the U.S. Constitution in 1787)

It seems more than fitting to begin reflections on the eighteenth century with a reference to one whom Frederick Jackson Turner called the “First American” and David Hume pronounced “America’s first philosopher.” Franklin bridged the gap between two great eighteenth century movements, Puritanism and the Enlightenment. Historian Henry Steele Commager (1950) declared, “In Franklin could be merged the virtues of Puritanism without its defects, the illumination of the Enlightenment without its heat” (p. 26).

My thesis today is that events occurred and ideas were contemplated in Franklin’s century unlike in any other century, which in turn impacted educational thought in America—and indeed the rest of the world. This is not to say that seventeenth century thought did not have considerable impact upon education. The English philosopher John Locke challenged the idealism of Plato with his tabula rosa, believing all ideas are not innate but come from experience. He also said that the curriculum should be utilitarian, and that Aristotle’s sense-realism should form the process of education. And it was John Amos Comenius, a Moravian bishop whose religious sect was persecuted by both Lutherans and Catholics, who wrote the first illustrated textbook for children in 1658, the Orbis Pictus. He believed that primary instruction should be in the vernacular, lent support for Locke’s sense-realism in education, and encouraged the kindly treatment of children. Such was the esteem for him that Cotton Mather claimed that Comenius was invited to become president of Harvard in 1654 (Pulliam & Van Patten, 2003).

The natural and social theories of Locke and Comenius found new expression in the eighteenth century, leading to a far different intellectual climate in 1776 as compared to 1620. It was the time of Jonathan Edwards, Voltaire, Diderot, Kant, Hume, and Adam Smith. In political America, we could find Thomas Paine, Jefferson, Adams, and Franklin. The rationalism of the Enlightenment bred a revolt against orthodoxy, especially against organized Christianity and monarchies. The faith and reason of Aquinas and Luther became faith or reason, and for some, just reason (or a version of it anyway). It was Diderot who said, “Men will never be free till the last king is strangled with the entrails of the last priest” (Durant, 1961, p. 231). The eighteenth century created a reorientation of the way people thought.

It was also a time, as we shall see, for Rousseau, Pestalozzi, and Thomas Jefferson to have oversized influence upon education. Neil Postman (1999) calls this the century where the idea of progress and the modern idea of happiness were invented. In science, Fahrenheit invented the mercury thermometer, and smallpox inoculations began. Blood
pressure was accurately measured, and Lavoisier discovered that oxygen and nitrogen comprise most of the air we breathe. James Watt perfected the steam engine. It was the century of Beethoven’s First Symphony and bore the genius of Bach, Handel, Mozart, and Haydn. In literature, Schiller, Swift, Defoe, Samuel Johnson, and William Blake breathed its air. It was also the century which saw the invention of the Sunday School as a remedy for idle London children.

A case can be made that the notion of continuous improvement of human life was jump-started in the eighteenth century (Postman, 1999). A feeling existed among the many disciples of the Enlightenment that happiness and peace and moral rectitude could be established right here on earth. Francis Bacon, sometimes called the grandfather of the Enlightenment, saw the principle end of science to be progress or the “happiness of mankind,” even as others like Kepler, Galileo and Newton did not (they viewed truth as the goal of science). Benjamin Franklin, in a 1780 letter to Joseph Priestley, conveys a Baconian sense of eighteenth century optimism: “The rapid progress true science now makes, occasions my regretting sometimes that I was born too soon. It is impossible to imagine the height to which may be carried, in a thousand years, the power of man over matter” (Crocker, 1969, p. 194).

Balancing such greatness and optimism were the inhumane beliefs and institutions of that century. Slavery still existed in America. Witches were hanged in New England. In Italy, the Inquisition continued throughout the century. Children were subjected to the brutality of the hickory stick in Puritan schools, and forced into child labor. Women were oppressed as standard practice. Great nations were ruled by despot.

Into this boiling cauldron of time were born ideas and institutions that were precursors to modern educational thought. And, as you might suspect, it is what we can learn about education that interests me most about the eighteenth century. I have chosen two eighteenth century events I believe illustrate my thesis that this century of the American and French revolutions created a watershed in educational thought: (1) the founding of the Philadelphia Academy in 1751 and (2) the publication of Rousseau’s Emile in 1762.

Franklin’s Academy

Benjamin Franklin was born into a Puritan educational world early in the eighteenth century. A century earlier, the Calvinist creed made it mandatory that elementary schools be established, both to prevent idleness and to shine the light of salvation into the lives of children. The Puritans of Massachusetts, New Hampshire, and Connecticut demanded a theocracy of church and state which called for a scholastic authority, along with ecclesiastical, parental, political, and judicial rule. All such authority was essential to enforce conformity in behavior and belief.

Enter into this school culture The New England Primer of 1690, America’s first textbook. By our standards today, the Primer was a crudely illustrated text that included the Westminster Shorter Catechism; a picture of the martyr John Rogers being burned at the stake in England; a dialogue between Christ, a youth, and the devil; and John Cotton’s Spiritual Milk for American Babes. It was called a primer because its role was to smooth a literary path to the reading of the main textbook, the Bible. Children learned catchy lines like:
In Adam’s Fall
We Sinned all
... Thy Life to Mend
This Book Attend
... the Idle Fool
Is Whipt at School.

To have a book at all was testimony to the mass communication revolution propagated by Gutenberg’s invention of the printing press a couple hundred years before, an invention which had a rippling impact in seventeenth and eighteenth century America, creating access to knowledge and the possibility of the common school.

Franklin saw firsthand the eighteenth century New England school which normally operated six days a week, except in the summer. Puritan schools had long periods of prayer and Bible reading both morning and evening. Teachers used the catechetical method, in which subject matter was memorized and recited by the students for the schoolmaster. There were no group activities, certainly no cooperative learning. Teachers had no pedagogical training, but they were usually the best educated members of their community (Pulliam & Van Patten, 2003).

While the Puritan beliefs about the evil nature of children and the public whipping post are, thankfully, no longer popular, a certain socialization ethic is still essential in our schools. Educational historians John Pulliam and James Van Patten (2003) list some of the values we trace to our Puritan heritage. I like to ask my students, twenty-first century teachers, to choose the ones they think are still the most relevant:

• Respect for authority
• Postponing immediate gratification
• Neatness
• Punctuality
• Responsibility for one’s own work
• Honesty
• Patriotism and loyalty
• Striving for personal achievement
• Competition
• Repression of aggression and overt sexual expression
• Respect for the rights and property of others
• Obeying rules and regulations (p. 98)

Most of my students desire a return to many of these values, but it must be pointed out that keeping many of them creates certain problems. Multicultural America displays a more casual attitude toward the Caucasian Puritan ethic. Economically and socially challenged children seldom, for example, have the future orientation often cherished by the middle class. They prize punctuality less, and do not understand the school’s demand that homework be turned in on time.

The notion of creating and utilizing a book tailored to the needs of a school, a grade, or a course became a standard practice in the eighteenth century. Evolutionary successors to the New England Primer were Noah Webster’s Blue-backed Speller, the McGuffey Readers of the nineteenth century, and the graded readers and school textbooks of the twentieth century.
Benjamin Franklin understood change and the need to tailor education to meet societal demands. In the tradition of the Sophists of ancient Greece, who, much to the chagrin of Socrates and Plato, formed tuition-based classes attuned to the rhetorical and political demands of the Athenian state, Franklin created the Philadelphia Academy in 1751. Franklin looked at the European import in America called the Latin Grammar School and saw impracticality. The New England upper class boys studied classical authors like Cicero, Virgil, Isocrates, and Homer, with little attention to mathematics, science, or modern languages. Colleges like Harvard, founded in 1636, admitted these students to prepare them for the ministry. The admission requirements included competency in Latin and Greek, and the classical and theological curriculum of the seven liberal arts (Morrison, 1956).

Colonial America in the mid-1700’s was an era of significant political, philosophical, and economic change. Franklin recognized the historical context in which he lived, and, as H.W. Brands of Texas A&M says, he undoubtedly helped it along. The secular ideas of the Enlightenment had a strong effect on him and his ideas about schooling. Franklin divided education into two goals, the practical and the ornamental (the arts)—and saw the former as the more compelling.

Franklin wanted a school which was free from the rigidity and intolerance he saw in the “Latinists.” Influenced by Locke, his academy was to be sharply different from the Latin Grammar School. It was to be English, not Latin, and it was to prepare youth for business, civil service, and medicine, not the ministry. Foreign languages were taught, but they were to be of the useful type: French, German, and Spanish. With a bow to the liberal arts, other subjects included were literature, science, rhetoric, and arithmetic. But he added some vocational arts as well: drawing, agriculture, accounting, and mechanics. And, like Aristotle before him, Franklin attached a botanic garden to his school. In addition, he revolutionized the social sciences of history and geography for inclusion in his secondary school. Franklin’s Academy, which evolved into the University of Pennsylvania, was the precursor of the modern comprehensive high school.

In this school can be seen the quintessential Franklin, his obsession with practicality and tolerance. Walter Isaacson (2003) also sees a subtle religious contribution: he detached the spirit of industriousness from the rigid Puritan’s dogma. Good-natured religious tolerance was, according to Isaacson, one of the great contributions to arise from the Enlightenment, “more indispensable than that of the most profound theologians of the era.” Franklin was the century’s preeminent proponent of tolerance, and he did it with humor and depth. His brand of compromise, which has been criticized as a lack of principle, was actually a moral virtue for him. He believed that every individual deserves equal respect, and was ever unwavering in his mistrust of arbitrary authority, whether it was William Penn or King George he opposed. As Isaacson says, Franklin believed he could best serve God by serving his fellow man, whether through Poor Richard’s Almanac or his inventions or his political service or his educational contributions. It was the French statesman Turgot (as cited in Isaacson, 2003) who wrote, ...ripiuit coelo fulmen sceptrumque tyrannis: “he snatched lightning from the sky and the scepter from tyrants.”
Rousseau’s *Emile*

The eighteenth century was a turning point in the recognition that childhood was distinctive from adulthood. The practice of marking the graves of children, for example, became commonplace in the eighteenth century. Before this time, it was as though children did not have individuality. Other examples are instructive: this century saw the emergence of children’s clothing, laws which distinguished children’s crimes from adult crimes, and games devised for children like the jigsaw puzzle (Postman, 1999).

The most persistent and prevalent concept of the child, however, could be found as an outgrowth of the Puritan worldview. The outlook that permeated educational thought in colonial America for a hundred and fifty years was the religious orthodoxy of Calvinism with its emphasis upon God’s power and wrath, original sin, reverence and fear of God, obedience to His commandments, and obedience to the authority of parents and elders. It followed that an authoritarian education was the only possible way to keep an inherently evil child’s nature under control. The strategy was to instill in him a fear of breaking God’s laws and the dreadful consequences of sin. Fear, discipline, and obedience became the educational by-words.

The famous Boston minister John Cotton favored the use of law as a final resort for undisciplined children and proposed the following to the Massachusetts General Court in 1641: “Rebellious children, whether they continue in riot or drunkenness, after due correction from their parents, or whether they curse or smite their parents, to be put to death” (Butts & Cremin, 1953, p. 67).

A hundred years later in the eighteenth century, Jonathan Edwards, in his *Thoughts Concerning the Present Revival of Religion in New England* (cited in Butts & Cremin, 1953), defended the practice of “frighting poor children with Talk of Hell and Damnation”; anyone who complained of the practice betrayed weakness and doubt about the corrupt nature of man and child alike. If parents were too tender and loving with their children, they would live to regret their folly because they were exposing their children to “eternal Burnings.”

In 1762 French philosopher Jean Jacques Rousseau published *Emile*. The impact of this little book about the education of an imaginary boy named Emile from birth to manhood was momentous. Intellectuals embraced the romantic ideas of Rousseau. That the effect could be so great so quickly probably is a testament to the eighteenth century mind being weary of Puritan rigidity in education, and to the fertile soil plowed by Enlightenment thinking.

In contrast to Puritan thought, Rousseau saw childhood as a desirable era of life, insisting that a child is important in himself, not merely a means to an end. The Puritans saw children as miniature adults who bore the burden of Adam’s sin. John Locke viewed children as potential citizens or merchants. Rousseau, in contrast, began his educational treatise with: “Everything is good as it comes from the hands of the Maker of the world but degenerates once it gets into hands of man” (Boyd, 1970, p. 11). Rousseau wanted to celebrate childhood—to him it was a natural order, like pausing to smell a flower:

The fact that my pupil is intended for the army, the church or the bar, does not greatly concern me. Before vocation determined by his parents comes the call of nature to the life of human kind. Life is the business I would have him learn...The man who gets the most of life is not the one who
has lived longest, but the one who has felt life most deeply. (pp. 14-15)

It is not difficult to perceive the romantic soul of the author, which contrasted with the science of the Enlightenment but conformed to the feeling of the age in that his words were so different from the religionists who dominated educational thought. Rousseau did inject some realism into his romantic notions. He said, “Nature made children to be loved and helped, not obeyed and feared...Surely then there is nothing more offensive or more unseemly than the sight of a dictatorial headstrong child...” (p. 37). Rousseau’s power as a writer and his charisma as a person apparently were so great that most of his devotees even refused to believe that he had abandoned his own children to orphanages (Postman, 1999).

Ad hominem arguments aside, what was so compelling about Emile was its child psychology. Rousseau aroused a curiosity about the nature of childhood which produced many intellectual heirs: Johann Pestalozzi, who started a world-acclaimed school for poor children in Switzerland; Friedrich Froebel, a German mathematician who believed that young children could be nurtured like flowers socially, emotionally, and cognitively and proceeded to invent the kindergarten; Marie Montessori, a twentieth century physician who created a structured method and a school for educating young children; John Dewey, the foremost philosopher of child-centered progressivism; and Jean Piaget, a cognitive giant who studied his own children at play and formulated a profound theory of learning which is being validated by the twenty-first century technology of neurobiology.

Rousseau also presented a philosophy of education that could easily be construed as engaged learning. He wrote, “Our pedantic eagerness to instruct is always leading us to teach children what they can learn better for themselves, and to forget the things they need to be taught” (Boyd, 1970, p. 29).

Four Gifts

The eighteenth century gave us much in educational thought. Here are four of its gifts:

1. It gave us the gift of skepticism. The Enlightenment and Puritanism were strange bedfellows—so strange that this century could not contain them both. Reason and science and tolerance won the day. The American Constitution set forth a republic, not a theocracy, and reflected a deep distrust of federal manipulation of education. It was created by a group of men who were predominantly Christian in their worldviews but influenced by the Enlightenment to create a secular, political document that would favor religious liberty, non-centralized government, and free market economics. Authority was given to the states to regulate education, and worship was to be an individual freedom with no state-imposed religion. The massively funded No Child Left Behind legislation of the twenty-first century allows unprecedented federal intrusion into state and local education in the name of educational accountability. Skepticism or what we would call “critical thinking” is needed more than ever in this age of sound bytes and media-created political candidates.

2. Student-centered education was another eighteenth century gift. Rousseau helped us think about schooling from the perspective of those being schooled. It
was a Swiss educator named Johann Heinrich Pestalozzi who put this idea into action when, in 1765, he started his school for twenty children, all of them from poor families. Unlike Rousseau, Pestalozzi actually liked children (Postman, 1999). He wrote in his diary comments that reflected Rousseau’s influence and presaged John Dewey: “Let every child be as free as possible... Do not teach by words anything which you can teach by actual experience of things as they are” (Boyd, 1970, p. 30). Pestalozzi, a deeply Christian man, developed principles and methods for teaching reading and writing and moral knowledge. It was his school and knowledge of children that inspired the German mathematician, Friedrich Froebel, to create the first kindergarten in 1816.

For the most part, teaching and learning are now thought of as two distinct processes: we are mostly willing to admit that we have taught nothing if nothing was learned. Teachers do not always behave as though they believe this, but even for us in higher education, the last bastion of teacher-centered teaching, most instructors know that it is the learner who matters the most.

3. A third gift of this revolutionary century was the idea of education as a national and natural right. Jefferson, like no other founding father, realized that our nation would require an educated citizenry to survive. Jefferson was a product of the type of education available only to the wealthy at that time, and he realized that this elitist paradigm would not work for the new nation. Jeffersonian democracy included the poor and the non-elite as political leaders, and universal education was essential. In our century, No Child Left Behind is an attempt to address the achievement gap between the economically blessed and the deprived. No contemporary politician dares to ignore the issue, this national exigency known as education.

