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TRANSACTIONS
OF THE
WISCONSIN ACADEMY
OF SCIENCES, ARTS
AND LETTERS

Volume 70, 1982

Co-editors
PHILIP WHITFORD
KATHRYN WHITFORD

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TRANSACTIONS OF THE WISCONSIN ACADEMY

Established 1870
Volume 70, 1982

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THEODORE N. SAVIDES
60th President, 1982
W.A.S.A.L.

PRESIDENTIAL ADDRESS

THEODORE N. SAVIDES

April 1982

For a very long time now we and the rest of this nervous world's industrialized nations have become mesmerized by the notion of calculating national wealth by the size of the gross national product and a favorable balance of trade. Not content with our questionable ability to estimate the *present* state of our economic health by these narrow measures we also base our prognosis of *future* health on whether the GNP is rising or falling and whether the balance of trade seems likely to tip for us or against us. For thoughtful men and women both of these somewhat suspect measures are very weak reeds indeed upon which to base predictions regarding the future of our posterity.

Although these brief remarks should in no way be construed as a sermon, they do have a text of sorts, or really two texts. The first is Aristotle's well-known observation that "educated men are as much superior to uneducated men as the living are to the dead." Parenthetically one might observe that given the man's world in which he lived, it is highly unlikely that Aristotle intended to include women in his use of the word "men." Modern society, of course, is quite a different matter, and the inclusion of women in the generic "mankind" is taken for granted. In 1870, however, the year this institution was founded, the status of women was perhaps most aptly described by Friedrich Nietzsche who suggested that woman existed for the amusement of the warrior, that all else was folly. On the long list of distinguished persons consulted in the matter of establishing this very academy, one finds not a single female, and an enormous volume of social conflict and pain lay ahead before women achieved even their present somewhat unsatisfactory status.

The second text is from Cicero, and in

the simplest language possible the great Roman stated a universal truth equally true for every normal member of our species, a truth obvious to everyone of us here: "to think is to live." One need only call to mind the thousands of our kind described in the cruelest language we know as being simply "institutionalized vegetables" to understand the priceless value of the ability to reason, an ability infinitely reduced even in the highest of the other primates.

But merely because we can out-reason the great apes hardly means that our problems are ephemeral and will shortly evaporate like so much mist. Terribly complex social, political, moral and economic dilemmas face our nation and our world for the foreseeable future, which future, by the way, is rarely as foreseeable as the term suggests and might more accurately be described as the unforeseeable future.

Each year a new generation of youth arrives, seeking to make its place in society and the world of work. Opportunities must be provided lest we squander the most precious of our resources, human talent. Historically our economy has usually managed to solve this perennial problem simply by expanding our production of material goods and refining the provision of human services. For some years now considerably more Americans have been employed in the service areas than in the manufacturing industries. Notwithstanding this happy development, we still lead the world in the production of junk, and the safe disposal of this enormous and ubiquitous volume of refuse constitutes a major problem for virtually every American community.

But the difficulties confronting us in recycling or otherwise safely disposing of our material debris are dwarfed by the growing

size of our social debris, the human flotsam and jetsam of a great and affluent nation which in recent years seems at least temporarily to have lost its sense of direction. On the positive side, however, what used to be known as our sense of manifest destiny has finally given way to a more realistic view of the tragic consequences of rapidly depleting our irreplaceable natural resources. Clearly the provision of food, clothing and shelter for the impoverished ones of this world is a global problem far exceeding the ability of any one or two or three of the most prosperous nations to solve, alone or in combination.

And then among a host of acute internal problems is the increasing level of gratuitous violence and outrage which we commit upon each other. Such aberrant behaviour is by now so pervasive as to have made the manufacture and installation of security systems both in places of business and personal residence one of the fastest-growing industries we have, an ironic paradox in a nation which from its beginnings has prided itself on being an open society.

Many millions of our fellow citizens suffer from the twin plagues of alcoholism and chemical dependency both of which cross lines of age, sex, education and economic status.

The immense social costs of widespread unemployment, personal and business bankruptcies, steeply diminishing levels of support for artistic, cultural and scientific endeavors, in short of the entire educational enterprise, cast deep shadows over the present and the future as well. Each of us is hard-pressed to maintain perspective and a

sense of optimism in the face of the continuing gloom which overhangs so many important sectors of society today.

But if we as a proud and productive people continue indefinitely to flounder around in a trough of despondency and defeat, it will be because we have lost sight of the true source of wealth which resides where it has always resided, in the educated skills of our people, in their almost incredible faculty for problem-solving.

The spectacular flowering of genius which so marked Periclean Greece and Elizabethan England may never be achieved again, but we can be quite confident that the grand total of our natural and intellectual resources far exceeds those of ancient Greece and Medieval Britain combined. They will, at last, when deliberately focussed on our national dilemmas carry us forward into a future far brighter than our present. If so, that happy outcome will be accomplished by close and continuing attention to the earlier texts of these remarks, namely Aristotle's advice that educated men are far superior to uneducated men as the living are to the dead and Cicero's equally perceptive observation that to think is to live.

I may say in conclusion that thanks to the dedicated efforts of Academy administrations both in the recent and not so recent past, your academy is both alive and well. I am confident that within the gradually expanding boundaries of its resources it will as before continue to support and encourage the sciences, arts and letters in full adherence to the sacred dictum of its venerable charter.

THE MAKING OF *A SAND COUNTY ALMANAC*

DENNIS RIBBENS
Lawrence University

A Sand County Almanac by Aldo Leopold needs no introduction in our time. Few books have had as much influence on America's growing ecological awareness. *A Sand County Almanac* is praised as the right mix of nature observation and ecological thought, of field experience and philosophical reflection, of scientific fact and aesthetic delight and ethical value. In fact this collection of essays—so diverse and yet unified in perspective, material, and treatment—has become the model for contemporary nature writing. But for all that the book has been given little critical literary attention. What textual analysis there has been has only considered the 1949 edition of *A Sand County Almanac*. No study of the earlier manuscript versions of the essays has been made. No one has traced the evolution of the text or of Leopold's thinking about the substance and structure of the text during its lengthy gestation from November, 1941, to April, 1948. This essay proposes to do those things, based on an examination of correspondence, essay drafts, and other manuscripts contained in the Leopold archives at the University of Wisconsin-Madison. Especially in the letters between Leopold and his publishers and his friends one can trace the evolution of the concept of the book. In them one finds the debate over what constitutes a nature book, the debate about the right interplay between nature observation and ecological preachment. In them one observes Leopold working out his own answers to these questions. The major part of this essay will examine the period during which *A Sand County Almanac* evolved both as concept and structure in order to discover the evolution of Leopold's thinking about what a nature book should be. As an after note this essay will also briefly comment on

some of the mechanical aspects of writing, revising, and editing the work: changes within the essays, changes in the type of essays, changes in titles, and changes in organization.

Prior to 1941 Leopold had published essays in many journals, some as early as the 1910's. For example, the most discussed of all the essays in *A Sand County Almanac*, "The Land Ethic," first appeared in 1933 as "Conservation Ethic." "Conservation Esthetic" first appeared in 1937. Most of Leopold's early essays were either technical or, like the two cited, overtly conservationist exhortation—philosophic essays Leopold called them. It is important to keep in mind the kind of essays Leopold wrote before 1941 if one is to understand the controversy within Leopold himself and between Leopold and his correspondents during the 1941-1947 period during which the book was shaped. A few of the 1930's essays like "Guacamaja" (1937) and "Marshland Elegy" (1937) shared with the philosophic essays their conservationist/ecological purpose, but were presented more nearly in descriptive/narrative terms. Even in part substituted for reason as ecological argument. None of these essays, however, were intended to be primarily narrative descriptions. Several essays which appeared in 1941 and which were later incorporated into *A Sand County Almanac*, anticipate the kind of essays Leopold was later to write. The only pre-November, 1941, essay to use the shack experience was "65287," later changed to "65290" (why, I cannot say). "Bur Oak is Badge in Wisconsin" (*Wisconsin Agriculturalist and Farmer*, April, 1941), an early and shortened version of "Bur Oak," and "The Geese Return" (manuscripts dated September, 1941) both predate Leopold's

thinking about *A Sand County Almanac*. Although in their early versions both anticipate the tone of the later shack essays and were revised in that direction in the middle 1940's, they were, in 1941, basically conservation/ecology essays.