Schooling itself by the end of the eighteenth century had replaced religion as the American divine right. The Puritans, as well as others influenced by the Great Awakening of the eighteenth century, prized literacy in order to read the Bible, but they also valued a well-educated leadership, stemming from the Calvinist notion that government was a covenant between God and mankind. As Mark Noll (1994) writes, the Puritans saw “religious significance in public acts and public significance in religious acts” (p. 40). Thus, they refused to compartmentalize life or exempt education from religious scrutiny.

Yet twenty-first century American education is compartmentalized. The question is how one can maintain a hold upon a more holistic vision of education while tolerating religious differences. The Northwest Ordinance begged the question by stating in Article One that “no person, demeaning himself in a peaceable and orderly manner, shall ever be molested on account of his mode of worship or religious sentiments, in the said territory.” And then, in Article Three, the founders felt no conflict in defining education as a combination of religion, morality, and knowledge.

We, perhaps, need Franklin’s sense of fairness and tolerance to assist us in this more pluralistic age where everyone is seemingly offended by everything and where religious differences are increasingly highlighted. It was this same Franklin, who upon observing the squabbling of the “assembly of demi-gods”
(Jefferson’s term) convened to write the Constitution, called upon his colleagues to begin every session with prayer, “humbly applying to the Father of lights to illuminate our understandings” (Isaacson, 2003). His colleagues were likely astonished, in that Franklin was not known as a religious man qua John Adams, but he did have a spirit of cooperation and humility in the face of great conflicting ideas.

4. A fourth gift of the eighteenth century was the acceptance of the scientific method as a common strategy in teaching and learning, a centerpiece of John Dewey’s educational philosophy of experimentalism a century later. The Enlightenment introduced this new way of thinking about learning, a more naturalistic and secular approach to education that emphasized the role of human intelligence to discover truth as compared to a more Judeo-Christian emphasis, or in that age an insistence, upon revealed truth. We now call it problem solving or problems-based learning. This method is, of course, connected to the sense-realism of Aristotle and Locke, and to the follow-your-curiosity, hands-on life philosophy of Franklin. But no one advanced the cause of discovery learning quite like Rousseau. Here is how he puts it in Emile:

Make your pupil attend to the phenomena of nature, and you will soon arouse his curiosity. But to nourish this curiosity, be in no hurry to satisfy it. Suggest problems but leave the solving of them to him. Whatever he knows, he should know not because you have told him, but because he has grasped it himself. Do not teach him science: let him discover it. If ever you substitute authority for reason in his mind, he will stop reasoning, and become the victim of other people’s opinions (Boyd, 1970, p. 73).

Final Thoughts

What it means to learn and how best to teach have been issues in schooling throughout the history of education. Rousseau’s work in the eighteenth century has had a lasting impact on educational philosophy. Change in types of schooling and curriculum occurs when society demands it. Franklin’s academy and textbooks, which were culturally tailored to American society, were the result of deep and lasting changes in the way Americans thought in the eighteenth century.

A futurist thinker, Theobald (1992), contends that everything already discovered should be called “training,” and that the term “education” should be reserved for unresolved issues and problems. Schools have primarily existed to teach students what they did not know, with the presumption that teachers knew the answers. A fundamental error of traditional education, which can impact our twenty-first century society greatly, is giving little attention to equipping students to solve problems for which there are no known answers.

Another fundamental error in education is what writer Charles Silberman (1969) called “mindlessness.” For example, textbook usage for the past one hundred years has mutated into utilizing a textbook as the curriculum of a subject or course. Webster and McGuffey never intended for their texts to be more than a very valuable resource in schools and classrooms. Or, for another example, the magic of technology becomes
mindless teaching when it is used as a blunt lecture instrument to pound students into passivity. Rousseau or Pestalozzi would have us recognize technology for what it is, a wonderful tool for enhancing discovery-learning. Much like the moth to the flame, educators seem destined to create mindless practices and paradigms without clearly assessing the educational context.

Finally, an even more basic error of education is to force a choice between the teaching of the glories and essentialities of our heritage, versus seeking to understand our students’ learning perspectives. In education (and I think Mr. Franklin would agree with me here), we seem all-too-ready to embrace the divisive conjunction or while ignoring the more divine conjunction and. The eighteenth century, a century of revolutionary change, can give us an educational perspective that can assist us in this century as we re-examine the relevancy of our priorities and values.

References


Molecular Dynamics of Complex Gas-phase Reactive Systems by Time-dependent Groups

by Michael R. Salazar

A method is introduced that enables accurate molecular dynamics (MD) simulations of complex gas-phase reactive systems where many simultaneous elementary reactions are possible. The method breaks the calculation of the total potential and gradients of the potential into time-dependent groups that are governed by spatial cutoffs. In an effort to obtain accurate potentials for reactive systems, interactions between chemical species of individual groups may be calculated at various levels of \textit{ab initio} theory. The \textit{ab initio} potential energy surface (PES) data are stored in a fast-access database and when sufficient PES data exists, the \textit{ab initio} calculations over the groups will yield to local interpolations. These local interpolations are individually optimized, resulting in accurate approximations of the \textit{ab initio} PES and, further yield an immense speed up of the MD simulations.

I. Introduction

The development of methods for the accurate description of how a reactive chemical system changes in time is a very important field of study, but one that regrettably seems to have developed more slowly than methods for describing the stationary-state properties of chemical systems. This is unfortunate because the ability to accurately describe, from first principles (\textit{ab initio}), reactive processes and the internal energy states, branching ratios, and rates of formation of products (as well as bulk properties) qualifies as a necessary step for a complete understanding of the chemical sciences. It is no wonder, however, that methods for simulating chemical changes over time have evolved more slowly, since there is much difficulty to overcome. Consider, for example, combustion processes with simple net reactions can often involve $\sim 10^2$ elementary reactions and $\sim 10^3$ different chemical species.\textsuperscript{1} Kinetic mechanisms for these very complex reactions are often postulated, reduced to the smallest number of steps believed to be possible, and rate constants are obtained by parameter estimation.\textsuperscript{2-3} Obtaining realistic mechanisms for gas-phase reactions is currently a very important and difficult area of research. The ability to follow the dynamics of these complex reaction paths from first principles would qualify as a momentous improvement.

Examining one of the assumptions of first principle methods for modeling the molecular dynamics of gas-phase reactive systems has proved to be fruitful. This assumption is a one-size-fits-all approach to the total potential. Many of the reactive processes of complex chemical systems will involve species that require high levels of \textit{ab initio} theory to get their interactions correct (free radicals, excited electronic states, etc.), while some collisional processes may involve chemical species that much lower levels of theory may be appropriate. Clearly, a one-size-fits-all approach to the calculation of the total potential will encounter great difficulty – falling into one of two extremes: (1) treating all the interactions with high levels of theory with explicit methods of calculating electron correlation that is sufficient to get the most demanding of interactions correct.
and absorb an as-yet impassable computational cost for the simplest of systems; or (2) treating all the interactions with a very low level of theory and very likely not capture the correct dynamics of complex reactive systems.

The goal of the method briefly developed in this manuscript is to move away from a one-size-fits-all approach to calculating the total potential energy and gradients of the potential when modeling the dynamics of gas-phase reactive systems and to move toward an approach that makes the compromise of truncating higher-order multi-body terms rather than the level of \textit{ab initio} theory. This approach allows the use of higher levels of \textit{ab initio} theory and, when combined with fast-access databases, and local interpolation methodology, holds promise for the accurate modeling of complex reactive chemical systems.

\section{Methodology}

\subsection{Assembly of the Total Potential}

Perhaps the greatest difficulty in performing molecular dynamics simulations of complex reactive systems involves the assembly of the total potential of the system and the gradients of the total potential.\footnote{This difficulty is well known for the modeling of small systems (3-5 atoms) involving only one reaction. For the modeling of systems involving $\sim10^2$ reactions and $\sim10^3$ species the difficulty is greatly exacerbated. An alternative approach to the assembly of the total potential involves breaking the total potential into time-dependent groups that reside inside some predetermined spatial cutoff and the group-group interactions, viz.,
\begin{equation}
V_{\text{total}}(t) = \sum_{i}^{N} \sum_{\alpha}^{N_i} V_{i\alpha}(t) + \frac{1}{2} \sum_{i}^{N} \sum_{j}^{N} \sum_{\alpha}^{N_i} \sum_{\beta}^{N_j} V_{i\alpha,j\beta}(t).
\end{equation}
}

The first term involves a sum over the total number of groups, $N$. These groups could be monomers, dimers, trimers, etc. of molecules for non-reactive systems involving only one chemical species. For more complex reactive systems the individual groups are defined according to the identification of the chemical species that reside inside the spatial cutoff. These groups will each be unique and may widely vary in their chemical composition. The total number of groups, $N$, will vary during the course of the simulation as bonds are broken and formed and as groups evolve within the spatial cutoff of one another. Each of these groups may have multiple members and the members of each group will have unique nuclear arrangements. Thus, the sum over $a$ in this first term is a sum over the unique members of the $i^{th}$ group. $V_{i\alpha}$ is the interaction potential between the chemical species that make up the $\alpha^{th}$ member of the $i^{th}$ group at the unique nuclear positions of this member at a particular time in the simulation. To illustrate, consider a combustion reaction that is hypothetically limited to only involving A and radical A (RA). At any given time during the simulation the total number of groups and members of the groups are formed: the A and RA monomers (each of these monomers are isolated and lie outside the spatial cutoff from all other chemical species in the simulation cell), the number of A-A, A-RA, and RA-RA dimers (each of the dimers lie within the spatial cutoff from one another and outside the spatial cutoff of all other
chemical species in the simulation cell), the total number of trimers, etc., until the approximation is made by truncating higher order multibody terms. Differing levels of \textit{ab initio} methodology may be employed to calculate the interactions of the different groups. Some groups, because of their unique chemical species, may require lower levels of \textit{ab initio} theory, while some may require much higher levels of \textit{ab initio} methodology to properly account for the electron correlation. Thus, the \textit{ab initio} level of theory may change with the first sum over the groups, i, but not with the sum over the members of a particular group, \( \alpha \).

The second term in Eq. (1) are those interactions between the members of groups \( i \) and \( j \) that reside outside the spatial cutoff and, thus, reside in the asymptotic region. Since these asymptotic interactions are likely much less important to the modeling the dynamics of chemical reactions, they may be treated at much lower levels of theory than the \textit{ab initio} methodology used for those interactions of the first sum. A very reasonable approximation to these interactions would be force field methods or the lowest levels of \textit{ab initio} theory.

**b. Discontinuity of the total potential**

Breaking the total potential up into time dependent groups as given in Eq. (1) will yield the changing of the number of groups and the number of group members as the simulations proceed. Furthermore, as explained earlier, the interactions of the different groups may be described by varying levels of \textit{ab initio} theory. The result of each of these will be discontinuities in the total potential, Eq. (1), as the simulation proceeds. Fortunately, for classical molecular dynamics simulations, the motion of the atoms is governed by the gradients of the potential rather than the potential itself. Since the groups are defined according to spatial cutoffs, the gradients of the potentials of the various groups will all approach the same value when the groups change identification; namely, the gradients will all approach zero. The fact that gradients approach zero at the spatial cutoff does not depend on the level of \textit{ab initio} theory being employed, but simply depends on the spatial cutoffs being sufficiently large that the asymptotic region is approached at the spatial cutoff. Thus, at the spatial cutoff, the potential across the cutoff may not be continuous, but the gradients of the potential will be – provided the spatial cutoff is large enough to be near the asymptotic region.

In order to demonstrate the principle of continuity of the gradients of Eq. (1) when groups switch, a very simple grazing collision between \( \text{O}_2 \) and \( \text{N}_2 \) molecules was considered with analytic Morse potentials used to describe the O-O, N-N, and O-N interactions. The Morse potential parameters for Eqs. (2) and (3) are given in Table 1.\(^5\)

Two different potential functions were used for the system: one outside the spatial cutoff where the O-N interactions are neglected:

\[
V_{\text{total}} = \text{D}_{\text{N}_2}[1 - \exp(-\text{b}_{\text{N}_2}(r_{\text{N}_2-r_{\text{e},\text{N}_2})))]^2 + \text{D}_{\text{O}_2}[1 - \exp(-\text{b}_{\text{O}_2}(r_{\text{O}_2-r_{\text{e},\text{O}_2})))]^2
\]

(2)

and one inside the spatial cutoff, where the O-N interactions are accounted for:

\[
V_{\text{total}} = \gamma \text{D}_{\text{N}_2}[1 - \exp(-\gamma \text{b}_{\text{N}_2}(r_{\text{N}_2-r_{\text{e},\text{N}_2})))]^2 + \gamma \text{D}_{\text{O}_2}[1 - \exp(-\gamma \text{b}_{\text{O}_2}(r_{\text{O}_2-r_{\text{e},\text{O}_2})))]^2 + \sum \{\text{D}_{\text{ON}}[1 - \exp(-\text{b}_{\text{ON}}(r_{\text{ON}-r_{\text{e},\text{ON}}}))]^2 - \text{D}_{\text{ON}}\}
\]

(3)
The $\gamma$ in Eq. (3) was inserted to approximate the fact that when the groups switch definitions different levels of \textit{ab initio} theory may be used and, thus, the intramolecular interactions of a particular chemical species may not match the interactions prior to the switch of the groups. Shown in Fig. 1 is a simulation with initial conditions reflective of a room temperature grazing collision. The N-N, O-O, and the center of mass (COM) between the N$_2$ and O$_2$ distances are shown in Fig. 1 as the black solid, blue dashed, and red dotted lines, respectively. The value of $\gamma$ in Eq. (3) for this simulation was $\gamma = 1$. For this N$_2$ and O$_2$ system, the spatial cutoff was defined at 5 bohr, i.e., if any N-O distance was below 5 bohr, then Eq. (3) was used to describe the total potential and if all N-O distances were 5 bohr or above, Eq. (2) was used to describe the total potential. This value of 5 bohr for the spatial cutoff was chosen to represent a rather poor choice and not quite in the asymptotic region. Thus, difficulties with the method will be more evident with this poor choice of a spatial cutoff. Furthermore, other ways exist to describe the spatial cutoff, and this definition was used so that switching from inside and outside the spatial cutoff could depend on the vibrational motion of the N$_2$ and O$_2$ diatomics. This was desired to illustrate the principle that a smooth continuous simulation is still obtained even when the groups change definitions more than once during a single collision event. Another test was performed by taking the exact same initial conditions as the simulation with $\gamma = 1$ and performed with the value of $\gamma$ set to 0.8. This was done to exaggerate the effect of possibly switching \textit{ab initio} methodologies when the groups change definitions. This change in $\gamma$ affects both the well depths of the O$_2$ and N$_2$ molecules as well as the curvature of their interaction potentials. The N-N, O-O, and the center of mass (COM) between the N$_2$ and O$_2$ distances are displayed in Fig. 1 as the green dashed, the violet dashed, and black dashed-dot lines, respectively. Each of these distances was increased by a fixed value of 1.0 in order to separate the coordinates from the $\gamma = 1$ simulation. The two simulations are exactly the same up until $t \sim 1.25 \times 10^{-13}$ sec, and the coordinates for both simulations evolve in a smooth manner throughout the whole simulation.