A letter from Knopf publishers written to Leopold on November 26, 1941, begins the period of Leopold's serious consideration of the kind of nature essays he should write and of how they might be coherently organized. That letter begins the making of *A Sand County Almanac*. In it Knopf told Leopold that they sought someone to write "a personal book recounting adventures in the field . . . warmly, evocatively, and vividly written . . . a book for the layman . . . [with] room for the author's opinions on ecology and conservation . . . worked into a framework of actual field experience." Notice that at the very outset of the Knopf/Leopold correspondence the fundamental variables which make up nature writing not only were identified but also were couched within their inevitable tension. On the one hand, the Knopf letter says a nature book must be personal, narrative, a recounting of field adventures and experiences, informed, warm, evocative. But beyond such narrative observation, a nature book might contain the author's opinions, his considered analysis of nature, his comment about natural events and man's place in them. It might address ecological and conservationist matters. And notice too Knopf's insistence that such ecological considerations be "worked into a framework of actual field experience," not the reverse. That was not the approach Leopold's essays had been taking up to that time. Conservation issues, not descriptions of nature, were the controlling element in his essays. Ironically had Knopf held to its desire to mold ecological considerations into field experience, it would have judged Leopold's essays more favorably in 1944 and in 1947. Leopold's responding letter (December 3, 1941) addresses this issue which was to separate them for the next six years. In it

Leopold also questioned "how far into ecology (that is, how far beyond *mere natural history*) such a book should attempt to go. . . . I am convinced that the book should go part way into ecological observation" (italics mine).

This matter of what constitutes a nature book, of what is the right mix of nature observation and conservation exposition received little attention from Leopold during the next two or more years. On December 29, 1941, Leopold wrote Knopf, "I am out as sole author for a year or two." He claimed to be writing "a series of ecological essays . . . as a Christmas book." I have uncovered no other reference to this unusual Christmas book idea. It is worth noting that Leopold describes what he was writing in 1941 as "ecological essays," a term appropriate for the largely non-narrative exhortative conservation pieces written before that time. In fact the title he probably would have chosen for the essays at that time was *Conservation Ecology*. In January of 1942 Knopf asked to see some of these ecological essays. Leopold pleaded that upon closer consideration he found the essays not to be ready. In April of 1943 Knopf again asked how the essays were progressing. Leopold responded that that he would get to them in the next year or two. In January of 1944 Knopf once again inquired about the essays. This time Leopold was able to say, "I have been working steadily" (January 28, 1944). And he had been. Of the thirty-seven datable manuscript drafts of the essays from *A Sand County Almanac* which are included in "Drafts of Essays in Sand County Almanac" (Writings, Box 5) in the Leopold archives of the University of Wisconsin, twenty-one date from 1943 and the first half of 1944, especially from September of 1943 through June of 1944. Probably eight of the book's forty-one essays were written during that period.

That period is also rich in Leopold's correspondence with his friend H. Albert Hochbaum, artist and wildfowl expert. Their let-

ters to one another reveal what essays Leopold was then working on, what tone and content he sought for the essays, and especially what overall effect Leopold wanted the collection of essays to have. As early as May 7, 1943, in a letter to Hochbaum Leopold spoke of "our joint venture." "Let's by all means reinstate the original plan and keep sending each other whatever materials we manage to bring together." Regarding the book and its drawings Leopold was to say, "This is a personal venture, and I take special pride in its 'home-made' aspect" (June 18, 1944). Later of Hochbaum's critical advice Leopold said, "I am learning alot from your letters" (June 3, 1944). "[O]ur intellectual partnership is one of the anchors of my ship. Without it I would be adrift" (October 17, 1947). On September 23, 1943, Leopold could say that "for the moment I have my hands more than full with the book. Perhaps I had not told you that I had spent the summer at it. I think I will call it 'Land Ecology' instead of 'Conservation Ecology.'" Leopold expressed concern over what he called the "literary effect" of the essays. Regarding his effort to reconcile the need to provide enough environmental data to permit ethical judgment and on the other hand achieving a satisfactory artistic or literary effect, Leopold wrote at length in his letter of March 1, 1944.

When you paint a picture, it conveys a single idea, and not all of the ideas pertinent to the particular landscape or action. If you inserted all of the ideas of your picture, it would spoil it.

In order to arrive at an ethical judgment, however, about any question raised by the picture, you need to consider all pertinent ideas, including those which changed in time. It seems to me, therefore, that any artistic effort, whether a picture or an essay, most often contains less than is needed for an ethical judgment. That is approximately what I meant when I said I intended to revise the essays insofar as could be done without spoiling the literary effect. . . . I do know that the essays can give a more accurate

judgment, particularly in reference to my own changes of attitude in time without hurting literary effect, and possibly improving the literary effect.

These 1943 and early 1944 letters refer to "Green Lagoons," "Too Early," "Illinois Bus Ride," "Draba," "Marshland Elegy," "Escudilla," "sketch of the chickadees," "The Flambeau," "Odyssey," "Great Possessions," "Thinking Like a Mountain," and "Pines Above the Snow." Hochbaum, in a letter Leopold marked "important letter," combined praise and criticism of the essays, and encouraged Leopold to worry less about "literary effects." "Since you can give a lilt to the deadest subject, it seems to me that [the quality of the essays] is in what you are writing about, not in your technique" (March 11, 1944). Moreover, Hochbaum was able to identify precisely those issues of unity, tone, and emphasis that were to plague Leopold and his prospective publishers for years. He found the overarching theme of the essays hard to uncover. He considered Leopold's tone elitist and cynical, and encouraged Leopold to write more simply, personally, optimistically. He further suggested that Leopold, in his struggle to get the right mix of natural facts and "ethical judgment" (March 11, 1944) think of the series of essays as a self-portrait, and that the Leopold depicted be "less a person than he is a Standard" (March 11, 1944), but a standard which finds lessons in his own life as well as in the lives of others. As Hochbaum wrote on February 4, 1944:

The lesson you wish to put across is the lesson that must be taught—preservation of the natural. Yet it is not easily taught if you put yourself above other men. That is why I mentioned your earlier attitude toward the wolf. The Bureau Chief had as much right to believe we should be rid of the Escudilla bear, or the government crews to plan roads for the crane marsh, as you had the right to plan the extermination of wolves in New Mexico. One gathers from parts of Escudilla and Marshland Elegy that you bear a grudge

against these fellows for not thinking as you when, in your own writings, you show that you once followed a similar pattern of thought. Your lesson is much stronger, then, if you try to show how your own attitude towards your environment has changed." (February 4, 1944)

Leopold himself had earlier acknowledged that "about the question of attitude in the essays—we all go through the wringer at one time or another" (January 29, 1944). A month later on the same matter, Hochbaum said, "you have sometimes followed trails like anyone else that lead you up wrong alleys. That is why I suggested the wolf business." "I hope you will have at least one piece on wolves alone" (March 11, 1944). On March 21, Leopold said he planned to write a wolf essay soon. On April 14, he wrote, "I am roughing out an essay or two, working toward your idea of a shack series." Leopold also enclosed a draft of "Thinking Like a Mountain," an essay which blends personal experience and universal environmental statement, an essay of confession to match the diatribe of his 1930's ecological essays. Said Hochbaum, "'Thinking Like a Mountain' fills the bill perfectly" (April 15, 1944).

On June 6, 1944, Leopold sent thirteen essays both to Macmillan, who had by then also contacted Leopold, and to Knopf. Much can be learned from a close examination of that list and of Leopold's comments about it.

1. Marshland Elegy
2. Song of the Gavilan
3. Guacamaja
4. Escudilla
5. Smoky Gold
6. Odyssey
7. Draba
8. Great Possessions
9. The Green Lagoons
10. Illinois Bus Ride
11. Pines Above the Snow
12. Thinking Like a Mountain

13. The Geese Return
- [14. The Flambeau]
- [15. Clandeboyne]

In his cover letter Leopold said, "The object, which should need no elaboration if the essays are any good, is to convey an ecological view of land and conservation." Knopf had initially asked for "a personal book recounting adventure in the field" (November 26, 1941). At first glance one might conclude that Leopold had attempted no accommodation between philosophical ecological essays and mere natural history. Such is, however, by no means the case. Conspicuously absent from the list are three non-narrative ecological essays from the 1930's: "Conservation Esthetic," "The Conservation Ethic," and "Wildlife in American Culture." Clearly Leopold's purpose in these thirteen essays (to which two more were added in August of 1944) upon which no organizational structure had yet been imposed, was to popularize and to dramatize through actual events, in some cases through his own personal experiences, those same ecological and conservation issues which he had addressed in the earlier philosophic essays. But if on the one hand the more philosophical essays do not appear, neither on the other hand except incidentally do the essays based on shack experiences. It is interesting to note that after ten years at the shack and after two and a half years of serious thought about nature essays, Leopold used the shack experience in only two of the fifteen essays, "Great Possessions" and "Pines Above the Snow." Unlike the 1947 draft, the 1944 draft of "The Geese Return" contained no shack reference. Ecological preachment, made accessible to the public by means of described events and experiences, is the dominant essay type by 1944. "Draba" is the most notable exception, a gentle, elegant description and implicit ecological argument.

This change in the perspective of Leopold's essays is evident in what he said in his

cover letter about a title for the book. I once thought to call it "Marshland Elegy—And Other Essays," but "Thinking Like a Mountain—And Other Essays," now strikes me as better" (June 6, 1944). Up to the summer of 1943 Leopold thought of the title as *Conservation Ecology*. After giving his first real attention to the essays in the summer of 1943, *Land Ecology* seemed a more appropriate title. The change points to a greater interest in natural fact and a lesser interest in human conservation activities. But as Leopold continued his work on the book, particular essays embodying the idea of land ecology seemed apt to name the book by, first "Marshland Elegy" and by June, 1944, "Thinking Like a Mountain." "Marshland Elegy" which dates from 1937 begins with an exquisitely poetic portrayal of a marsh dawn, and ends with a harsh attack on governmental conservation blundering and the prospect of an ecological doomsday. Leopold's place in the piece is that of aloof critic, the judge of what is right. By contrast "Thinking Like a Mountain" is personal, experiential, humble, even confessional. It records Leopold's own ecological blunders. More profound than "Elegy," it quietly speaks of individual attitude, of Leopold's own change in attitude. In place of the doomsday ending in "Elegy" it concludes with Thoreau's hopeful dictum, "In wildness is the salvation of the world."

This combining in the same essay of wolf description, personal experience, attitude change, and ecological comment troubled the editors of Knopf. Their letter of rejection of July 24, 1944 (Macmillan had rejected the essays with virtually no comment a few days earlier) triggered Leopold's struggle for the next three and a half years to define to his own satisfaction what a nature book should be. The 1944 Knopf rejection comments and Leopold's response to them are critical to an understanding of the concept and structure of *A Sand County Almanac*, the prototype for all contemporary nature

writing. For that reason I include Knopf's entire July 24, 1944, letter.

Dear Professor Leopold,

We have discussed your essays here and find that, while we like your writing, they do not seem altogether suitable for book publication in their present form. One reason is that they are so scattered in subject matter, and it also seems to us that the point of view and even the style varies from one essay to another. Pieces of only a page or two in length are also rather difficult to put into a book. And of course the dozen articles submitted would make a very slim volume indeed. I am sure you plan these as only part of a volume.

I wonder if you would consider making a book purely of nature observations, with less emphasis on the ecological ideas which you have incorporated into your present manuscript? It seems to us that these ecological theories are very difficult indeed to present successfully for the layman. Certainly, the repetition in chapter after chapter of a book, of the idea that the various elements and forces of nature should be kept in balance would end by becoming monotonous. Would it not be better to make the greater part of the book observation of wild life in narrative form, such as your pieces on "Great Possessions" and the "Green Lagoons," adding a chapter developing the ecological interpretations?

Such a book should, we feel, be based on your own experiences and if possible should be limited to one region of the country. In the present collection, we feel a distinct break between the middlewestern and southwestern essays, because of the completely different conditions existing in the two regions. Some sort of unifying theme or principals must be found for a book of this sort, we think, and perhaps it would hold together better if it were limited to a single part of the country.

One reason the ideas about the balance of nature, as embodied in these essays, do not seem successfully presented is, I feel, that the reader is apt to get a confused picture of what you advocate. Sometimes it seems that

you want more intelligent planning, but you point out that nature's balance was upset with the coming of civilization, and you certainly do not seem to like the ordinary brand of conservationists and government planners. I think the average reader would be left somewhat uncertain as to what you propose. Perhaps in a single essay, all these ideas could be related so that your basic theme would become clearer.

I should add that we are impressed with your writing, with the freshness of observation which it reflects, and the skill of phrase. We believe that readers who like nature will enjoy such writing and hope that we can work out with you a successful plan for a volume. I would appreciate hearing your reaction to the above, and will hold the essays until you tell me what to do with them.

Yours sincerely,
Clinton Simpson

That the essays were yet not developed into a book form is true. But the more basic issue remained the direction Leopold's essays took, their effort to combine narrative and exposition. Not surprisingly Knopf liked "Green Lagoons" and "Great Possessions." The editors still preferred "a book purely of nature observations, with less emphasis on ecological ideas." The heart of the Knopf/Leopold debate was the perceived conflict between observation of nature and comment about nature, between aesthetic response and ethical insight, between nature as other and man/land interaction. Knopf wanted the "what-I-saw-while-in-the-woods" sort of nature book. Leopold's concerns by contrast were planetary and ethical as well as provincial and descriptive. In a letter dated August 24, 1944, Knopf after seeking the judgment of two unnamed professional writers, dropped its concern for regional focus, but persisted in demanding more essays, longer essays, elimination of repetitive ecological arguments, and the addition of a chapter "which sums up the argument for the forces of nature." Leopold's reply to Knopf's rejection letter made clear that his agenda was "conservation in continental

rather than in local terms" (July 27, 1944). But he agreed with Knopf that the essays should, whenever possible be presented in narrative form. Hochbaum's immediate response to the Knopf letter Leopold at once shared with him, pointed out the similarities between Knopf's and his own previous criticisms, and urged Leopold to recast the entire book around the shack experience*—something narrative, closer to nature, more hopeful in tone (July 31, 1944). Leopold admitted that "the shack essays . . . are of a different cast than [sic] the others" (August 17, 1944). By the end of the summer Leopold pledged to redo the essays along the lines Knopf suggested—longer essays with a discernible difference between the body of natural observation and the final section on ecological matters.

But apparently much time elapsed before Leopold worked on the book. To Hochbaum on December 4, 1944, Leopold wrote, "I'm saying nothing of the essays because I've not yet tackled them." Heavy correspondence continued between them, but no references to the essays are to be found during 1945-1947. Knopf continued to check periodically with Leopold on how the work was progressing. Little was being done. At the urging of some of his friends Leopold sent some of his earlier "philosophical" essays to Knopf. Returning them, Clinton Simpson again expressed concern over what he considered thematic and stylistic disunity. As encouragement he added, "I find whatever you write full of interest and vitality, and it seems to me our only problem is one of fitting together the pieces in a way that will not seem haphazard or annoying to the reader" (April 29, 1946). Said Leopold in reply, "I entirely agree with you that I can see no easy way of getting unity between the philosophical pa-

* A rejection letter from the University of Minnesota Press dated January 31, 1946, suggested that in his essays Leopold "introduce more of himself, so that his personal experience becomes the thread on which the essays are strung."

pers and the descriptive essays" (May 10, 1946). No issue was the object of more of Leopold's literary attention than this matter of unifying natural description and ecological exhortation. He saw "Draba" and "The Land Ethic" as of one piece. Knopf did not.

Much writing and revising took place from the last half of 1946 up to the time the manuscript was submitted in 1947. Leopold's correspondence reveals his determination to get the essays published one way or another. Eleven of the thirty-seven dated essays included in "Drafts of Essays in Sand County Almanac" (Writings, Box 5) in the University of Wisconsin Leopold archives fall into this period. (Twenty-one fall into the earlier 1943-44 productive period.) Many of these later essays growing out of Leopold's shack experiences and reflecting his intention to include more personal narrative, are privately held and unavailable for examination. Probably about nine of the forty-one essays were written during this period.

The results of Leopold's 1946-47 literary work appear in the manuscript of *A Sand County Almanac*, then entitled *Great Possessions*, sent to Knopf on September 5, 1947. It is important to note that Leopold explicitly stated that he put together this manuscript (essentially the same as the published book) in a deliberate effort to meet the objections Knopf raised in their three letters of July 24, 1944; August 24, 1944; and April 29, 1946. *A Sand County Almanac* as we have it today was Leopold's best effort to combine narrative and exposition, natural fact and conservation value, joy and concern, the particular and the universal, the scientist and the poet and the philosopher. Knopf saw it otherwise. The book, they said, "is far from being satisfactorily organized. . . . What we like best is the nature observations, and the more objective narratives and essays. We like less the subjective parts—that is, the philosophical reflections which are less fresh, and which one reader finds sometimes 'fatuous.' The eco-

logical argument everyone finds unconvincing; and as in previous drafts, it is not tied up with the rest of the book." As final advice Clinton Simpson suggested to Leopold that "instead of trying to cover so much territory, you might concentrate on the 120 acres of woodland you bought" (November 5, 1947). By this time Leopold was less ready to accept Knopf's judgment on a matter that had received so much of his attention. Regarding the essays he said in his letter of reply, "I still think that they have a unity as they are" (November 18, 1947). Five months later on April 14, 1948, Oxford University Press agreed and accepted the same manuscript without critical comment. (Sloane was also looking favorably at the manuscript at that time.)

It is important to examine what was included in the final manuscript, the one that evolved over six years of debate over its contents, the one in which Leopold properly unified the elements of natural description and ecological concerns, of field and contemplation, of dawn at his Wisconsin River shack and his analysis of environmental history. A comparison of the table of contents of the 1947 manuscript with the 1944 list demonstrates change in two directions. In the first place many more essays by 1947 are based on the shack experience. Leopold called these personal narratives "Sauk County Almanac." In them emerges Leopold the man, the participant observer, the Standard as Hochbaum would have it. The arguments of the earlier ecological essays and philosophical essays are demonstrated in the personal experiences recorded in these late essays. Fact and value appear in all three essay types: one merely gains access through a different door.