The discontinuity in the total energy for each of the grazing collisions displayed in Fig. 1 is shown in Fig. 2. In this figure, the difference in the total energy at every time minus the initial total energy is plotted against the time. This difference is given as the blue solid line for the $\gamma = 1$ simulation and as the red dashed line for the $\gamma = 0.8$ simulation. The time step for the simulation was $4.84 \times 10^{-17}$ sec. From this figure it can be seen that there were 6 changes in the definition of the groups for both the $\gamma = 1$ and $\gamma = 0.8$ simulations: from 2 isolated diatoms described by Eq. (2) to an N$_2$ – O$_2$ supermolecule described by Eq. (3) and back and forth for both of the simulations displayed in Fig. 1. All 6 changes happened between times $1.25 \times 10^{-13}$ and $1.80 \times 10^{-13}$ sec when the N$_2$ and O$_2$ are the closest and the changes correlate with the individual N$_2$ and O$_2$ vibrational motions. As can be seen in Fig. 2, the potential changes by $\sim -0.008$ Hartrees during this time of switching group definitions for the $\gamma = 1$ simulation, which causes the total energy to have a discontinuity of this same amount. For the $\gamma = 0.8$ simulation displayed in Fig. 1, there were much more dramatic discontinuities in the total potential. For both simulations, the total energy only changed when the group identification changed, i.e., when the group definition remains constant, the total energy also remained constant. For the $\gamma = 1$ simulation (blue solid line in Fig. 2), the potential changes by nearly the same amount during each change of the groups because the N-O bond lengths do not undergo drastic changes in their distances during this time window.
From Fig. 1 it can also be seen that the coordinates for both simulations all evolve in time in a smooth manner. Thus, the large discontinuities in the potential energy do not yield the gain or loss of kinetic energy of the atoms. Further proof of this may be seen in Fig. 3 where the total kinetic energy is plotted in the time window where there is a change in groups for both of the collisions displayed in Fig. 1. In Fig. 3, the blue solid and the dashed red lines are the total kinetic energy for the \( \gamma = 1 \) and \( \gamma = 0.8 \) simulations, respectively. Although there are large discontinuities in the total potential, as can be seen from this figure, the total kinetic energy is smooth, simply because the gradients of the potential along the coordinates defined by the spatial cutoff all approach the same value, namely zero.

c. Implementation

Much work is currently being performed to implement the method that has been briefly outlined here. The development of fast-access PES database technology and accurate methods for the interpolation of the energy and gradients of the energy over the groups is critical to the success of the method. As the simulation proceeds and more and more computationally expensive \textit{ab initio} calculations are performed over the groups, the \textit{ab initio} calculations must yield to interpolations of the energy and gradients over the individual groups. As such, a completely general method of performing interpolations over a varying grid of data is being developed. These interpolations are local, meaning they do not use all the potential energy data for a group, but only use \textit{ab initio} data local to the region where the interpolation is being sought. The local interpolant must have the ability to be able to handle very irregular grids with both sparse and dense data and yield interpolations of the energy and gradients that are computationally fast and accurate. Radial basis function interpolants satisfy the requirements listed above. In particular, the multiquadric radial basis function interpolant has been successfully applied to molecular dynamics simulations before and proven very flexible and accurate. The interpolant may be written as:

\[
E(P) = \sum_{i}^{N} c_i \sqrt{d_{ip}^2 + r}
\]

where \( N \) is the number of \textit{ab initio} energies used as a basis for the interpolation at point \( P \), \( r \) is an \textit{ad hoc} parameter that may be used to optimize the interpolant, and \( d_{ip}^2 \) is the squared distance from point \( P \) to grid point \( i \). This method of interpolation has been modified to provide an optimized interpolant for a variable underlying grid by optimizing the interpolant with respect to the \textit{ad hoc} parameter, \( r \). Tests of this local, optimized interpolant have been performed for a four dimensional (4D) potential function between two nitrogen molecules. The function depends on the N-N bond lengths between individual \( \text{N}_2 \) molecules. This 4D functions was chosen to give an analytic 4D PES that could be differentiated to obtain the analytic gradients. The absolute error in the interpolated gradients as a function of the density of the underlying grid is reported in Fig. 4. These data were obtained by taking 14 test points on the surface that went from very repulsive parts of the surface (all N-N bond lengths between the nitrogen molecules equaling 2.4\( \text{Å} \)) to near asymptotic surface locations (all N-N bond lengths equaling 5\( \text{Å} \)). At each of these test points, the underlying grid was randomly chosen and varied in
density. At each density and for each test point, a local, optimize interpolant was formulated. The PES was used as the basis for the formulation of the interpolants. After formulation, Eq. 4 was differentiated to yield the gradients. It is the errors in the gradients of these localized interpolants for all 14 test points that are plotted against the density of the underlying grid in Fig. 4. These data show a drop in the largest values of the interpolated gradient errors (errors > 0.01 a.u.) as the density increases. Contained in Fig. 4 are 11,141 data points for each of the four gradients. As can be seen from this figure, the great majority of these data have errors that are too small to be distinguished on the scale of the figure. The root mean square error in the interpolated gradients for the data displayed in Fig. 4 were 2.98×10^{-5}, 2.57×10^{-5}, 2.99×10^{-5}, and 2.89×10^{-5} a.u. for the gradients along r_{13}, r_{14}, r_{23}, and r_{24}, respectively. The error in the interpolated energy is not shown in Fig. 4. These errors were usually two orders of magnitude smaller than the errors in the interpolated gradients. Further discussion of storing ab initio PES data in fast-access databases, the computational scaling of the method, and further numerical tests of the optimized local interpolants will be reported in a forthcoming manuscript.^{13}

II. Conclusions

In summary, these simple tests of a grazing collision between O_{2} and N_{2} molecules demonstrate the principle that the total potential can be defined by groups that change definitions according to spatial cutoffs as the simulation proceeds. This change in group definitions will induce discontinuities in the total potential, but the coordinates will evolve smoothly over these areas because the gradients along the coordinates between the molecular entities will approach the same value, namely zero. Because the gradients approach zero at the spatial cutoff regardless of the level ab initio theory employed, varying levels of theory may be employed based on the nature of the chemical species that define the group. Since there is a discontinuity in the total energy when the groups change definitions, the method will have difficulty when it comes to predicting bulk properties that depend on conservation of energy. Nevertheless, the method can be employed for the simulation of what it was designed for—the prediction of mechanistic and energetic information for chemically complex reactive systems in which the dynamics may be spread over \sim10^2 elementary steps and \sim10^3 chemical species. Since the simulations will begin by performing many computationally expensive ab initio calculations over the various groups, very little simulation time will transpire for a large expense of CPU time. This difficulty finds its remedy in the ability to employ local interpolations of the potential energy and gradients of the potential once a requisite density of ab initio calculations is obtained.
Acknowledgements

The author would like to thank Michael Johnson and Wendell Duncan of CogniTech Corporation for valuable conversations regarding this work. I would also like to thank Union University for faculty start-up support for this research and matching-funds support. This research was also supported by an award from Research Corporation. Acknowledgement is made to the Donors of the American Chemical Society Petroleum Research Fund for partial support of this research.
Table 1. Morse potential parameters for the interactions of Eqs. (2) and (3).

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<td>ON</td>
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References

Figure 1. The time dependence of the $O_2$ and $N_2$ distances and the $O_2$-$N_2$ center-of-mass distances for the grazing collision in which there were six changes in the group definitions for both the $\gamma = 1$ and $\gamma = 0.8$ simulations.
Figure 2. The conservation of the total energy for the grazing collision displayed in Fig. 1. The discontinuities in the figure are a result of a change in the definition of the groups.
Figure 3. The total kinetic energy for the grazing collision displayed in Fig. 1 for $\gamma = 1$ (blue solid line) and $\gamma = 0.8$ (red dashed line) during the time window where the groups change definitions and there are discontinuities in the total potential.
Figure 4. The absolute error in the interpolated gradients using an optimized interpolant as a function of the density of the underlying grid.
The Books of Our Youth: Why Children’s Books Belong in a College Library

by Melissa Moore

When I was growing up, summer was issued in with an eight-hour drive through Mississippi to the Gulf Coast of Florida, where we would spend a week gorging on shellfish, roasting our backsides, and tossing a Frisbee on the sand. Prior to the drive, my dad had the fishing poles strapped down on top of the van, and my mom had the cooler filled with soft drinks. Each of us kids had an unmarked paper sack filled with fresh coloring books and crayons, chocolate bars (which we had to eat by 8 a.m. to prevent melting, right?), travel Bingo or Yahtzee, and those workbooks with invisible ink pens. But the best part was the money we were given the week before leaving, to spend on what my mother called “beach books.” This was before Amazon.com, so we would go to the local bookstores and spend an hour making our selections. Some were duds, most were average, but a few were real treasures that live on in my mind even now, twenty-something-years later.

Perhaps that “beach reading” is in part responsible for my being a reference librarian. I currently serve in an academic library setting, conducting information literacy classes and supervising several staff members in our public services area. I love interacting with the college students here, finding out what they like to read and comparing ideas and interpretations. However, my first love, academically speaking, is the books of our youth. I love children’s books and chapter books, middle school novels and the cutting edge of young adult literature. Over the years, I have had several people tell me that, because of my love, I should be working in a school library or public library. In fact, I have done both and can safely say that those places are not for me. I belong in a college library. And what’s more, youth literature does too.

Children’s Literature—in College?

For many academic librarians, we justify having children’s books by pointing out that we have a solid undergraduate program in education, and these students need access to children’s books for making lesson plans and developing themed centers. And at the reference desk, I do have education students ask for help in determining the difference between fairy tales and folk tales, or locating wordless picture books, or finding a book for their parallel culture. But children’s literature offers the collegiate world much more than that. I have met art professors who use the artwork of David Weisner, Faith Ringgold, or Chris Van Allsburg to demonstrate certain techniques. I have a colleague in our history department who has used children’s books over the years to demonstrate the surreptitious teaching of historical events and technological changes through their illustrations. I know of a math professor who uses David Schwartz’s How Much is a Million? and Jon Scieszka’s Math Curse to convey basic concepts and address math-phobia among his freshmen.

Children’s literature can also address the diversity we are increasingly encountering in our culture and on our campuses. I was approached nearly a year ago by a graduate
student about the possibility of my working with her to gain some familiarity with the literature of cultures other than her own (she’s Caucasian). She is currently a K-5 librarian with an M.Ed. and school media librarian endorsement, and is pursuing ESL certification. We worked together to craft a graduate-level directed-study course entitled “Parallel Cultures in Children’s Literature,” which I taught to her and three others. As I prepared to teach this course, I was surprised again and again by both the remarkable breadth and the fine quality of writing for children which addresses life issues for African-Americans, Hispanic-Americans, Asian-Americans, and Native Americans. Books for children by authors like Arthur Dorros, Margaret Hamilton, Gary Soto, Patricia and Fredrick McKissack, Laurence Yep, Nikki Grimes, and Allen Say explore historical, educational, cultural, religious, and linguistic issues related to these groups with sensitive and fully-developed characters, engaging story lines, and original writing. By sharing some of these beautiful texts with my three- and four-year-old daughters, I have been afforded new opportunities to explore with them issues of race, ethnicity, and diversity.

**College Students are Young Adults**

Some tend to think of college freshmen as adults, a whole step away from being high school students and as a result more focused, more mature, more responsible. But some of us work with college freshmen daily, and we can quickly debunk that myth. The truth is that not a whole lot changes for these kids in the three summer months between graduation and starting college. They still agonize over appearance and money, they still struggle with relationships with parents (and sometimes even more so), they are still concerned about fitting in with their peers and discovering what to do with their life. The books being published for young adults today address those issues. Perhaps the librarians among us need to rethink the layout of our libraries, to distance the young adult materials from the picture books, and perhaps even to incorporate a reading area designed to draw in our freshmen, with Robert Cormier and J. K. Rowling next to John Grisham and Charles Dickens. Perhaps college professors can find ways to incorporate young adult literature into their ethics, history, literature, or sociology courses. Perhaps student groups need to look at discussion group opportunities around some of these texts. Perhaps we all need to shake off any attitudes of superiority and rediscover the books of our own youth, as well as the books of today’s youth.

Every summer, it is my delight to teach a graduate course in Young Adult Literature. I read avidly throughout the year in the field, across a wide variety of genres, and require my students to do the same. What many have discovered is surprising—that some of today’s Young Adult literature is not that far removed from what they, as adults, are choosing to read. Tightly woven mysteries, sound historical fiction with engaging characters, interesting biographies free of jargon, high fantasy reminiscent of Tolkien—all abound in young adult literature. Some of my students are parents, and they end up reading the book which all their daughters’ friends were talking about last year, *The Princess Diaries*; they laugh and cry and find a fresh connection point with their preteens. Others have gotten so deeply into their discipline’s reading that they’ve forgotten what it means to read for pleasure. Still others rediscover favorites from their own youth—*Trixie Belden, Pollyanna, The Chocolate War*. All students walk away from my classroom in August with an arsenal of titles, written in a myriad of genres and styles,
Dipping into the Pool

In order to teach these courses, I have to read the literature. In order to be a better mother for my daughters and my eleven-year-old son, I need to read what they are reading. In order to recommend titles to college faculty wanting to explore using children’s books in their classroom, I have to read. In order to connect on a deeper level with the college students in my library every day, I have to read. And I have to read more than the award-winners, more than the best sellers. I need to get my feet wet and read widely, beyond my own genre-specific comfort zones. I have to get past offering an apology every time someone notices that I am reading *A Wrinkle in Time*, or *The Seeing Stone*, or *Smack*.

Next June, I will be the mom loading the cooler with water bottles. My husband will be packing board games instead of fishing poles, since he prefers acquiring monopolies to catching red snapper. I will lead the pack in tossing the Frisbee and eating grilled shrimp. My three children will be in the back of the van with their brown paper bags of goodies, purchased by yours truly at K-Mart. But you can be certain that, a week before departing, we will descend on Books-A-Million and spend an hour looking for the right “beach books” to go in our suitcases. Lucky for them, my children have a mom who reads, so the “beach books” will be a family beach experience. We will share ideas and characters and story lines, and in the process make some Florida memories all our own.

References

Flannery O'Connor at Union and Beyond

by Roger Stanley

Flannery O'Connor, whose premature death from lupus in 1964—just before her fortieth birthday—marks one of Southern literature’s biggest losses, is the writer who has meant the most to me both in the Union classroom and beyond.

Indeed it has been the opportunity to take students from two separate summer classes to Georgia for sites associated with O’Connor which will always provide one of my most fulfilling Union memories. We first embarked in August 1997 at the end of a four-week class in the major Southern authors Faulkner, O’Connor, and Percy; in 1999, chair Barbara McMillin was gracious enough to let me teach a special topics course exclusively on my favorite writer (“The Fiction and Faith of Flannery O’Connor”). Both journeys took us to O’Connor’s birth home in coastal Savannah, but focused primarily on rural Milledgeville, the residence of most of her adult life which also serves as the repository of her papers inside her alma mater’s library.

Flannery O’Connor’s fiction consists of some three dozen short stories, plus the two novels *Wise Blood* and *The Violent Bear it Away*. While the longer works are a harder sale best reserved for upper division courses, I have never neglected the opportunity to teach such hilarious stories as “A Good Man is Hard to Find,” “Revelation,” and “Good Country People” at the freshman level.

As might be surmised from these titles, O’Connor's subject matter ultimately involves a search for goodness; ironically, such epiphanies often come to her characters only in the aftermath of a textbook being hurled up side of their heads or of finding themselves abandoned in a hayloft short one artificial limb. It’s this mixture of violence with a comic sensibility driven largely by accurate representation of how mid-twentieth century Southerners actually talked (and still talk today) which makes O’Connor’s stories stick.

Using the word “Faith” in the 1999 course title was much more than just a recruitment pitch in light of Union’s mission and evangelical orientation. A cradle Catholic born in that rare Southern city where Catholics were more than a token minority, O’Connor never quite adjusted to the Bible Belt of central Georgia when the family moved there from Savannah just before her teen years. Still, both her letters and her fiction are imbued with theology—more overt and speculative in the former, subtler in the fiction.

Indeed any sect or denomination might well appropriate O’Connor’s writings in an enriching way. One of the best O’Connor conferences I ever attended was held at Brigham Young University under the auspices of its Center for the Study of Christian Values in Literature. Closer to home (and to the theological mainstream), I was pleased to assist Union Artist-in-Residence Michael Mallard last fall in a six-week Wednesday night study series on O’Connor at First United Methodist of Jackson. This creator of “a Christian in spite of himself” (O’Connor’s label for her *Wise Blood* protagonist) is the exclusive province of no one religious perspective—Catholic, Protestant, or otherwise.

I am struck too by allegiance to O’Connor not only from her fellow prose stylists, but also in what might be loosely (but not disparagingly) labeled “secular popular
culture.” Singer/songwriter Lucinda Williams, who recently won her third Grammy for a probing vocal on her song “Get Right With God,” once prefaced a live performance of “Pineola” by noting that it “could be right out of Flannery O’Connor.” Strikingly, “Pineola” is based on an actual Catholic funeral she attended, but Williams changed the characters and imagery in the lyrics to Pentecostalism. Artists like Tom Waits (who entitled one song “A Good Man is Hard to Find”) and Bruce Springsteen (who avows reading the “just incredible” O’Connor prior to releasing Nebraska) have also come under O’Connor’s sway.