Leopold's late attention to essays based on his shack experience is beyond doubt. It is reasonable to assume that the focus grew out of Knopf's and Hochbaum's urging. The 1947 manuscript includes twenty-one essays in Part I "Sauk County Almanac," only seven of which had appeared earlier as arti-

cles, one of them "Pines Above the Snow" in a version so different that one may conclude that fifteen of the twenty-one Part I essays are new to the book. Essay manuscript dates and the 1944 list of fifteen essays demonstrate that most of the essays in Part I, "Sauk County Almanac" date from Leopold's last few years and reflect his turning to personal experience and to nature description as a vehicle for conservation thinking. Observed meadow mice replaced criticized road builders.

By contrast only six of the sixteen essays in Part II had not been previously published. Ten of these sixteen essays were among the fifteen included on the 1944 list. Probably only two of the essays in the manuscript Part II were written after mid-1944. Clearly the ecological essays included in Part II reflect Leopold's 1941-1945 sense of what nature writing should be. "Marshland Elegy" and "Thinking Like a Mountain" cover the range of such ecological essays. Any reading which attempts to reconstruct the making of *A Sand County Almanac* must begin with Part II. Parts I and III come later in Leopold's thinking and reflect his final conviction that personal descriptive essays on the one hand, experience based ecological essays in the converging middle, and philosophic essays on the other hand all have their place in a book about nature.

If it is true that Leopold gave late attention to personal narrative in the shack essays, it is also true that he only late determined to include four philosophical essays, three of them essentially unchanged from their first appearances between 1933 and 1941. Clearly Leopold considered what he had said about a conservation ethic in 1933 to be no less important in 1947. Of even more importance for this investigation of the conceptual evolution of *A Sand County Almanac*, Leopold to the end saw a unity in "Draba" and "The Land Ethic." Thus the book in its final form acquired a greater range in style and point of view than it had

had in the earlier years of its making. Thematically it remained complexly tight.

Throughout the writing of the book Leopold was concerned about unity of tone, "literary effect" as he described it to Hochbaum. That he was consciously concerned about textual balance is evident from a handwritten, undated sheet (in Robert McCabe's Leopold file) entitled "Notes for Paper Writing." On it Leopold argued the need to set forth at the outset the facts and descriptions related to the matter. This process he called "exposition." Only upon its completion ought one move on to what he called "commentary," that is discussion, appraisal, and interpretation. That organization is certainly reflected in the three-part division of *A Sand County Almanac*: I. Sauk County Almanac, II. Sketches Here and There, III. The Upshot. Lest there be any doubt, Leopold carefully spelled out their relationship in the "Foreword," that section of the book I am certain Leopold wrote with Knopf's previous objections in mind. Part I, he said, tells what his family sees and does at its week-end refuge—personal observation. Part II he described as episodes in his life bearing on conservation issues—experientially based conservation commentary. The essays of Part III he said deal with "philosophical questions." And notice how Leopold had been conditioned to assume very few were interested in such essays. How wrong Knopf was to want them out; how right Leopold was to insist on their presence. *A Sand County Almanac* is a working out of what "Notes For Paper Writing" says about composition and argument. It begins with the facts and descriptions of land and man at the shack. Only then does it move on to discussion, appraisal, and interpretation.

The evolution of Leopold's thinking about his book, which he never thought of by the publisher's title *A Sand County Almanac*, is epitomized in his changing choice of title. Before mid-1943 *Conservation Ecology* was his choice. Around that time he turned to

Land Ecology (See earlier comments). In early 1944 he preferred as title essay "Marshland Elegy"—a lovely but devastating ecological essay, one in which Leopold does not himself appear. By mid-1944 Leopold considered "Thinking Like a Mountain" a better choice—a more personal and thoughtful essay. The title essay Leopold chose for the 1947 manuscript was "Great Possessions," the essay he thought his best (October 31, 1944), one which depends on Leopold the man, the phenologist, the lover of land, the man in search for harmony with his world. This last title choice reflects Leopold's last and deepest sense of the book—a book which ironically assesses man's great possessions; a book which through narrative and exposition, both implicitly and explicitly, set up Aldo Leopold as Standard. As his essays evolved, Leopold added Leopold an example to Leopold the preceptor. Only then did he become Leopold as Standard.

A reading of *A Sand County Almanac* benefits not only from an understanding of its conceptual and structural evolution, but also from an awareness of how Leopold wrote and revised, and of how the book was edited. Important as these matters are, they have not thus far been made accessible to Leopold's readers. My brief comments are to be construed as introductory to the more complete study which has yet to be made.

Those who have studied the literary process are familiar with the personal journal extracted and reshaped into essays and finally into books. John Muir and Henry Thoreau wrote that way. Aldo Leopold did not. It was habit for Leopold to take a small pocket notebook with him into the field. The plaid-covered notebook found in his pocket at his death, written in scratched script and cryptic style, contained records of temperatures, shopping lists, correlations of bird songs and candle power, and flower blooming dates. All is factual and quantitative. The last line in the fire-scorched note-

book reads "lilac shoots 2" long." These field notes were promptly recorded in what is called "The Shack Journal," the several volumes of which are to be found in the University of Wisconsin Leopold archives. The journal entries, consisting entirely of listings and descriptions of natural events, were made by different members of the Leopold family, but primarily by Aldo himself. The journal, carefully done and without erasures, is divided into sections with recurring headings such as "Phenology, Mammals, Broken Candle, First Bloom, Out of Bloom, Last Bloom, and so on." This journal, containing only natural description with no value or delight response, is neither a Leopold, nor a family, nor a shack journal. It is a land journal. The Leopold children used it as a data base for later technical articles. But the journal is no way the basis for the essays in *A Sand County Almanac*. A search of journal entries on, for example, woodcocks as indexed by Leopold's wife (interestingly Leopold had suggested to Knopf that *Great Possessions* be indexed) demonstrates beyond doubt that the journal is not the literary source of "Sky Dance."

Leopold's initial literary unit was the draft essay, written neither at home nor at the shack but in his office early in the morning. Nor did I find indication that Leopold wrote from extensive preparatory notes. To the contrary, in several drafts I found blank spaces where exact numbers and technical terms were to be added later. An examination of Leopold's neat pencil drafts reveals writing that is skillful, colorful, natural. Leopold's first draft language was metaphoric, balanced, poetic. There can be no doubt about Leopold's literary gift. Revision followed, mostly deletion and tightening, but occasionally large portions were added, like the Jonathan Carver and John Muir sections of "Bur Oak" and the accounts of geese near the shack in "The Geese Return." Perspective revisions occur. For example, the first draft of "January Thaw" speaks of "the

naturalist." The next draft replaces "the naturalist" with "you." Only in the final version does the personalized, Leopold "I" appear.

Leopold actively sought critical comment on his writing from friends, family, and colleagues. Dozens of people at one time or other examined and critiqued Leopold's essays. One of the very last notes before his death requested eleven of his friends to read his manuscript with an eye for unity, style, and balance between description and commentary—matters which concerned him to the end. After his death Leopold's son Luna headed a team responsible for the book's final editing. The Hamerstroms wisely argued that the work be as Leopold left it. Others suggested changes, some of which were made. Oxford considered the title *Great Possessions* unsellable. Worse titles were suggested: *Fast Losing Ground*, *Last Call*, *Two Steps Backward*, *This We lose*, and others (July 19, 1948). One of the editorial team, Alfred Etter, found either "Sand Country Almanac" or "Seasons in the Sand Country" a better rubric for Part I than Leopold's choice "Sauk County Almanac" (June 10, 1948). Possibly the most important change to the manuscript after Leopold's death was the climax-altering decision to shift "The Land Ethic" from its original first placement in Part III to its present final position. Many lesser changes were also made. "The Alder Fork" was

changed from Part II to Part I. "Ave Maria" was changed a bit and retitled "Choral Copse," although Leopold's wife preferred the original title. "Prairie Birthday," not in the original manuscript, was added to Part I. "The White Mountain" was renamed "On Top." Opinions of the essays differed widely. One of the editorial team thought all of Part I was weak. Bill Vogt considered the essay "Draba" to be "as insignificant as the plant itself." The first sentence of this essay drafted on March 16, 1943, was cut. "During this the longest winter, of the biggest war, in this month of the big tax, it is salutary to think upon Draba." Whether that deletion improved the piece, you may judge. A reference to Gabriel Heater was dropped from "Too Early." Several of the editorial team objected to language here and there which they considered "too sweet" and not in character for Leopold. But beyond other small changes, the manuscript remained intact.

A Sand County Almanac in the making had a long and interesting history. Any serious study of this work, and certainly any attempt to analyze it as *genre exemplar* can no longer be content with the 1949 published edition, but must also take into account how Leopold wrote and revised, and especially how the concept of the book evolved. Leopold's attitude toward writing was no less ecological than was his attitude toward land.

THE PRE-EUROPEAN SETTLEMENT VEGETATION OF THE ALDO LEOPOLD MEMORIAL RESERVE

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Abstract

From the original land survey notes of the eight sections surrounding and including the Aldo Leopold Memorial Reserve in Sauk County, Wisconsin, qualitative data were used to determine plant community types present prior to European settlement. They included savannas, upland forests, floodplain forests, tamarack swamps, and marshes. Through correlation with soils information and comparison with the pre-European settlement vegetation maps of Columbia and Sauk Counties and with the present vegetation of the Reserve, a more detailed pre-settlement vegetation map was prepared. Ten plant communities were distinguished: oak openings, oak barrens, dry upland forest, mixed hardwood forest, mixed floodplain forest, wet floodplain forest, tamarack swamp, low prairie, sedge meadow, and marsh. These communities were related to discontinuous gradients of fire stress, fluctuating water-levels, and siltation levels. Prevailing climate, regional geology, and local topography were the main factors responsible for the environmental gradients.

INTRODUCTION

The vegetation of Wisconsin has been thoroughly modified through European settlement and subsequent land-use. Frequent fires maintained many of the plant communities of Wisconsin prior to settlement. In the absence of fire, the sunny oak openings of southern Wisconsin grew up into the oak woodlots of today, while shrub-carr and aspen invaded the sedge meadows and low prairies. Lumbering and farming transformed most of the remaining expanses of prairie, savanna, marsh, and forest into today's fields of corn and hay (Curtis 1959).

The Aldo Leopold Memorial Reserve is located in Fairfield Township, Sauk County, Wisconsin (R7E, T12N, Sec. 2, 3, 4, 5; R7E, T13N Sec. 32, 33, 34, 35) (Fig. 1). This area is the "sand country" of Aldo Leopold where he and his family spent their weekends and vacations in the 1930's and 1940's. The property had been devastated by early settlers, and Leopold spent much of his time nurturing the land back to a

healthy state. Today, the Reserve encompasses a great diversity of plant communities, ranging from floodplain forest, marshes and

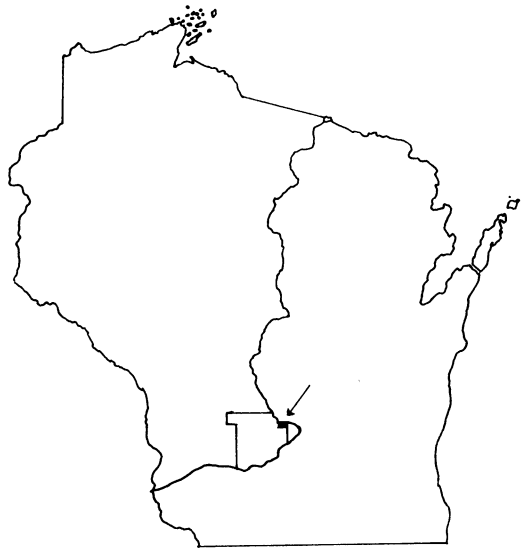


Fig. 1. Location of the Aldo Leopold Memorial Reserve, Sauk County, Wisconsin.

prairies to upland woodlands and cultivated fields (Luthin 1978).

A goal of current research on the Reserve is to acquire an understanding of the ecology, environment, and history of the Reserve as a guide to the management of the area, as well as to increase our capacity for land rehabilitation and management. The purposes

of my study were to identify the major pre-settlement plant community types of the Aldo Leopold Memorial Reserve and their species composition, and to relate their occurrence and distribution to environmental factors. This, in turn, will facilitate comparison of the presettlement plant community types with those of Aldo Leopold's time and

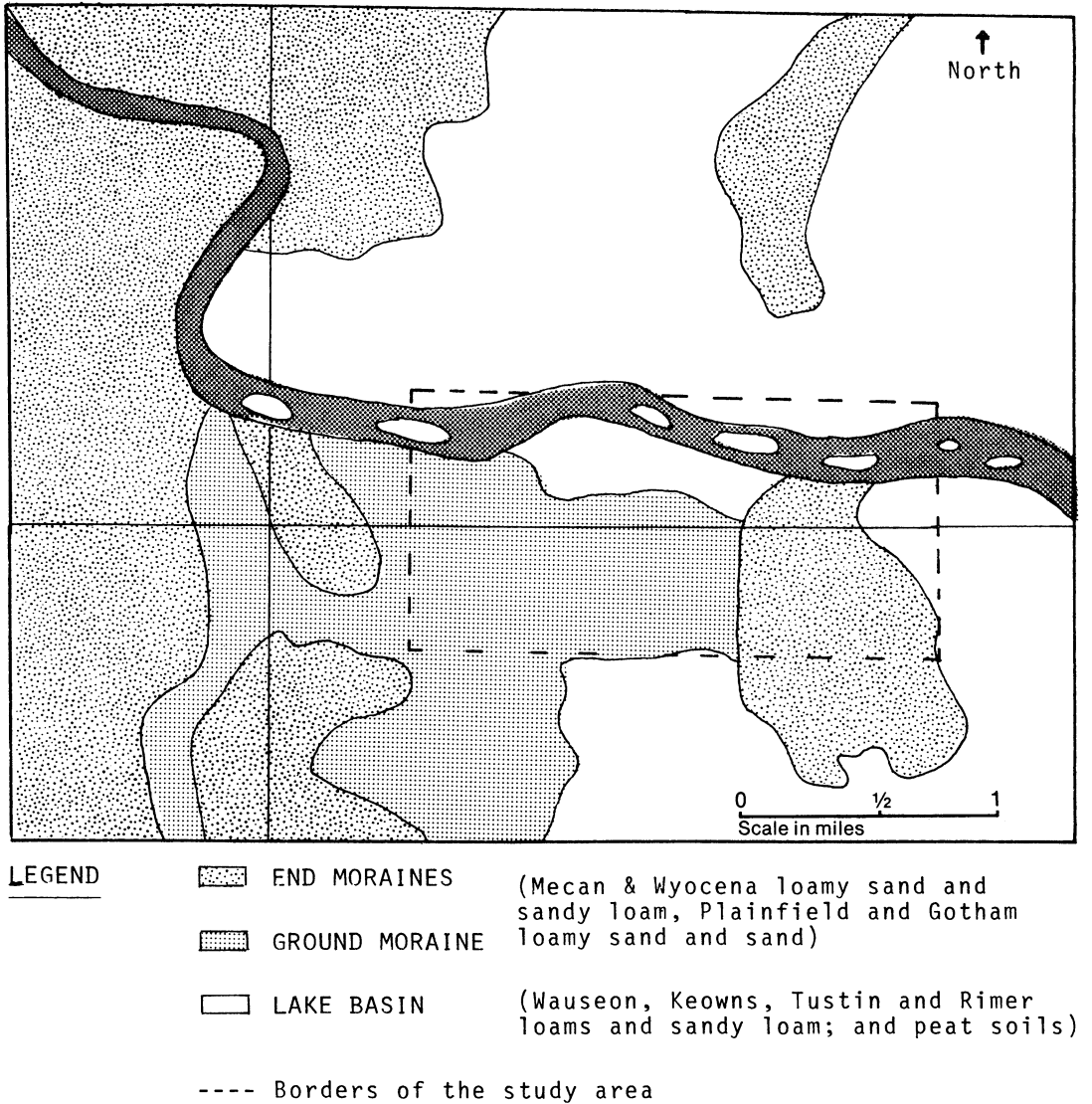


Fig. 2. Glacial deposits and generalized soils of the area surrounding and including the Aldo Leopold Memorial Reserve, Sauk Co., Wisconsin. (Adapted from Wisconsin Geological and Natural History Survey 1976, Glacial Deposits of Wisconsin Map and from Hole *et al.* 1968, Overlay Soil Map of Wisconsin.)

of the present to emphasize the degree to which the landscape has been modified following European settlement.

DESCRIPTION OF THE STUDY AREA

The study area lies in northeastern Sauk County, Wisconsin, south of the tension zone which separates the Northern Hardwoods floristic province to the northeast from the Prairie-Forest province to the southwest (Curtis 1959). The study area includes the eight sections surrounding the Aldo Leopold Memorial Reserve. It is bounded to the north by the Wisconsin River and to the south by a large marsh. The marsh has recently been drained and is now farmed.

The surface features have been influenced primarily by glaciation, subsequent erosion, and the pervasive influence of the Wisconsin River. The study area is covered with a mantle of deposits laid down by a series of glacial advances, the last being the Green Bay Lobe of the late Woodfordian age (Black & Rubin 1967-68) approximately 12,000 years ago. During glaciation, ice dammed the river in the vicinity of the study area. Subsequently, the retreating glacier deposited debris between 100 and 300 feet in depth within the area (Borman 1971). In the process, the river was diverted from its present location along the north end of the study area (Alden 1918). Temporary ponding occurred until the swollen waters broke through the resistant morainal deposits (Columbia County Planning Department 1970).

At the time of European settlement, the glacial lake basin with its characteristically broad and flat expanse occupied the central part of the study area (Columbia County Planning Department 1970). A rolling terrain composed of morainal hills (Socha, pers. comm., 1981) rising 50 to 170 feet above the lake basin lay to the south, west and east and a floodplain to the north (Fig. 2).