As much as music, conferences, study groups, and certainly the classroom have meant and continue to mean to me, I always return to the “field trips” I have led, especially the 1999 one, when assessing what O’Connor has provided me. The five of us attended Sacred Heart Catholic Church of Milledgeville on a hot July Sabbath, O’Connor’s actual parish in the 1940’s and 1950’s.

A “cradle Baptist” myself, I had never attended a Catholic service, and I sought to alleviate any misgivings by offering a ride across town to any student who wished to “opt out” and attend a more familiar denomination. There were no takers. We were made to feel welcome by this small enclave of worshippers, and one elderly lady proved to be a cousin of Flannery and reminisced in our presence after the service.

The great writer is buried rather anonymously with family in Milledgeville’s public cemetery, where the mourner can stand graveside and take note of the First Baptist fellowship hall directly across the fence. After a brief stop there, I couldn’t prevent this spirited quartet of students from guiding me to Andalusia, the O’Connor farm house which I knew to be officially off limits to visitors. It must have been that offer of extra credit I had half seriously dangled out to them, for before I knew it, they were all navigating their way past barbed wire and Pinkerton security signs and onto the driveway proper. What could a professor cast in a supervisory chaperone’s role do but follow in their wake?

Never very patient with academic analysis of her prose, O’Connor would probably be appalled at the cottage industry surrounding her work in literature and creative writing programs today. She once famously said, “Everywhere I go I’m asked if I think the universities stifle writers. My opinion is that they don’t stifle enough of them.” Touché: and thank goodness her own counsel was not heeded in her case.
JUFF Contributors

Sean Evans assumes the mantle of Faculty Forum president for 2004-2005 after having served as vice-president last academic year; he is Assistant Professor of Political Science.

Gene Fant has served the Department of English as chair since coming to Union from Mississippi College in 2002.

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Roger Stanley has been JUFF editor since 1996, having contributed both poetry and prose to its pages in the early and mid-90’s; he is Assistant Professor of English.
CLIO Encounters Eschatology:
Recent Historiographical Interest in Christian Belief About the Future

by James A. Patterson

Introduction

In 1970, Hal Lindsey publicly inaugurated what proved to be a remarkable career as an evangelical prophecy guru with the initial release of The Late Great Planet Earth. This volume, which was not far removed from the literary genre of tabloid journalism, became a national best seller and precipitated a deluge of books, newsletters, films, and television shows devoted to frequently sensationalized depictions of prophetic themes.\(^1\) For his part, Lindsey essentially popularized the dispensational tradition of John Nelson Darby, C. I. Scofield, and Lewis Sperry Chafer; of course, he offered several new interpretive twists to fit the unfolding events of the late twentieth century into the classic system. Moreover, as Chris Hall has recently noted, Lindsey “unexpectedly uncovered a deep vein of eschatological and apocalyptic longing in the fundamentalist/evangelical subculture and in American culture at large.”\(^2\)

In the same year that The Late Great Planet Earth gazed expectantly toward the future for the impending fulfillment of biblical prophecies, the late church historian Ernest R. Sandeen published The Roots of Fundamentalism, a landmark monograph that looked to the past for perspective on, among other things, conservative Christian beliefs about the future.\(^3\) Lindsey and Sandeen probably were unaware of each other in 1970; in addition, they wrote for different reasons and disparate audiences. Nevertheless, Sandeen’s explorations in British and American millenarian sources yielded historical insights that subsequently would help to explain the Lindsey phenomenon. If American evangelicals and fundamentalists had devoured The Roots of Fundamentalism with as much gusto as they imbibed The Late Great Planet Earth, their grasp of Lindsey’s context and significance would have been much sharper. Furthermore, they might have been far less euphoric about the former tugboat captain’s prophetic speculations.

Sandeen, then a professor at Macalester College in Minnesota, was not the first scholar to address historical manifestations of prophecy belief.\(^4\) What set his endeavor apart from others was his focus on American fundamentalism as a theological tradition that could not be explained simply in cultural, psychological, or social terms. As an intellectual historian, Sandeen contended that premillennialism represented one of two major components at the very heart of the fundamentalist movement.\(^5\) He carefully traced the influence of nineteenth-century British millenarians like Edward Irving and John Nelson Darby, giving special attention to the latter’s ecclesiology and theory of a secret rapture.\(^6\) Through a number of visits to the United States, the Plymouth Brethren leader convinced many American Protestants to accept his dispensational theology, even if few were inclined to join his movement. As Sandeen demonstrated, dispensationalism was then Americanized through the efforts of men like C. I. Scofield, known especially for his Reference Bible.\(^7\)

In his thorough investigation of the origins of fundamentalist eschatological beliefs, Sandeen showed that he took them seriously. While his overall interpretation of fundamentalism has been justifiably challenged, Sandeen contributed significantly to the historiography of Christian beliefs about the future.\(^8\) His book provided a useful historical backdrop for what was happening among more apocalyptically-oriented evangelicals after 1970; at the same time, it
suggestively paved the way for further research into the historical development of Christian eschatology.

Timothy P. Weber, now the academic dean at Northern Baptist Theological Seminary near Chicago, pursued some of Sandeen’s themes in his doctoral dissertation at the University of Chicago, eventually published as *Living in the Shadow of the Second Coming*.9 Weber shared Sandeen’s interest in the theological world view of premillennialism, including its methods of biblical interpretation. But he also sought to incorporate the historical models of Robert F. Berkhofer Jr. and Martin E. Marty, his dissertation advisor.10 Hence, Weber aimed his analytical skills not only at doctrine, but also at the forms of behavior that were shaped and influenced by doctrine. He approached his study of premillennialism by asking whether a belief in the imminent return of Christ made any difference in how people actually lived, behaved, or conducted their lives.11

After explaining the eschatology of premillennialism, Weber then examined the impact of belief in the imminent Second Coming on attitudes toward social reform, foreign missions, war, Zionism, and other issues with potential links to biblical prophecy. Like Sandeen, Weber presented premillennialism primarily as a religious movement: “Although it has had some social and political consequences, premillennialism’s paramount appeal is to personal and religious sentiments.”12 On the other hand, Weber’s behavioral perspective allowed him to show more interest than Sandeen in the social and political implications of premillennial beliefs. In the final analysis, Weber went beyond Sandeen’s basically theological treatment, resulting in a more realistic picture of premillennialism.

Led by historians like Sandeen and Weber, there was an explosion of scholarly writing about prophecy beliefs and apocalypticism in the 1970s and 1980s. These works ranged in scope well beyond American fundamentalism and evangelism to include several different historical eras and types of eschatological doctrines.13 Clearly, Christian eschatology had gained acceptance as a legitimate topic for historical research and writing. In fact, the 1990s would bring a further expansion of scholarly efforts to understand and explain the historical development of Christian beliefs about the end times, most notably in the works of Paul Boyer, Bernard McGinn, and Robert Fuller.14

**Paul Boyer: Mining the Sources**

In 1992, Paul Boyer, the Merle Curti Professor of History at the University of Wisconsin-Madison, published *When Time Shall Be No More*, the most exhaustive study of modern American premillennialism yet written. Raised in the Brethren in Christ denomination, Boyer first became aware of prophecy issues during childhood through the sermons of his grandfather.15 Through previous works on the Salem witchcraft episode, urban history, and the nuclear age, Boyer achieved wide acclaim in the guild of professional historians.16

In *When Time Shall Be No More*, Boyer’s central concern is to account for the pervasiveness, persistence, and adaptability of prophecy belief in modern American culture. He steadfastly avoids condescending or reductionistic analyses, preferring to treat premillennial eschatology with respect as primarily a religious belief system. At the same time, Boyer alertly recognizes that doctrines concerning the end times contribute to a world view that offers psychological and ontological benefits: "Prophecy belief is a way of ordering experience. It gives a grand, overarching shape to history, and thus ultimate meaning to the lives of individuals caught up in history’s stream. Here, I believe, is a key to its enduring appeal."17
In a recent article that serves to update his book, Boyer elaborates further on this more functional side of prophecy belief:

So long as premillennial dispensationalism continues to meet the emotional and psychological needs of a great many Americans, and so long as the popularizers of Bible prophecy continue to weave our deepest collective anxieties into their end-time scenarios, this ancient belief system, with its infinite flexibility and its imaginative, drama-filled vision of history, will remain a significant shaping force in our politics and culture.18 Boyer’s sensitivity to these dimensions of eschatological belief, while not fully developed in *When Time Shall Be No More*, nonetheless helps to qualify the criticisms of reviewers who judge him as long on narrative and short on analysis and interpretation.19

Like Sandeen, Boyer is most comfortable employing the tools of intellectual history; in particular, he depends primarily on the reading of texts for his information about the “hidden world” of prophecy belief. Indeed, the mere quantity of prophetic materials that Boyer read staggers the imagination. During a four-year period, he digested over three hundred prophecy books, as well as papers from prophecy conferences, prophecy newsletters, and religious periodicals devoted to prophecy themes. To supplement his scouring of written sources, Boyer also interviewed five prophecy writers, listened to prophecy sermons by visiting speakers at two churches in Madison, Wisconsin, and attended a prophecy seminar held under the auspices of the Seventh-day Adventist Church. Over one hundred pages of endnotes attest to the thoroughness of Boyer’s research.20

In good historical fashion, Boyer sets the stage for the core of his book by establishing the background and context of premillennial eschatology. His first chapter concisely scans the early development of prophetic and apocalyptic thought in ancient Israel and the early church. He limits his discussion of biblical materials to Ezekiel, Daniel, Mark 13, and Revelation; here his comments indicate at least a modest acceptance of higher critical conclusions. For example, Boyer states that “the weight of scholarly opinion views the Book of Daniel as a pseudopigraphic apocalypse written around 167 B.C. and predated to enhance its credibility.”21 Even so, he recognizes the enormous influence of the Bible’s apocalyptic texts on later believers who viewed them as “vital source of doctrine, reassurance, and foreknowledge.”22

His overview in chapter two of the “rhythms” of eschatological beliefs throughout church history covers key individuals and movements like Irenaeus, Augustine, Joachim of Flora, the Reformers, the Puritans, and Jonathan Edwards. The compressed character of this section is understandable in light of Boyer’s overall purpose; certainly it invited other scholars like McGinn to shape more substantive treatments of apocalyptic thinking in periods and contexts to which *When Time Shall Be No More* gives short shrift. Still, Boyer manages to glean some suggestive themes from his historical survey, including (1) the durability and adaptability of prophetic beliefs; (2) the danger of these doctrines becoming politicized; and (3) the reality that in the contemporary world, intellectual and theological leaders are no longer the chief expounders of the prophetic scriptures.23

Boyer’s third introductory chapter, which covers some of the same ground as Sandeen’s *The Roots of Fundamentalism*, charts the history of premillennialism through 1945. The Wisconsin professor is especially adept at measuring the impact of the World War II era on premillennialist scenarios. In fact, the momentous wartime events, Boyer concludes, provided prophecy writers with “compelling empirical validation of their unfashionable but remarkably tenacious vision of human destiny.”24 Many of the themes that unfold more fully in later chapters are introduced in this section.
The heart of Boyer’s tome can be found in the five chapters that make up part II. Here he meticulously draws on his vast reading of prophecy literature to recount the story of dispensational premillennialism over the last half-century. Boyer focuses specifically on how the prophecy movement sought to interpret biblical texts in response to the advent of the atomic bomb, the regathering of Israel as a nation, the rise and fall of the Soviet Union, and the prominent role of the United States in world affairs. Chapter eight tactfully catalogs the host of Antichrist candidates that prophecy speculators have identified since 1945—Anwar el-Sadat, King Juan Carlos, Henry Kissinger, Mikhail Gorbachev, and Ronald Reagan, among others, received consideration for beastly status. In these chapters, Boyer copiously cites prophecy writers and preachers like Donald Grey Barnhouse, M. R. DeHaan, Dave Hunt, Salem Kirban, Tim LaHaye, Mary Stewart Reifel, Chuck Smith, Charles Taylor, Jack Van Impe, John Walvoord, and, of course, Hal Lindsey. The reader has to be struck not only by the apocalyptic nature of the times, but also by the boldness with which the prophecy experts put forth their applications of biblical texts to current events.

The final two chapters reveal Boyer at his interpretive best. For example, he offers the image of the theater as the most helpful metaphor for understanding the premillennial view of history as predestined. Premillennialism’s keen sense of harmony, symmetry, and meaning in history, in fact, partly explains its appeal: “With secular historians no longer speaking the language of progress or portraying the majestic unfolding of a divine plan in history, prophecy popularizers took up the slack and found a vast audience in the process.”25 Boyer is also effective in pointing out how the premillennial concept of history is linked to a pronounced utopianism with its emphasis on the coming Millennium as an “alternative future.”26

Boyer’s most weighty achievement in this long volume is his consistent attention to the resiliency of prophecy belief. Even when the prophecy teachers and writers have been wrong on the significance of events or in their identifications of the Antichrist, they have not hesitated to reset their timetables or rework their interpretations of prophetic passages. Near the end of his book, Boyer comes close to commending the flexibility of contemporary premillennialists: “As the configuration of world power alignments and public concerns shifts at the end of the century, prophecy popularizers, like their predecessors over the centuries, are proving extremely resourceful at restructuring their scenario.”27 While this assessment might suggest that biblical prophecy becomes a ball of wax in the hands of some its expounders, it also helps to explain why a distinguished historian like Paul Boyer regards prophecy belief as an enduring reality in modern American culture.

Bernard McGinn: Antichrist over Two Millennia

Bernard McGinn’s Antichrist represents only one of several works that this respected medieval historian has penned on the historical development of Christian eschatological beliefs, an area he has researched for over twenty years. Among other important volumes on prophetic doctrines, the Naomi Shenstone Donnelley Professor of Historical Theology and the History of Christianity at the University of Chicago Divinity School has authored Visions of the End and served as one of the editors for The Encyclopedia of Apocalypticism.28 Like Boyer, McGinn writes primarily as an intellectual historian, although his major area of expertise is Europe, not America.

The fact that McGinn is a Roman Catholic in the Augustinian tradition helps to explain his overall approach in Antichrist.29 From the outset, he disclaims a literal Antichrist, averring
instead that the paramount manifestation of evil has already come: “the most important message
of the Antichrist legend in Western history is what it has to tell us about our past, and perhaps
even about our present attitudes toward evil.” He then elaborates on this theme with the
proposal that “the Antichrist legend can be seen as a projection, or perhaps better as a mirror, for
conceptions and fears about ultimate human evil.” Thus an allegorical or symbolic
understanding of the Antichrist functions as McGinn’s vehicle for taking Christian eschatology
seriously.

McGinn’s aversion to a literal Antichrist is even more evident when he discusses the
internal-external and dread-deception polarities that have characterized the various images of the
Antichrist in Christian history. He unequivocally identifies with those Christian thinkers, such as
Augustine of Hippo, who have located the central meaning of Antichrist in “the spirit that resists
Christ present in the hearts of believers” or in the deceit of those “who confess Christ with their
mouths but deny him by their deeds.” For McGinn, this spiritualized, even domesticated
Antichrist is far more plausible than an external enemy who inspires dread like a persecutor or
who practices outright deception from a seat of religious power.

These theological musings about the nature of the Antichrist form the backdrop for
McGinn’s historical survey. He begins his account by delving into the apocalyptic traditions of
Second Temple Judaism, which he regards as a complex interaction of myth, legend, and history.
The angelic and human adversaries of God and His messiah that emerge in these writings,
McGinn argues, “form a necessary part of the background to the Antichrist legend.” Among
the important Jewish antecedents he discusses is the “Final Tyrant” found in the Book of Daniel,
a writing that McGinn dates to the Maccabean period. By limiting the application of the “little
horn” in Daniel 7-12 to Antiochus IV Epiphanes, McGinn adopts a posture toward the Old
Testament prophetic book that is very similar to Boyer’s. In other words, the author of Daniel
creatively utilized apocalyptic eschatology to interpret his own troubled times. Even as he
ignores any predictive value in Daniel’s prophecies, McGinn frets over the apocalyptic writer’s
externalization of good and evil “in terms of present historical conflicts.” Consequently,
McGinn infers that the apocalypticism of Second Temple Judaism influenced Christian
eschatology in deleterious ways.