ORIGINAL LAND SURVEY RECORDS

There are several historical sources for a description of the pre-settlement vegetation

of a given area. One primary source is traveller and settler accounts in local, county, and state historical societies and histories. The Wisconsin River was the principal means of transportation in the study area prior to settlement. One traveller wrote of it:

The channel is subject to change, from the numerous bars of sand which lie in it, and frequently alter their position. In this river are numerous islands, in which grow the principal timber of the country. The banks are generally low and sandy. (Tanner 1908)

Another described the river as passing between "forests of oak" (Marryat 1839) and yet another remarked about numerous tall pines on the islands near the present city of Portage (Turner 1898). William Toole, a pioneer farmer in a neighboring township, meanwhile, described the interior country as composed of

exclusively oak in the several varieties of black, red, white, and burr oak, with an occasional hickory or aspen poplar, and very rarely a black cherry, irregularly scattered apart and seldom near enough together to be called a grove or more commonly a growth of oak brush, with dwarf willows, poplar, hazel, and a few other kinds of shrubs. (Cole 1918)

Reflecting over her childhood in the same township as the study area, Mrs. John Luce wrote:

Fairfield in pioneer days was a veritable flower garden. Wherever the sod was unbroken the ground was literally covered with flowers. (Luce 1912)

Not everyone was so delighted with what they found, though. While surveying about two miles east of the study area, Theodore Conkey wrote in his field notes: "They call this barrens and barren it is" (Conkey 1845).

In areas where they are available, however, the records of the original U.S. Government land surveyors are most frequently used to reconstruct the past vegetation of a particular region.

The data for the original land survey of the study area were collected in 1845 by Theodore Conkey and John Brink and in 1851 by Henry J. Howell. At each section and quarter section corner along the survey lines, i.e., at $\frac{1}{2}$ mile intervals, corner posts were set. From each post, these surveyors measured the distance* and angle to the two closest trees in different quadrants, blazed the trees to facilitate relocation, and recorded the tree species and diameter. In addition, line trees, those intersected by survey lines, were recorded by species and diameter. The location of springs, ponds, streams, prairies, marshes, bottoms and other features encountered along the survey lines were recorded, and after each mile and township, the Deputy Surveyor completed a brief summary of the land surveyed. Upon completion of the survey, plat maps were prepared for each township and range (Dodds *et al.* 1943, and Tans 1976).

Evidence of fraud and bias has been found in the original land survey records for some areas (Bourdo 1956), but there is no evidence indicating fraud in the data for the Reserve (McConaghy, 1979, pers. comm.).

The original land survey records do have their limitations. The survey was conducted under less than ideal conditions. Furthermore, instructions to the surveyors frequently varied; surveys were conducted in different months; different crews surveyed the interior and exterior lines of a township; the survey crews were not always literate, and the gathering of ecological data was not a stated goal of the survey (Tans 1976).

The major limitation of the survey in the study area, however, is its scale. The Reserve is small—under 1200 acres—and geologically complex. The survey records only provide information along the four sides of

each square mile. By themselves, they are not capable of the fine resolution necessary in this diverse landscape. Some lowland communities, such as sedge meadows, low prairies, and emergent aquatic marsh known to be present in the Reserve, were not separated in the land survey records (Leopold 1935-48, and Luthin 1978). Other plant communities were overlooked because they occupied too small an area to be present on one of the survey lines. Even with topographical information, vegetation types from the GLO data are generalized and boundaries between them arbitrary.

Finally, the relatively few corners present (35 within the study area) are not enough to justify a quantitative treatment of the survey data. Within each community type, the number of trees of each species is less than 10 and usually less than 5. Thus, a statistical treatment of the results may be more confusing than illuminating. Quantitative analyses of vegetational composition, spatial relationships, and structure, which are useful in mapping community types, are therefore not attempted here.

SOILS: ANOTHER HISTORICAL RECORD?

Soils are an additional source of information for reconstructing the pre-settlement vegetation of a particular region. A soil is a three dimensional body of mineral and organic matter that reflects conditions at the site where it is found (SCS Soil Survey Manual 1951). The biota is particularly important in influencing the development of characteristic horizons within the soil body (Jenny 1958, and Hole 1976). Plant communities will occur with correspondingly distinct soil profiles (Buol, Hole, and McCracken 1973). For example in a forested area in Menominee County that escaped clear-cutting in logging days three major forest communities, with correspondingly distinct soil profiles, occur within a distance of 40 kilometers: (1) hemlock forest (Spodosol soil), (2) hemlock-northern hardwood

* Surveyors measured distances in units of chains (66 ft.) and links (.66 ft. or 7.92 in.); 80 chains = 1 mile. Survey posts were set at the 40 and 80 chain points on the four sides of each section.

forest (double profile soil—weak Spodosol over weak Alfisol soil), and (3) northern hardwood forest (weakly developed Alfisol soil) (Milfred, Olson, and Hole 1967).

Soils respond slowly to vegetative shifts. In southern Wisconsin, for instance, Van Rooyen (1973) estimated that about 400 years are required to form a mollic epipedon (a characteristic prairie surface horizon) in a well-drained site and 200 years where drainage is impeded. An ochric epipedon (a characteristic forest surface horizon) may form in 300 years under a nearby deciduous forest. This time lapse, called “pedologic lag,” between change of vegetation and that of the soil profile allows one to reconstruct the presettlement vegetation of a given region long after settlement.

Soil survey maps (SCS 1951) based on small-scale aerial photographs are very useful in reconstructing the pre-settlement vegetation of locations like the Aldo Leopold Memorial Reserve that are too small to be analyzed using surveyors’ data alone. They indicate the probable distribution of plant communities not intersected by the survey lines. They help sharpen delineation of boundaries between community types and help to differentiate certain lowland plant communities, such as sedge meadows, low prairies, and emergent aquatic types, that cannot be determined from the land survey records. When accompanied by field investigations of vegetation and soils, as in the Menominee Tribal Lands of Wisconsin study (Milfred, Olson, & Hole 1967), they can help determine successional relationships among vegetation types and the importance and extent of environmental factors operating in the area.

There are limitations in the soil approach to reconstructing past vegetation patterns. In mapping the soils of Wisconsin, the SCS indicated the pre-settlement vegetation type associated with each soil series. They performed the bulk of their mapping, however, prior to Curtis’s studies on the vegetation

of Wisconsin (1959) and to Findley’s map of the pre-settlement vegetation of Wisconsin (1976). Their terminology, therefore, is not directly comparable to that of Curtis (Hole, 1980, pers. comm.).

Furthermore, our understanding of the processes of soil formation under specific biotic regimes is incomplete and, in some cases, very general. It is consequently difficult to be certain of the vegetation type associated with a given soil profile and for a given soil series. There may be two (or more) vegetation types associated with a particular series. For example, Curtis noted (1959) that the very ancient maple forests of Green County, Wisconsin occurred on soils mapped in the early reconnaissance soil surveys as prairie soils. A later soil survey of Grant County, Wisconsin (Robinson & Klingelhoets 1961) made the same ecological error (see Hole, 1976). Like typical prairie soil profiles, these soils had a nearly black A₁ layer, enriched in humus, extending to a depth of 7 to 9 inches. Most likely, this so-called “prairie horizon” was not the result of former prairie occupation as originally believed, but instead was caused by the “nutrient-pumping” ability of sugar maple and basswood.

Soil profiles also may reflect conditions that existed a hundred or more years prior to the time of European settlement and not those at the time of settlement. There has been a vegetative shift in the last few thousand years from grassland to encroaching forest (Curtis 1959). Because of the process of pedologic lag, one would expect the deep dark mineral soils to be more extensive in Wisconsin than the actual prairie that European settlers found there. This may be the real explanation for the fact that the soil map shows more of the state occupied by prairie soils than was occupied by prairie a century ago (Hole 1976).

Finally, soil series maps are themselves generalized and do not always include the soil series corresponding to particular vege-

tative types found in a given area. On extinct lake beds, for example, wet prairie is often a minor component in the moisture gradient from oak uplands through wet prairie, sedge meadows and marsh. Hence it typically does not appear in the generalized soil maps (Hole, 1980, pers. comm.).

METHODS

Keeping these limitations in mind, one can construct a more detailed and accurate pre-settlement vegetation map for small study areas by utilizing both the original land survey records and the soil survey maps than by using either alone.

From the original land survey field books on file at the Division of Trust Lands and Investments (DNR, Madison, Wisconsin), the surveyors' notes from all of the interior and exterior lines of each section surrounding and including the Aldo Leopold Memorial Reserve were examined. The species and size of each bearing tree, the species and size of each line tree, the distance from tree to survey post, the description of each section, and the field notes on the meanders of the Wisconsin River were tabulated. This information was summarized and transferred to blank section outline forms. As data from the original survey records were transposed, each section and quarter section point was coded according to the nature of the plant community.