McGinn’s comprehensive overview of Christian Antichrist images occupies eight
chapters, each one devoted to a distinct historical period. In covering early Christianity, the
Chicago historian combines a higher critical approach to the New Testament with a marked
preference for patristic authorities like Origen, Jerome, Tyconius, and Augustine. All of these
Fathers articulated non-millennial eschatologies, usually accompanied by inner moral
interpretations of Antichrist. Four chapters on the Middle Ages, McGinn’s specialty, scrutinize
topics like the monk Adso’s “Last Emperor” motif, Hildegard of Bingen’s innovative
symbolism, Joachim of Flora’s apocalyptic speculations, and dissident Franciscans’ espousal of a
papal Antichrist. In these sections, McGinn incorporates useful references to poetry, drama, and
art, thus illustrating how apocalypticism played out in popular culture.

For the Reformation and modern periods, McGinn employs the rubrics “Antichrist
Divided” and “Antichrist in Decline.” First, he adeptly shows how polarization became
inevitable as a result of Martin Luther’s “uncompromising denunciation of the papacy as true and
final Antichrist present in the world.” This stridency set the tone for later debate; indeed,
radical, Anabaptist, Puritan, and Catholic voices all responded in one way or another to the
Lutheran Reformer’s identification of the papacy as the Final Enemy. Second, McGinn depicts
the marginalization of literal Antichrist beliefs after 1660, a development he appears to welcome. He offers this critical prognosis of modern trends:

Antichrist as a form of vague rhetoric to be used against any opponent helped weaken the content of a term that was already being undercut by the neglect of its more personal applications. Antichrist's reality became increasingly problematic as Enlightenment ideas spread, but Christianity itself had prepared the way for this collapse. Because of this, most eighteenth- and nineteenth-century views of Antichrist seem empty repetitions of once-vibrant symbols.\footnote{38}

In McGinn's analysis, a divided Western Christendom lacked the resources to sustain a viable Antichrist tradition.

In his final chapter, "Antichrist Our Contemporary," McGinn assesses various twentieth-century versions. After a brief discussion of Roman Catholic perspectives, he evaluates dispensational premillennialism's chronic search for the Antichrist, covering much of the same ground as Sandeen, Weber, and Boyer—although failing to cite the latter. McGinn seems somewhat hopeful about the Antichrists of literature, noting writers of modern fiction like Frank Kermode, Czeslaw Milosz, Robert Hugh Benson, and Charles Williams, all of whom wrestle with the motivation behind ultimate human evil. McGinn also points to Carl Jung's notion of Antichrist as "an inexorable psychological law," not because he views it as plausible but rather as another possible way of emphasizing the "inner meaning of Antichrist."\footnote{39}

McGinn's quest for the contemporary relevance of Antichrist stems largely from his concern that the traditional "legend" serves mainly to foster "hatred and oppression of groups, such as Jews and Muslims, seen as collective manifestations of Antichrist's power."\footnote{40} His salvation operation on Antichrist belief finally arrives where it began, stressing the symbolic nature of the Antichrist within: "At the end of this millennium we can still reflect on deception both within and without each of us and in our world at large as the most insidious malice—that which is most contrary to what Christians believe was and still is the meaning of Christ."\footnote{41} As some of McGinn's critics have suggested, it remains to be seen whether this Antichrist image is adequate to account for either the biblical texts or contemporary manifestations of evil in our world.\footnote{42} Nevertheless, McGinn has written the best one-volume historical account of the Antichrist tradition, one that is still influencing our journalistic culture today.\footnote{43}

**Robert Fuller: An American Obsession?**

Following Paul Boyer's magisterial study of prophecy belief in America and Bernard McGinn's thorough examination of the Antichrist tradition in Christian history, Robert Fuller's *Naming the Antichrist* is something of a disappointment. First, Fuller is much briefer than McGinn on the overall history of Antichrist belief and not nearly as comprehensive as Boyer when dealing with the American scene. Second, Fuller writes with an obvious agenda. He is appalled by the persistence of literal interpretations of biblical prophecy in fundamentalism. Rather than appraise these beliefs at face value, Fuller attempts, with limited success, to explain them primarily with psychological and social categories. In fact, he claims that one of the essential tasks of intellectual history is to be alert to "the sociology of knowledge":

The whole point of humanistic inquiry, particularly historical inquiry, is to explicate meanings that are not overtly present in a text, a historical event, or a person's self-awareness. A judicious use of social, economic, and psychological perspectives that
make such an explication possible is thus an indispensable part of the interpretive process. While this is a laudable goal, Fuller seems more bent on discrediting the fundamentalist world view than on offering a plausible and convincing account of it.

Fuller, Professor of Religious Studies at Bradley University, contends in his introduction that Christians through history have used the Antichrist symbol to shape their self-understanding and to demonize their enemies. For Americans, in particular, naming the Antichrist aids in the establishment of “the symbolic boundaries that separate all that is holy and good from the powers of chaos that continually threaten to engulf them.” Apocalyptic thought then, according to Fuller, functions as a protective device for those plagued by doubts and uncertainties about life.

The initial chapter of Naming the Antichrist traces the origins of Antichrist doctrine from the New Testament era through the colonial period in America, a span of almost eighteen hundred years. Fuller’s psychosocial approach to eschatology is clearly evident when he interprets the beast of the sea, or Antichrist, in John’s Apocalypse as “a mythic device” that has allowed readers “to label and interpret their fears and frustrations.” The remainder of Fuller’s historical survey through the Reformation correlates apocalypticism not so much with theological speculation as with social, economic, and political disruption.

Fuller’s treatment of the Puritans in chapter two leaves much to be desired. In terms of historical matters, he wrongly implies that Puritans were Separatists, and fails to distinguish carefully between Puritans and Pilgrims. On the interpretive side, he organizes his analysis around the idea that apocalyptic thought in New England provided a mechanism for the Puritans to demonize their enemies, whether they be native Americans, dissenters, or witches. Fuller, however, does not supply sufficient evidence to demonstrate that the Puritans identified all their “enemies” with Antichrist, or that they viewed all their social and political conflicts in apocalyptic proportions. He also delivers some low blows; for example, he suggests that “Cotton Mather’s lifelong obsession with the devil was an inherited trait.” Except for his generally balanced presentation of Jonathan Edwards’s eschatology, Fuller’s overview of Puritanism is condescending and much too driven by social and psychological explanations.

Following a chapter on developments in American apocalyptic thought during the nineteenth century, Fuller devotes most of the remaining parts of his book to fundamentalist eschatology. Overall, his explication of fundamentalism in many ways parallels his treatment of Puritanism. He sees both movements as representative of the darker side of apocalyptic belief; both used Antichrist doctrine to project their fears and anxieties upon demonic enemies, thus serving as typical exemplars of the American “obsession.” Hence, Fuller writes about both with a decidedly polemical edge.

Fuller’s portrait of fundamentalism draws on the scholarship of Boyer, Marsden, Sandeen, and Weber, among others. The major difference is that they are more nuanced and less tendentious than Fuller. For example, far more than any previous author, Fuller wants to identify premillennialism as the sine qua non of fundamentalism, ignoring the fact that not all fundamentalists have been premillennialists. He also jumps from a discussion of early fundamentalism in chapter four to “Crusades of Hate” in chapter five, assuming significant historical continuity between those who stood for the fundamentals of the faith in the 1920s and those more extreme fundamentalists who later launched virulent anti-Semitic, anti-Catholic, and anti-New Deal campaigns. Indeed, it is not entirely obvious who falls under this judgment of Fuller: “[t]he story of twentieth-century Antichrist is thus in large part the story of naming,
dramatizing, and mythologizing the enemies of ultraconservative Protestantism.” ⁵⁰ At times, Fuller appears to classify anyone who believes in biblical inerrancy, premillennialism, evangelism, and social and moral separatism with the “apostles of discord” and “paranoid” types described in chapter five. Fuller’s assessment of fundamentalism as basically ill, empty, and even evil has provoked one critic to remark that Naming the Antichrist “is an invitation not to understand but to deride and dismiss.” ⁵¹

Although Fuller drops many interpretive hints throughout his book, he waits until the epilogue to reveal his full agenda. After reviewing several earlier theories concerning apocalypticism, he opts for a perspective that combines philosophical pragmatism and functionalism:

A functionalist interpretation of specific religious beliefs, such as belief in the Antichrist, focuses on the functions of these beliefs in guiding individual and group interaction with the surrounding world. Philosophical pragmatism comes into play as we begin seeking some means of comparing or evaluating competing ideas or beliefs. Pragmatism shifts our attention away from philosophy’s traditional interest in judging the truth of an idea, in favor of the task of assessing an idea’s functional value. ⁵²

What especially irks Fuller about apocalyptic fundamentalism is that its eschatological beliefs promote nativism, territorialism, and “tribalistic boundary posturing,” which he apparently judges to be “absolutely” wrong, even though his philosophical allegiance is to a system that denies absolutes. ⁵³

In the final analysis, Fuller regards naming the Antichrist as a functionally counterproductive activity. It not only prevents people from becoming fully participating contributors in a pluralistic society, but it also represents an attempt to project one’s own faults and shortcomings onto an enemy, which is psychologically dysfunctional. Yet Fuller seems not entirely satisfied with his functionalist perspective when he borrows social gospel rhetoric for his last sentence: “[t]his relentless obsession with the Antichrist appears to have done more to forestall than to signal the realization of the Kingdom of God on earth.” ⁵⁴ Perhaps even a pragmatic functionalist like Robert Fuller is entitled to entertain an eschatological hope.

**Conclusion**

In his recent book *Apocalypses*, retired UCLA professor Eugen Weber sets forth a compelling rationale for the historical investigation of prophecy belief:

If scores of eschatologists have proved mistaken, the answer is not that one of them will prove right one day, but that too many of them have proved too influential—destructive, constructive, inspiring, consoling—and that it is foolish for historians to dismiss or, worse, to ignore them. ⁵⁵

The point of Weber’s statement reverberates through the scholarly contributions considered in this essay. Because several researchers chose not to neglect an important and legitimate sphere of historical inquiry, we have a fuller and much richer portrait of the development of eschatological doctrines in Christian history. Their work not only demonstrates the significant impact that beliefs about the future have exerted at various times in the past; it also illuminates the cultural, historical, and religious contexts that have helped to shape those beliefs.

The studies of Boyer, McGinn, Fuller, and others hold special relevance for Christian readers. As Weber observes, several “eschatologists” have made serious miscalculations about prophetic timetables or patently erroneous conjectures regarding the fulfillment of biblical
prophecies. The existence of contrived, sensationalized, or highly speculative apocalyptic scenarios in the past should alert evangelical Christians against such follies in the present. If the history of prophecy belief teaches anything, it calls its practitioners to exercise caution and humility when attempting to chart the future plans and actions of God.

Finally, while the historical labors reviewed here yield many benefits, they also suggest some interpretive limitations. McGinn, Fuller, and—to a lesser degree—Boyer at times adopt an adversarial posture toward their subjects. As a result, some of their analyses tend toward reductionism, especially when they employ political, psychological, and social explanations for the vitality and persistence of prophecy belief. While such perspectives certainly have validity, they also threaten to obscure the importance of religious aspirations and theological convictions in the lives of those energized by eschatology. To enlarge on Weber's warning, patronizing the eschatologists can be as problematic as dismissing or ignoring them.

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4For example, see the earlier path-breaking work by Norman Cohn, The Pursuit of the Millennium: Revolutionary Millenarians and Mystical Anarchists of the Middle Ages (London: Secker and Warburg, 1957). Ironically, the third edition of Cohn’s book was published in 1970 by Oxford University Press.

5Sandeen saw the Princeton Theology of the nineteenth and early twentieth centuries as the other vital component. See The Roots of Fundamentalism, esp. chap. 5.

6Ibid., esp. chap. 3.

7Ibid., 222-24.

8The most successful challenge to Sandeen’s two-source thesis was George M. Marsden, Fundamentalism and American Culture: The Shaping of Twentieth-Century Evangelicalism, 1870-1925 (New York: Oxford University Press, 1980).


12 Ibid., 229.


18Boyer, “Bible Prophecy Belief in Contemporary American Culture,” Anglican and Episcopal History 67 (December 1998): 466. It is not clear whether “this ancient belief system” is a reference to biblical prophecy in general or to premillennial dispensationalism in particular.


20On his sources, see Boyer, When Time Shall Be No More, xiii-xiv. For the endnotes, see ibid., 341-444.

21Ibid., 31.

22Ibid., 45.

23Ibid., 77-79.

24Ibid., 112.

25Ibid., 317-18.

26Ibid., 318-24.

27Ibid., 338-39.


30McGinn, Antichrist, xii.

31Ibid., 2.

32Ibid., 4-5.

33Ibid., 9.
34 Ibid., 32.

35 Ibid., esp. chaps. 2 and 3.

36 Ibid., chaps. 4-7.

37 Ibid., 208.

38 Ibid., 249.

39 Ibid., 274-75.

40 Ibid., 273.

41 Ibid., 280.


43 For example, look for the impact of McGinn on Kenneth L. Woodward, “The Way the World Ends,” Newsweek, 1 November 1999, 67-74. At the end of his article, Woodward asks, “And who’s to say that John’s mythic battle between Christ and Antichrist is not a valid insight into what the history of humankind is ultimately all about?”


46 Ibid., 30.

47 For example, see ibid., 34-37.

48 Ibid., 42-44.

49 Ibid., 62.

50 Ibid., 136.


52 Fuller, Naming the Antichrist, 194-95.

53 Ibid., 195-96.
54 Ibid., 200.

Tennessee: Raveling the Edges of Who I am

by Jenny Brooks White

When I was there, I was a cotton farmer's daughter with wild hair and bare feet and I let no one tie my days to order. I climbed the highest trees, fingered scars in the rough bark, and felt my hands turned raw and sweaty. When I looked over the cotton fields, I saw deer flash their white tails and run when they caught my scent. I've run, too, through the roughest fields with grass whipping my bare legs and the ground rising up to meet my fast steps. I was a sister and fought my brothers with the wrath of a young woman. I pounded my fists into their adolescent chests and I even bloodied their noses. And I bloodied my knees and elbows, fell from swings and bicycles, cut my feet on the gravel drive. I was a granddaughter and I walked my grandfather's garden rows, found bits of coal and glass, reached through the scratchy squash and picked fruit swollen with time. And now time reaches up for me and takes me back to Tennessee, a place far away, a place once visited, once lived, and it shakes out its memory in my mind the way my grandfather shook fruit trees—bringing the ripest, most delicate to the ground. I look back at that cotton farmer's daughter and see her ragged pants and tangled hair and I say to myself: this is who I am.
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honorific, which became widely popular in the Middle Ages. Honorious Augustodunensis writes that Mary Magdalene merited her singular Christophany ("angelum videre meruit Dominusque resurgens primo omnium ei publice apparuit"), and that Christ sent her as an apostle to his Apostles ("eamque apostolam apostolis suis misit"); Honorious sees Mary as a second Eve bearing the message of eternal life instead of subjecting humankind to mortality ("et sicut prima femina mortem viro traderet, ita nunc femina perhennem vitam viris nunciareat"; PL 172.981). In Joseph Szövérffy's survey of medieval Magdalene hymns, *Apostola* is one of four principal titles that she is repeatedly given (92). Vernacular authors such as Osbern Bokenham (139) and Nicholas Love (206) also observe this distinction in their praise of the Magdalene, and Joseph Harris has argued that the ballad "Maiden in the Morn Lay" draws upon similar Magdalene traditions (79). Possibly the most dramatic illustration of her apostolic role can be found in an English twelfth-century psalter probably prepared for Christina of Markyate. Here the Magdalene, with hand raised, extends her finger in a gesture of address, recounting the news of the Resurrection to eleven wide-eyed Apostles who hang on her every word. This iconography is not common, but it can be found in multiple manuscript illustrations, carvings, and stained glass beginning in the eleventh century (Haskins 220, 452).

Conscience's suggestion that the Magdalene noised her news indiscriminately abroad undermines her quasi-evangelical authority. Even his summarizing statement, "Thus cam it out þat crist overcom, recouerede and lyuede," implies a random relaying of information. The language of the Vulgate, confirmed by patristic, hagiographic, dramatic, and lyric traditions, stresses Mary Magdalene's role as an appointed envoy to the Apostles, not the indiscriminate speaker we find in Conscience's account.

### III

Conscience's portrayal of a garrulous Magdalene offers an ideal opportunity to employ the proverb "What a woman knows may not well remain secret." The garrulity of women was a proverbial commonplace, and its appearance in one of the most encyclopedic poems of the English Middle Ages may therefore be unsurprising. Examination of the contexts in which this proverb occurs elsewhere, however, reveals more specific, and more specifically ideological, agendas which condition its use and which motivate Conscience's apparently gratuitous denigration of the Magdalene.

The "counseille" proverb's first English attestation comes from the widely popular *Proverbs of Alfred*, in which we are told that King Alfred was "þe wysuste mon þat wes englelon on" (lines 23-24). For the author or compiler of the *Proverbs*, part of the king's wisdom involved a facility with misogynistic traditions. At "Sifford," before a gathering of bishops and earls, knights and clerks, Alfred counsels his men: "Be never so insane nor so drunk with wine that you ever tell your wife all your plans, because she will reveal all in front of all your enemies... for woman is word-crazy and has a tongue too swift, and even though she

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*Le Culte de Marie Madeleine en Occident, des origines à la fin du moyen âge.*

6 I translate from the J text (Jesus College Oxford MS. 29). The "counseille" proverb is item W534 in the Whitings' proverb dictionary; compare items F426 and W485, and Tilley's item W649.
might want to, she cannot withhold anything.” In the Proverbs of Alfred we first witness what
will become a recurrent narrative context for this proverb: the secrets which a “word-wod”
woman divulges will be hazardous to men.

No text more strongly emphasizes the danger of confiding in wives than Jean de Meun’s
portion of the Roman de la Rose, in which the female personification Nature “confesses” to a
male Genius for creating that most reprehensible of all creatures, Man. What ensues is a broad
parody of Catholic confession in which a priestly Genius uses his authority not only to counsel
Nature, but also to embark on a diatribe against the seductive menace and verbal infidelity of
women, employing the same sententious advice found a century earlier in the Proverbs of Alfred:

No man born of woman, unless he is drunk or demented, should reveal anything to a
woman that should be kept hidden, if he doesn’t want to hear it from someone else . . .
for if, just one single time he ever dares grouch at her or scold her or get angry, he puts
his life in danger—if he deserved death for his deed—that she will have him hanged by the
neck, if the judges catch him, or secretly murdered by friends. (276)

As in the Proverbs of Alfred, we see the details of the insanity or drunkenness that must afflict a
foolish man who speaks his mind to his wife, as well as the disastrous consequence which would
befall him. A few lines later, Genius dramatizes the proverb by portraying a sexually seductive
wife who weasels her husband’s secret out of him, saying:

I see all these other women who are sufficiently mistresses of their houses so that their
husbands confide in them enough to tell them all their secrets. They all take counsel with
their wives when they lie awake together in their beds, and they confess themselves
privately so that there is nothing left to them to tell. Truth to tell, they even do so more
often than they do to the priest. I know it well from them themselves, for many times I
have heard them; they have revealed to me everything, whatever they have heard and
seen and even all that they think. In this way they purge and empty themselves.
However, I am not the same sort. (278)

Jean de Meun’s mention of priests in this passage transforms these loose-lipped wives into
metaphorical confessors—a metaphor further explored below.

Chaucer would make liberal use of the “counsellor” proverb, employing some form of it
in The Wife of Bath’s Tale (the digression on Midas and his ass’s ears, line 980), The Monk’s
Tale (2015-30; 2090-94), and The Tale of Melibee (1060). Chaucer’s Monk, for example, does
not ascribe Samson’s downfall to fortune, but to his error of confiding in women:

Of Sampson now wol I namoore sayn.
Beth war by this ensample oold and playn
That no men telle hir conseil til hir wyves
Of swich thyng as they wolde han secree fayn,
If that it touche hir lymes or hir lyves.
(MkT 2090-94)
The Wife of Bath is especially fond of quoting proverbs, even to the disparagement of her own gender. In her tale, when she discusses the suggestion that a woman most desires her husband’s confidence, she embarks on a long digression employing, and radically altering, the familiar myth of King Midas and his ass’s ears—a digression in which Midas’s wife, not his barber, betrays his embarrassing secret. She further affirms the truth of the proverb in a confessional passage concerning the secrets of Jankin:

My fiftie housbonde—God his soule bless!—
Which that I took for love, and no richesse,
He som tyme was a clerk of Oxenforde,
And hadde left scote, and went at hom to bord
With my gossib, dwellynge inoure toun;
She knew myn herete, and eek myn priveteene,
Bet than owre parisse prest, so mot I thee!
To hire biwreyed I my conseil al.
For hadde my housbonde pissed on a wal,
Or doon a thynge that sholde han cost his lyf,
To hire, and to another worthy wyf,
And to my nece, which that I loved weel,
I wolde han toold his conseil every deel.
And sowe I did ful ofte, God it woot,
That made his face often reed and hoot
For verray shame, and blamed hymselfe for he
Had toold to me so greet a pryveteene.

(Prol. WBT 531-42)

Thus Jankin joins husbands from the Proverbs of Alfred, the Roman de la Rose, and the Wife’s own tale as men whose lives are ruined or jeopardized by their loose-lipped wives.\(^7\)

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\(^7\) One might also observe that the verbal promiscuity of these women frequently possesses a sexual correlative. The wife of Genius’s Roman de la Rose diatribe partially undresses as she solicits her husband’s secret, while Delilah and the Wife of Bath are both portrayed as sexually powerful and potentially dangerous. The “counseille” proverb also features prominently in Thomas Hoccleve’s Tale of Jonathas, in which the prying woman is the prostitute Fellicula. This correlation between verbal and sexual promiscuity might have prompted Langland’s audience to recall the Magdalene’s traditional status as a reformed prostitute, thereby associating her with the Venerien Wife of Bath, the prostitute Fellicula, the temptress Delilah, and the seductive wife of Genius’s diatribe in a sorority of sexually and verbally dangerous women. Langland alludes to the Magdalene’s sexuality in passus 5, lines 496-498 and passus 10, line 428, presenting the Magdalene as one of salvation history’s greatest sinners whose redemption illustrates God’s abundant grace. No one, according to the Dreamer, could have led a worse life in the world than her. Conscience, however, does not make the Magdalene’s presumed sexual past an issue in passus 19.
This selective but representative narrative history of the proverb reveals that loose-lipped and prying women jeopardize men’s crucial secrets, and sometimes their very lives. And in two instances the usually domestic “counsielle” proverb carries with it implicit ecclesiastical associations. Genius’s diatribe in the Roman de la Rose, with its portrayal of women as irresponsible secular confessors, reinforces the exclusively male role of confessor by pointing out a woman’s inability to hold an office so dependent upon the ability to “keep counsielle.” Chaucer was to repeat these ecclesiastical associations in the Wife of Bath’s Prologue, in which Alisoun asserts that her gossip “knew myn herte, and eek my privete, / Bet than oure parisses preest . . . .” If this is how women keep counsel, so the argument would run, they surely would make disastrous priests. In the Roman de la Rose and the Wife of Bath’s Prologue, the proverbial garrulity of women is expanded from a domestic sphere to reflect a religious one.

However, the author who provides the clearest connection between the “counsielle” proverb and anxieties over women’s religious authority is Langland himself. In passus 5, Wrath, a former friar, slanders all women while confessing to Repentance:

I haue an Aunte to Nonne and an Abbesse bope;
Hir were leuere sweowe or swele þan suffire any payne.
I haue be cook in hir kichene and þe Couen serued
Manye Monðes wiþ hem, and wiþ Monkes boþe.
I was þe Prioresse potager and opere pouere ladies,
And maad hem ioutes of langlyng þat dame Iohane was a bastard,
And dame Clarice a knyþtes douþter ac a cokewold was hir sire,
And dame Pernele a preestes fyle; Prioresse worþ she neuere
For she hadde child in chirietyne; al oure Chapitre it wiste.
Of wikkede wordes I, waþe, hire wordes made
Til “þow lixt!” and “þow lixt!” lopen out at ones
And eþer hitte oþer vnder þe cheke.
Hadde þei had knyues, by crist! hir eþer hadde kild oþer.
Seint Gregory was a good pope, and hadde a good forwit:
That no Prioresse were preest, for þat he purueiede;
They hadde þanne ben Infamis, þei kan so yuele hele counsiel.

(5.153-68)

For Wrath, the “counsielle” proverb involves no mere metaphor but stands as the principal argument against women priests. Wrath dismisses the prioresses’ assumptions of authority with the same reproach that Conscience levels at the Magdalene, using the same proverb; they cannot restrain their “janglyng” mouths.

IV

Up to now my focus has been on literary traditions that may help make sense of Langland’s problematical Magdalene, but it is in a social context that Conscience’s proverbial denigration of the Magdalene can be better understood, and gendered controversies of the late fourteenth and early fifteenth centuries recommend such an approach. In the first half of the
thirteenth century, it appears that some priresses were testing the limits of their religious authority despite the oft-repeated injunctions of 1 Timothy 2:11-12, encroaching upon the priestly duty of hearing nuns’ confessions. Their presumption led to a sharp rebuke by Pope Gregory IX, who forbade priresses to assume such duties. It is this decretal to which Wrath alludes in passus 5, and Wrath’s use of the “couseille” proverb implies an association on some level in Langland’s mind between the Magdalene and these priresses who had overstepped their bounds.

Perhaps Langland was concerned with these gendered tensions because his age was uniquely marked by an increasingly public feminine religiosity that became associated with everything subversive and dangerous. The explosion of lay piety, affective devotion, and vernacular translation of Scripture threatened to circumvent the already-besieged clerical community in England. Mystics such as Julian of Norwich were recording their spiritual experiences while Langland was writing his poem, and those who received visions from God authorizing non-traditional actions would prove most difficult to contain. Jean de Gerson, the staunch defender of orthodoxy best known for his vigorous persecution of Wyclif’s continental counterpart, Jan Hus, felt compelled to remind Langland’s generation that “the female sex is forbidden on apostolic authority to teach in public, that is either by word or by writing . . . . All women’s teaching, particularly formal teaching by word and by writing, is to be held suspect unless it has been diligently examined, and much more fully than men’s” (Colledge and Walsh 151). Here we may be reminded of a Canterbury monk’s reaction to Margery Kempe: “I wold now wer closyd in an hows of ston pat per schuld no man speke wyth pe” (27).

If contemporary accounts can be trusted, there were not enough houses of stone in all of England to contain the women who were supposedly assuming important roles in heretical movements of Langland’s day. Lollardy especially offered opportunities for women that orthodox Catholicism would never have allowed, as women assumed important but hazardous roles as readers and interpreters of Scripture. Yet the extent to which women were actually involved in Lollardy is the subject of considerable debate. Claire Cross has suggested that through being central to the family unit by which Lollardy thrived, women were spiritual leaders in the heresy. According to Cross, women were active teachers mainly through Conventicle recitation of memorized Scripture (360, 370-71). Margaret Aston continued Cross’s line of inquiry, additionally addressing rumors that Lollard women were actually functioning as priests. However, Shannon McSheffrey has cautioned against exaggerating women’s roles, reminding us that most of these women were illiterate and ancillary to a definite male leadership structure. McSheffrey writes, “Even most influential female Lollards confined their endeavors to informal situations rather than public teaching roles” (21).

Although the extent of women’s actual involvement in Lollardy is debatable, one thing is certain: women were perceived to be usurping traditionally male roles in heretical movements, including preaching and expounding Scripture, and this usurpation was to be a source of great anxiety. Margery Kempe’s public religiosity repeatedly earned her the accusation of “fals loller,” suggesting an association among her contemporaries between the heresy and preaching

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8 See Friedberg, Decretal Gregor. IX Lib. V. Tit. XXXVIII. cap. x (cols. 886-7).
women. It may be no coincidence that the two great persecutors of Wycliffite and Hussite belief, Thomas Arundel and Jean de Gerson, also made a point of condemning women preachers. Margaret Aston adduces considerable evidence from chronicle and sermon literature, poetry, and polemical tracts to reveal widespread concern over women’s roles among the champions of orthodoxy. By the 1390s rumors were circulating throughout London that women were celebrating masses, and Hoechele’s oft-quoted verbal assault on Oldcastle shows how women were already established as vigorous heretical interpreters of Scripture in the minds of the orthodox by this time:

Some wommen eke, thogh hir wit be thynne,
Wole argumentes make in holy writ!
Lewde calates! sittith doun and spynne,
And kakele of sumwhat elles, for your wit
Is al to feeble to despute of it!
To Clerkes grete apparteneth hat aart
The knowleche of hat, god hath fro yow shite;
Stynye and leue of for right scelendre is your paart. (13)

Hoechele responds to the threat of Lollard women scholars in what is by now a predictable pattern: by impugning their authority through misogynistic portrayals of small minds and big mouths. The imagined “kakeling” of Hoechele’s women is a revealing correlative to Langland’s depiction of “janglyng” prioresses and an indiscriminate Magdalene. The charge of garrulity seems to have been a multi-purpose putdown for any group of presumptuous women.

Aston discusses the most compelling evidence for a late fourteenth-century debate over women’s religious authority in the case of Walter Brut (or Brit), arrested in 1391 on heresy charges. Brought before the Bishop of Hereford, John Trefnant, Brut contended that women did indeed have priestly powers denied them by orthodoxy, expressing such powers in explicitly Petrine terms (e.g., they have the power “to bind and to loose”). Prominent theologians were convened to counter Brut’s claims, and his case evolved into a kind of referendum on whether women could attain religious privileges formerly reserved to men. In the debate between Brut and his opponents, the Magdalene was introduced as proof of the defensibility of women preachers: “multe mulieres constanter predicaverunt verbum quando sacerdotes et alii non audebant verbum loqui et patet de Magdalena et Martha” (“Many women steadfastly preached the Word when priests and others did not dare speak the Word, as evinced by the Magdalene and Martha” (Aston 52; my translation). Brut’s case demonstrates that the symbolic power of the Magdalene’s voice could be and was appropriated by proponents of expanded female religious liberties.  

9 William White was also alleged to have used these Petrine terms in the early fifteenth century; see Aston 52, 59.

10 Here one might also be mindful of allegations made toward Waldensian women. In his Summa adversus Catharos et Valdenses (ca. 1241), the Dominican Moneta of Cremona asserts that “the Waldensians appealed to the example of Mary Magdalene to justify preaching
Brut’s defense benefitted from hagiographical traditions that made Mary and Martha outstanding women evangelists. In the *Legenda Aurea*, St. Peter entrusts Mary Magdalene to the care of Maximin fourteen years after the Resurrection. When the disciples disperse to spread the gospel, Maximin, Mary, Martha, Lazarus, and others are cast out to sea in a rudderless ship by unbelievers. Miraculously arriving safely at Marseilles, the Magdalene immediately sets to work converting heathens through the power of her speech. The composer of the *vita* invests the Magdalene’s lips with both erotic and rhetorical power:

When blessed Mary Magdalene saw the people gathering at the shrine to offer sacrifice to the idols, she came forward, her manner calm and her face serene, and with well-chosen words called them away from the cult of idols and preached Christ fervidly to them. All who heard her were in admiration at her beauty, her eloquence, and the sweetness of her message . . . and no wonder, that the mouth which had pressed such pious and beautiful kisses on the Savior’s feet should breathe forth the perfume of the word of God more profusely than others could. (376-77)

It is no wonder then, given Mary Magdalene’s status as an emblem of the value—even the privilege—of women’s speech, that she could be perceived as a dangerous role model by later clerics. A figure outside the male apostolic circle of Christ but who was still clearly favored by him, the Magdalene would serve as an inspiration for a growing body of late medieval women who similarly sought an affective bond with Christ independent of a male clerical “inner circle.” Prominent women such as Christina of Markyate and possibly even Richard II’s Queen Isabella owned Psalters depicting the Magdalene proclaiming the Resurrection to the other Apostles. Osbern Bokenham tells us that Lady Bourchier, Countess of Eu, commissioned the English translation of her *vita*, with pointed emphasis on her apostolic role:

“I have,” quod she, “of pure affeectyon
Ful longe tym had a synguler deuocyon
To þat holy wumman, wych, as I gesse,
Is clepyd of apostyls þe apostyllesse;
Blyssyd Mary mawdelyn y mene,
Whom cryste from syn made pure & clene,
As þe clerkys seyn, ful mercifully,
Whos lyf in englysshe I desyre sothly
To han maad, & for my sake
If ye lykyd þe labour for to take,
& for reuerence of hyr, I wold you preye.”