The determinants of the plant community types were similar to those utilized by Tans (1976) in his study of the pre-settlement vegetation of Columbia County, Wisconsin: the dominant tree species, if any, at the point, characteristics of the landscape from the surveyors' comments, and density of tree canopy as indicated by the distance from surveyor post to tree. A measure of density is possible because the mean of the two distances in links from survey post to tree corresponds well to the mean distance between trees in feet in a natural situation (Cottam and Curtis 1956).

The major groupings of plant community types in the presettlement landscape surrounding and including the Aldo Leopold Memorial Reserve were: savanna, upland forest, floodplain forest, tamarack swamp, and marsh.

After delineating these groups, soil types were utilized to distinguish between oak barrens and oak openings, between dry upland forest and mixed hardwood forest, between mixed floodplain forest and wet floodplain forest, and between low prairie, sedge meadow and emergent aquatic marsh. Determinations of the pre-settlement vegetational associates for the soil series present in the study area (Table 1) were based upon descriptions of the properties of the soil series found in Hole (1976) and in the records of the SCS and upon field evaluations of the present vegetational associates for each soil series.

An example will illustrate the procedure adopted here. Areas occupied by the Adrian soil series were characterized in the GLO survey notes as marsh and for the Granby soil series as marsh and floodplain forest. In Hole (1976), the vegetational associates for Adrian muck were sedge meadow or shrub carr and for Granby sandy loam swamp hardwoods or conifers. Since there was no evidence of shrubs in the GLO account for areas occupied by Adrian muck and no evidence of other natural plant communities in field investigations in the study area, it was classified as sedge meadow. Both swamp hardwoods and wet prairie were noted in field investigations, on the other hand, for areas occupied by the Granby soil series. I decided, therefore, that the vegetational associates found in Hole (1976) for Granby were not quite complete and mapped areas described as marsh in the GLO accounts and containing prairie species in the groundlayer at the present time as wet prairie. Two other soil series, Marshan and Rimer (Table 1), also had incomplete vegetational associates in Hole (1976).

TABLE 1. Soil types and their pre-European settlement vegetational associates.

Soil Types	Vegetational Associates
I. <i>Entisols</i> (recently formed soils)	
Typic Udipsamment—Plainfield*	Oak Barrens ^{1,2,4} /Dry Upland Forest ^{1,4}
Aquic Udipsamment—Brems*	Mixed Floodplain Forest ^{3,4}
Wet Alluvial*	Wet Floodplain Forest ^{3,4}
Alluvial*	Mixed Floodplain Forest ^{3,4}
II. <i>Mollisols</i> (prairie soils)	
Typic Argiudoll—Ringwood	Dry-Mesic Prairie ²
Typic Haplaquoll—Granby*	Low Prairie ^{1,4} /Wet Floodplain Forest ^{1,2,4}
Gilford	Low Prairie ³
Colwood	Low Prairie ³
Marshan	Low Prairie ⁴ /Sedge Meadow ²
III. <i>Alfisols</i> (high base status forest soils)	
Psammentic Hapludalf—Gotham*	Oak Opening ^{1,2,4} /Dry Upland Forest ^{1,2,4}
Typic Hapludalf—Wyocena*	Oak Opening ^{1,2} /Dry Upland Forest ^{1,2}
McHenry	Oak Opening ^{1,2}
Sisson	Mixed Hardwood Forest ²
Fox	Oak Opening ^{1,2} /Dry Upland Forest ^{1,2}
Briggsville	Oak Opening ^{1,2} /Dry Upland Forest ^{1,2}
Arenic Hapludalf—Tustin*	Upland Forest ^{1,2}
Mollic Hapludalf—Billett	Oak Opening ^{1,3}
Aquic Hapludalf—Rimer*	Lowland Oak Opening ¹
Aquollic Hapludalf—Mosel	Oak Opening ^{1,3}
Shiffer*	Mixed Hardwood Forest ^{2,4}
IV. <i>Entisols</i> (organic soils)	
Terric Medisaprist—Adrian*	Sedge Meadow ^{2,4}
Palms	Sedge Meadow ^{2,4}
Typic Medisaprist—Houghton*	Emergent Aquatic ^{2,4} /Sedge Meadow ^{2,4}

* Found in Aldo Leopold Memorial Reserve.

Sources: ¹ GLO Survey Notes² Hole (1976)³ Soil Conservation Service Reports⁴ Field Investigations

The completed township maps coded to identify the major vegetation types, together with the surveyors' maps, U.S. Geological Survey topographic map, the soils map of the county (Gundlach 1980), the pre-settlement vegetation maps of Sauk (Lange 1973 & 1976) and Columbia Counties (Tans 1976), the vegetation map of the Aldo Leopold Memorial Reserve (Luthin 1978), and field inspections were utilized in preparation of the final map of the pre-settlement vege-

tation of the Aldo Leopold Memorial Reserve (Fig. 3). Where the boundary line between two communities was not evident by inspection, the boundary line was refined to correspond to the nearest topographic line.

RESULTS AND DISCUSSION

Ten vegetation types were identified as comprising the vegetation of the study area in the 1840's (Fig. 3). The relative area

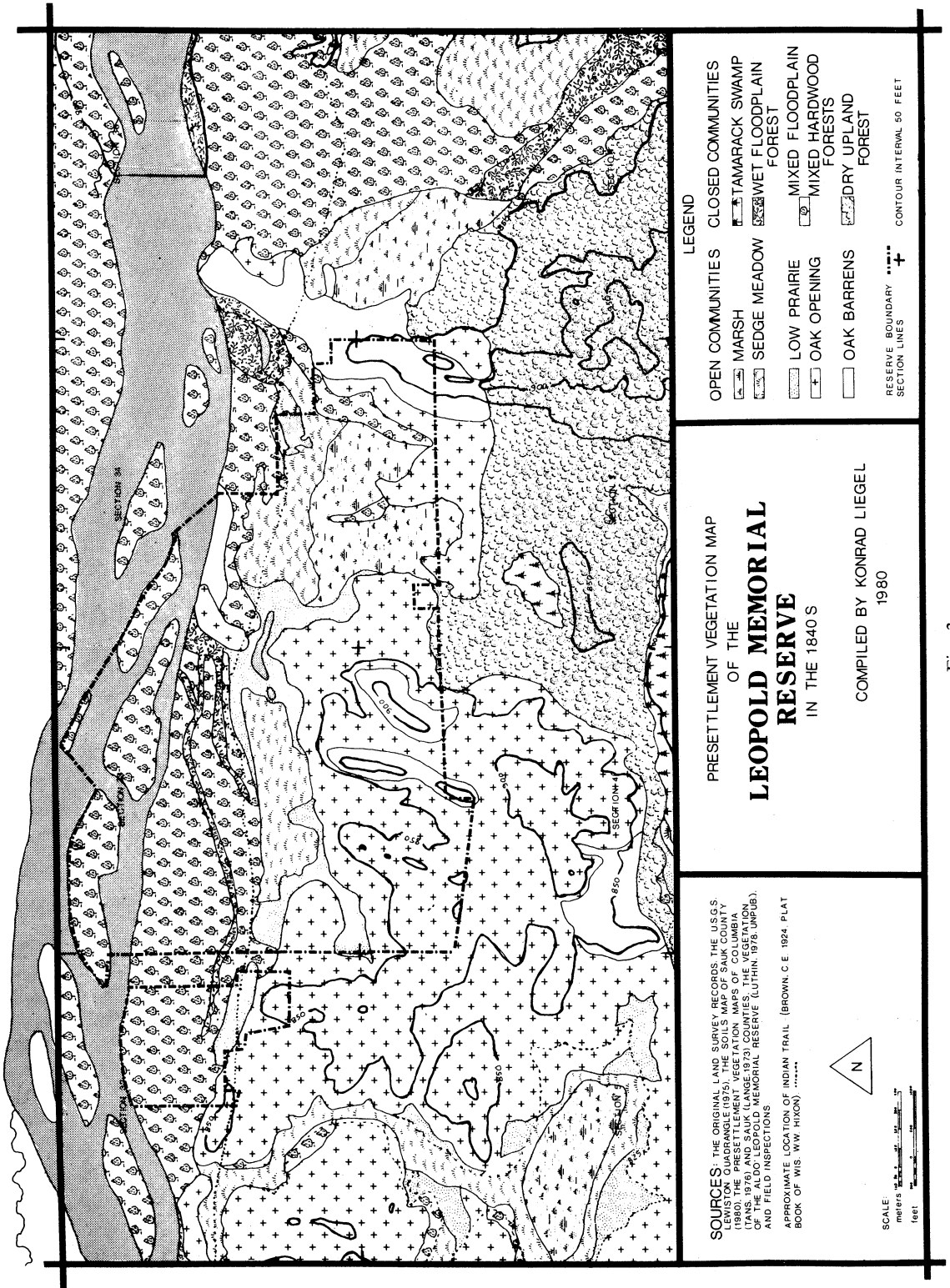


Fig. 3.

TABLE 2. Relative area coverage of the pre-European settlement plant community types in the eight sections surrounding and including the Aldo Leopold Memorial Reserve, Sauk County, Wisconsin.