(5065-75)

And when Margery Kempe portrays herself repeatedly answering the question, “Why wepist þu so, woman?” surely she is engaging in more than a little self-fashioning. Conscience’s proverbial

by women” (Kienzle 105). Of course, since this *Summa* was intended to point out the errors of the heresy, its allegations may be distortions of actual Waldensian practice.
denigration of the Magdalene, then, reflects contemporary tension between a male clerical orthodoxy struggling to maintain ecclesiastical control in opposition to a growing number of women who, like the Magdalene, refused to be silent, who believed in the validity of their spiritual experience, and who sought a greater public authority in matters of the soul.

V

We are finally confronted with an issue raised at the outset of this study: if Conscience is such a courteous character in passus 19, why attribute this proverbial misogyny to him? Any discussion of Conscience’s role must begin with a definition of his function in faculty psychology, and Mary Carruthers offers a useful summary of scholarly readings. According to Carruthers, scholastics held that Conscience represented basic “moral sense,” a blend of synderosis and conscience. Quoting Aquinas, Carruthers defines synderosis as a “habit, a natural disposition of the practical intellect, ‘the first practical principles bestowed on us by nature,’ by means of which the practical intellect is inclined to the good and is able ‘to discover, and to judge of what [it has] discovered’” (Schroeder 15). Conscience, then, is a catch-all term for several “intellectual habits” derived from synderosis, and is a faculty devoted to making distinctions and applying knowledge. Carruthers further comments, “The role of conscience was able to include not only the function of moral judge but also that of intellectual judge distinguishing between truth and falsehood” (16). Given this definition, it appears strange that Conscience would depart from Scripture and portray an indiscriminate Magdalene by means of an antifeminist proverb in his account of the Resurrection. Perhaps Carruthers’ discussion of Conscience’s collective role explains the portrayal. Citing the work of Morton Bloomfield, Carruthers observes that Conscience’s role as knight “may indeed reflect an aspect of the monastic conception of conscience—not only as the guide and protector of the individual soul but as a collective conscience defending the collective soul of the Church” (17-18).

I would suggest that Conscience’s account of the Resurrection results from his collective role as defender of Holy Church, and his use of proverbial misogyny constitutes an attempt to unify and defend an increasingly fractured Catholic orthodoxy. This is a role he will play in greater detail as the final two passus unfold—building and defending the Barn of Unity. Immediately after employing the “counseille” proverb, Conscience tells us that “Peter perceyued al pis and pursued after, / Bope James and Johan, Iesu to seke, / Thaddee and ten mo wip Thomas of Inde.” Conscience emphasizes Peter’s intellectual understanding of Mary Magdalene’s words, for these words prompt him and other Apostles to await Christ’s appearance before the Eleven. The sense of 19:157-69 is that Mary Magdalene indiscriminately broadcasts the news of the Resurrection, but it is Peter who first fully understands its ramifications and, with the other Apostles, takes action. Here Langland may have been influenced by an interpretation best developed by Aquinas, who argued that the Magdalene’s Christophany was flawed, that she was unfit to preach and needed the male Apostles to translate her information into action (Børresen 245-46).

Perhaps Conscience, in devaluing Mary Magdalene’s authority and affirming Peter’s, is making clear just who exactly has the power to bind and loose. Given the historical rivalry that
obtains between the two figures, it may be no coincidence that the divestment of Mary’s authority and the investment of Peter’s occurs in the space of a mere thirty-four lines, culminating with the papal privilege given to St. Peter:

And whan þis dede was doon do best he þouȝte,  
And yaf Piers pardon, and power he graunted e hym,  
Myght men to asoisille of alle manere synnes,  
To alle maner men mercy and forȝiounesse  
In couenaunt þat þei come and kneweliche to paië  
To Piers pardon þe Plowman redde quod debes.  
Thus hap Piers power, be his pardon paiëd,  
To bynde and vnbynde boðe here and ellis,  
And asoisille men of alle synnes saue of dette one. (19.182-90)

Here Conscience replaces Christ’s post-Resurrection commission to all of the Apostles (John

11 Christ’s command to Mary Magdalene to bear the news of the Resurrection specifically to Peter entwines these two figures forever in the narrative of the greatest authority-conferring experience in church history, and calls attention to Peter’s dependence upon Mary Magdalene for the news. The Magdalene’s Christophany granted her a privilege unattained even by Peter, the foremost of the Apostles and the “rock” upon which the church is founded. The respective designations of Mary Magdalene and Peter even betray a kind of hierarchical rivalry, as apostola apostolorum and princeps apostolorum both make special claims for themselves. This rivalry was much more than a nominal one. Gnostic gospels reveal a well-documented and strongly gendered tension between Mary Magdalene and Peter in nascent Christianity. (On the Magdalene in Gnostic writings, generally see Malvern 42-56; Pagels 12-14, 22, 64-66; and Haskins 42. For other early texts that depict a gendered tension among the Apostles, see Schüssler-Fiorenza 304-9, 332-33.) Perhaps Gnostic and medieval writers were elaborating on the same tensions suggested in New Testament accounts in which Peter seems to doubt the Magdalene’s words (e.g., Luke 24:12). Most importantly, Mary’s unequivocal privilege of seeing Christ first was undermined by Paul’s mention of Peter and omission of Mary in the Resurrection account of 1 Corinthians 15:5, thus making them competitors for the distinction and fostering a debate that would prove to be of the highest importance in establishing papal power and the roles of women in the church. In the figure of Peter, medieval dramatists would depict an Apostle angrily dismissive of the Magdalene in terms that emphasized her gender. The Towneley Thomas Indie, for example, begins with Mary Magdalene bringing the news to the Apostles; Peter shouts her down with an impassioned “Do way, woman, thou carps wast!” (line 7). The exchange continues at length, with the Magdalene accusing Peter of heresy and Peter vigorously maintaining that the Magdalene’s lying is shameful. For other medieval texts which depict Peter’s skepticism of the Magdalene, see the Coventry (“Corpus Christi”) Appearance to Mary Magdalene (Davies 343-46), and the Ms. e Museo 160 Christ’s Resurrection (726-29; Baker 191). This rivalry would provide Langland with an inviting narrative context in which to insert a misogynistic proverb so dependent upon gendered tension and mistrust.
20:19-23) with Peter’s singular commission (Matt. 16:18-19). Conscience also undermines the communal sense of John 20 by referring to the gathering as “Peter and . . . his Apostles”--a foregrounding of Peter not found in Scripture. Peter’s special commission is similar to the communal commission, but it occurs well before the Resurrection, even before Christ’s transfiguration. Perhaps Conscience makes these changes in the belief that a resurrected Christ would have greater divine authority to bestow on Peter; the sequence of events is shifted accordingly.

Given Langland’s skepticism regarding the ecclesiastical abuses of the post-apostolic church, perhaps Conscience’s portrayal of the Magdalene is meant to demonstrate how earthly power can corrupt this essential faculty. (Conscience’s unwise decision to allow the friars, particularly Frere Flaterere, entrance into the Barn of Unity will later demonstrate his debilitated powers of discernment). In Conscience we see a figure enhancing the authority of Peter (and, by extension, papal authority) at all costs, even at the expense of a beloved saint. And of course the Great Schism forms the contemporary backdrop for Langland’s narrative--a backdrop of divisiveness in which church authority was fragmented among two and three popes between 1378-1417, to which Langland alludes in 19.417-27. Conscience’s efforts in the name of unity illustrate the impulses that yield such a state of affairs; his attempts to consolidate Peter’s authority necessarily detract from Mary Magdalene’s. For a church to have one earthly leader, there can be no division of power.

Although it is true that Langland was in many ways a social conservative who probably would have opposed women’s pursuit of greater ecclesiastical authority, Conscience seems too deeply flawed for his views to be considered authorial. Langland might have supported the end of his arguments, but not the means, characterized as they are by a mocking application of proverbial misogyny. Conscience’s prejudices involving Mary Magdalene cannot be attributed merely to a confusion of traditions; Langland manifests a strong familiarity with relevant Scripture and Magdalene hagiography elsewhere. There are six references to Mary Magdalene in Piers Plowman. In 5.497 Repentance says that Christ appeared to the Magdalene first to show that he died for sinners. In 10.428 Will refers to her sinful nature to justify a self-indulgent predestinarianism since even some of the most iniquitous are saved: “Than Marie Maudeleyne who myȝte do worse?” In the speech attributed to Trajan in 11.250-58, Langland employs the interpretation of Luke 10:40-42 that casts Mary Magdalene as a representation of the contemplative life in order to praise poverty. In 13.194 Conscience praises poverty as well, noting that Mary Magdalene gained more from her box of ointment than Zacchaeus did from half his riches. Anima also associates the Magdalene with virtuous poverty in 15.294, observing the extra-biblical tradition that she lived on roots and dew and her devotion to God in her later life. The Resurrection account of 19.157-62 marks the final appearance of Mary Magdalene in Piers Plowman. It seems, then, that for Langland’s characters, as well as for principal actors in church history, Mary Magdalene could be whatever each figure needed her to be--saint, sinner, whore, apostle, gossip--and Conscience is no different. His interest in affirming male ecclesiastical authority leads him to apply the proverb “ȝat womman witeȝ may noȝte wel be counseller,” with all of its unflattering narrative associations, in depicting a “word-wod” Magdalene unworthy of the momentous news she bears, incapable of using it to establish Holy Church. For Langland, Conscience is the revisionist historian of a church lamentably estranged from a once unified, divine origin.
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The Status of Pollution in Tennessee

by H. W. Wofford

What places come to mind when you think about polluted sites in the United States? Perhaps you think about Love Canal in Niagara Falls, New York, where the Hooker Chemicals and Plastics Co. buried 22,000 tons of chemical waste in a half-dug canal and where a housing development was built on top of it (1). Or maybe Lake Erie comes to mind. It was so heavily contaminated by industrial wastes and sewage that it was closed for fishing and swimming, and many species of lake fish were on the verge of extinction. In 1965, almost one-fourth of the lake was so polluted that its oxygen supply was virtually depleted (2). What about Los Angeles, California? Los Angeles is located in a geological bowl which traps air pollution, and during the sixties smog sometimes got so bad that industries and motor vehicle traffic had to be shut down for several days a year. You may not be as familiar with Boston harbor. At one time it was so polluted that there were reports of rats walking across the harbor on the floating debris!

When people are asked to name polluted states, New Jersey is often mentioned. This is probably because of areas on the coast such as Newark, with its sprawling railroad yards and chemical refineries. Much of Newark is an eyesore, prompting a friend of mine from New Jersey to describe it as the “armpit of the universe.” However, this is probably not a fair way to characterize New Jersey as a whole. When you get away from the industrial areas, the countryside in New Jersey is among the most beautiful and undisturbed in the United States. Sometimes Texas and Louisiana will be added to the list because of the expansive petrochemical industries on the Gulf Coast of these states.

But what about our state? Where would you rank Tennessee as a polluted state? I don’t think most people in Tennessee would consider our state to be very polluted. After all, we have traditionally been known for our agricultural economy, rather than for our industrial output. I must confess that, until I returned to Tennessee after having spent fifteen years training as an ecotoxicologist, I did not think of Tennessee as polluted. It is interesting how differently you look at the place where you grew up after having been away for some time. You can back off and look at it a little more objectively. Coming back as a trained environmental toxicologist, I looked at Tennessee through new eyes. Over the last twelve years, I have been accumulating information about the state of pollution in Tennessee from newspaper clippings, state and federal publications, and web sites. My goal for this paper is to pass on to you a summary of what I have gleaned from all this information. What you read may surprise you.

I can’t possibly write about every environmental problem in Tennessee in a paper of this length. In order to make the task a bit more manageable, I will begin with some overall statistics concerning the status of pollution in Tennessee, and then focus on our immediate environment, Madison and surrounding counties.
Tennessee’s Environmental Scorecard

There are many ways in which the environmental health of an area can be assessed. These include determination of the amount of air pollution, the amount of water pollution, the amount of waste emptied into the sewer system, the rate of deforestation, the public health status, and the status of environmental education. I have summarized some of them in **Table 1**. As you can see, Tennessee consistently comes in as one of the ten worst polluted states in the nation.

It is informative to go to the Agricultural Museum in Milan, Tennessee. In this museum, there is an exhibit about soil erosion and conservation efforts made by Tennessee to prevent it. There is a picture in this exhibit of a man standing in a ditch caused by soil erosion. He cannot see out of the ditch! Great strides have been made in recent years to control soil erosion, with no-till farming being the most recent such control measure.

Air pollution is also a big problem in Tennessee. It is probably contributing to the destruction of hundreds of thousands of acres of trees in the Great Smoky Mountains Park. Air pollution, mainly sulfur and nitrogen oxides, from industry and the cars of the millions of tourists who visit this park weakens the trees, making them susceptible to infections by fungi, bacteria and insects (5). I had the opportunity to talk to a technician at the Agricultural Experimental Station here in Jackson. He has been measuring the pH of the rainwater falling on the station for several years. Though it isn’t part of his job, he does it out of interest. On several occasions, the precipitation falling on Jackson was acidic enough to be classified as acid rain. Interestingly, this always happens when the wind is coming from the southwest. This shouldn’t be too surprising, since Memphis, the largest center of industry in West Tennessee, is southwest of us. On one or two occasions he recorded alkaline rain. I have never seen this discussed in the environmental literature. What are we putting into the air in West Tennessee that is making our air more alkaline (basic)?

**Tennessee Rivers and Lakes**

Another way to assess the environmental health of a state is to examine the health of its rivers and lakes. 60,000 stream miles and 540,000 lake acres can be found within Tennessee (27). One way of determining the health of these waterways is to look at whether or not these waterways have been posted. In other words, have some intended uses of these waterways been restricted? This usually means that either body contact, recreation, or fishing has been restricted or banned. In 1996, twenty-six per cent of stream miles and twenty-two per cent of lake acres in Tennessee were classified as not fully supporting their intended use (27). These waterways have been posted for such diverse causes as presence of fecal coliforms, lead, mercury, PCBs, chlordane, and dioxins.

Two Tennessee rivers, the Forked Deer River and the Obion River (which pass through parts of Madison or Gibson Counties), are classified as completely failing to support their intended use (**Table 2**). The Mississippi River, which is notorious for its pollution, has been added to the table for purposes of comparison. As you can see from the table, our local river systems are not considered safe for the usages we commonly make of waterways and are considered less safe than the “mighty Mississippi.” Having contracted either Giardia or amebic
dysentery from swimming in the Forked Deer River in the days of my youth, I heartily recommend that you heed the warnings!

**Madison and Gibson Counties’ Environmental Scorecards**

The Environmental Defense Fund maintains a web site that allows individuals to rank almost any site in the country according to its rate of release of toxic chemicals and the health effects of these chemicals (28). In terms of release of Toxics Release Inventory (TRI) chemicals, an inventory of chemicals maintained and monitored by the EPA, Madison County ranks forty-seventh in the state in release of these chemicals, while Gibson County ranks sixteenth. This surprised me. I expected that Madison County would release more chemicals than Gibson County. However, Gibson County has four facilities in the top one hundred for most chemicals released, while Madison County has none. It is important to note that these numbers do not take into consideration non-TRI chemicals, including many agricultural chemicals. I shudder to think of what I was exposed to while “growing up on the farm.”

However, these rankings should not give residents of Madison County too much peace of mind. Although Madison County fares well in comparison to other Tennessee counties, it must be compared to the nation as a whole (28). Madison County ranks in the top twenty per cent of all counties in the U.S. in terms of:

- Release of non-cancer hazards
- Water releases of recognized developmental toxicants
- Water releases of suspected immunotoxictants
- Release of chemicals with ozone-depleting potential.

Gibson County fares even worse. It ranks in the top twenty per cent of all counties in the U.S. in terms of:

- Release of cancer hazards
- Air releases of recognized carcinogens
- Air releases of recognized developmental toxicants
- Air releases of suspected cardiovascular or blood toxicants
- Air releases of suspected reproductive toxicants.

**Problem sites in the Madison County Area - Superfund Sites**

Another criterion that can be used as a yardstick of the environmental health of a region is whether or not that region contains any Superfund sites. Residents of Jackson have the dubious distinction of living within thirty miles of four EPA Superfund sites (Table 3). Two of these are located within the city limits of Jackson and are within two miles of ten of Jackson’s water wells. EPA Superfund sites are sites that are deemed to be so contaminated and pose such a health risk that they are assigned the highest priority for cleanup. The problem with Superfund sites is that when the funding was set up for this program, the cost of the cleanup was grossly
underestimated. As a result, many sites have been identified, but have not been cleaned up. Regarding the four sites in the vicinity of Jackson, only partial cleanup has been undertaken, and cleanup efforts are still underway.

The state of Tennessee also has a Superfund program. Table 3 contains a listing of the Tennessee Superfund sites in Madison and Gibson Counties. As you can see, Tennessee has added an additional seven sites in our area to the Superfund list. Of these sites, only the Owens-Corning site has been declared clean. Table 3 also includes some sites in this area that have not been declared Superfund sites, but have been in the news lately because of environmental problems.

In order to give you a better appreciation of the magnitude of these environmental problems in our area, I have given some of the history and the possible health consequences of some of these sites in the following sections.

**American Creosote Works**

The American Creosote Works was declared an EPA Superfund site in 1987 and is considered to be one of the worst creosote-contaminated sites in the country (21). The plant operated from the early 1930’s until 1981. It was located on fifty-five acres in southwest Jackson just off of State Street, between the Forked Deer River and the 45 Bypass.

Creosote is used as a wood preservative. It is most often seen in old telephone poles and railroad ties. After the wood was treated by placing it in baths of hot creosote, it was stacked on racks outside to dry. The excess creosote dripped onto the ground and has been working its way into the water table. Creosote contains a large number of chemicals called polyaromatic hydrocarbons and related compounds, many of which are potentially carcinogenic (cancer-causing). One PAH, benzo[a]pyrene (BAP), was found in high concentrations in the soil. BAP is one of the five most carcinogenic chemicals that we have currently identified.

In 1991, the EPA started the cleanup of the site. All of the remaining creosote (approximately 200,000 gallons) was removed, and all structures were torn down to the ground. However, funding problems halted the cleanup of the soil at the site (22). The state and federal governments planned to spend $5 to $12 million to clean up this site (21). However, the total projected costs have increased to as much as $50 million. About 8.4 acres of land will be scraped two to five feet deep, removing 35,000 to 88,000 tons of soil. The work was scheduled to begin in 1996 or 1997, but I have not seen evidence of cleanup operations. At one point it was seriously suggested that the site be used as a jail! I can’t imagine how many lawsuits that would have generated. Does being used for bioremediation constitute cruel and unusual punishment?!

**Iselin Railroad Yard**

The Environmental Protection Agency wants to put Jackson’s old Iselin Railroad Yard on its Superfund list of the most serious hazardous waste sites (12). This eighty-acre site is just south of Iselin Street in Southeast Jackson, directly across from Washington-Douglass Elementary School. It is also near ten of JUD’s city water wells. This site was used for the maintenance and repair of railroad engines for many years by the Mobile & Ohio and Illinois
Central railroads (13). The degreasers used to clean the engines and their parts were often allowed to run onto the ground and into a creek that fed into the Forked Deer River. Often, the water in the creek ran black.

Among the chemicals found at the Iselin site are chromium, lead, vinyl chloride, chloroethane, benzene, copper, tetrachloroethane, dichloroethane, ethylbenzene, and xylene. These chemicals carry such possible health risks as cancer, birth defects, liver toxicity, kidney toxicity and neurotoxicity. JUD is currently monitoring the city water for these chemicals and has plans in place for treating the water if necessary.

Cleanup of the Iselin site was predicted to start in 1996, but to the best of my knowledge this process has not started yet (14).

**Milan Army Ammunition Plant**

The Milan Army Ammunition Plant has been in operation since 1942, manufacturing ordinance for the military. From 1942 to 1978, wastewater from the O-line production area was discharged into eleven unlined settling ponds. In 1991, it was discovered that RDX and other potential carcinogens such as TNT, 2,4-dinitrotoluene, nitrobenzene, and HMX used in the manufacture of explosives, had seeped out of these ponds and had gotten into the groundwater that provides the drinking water for Milan (19). In 1992, the U.S. Army started a $9 million study to assess the degree of contamination of the water, eventually drilling four hundred test wells (16, 20). The results of this testing indicated that the city’s drinking water was below the danger point of 2.0 ppb.

In light of concerns that the levels of these chemicals could increase in the future, the Army agreed to spend $9 to build a water treatment facility at the plant and to drill three new water wells for Milan farther away from the arsenal. In May 1995, the levels of the chemicals in the city water had not increased significantly (17). By 1997, the Army had spent $58 million on the cleanup operation. This involved the design and construction of cleanup systems using a combination of high-tech filtration and UV systems, and a low-tech artificial wetlands where native plants and microorganisms break down the chemicals, a process called bioremediation (18). The O-line ponds were also capped with clay to prevent further leaching of the chemicals into the water table. A recent report indicates that the cleanup of the contaminated ground water is on schedule and should be complete by 2009 (29). Unfortunately, parts of the city park will be unavailable for the next six to eight months as wells are being dug which will be used to filter the groundwater.

**Lead Exposure in Jackson**

Jackson is the only city in West Tennessee to be cited by the Environmental Protection Agency (EPA) for having high lead levels in the drinking water. According to EPA guidelines, lead levels in drinking water must not exceed fifteen ppb. Unsafe levels of lead were found in a small number of homes with lead materials in their plumbing and are not due to lead in the JUD water supply. Although a report in 1994 showed that about twenty-two per cent of the children
in Madison County have elevated levels of lead in their blood, it is believed that most of this lead did not come from the water, but from lead-based paint and leaded gasoline.

More recently, residents of East Jackson in the neighborhood of the former H. O. Forgy recycling plant have been tested for lead levels (15). This plant that turned scrap metals into materials for industry allowed lead to seep into the soil for thirty-seven years, from 1946 to 1983. When evaluated for its risk, this site received a score of 85.26. In order for a site to be placed on the EPA Superfund List, it must have a score of 28.5. The score for the H. O. Forgy site is one of the highest ever seen.

**Velsicol Corporation Dump Site**

The Velsicol Corporation is a Memphis-based company involved in the manufacture of insecticides. Several hundred thousand drums (seven million gallons) of waste created from the production of these insecticides were buried on thirty-seven acres between 1964 and 1974 in Hardeman County near Toone, which is just south of Jackson (23). Over time the drums rusted and leaked, allowing the chemicals to leach into the water table. It is estimated that over one thousand acres of groundwater are contaminated because of this leakage (24).

Removing and properly disposing of all these drums could cost in excess of $1 billion. At this point, a ground water treatment plant has been constructed, and the area has been capped with clay to prevent further leaching into the water table. This is all the cleanup that is currently planned. Velsicol has spent $12 million on capping and stabilizing the site to this point (25). However, the clay cap over the site has been found to be only ninety-eight per cent effective (26). It is now being capped with plastic, which will be “one hundred per cent effective.” The workers who went into this site to stabilize it were either very brave or very foolish. This is by far the worst contaminated site that I have ever encountered, and it’s only a thirty-minute drive away!

**Conclusions**

I have presented a large number of facts and figures about the state of pollution in Tennessee. What conclusions can we draw from all of this? The obvious conclusion is that Tennessee is a relatively contaminated state. It is very likely that health problems are and will continue to be a result of this contamination. Many of these sites are areas where chemicals are entering our water table. Adequate quality drinking water may very well be the next great environmental crisis for the whole world, including the United States. West Tennessee is blessed with one of the best aquifers in the world. However, there are many sites in which chemicals are slowly working their way into this aquifer. These chemicals will not stay localized. Hydrologists tell us that the aquifer in West Tennessee flows. As it does, it will carry chemicals to areas that are many miles away from the sites of contamination.

It should be noted that as bad as the status of pollution in Tennessee may seem, it is getting better. Almost every statistic I have mentioned in this paper has shown improvement in the last twenty years. For example, in 1996, twenty-six per cent of stream miles and twenty-two per cent of lake acres in Tennessee were classified as not fully supporting their intended use (27).
1984, forty-six per cent of stream miles and thirty-four per cent of lake acres were not fully supporting. This constitutes a significant improvement.

How did we get this way? I suspect it has much to do with our state historically having a predominantly rural economy. Thus, some of the problems resulting from urbanization and industrialization have come to us later than for other states, and we are dealing with them much later as a result. Also, I feel there is almost a vacuum of environmental awareness and consciousness in West Tennessee. I was impressed by this when I came back to Tennessee after having spent fifteen years in other parts of the country. Many people think nothing of littering in this area, and they tend to pour out chemicals such as used oil and antifreeze on the ground. This same attitude has carried over into industry. For most of this century, industrial wastes have just been dumped into a ditch. Jackson has only very recently put a tree ordinance in place. In New England, you must get permission from all of your neighbors before you can cut one tree in your yard. Union, as a Christian university, must set an example of environmental stewardship for the community.

I suspect that the contamination of our area also has to do with the loss of contact between our citizens and the environment. As people moved away from the farms, seeking jobs in the cities, they lost their contact with the soil. I grew up on a farm. I spent most of my waking hours prowling around, turning over logs, watching birds fly, and catching insects and tadpoles; in the process, I developed a deep appreciation and love for the environment. The students in my classes have learned this, as I frequently get on my “soap box” about environmental issues. Children who grow up in cities don’t have these opportunities. Studies have shown that inner city children have no idea where their food comes from, other than the store. These children don’t have a connection to the land, and it is less likely that they will show concern about environmental issues. I have been impressed on many occasions by individuals who will get outraged about the fate of whales, which they have never seen, and not be concerned about the destruction of the environment going on behind their own house.

Ultimately, the contamination of Tennessee is about our population. As the population and economy of Tennessee has grown, so has the demand for food and goods. With this increase, there has to be an increase in the utilization of chemicals and subsequent problems of dealing with the byproducts of the manufacture of these chemicals. My dad understands this very well. He is a retired farmer. During his career as a farmer, he has released thousands of pounds of agricultural chemicals into the environment. He despises these chemicals, but he can’t see any way around the use of them. Without the use of pesticides and herbicides, we wouldn’t be able to feed everyone in the U.S., much less export excess food to starving people in other parts of the world.

What can we do about it? We can’t avoid the use of water. There are some things that we can do at a personal level to help protect ourselves. For example, we could drink bottled water. But recent studies have shown that bottled water, despite its cost, is not necessarily any safer than our tap water. It would be a good choice if you live in an area with a known contamination problem.

Filtration of the water might be an option. However, this also has its problems. The type of filtration employed must match the contamination problem. A different approach is necessary to remove bacteria from water than to remove heavy metals or organics. Another problem is
knowing when to change out the filters. In many cases, there is no obvious way to tell when a filter is saturated other than having the water tested. After a filter becomes saturated, it may start to release its absorbed chemicals back into the water and, in some cases, the concentration of the pollutants in the water may be higher than without a filter.

You can have your water tested. This is especially advised if you have reason to believe that it is contaminated. However, unless you can convince the Health Department that there is a problem, you may have to pay for the testing yourself. Depending on the contaminant you are concerned about, this can range from fifteen dollars up to several hundred dollars per test. If you have city water, it should be tested for a wide range of chemicals on a regular basis, and you should be able to get a report from the city.

The best way to get good quality drinking water is to have uncontaminated water in the first place. This requires us to develop a sound environmental ethic about the proper handling of waste products. Here, education is probably the most important factor. Be informed. I suspect that often chemicals have been released into the environment more out of ignorance than out of greed. Get involved. Attend community meetings on environmental issues. There have been many in this area, some very recently. Write your legislators. Remember that in even the worst cases that I have described, the companies involved were not breaking any laws at the time.

After reading this article, has your opinion about the amount of pollution in Tennessee changed? If so, let me know.
Table 1 - Tennessee's Environmental Scorecard

**Quantity of release**

No. 1 in the nation for soil erosion

2nd worst air-polluting state

139 million lbs of toxic chemicals into the air in 1990

12th worst water-polluting state

8th worst state for toxins dumped into sewers

21 million lbs of toxic wastes

10th worst state for toxins dumped into sewers

15.7 million lbs of toxic wastes

6th worst toxin-emitting facility in the country

New Johnsonville power plant

3rd worst state in the nation overall

5th worst state in the nation overall

**Health Implications of the release**

2nd worst in the nation for protecting the environment

Criteria: Drinking water, Food safety, solid-waste recycling, forest management, and impact of growth

9th worst in the nation in release of chemicals which cause birth defects

11th worst in the nation in release of chemicals which cause cancer

Three cities in top 25 % with premature heart- and lung-related deaths linked to particulate air pollution: Nashville, Memphis, Chattanooga

1990 (8)

1995 (3)

1997 (6)

1995 (10)

1990 (11)

1994 (4)

1990

1992

1995 (9)

1997 (6)

1989 (7)

1995 (10)

1995 (10)

1996 (5)
Table 2 - The Health of Local Rivers in Tennessee (27)

<table>
<thead>
<tr>
<th>River</th>
<th>Miles in Tennessee</th>
<th>Fully Supporting</th>
<th>Partially Supporting</th>
<th>Not Supporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forked Deer</td>
<td>20.7</td>
<td>0 %</td>
<td>0 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Obion</td>
<td>71.1</td>
<td>0 %</td>
<td>0 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Mississippi</td>
<td>175.3</td>
<td>0 %</td>
<td>14 %</td>
<td>86 %</td>
</tr>
</tbody>
</table>

Supporting - Can be used for body contact, recreation and fishing
# Table 3 - Problem Sites in the Madison / Gibson County Areas

<table>
<thead>
<tr>
<th>Site</th>
<th>County</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EPA Superfund Sites</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Creosote Works</td>
<td>Madison</td>
<td>Jackson</td>
</tr>
<tr>
<td>Iselin Railroad Yard (Proposed)</td>
<td>Madison</td>
<td>Jackson</td>
</tr>
<tr>
<td>Milan Army Ammunition Plant</td>
<td>Gibson</td>
<td>Milan</td>
</tr>
<tr>
<td>Velsicol Corp. Dump Site</td>
<td>Hardeman</td>
<td>Toone</td>
</tr>
<tr>
<td><strong>Tennessee Superfund Sites</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. O. Forgy and Son</td>
<td>Madison</td>
<td>Jackson</td>
</tr>
<tr>
<td>Boone Dry Cleaners</td>
<td>Madison</td>
<td>Jackson</td>
</tr>
<tr>
<td>Porter-Cable Corporation</td>
<td>Madison</td>
<td></td>
</tr>
<tr>
<td>Noma-ITT</td>
<td>Madison</td>
<td>Jackson</td>
</tr>
<tr>
<td>Owens-Corning (Now declared clean)</td>
<td>Madison</td>
<td></td>
</tr>
<tr>
<td>B &amp; H Transformer</td>
<td>Gibson</td>
<td></td>
</tr>
<tr>
<td>Michie Dump</td>
<td>McNairy</td>
<td>Michie</td>
</tr>
<tr>
<td><strong>Other Problem Sites</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITT Milan (Jones Companies Ltd.)</td>
<td>Gibson</td>
<td>Milan</td>
</tr>
<tr>
<td>Yorkville Elementary School</td>
<td>Gibson</td>
<td>Yorkville</td>
</tr>
</tbody>
</table>
References


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Juff Contributors

John Jaeger further explores his interest in philosophical issues here, on the heels of his 1998 JUFF piece on Kierkegaard. He is assistant professor of library sciences and holds a master of divinity degree as well.

Randy Johnston is Department Chair and associate professor of chemistry. This is his third article to appear in JUFF since his 1994 arrival at Union.

Barbara McMillin has just been named Dean of the College of Arts and Sciences after serving six years as chair of English. The article here is a reworking of a paper presentation last February at the Tennessee Philological Association meeting in Jackson.

Melissa Moore has contributed multiple articles to JUFF in the area of literary criticism. Currently on maternity leave, she holds the title of associate professor of library services.

Gavin Richardson begins his second year at Union with his JUFF debut. Assistant professor of English, his article is being revised for cross-publication.

Roger Stanley has edited or co-edited JUFF since 1995. He holds the title of assistant professor of English.

Jan Wilms assumes the presidency of the Faculty Forum after serving as its vice-president for 1998-99. He is associate professor of computer science and Chair of mathematics and computer science.

H. W. Wofford is a former president of Union’s Faculty Forum and well known regionally for his acumen on environmental issues. He serves as Director of the Center for Scientific Research and is an associate professor of biology.

Janice Wood enters her second year as co-editor of JUFF and has been a past contributor. She is assistant professor of communication arts.