Community	% of total land surface	Community	% of total land surface
Savanna	31	Marsh	17
Oak Opening (26)		Sedge Meadow (8)	
Oak Barrens (5)		Marsh (Emer-	
Floodplain		gent Aquatic/	
Forest	25	Sedge	
Mixed F.		Meadow) (5)	
Forest (23)		Low Prairie (4)	
Wet F. Forest (2)		Upland Forest	16
		Dry Upland	
		Forest (15)	
		Mixed Hard.	
		Forest (1)	
		Open Water	10
		Tamarack Swamp	1

covered by each vegetation type is given in Table 2. Size class distribution for line, bearing, and meander trees indicates that the median size tree was in the 10-inch diameter class. Table 3 lists the line, bearing, and meander tree species found within the study area. Almost 85 percent of the bearing trees were oaks. Oaks were found in virtually all of the vegetation types. It is possible, as Tans suggests (1976), that this reflects the surveyor's bias towards selecting oaks as bearing trees. When line and bearing trees are compared for differences in the relative abundance of species, however, no significant difference is found except, perhaps, for the bur oak. It is evident, therefore, that the pre-settlement landscape of the study area was dominated by oaks.

Three interdependent factors seem to have been crucial in influencing the pattern and composition of the pre-settlement vegetation types in the study area: topography, hydrol-

TABLE 3. Line, bearing, and meander trees from the Original Land Survey of the eight sections surrounding the Aldo Leopold Memorial Reserve, Sauk County, Wisconsin. Common names are those given by the surveyors.

Common Name	Scientific Name	Number of Trees	Percent of Total
Black Oak	<i>Quercus velutina</i> L., <i>Q. ellipsoidalis</i> E. J. Hill, or <i>Q. rubra</i> L.	34	26.8
White Oak	<i>Quercus alba</i> L.	19	14.9
Birch	<i>Betula nigra</i> L.	19	14.9
Bur Oak	<i>Quercus macrocarpa</i> Michx.	18	14.2
Yellow Oak	<i>Quercus ellipsoidalis</i> E. J. Hill	12	9.4
Maple	<i>Acer saccharinum</i> L.	8	6.3
Tamarack	<i>Larix laricina</i> (DuRoi) K. Koch	5	3.9
Ash	<i>Fraxinus</i> spp.	3	2.4
Willow	<i>Salix</i> spp.	2	1.6
Cottonwood	<i>Populus deltoides</i> Marsh.	2	1.6
Swamp White Oak	<i>Quercus bicolor</i> Willd.	1	0.8
Aspen	<i>Populus</i> spp.	1	0.8
Elm	<i>Ulmus</i> spp.	1	0.8
Hickory	<i>Carya ovata</i> (Mill.) K. Koch	1	0.8
Pine	<i>Pinus strobus</i> L.	1	0.8
TOTAL		127	100.0

ogy, and fire. The probable role of each will be discussed for each vegetation type. Microclimate and soil type probably are also important but their effects are best understood in terms of topography and hydrology.

Savanna

Savannas were defined by section and quarter section points where the range of the mean distance between survey post and tree was 209-50 links, which corresponds to a range in density of 1-17.4 trees per acre, well within Curtis' definition of a savanna (Curtis 1959, Anderson and Anderson 1975). The mean distance from survey post to tree was 87.3 links, equal to a $\bar{x}$ density of 5.7 trees per acre. Median tree size in the savannas was 12 inches in diameter.

Dominant tree species, soil type, topography, and exposure were used to distinguish between oak barrens and oak openings. Oak barrens were savannas dominated by black oak (*Quercus velutina* L., *Q. ellipsoidalis* E. J. Hill, or *Q. rubra* L.). They were restricted to the droughty Plainfield loamy sand and sand. Oak openings, on the other hand, were savannas dominated by white (*Q. alba* L.) or bur oak (*Q. macrocarpa* Michx.). They occurred on a variety of soil types, including Gotham, Wyocena, McHenry, Fox, Briggsville, Billett, Dresden, Rimer, and Mosel. Within the savanna community the witness trees were always of the same species at any one corner whereas in the floodplain forest and upland forest they were often of different species.

At the time of settlement, a traveller going from east to west across the uplands of the Reserve would have passed through thinly-treed savannas of black oak on the ridge tops and white oak in the valleys, then onto a rolling parklike plain of scattered groves of bur oak immediately to the west of the Reserve. This pattern may reflect a differential response among the oaks to topographically-induced moisture and fire gradients. The land west of the Reserve is gently rolling,

unlike the broken hilly landscape within the Reserve. Under prevailing westerlies, the potential exists there for frequent fires, which would favor fire tolerant and shade intolerant species such as bur oak. The presence there of several areas of the Ringwood soil series, a prairie soil with too small an area to be mapped in this study, also supports this line of reasoning.

Upland Forest

Upland forests were mapped at upland sites where the mean distance between the survey post and tree was 50 links or less, i.e. a density of 17.4 or more trees per acre. The mean distance for all upland forest sites was 37.2 links, a density of 31.5 trees per acre.

Upland forests were subdivided on the basis of dominant tree species and soil type. Dry upland forests were plant communities dominated by several species of oaks, most notably black, white, and bur oak, and found on a variety of soil types (Table 1). Mixed hardwood forests were found on the Sisson and Shiffer soil types, generally restricted to fire-protected, north-facing, and mesic to wet-mesic sites. In spite of their distinct soil types and upland location, mixed hardwood forests closely resemble the mixed floodplain forests of the Reserve at the present time and are likely not a distinct type (Luthin 1980). They may be kept wet periodically due to surface runoff or seepage from adjacent higher ground (Luthin 1980). In addition, they include several tree and ground-layer species with northern lowland affinities such as tamarack (*Larix laricina* (DuRoi) K. Koch), huckleberry (*Gaylussacia baccata*), blueberry (*Vaccinium* spp.), and dwarf raspberry (*Rubus pubescens*). Mixed hardwood forests, hence, are mapped together with mixed floodplain forests (Fig. 3).

Unlike other surveyors in the area, John Brink distinguished between yellow oak and black oak in his field notes for the forest community. What Brink listed as yellow oak

in the study area is probably Hill's oak (*Q. ellipsoidalis* E. J. Hill) since it was more commonly found in dry woods or barrens on the very poor Plainfield soil type.

All of the witness trees in the dry upland forest community were oaks although a hickory was recorded as a line tree. The presence of redroot (*Ceanothus americana*) and prairie grass in the understory was noted. These results suggest that the upland forest was simply a former oak savanna closed by the development of root sprouts and/or oak seedlings. If this were the case, the median tree size of the oak forests, composed of numerous young trees crowding the older, savanna-grown trees, would be less than that of the oak savanna (Tans 1976). As expected, the median diameter of the oak forest trees was 10 inches but for oak savanna trees, 12 inches.

Prior to settlement upland forests typically occurred in areas adjacent to natural fire barriers, i.e. in areas of irregular topography, extensive wetlands, and between branching streams (Tans 1976). A large marsh and tamarack swamp immediately south of the study area (Lange 1976) may have been responsible for protecting the forests south of the Reserve from frequent and/or intense fires.

Since both oak forest and savanna occurred on the same soil series, it was impossible to distinguish them by soil type (Table 1). Curtis thought (1959) that oak savannas originated from the degradation of pre-existing forests by fire. Pedologic lag could then account for the similarity in soil types between the two communities. This may be too simplistic, however, for in the study area, forest probably has recently replaced savanna. An alternative explanation (Hole, 1979, pers. comm.) is that only a few trees per acre are enough to prevent the development of a prairie soil. Shade may suppress the prairie vegetation so that less of it is incorporated into the soil and/or tannic acids released by the decaying oak leaves

may change the pH and mineral content of the soil.

Floodplain Forest

Floodplain forest included those points along the survey lines in lowlands where the mean distance between the survey post and tree was 50 links or less, corresponding to a density of 17.4 or more trees per acre; the mean distance was 41.2 links, density 25.7 trees per acre. Median diameter of the trees was 10 inches. The surveyors called these areas "bottoms" and indicated their position when entering and leaving. This information was useful in separating the river bottom types from those adjacent to them.

Floodplain forests were subdivided on the basis of dominant tree species and soil type. The mixed floodplain forests were plant communities restricted to the Brems and alluvial soils where the dominant tree species included river birch (*Betula nigra* L.), ash (*Fraxinus* spp.), and different species of oak previously mentioned. The wet floodplain forests were plant communities restricted to the Granby and wet alluvial soils where the dominant tree species in the Reserve today is silver maple (*Acer saccharinum* L.). Although less common, aspen (*Populus* spp.), swamp white oak (*Q. bicolor* Willd.), willow (*Salix* spp.), elm (*Ulmus* spp.), and pine (*Pinus strobus* L.) were also present in the floodplain forests. The surveyors also frequently commented on the undergrowth of vines, briars, alder, prickly ash (*Xanthoxylum americanum* Mill.) and occasional small oaks and grass.

The vegetational complexity of the mixed floodplain and wet floodplain forests reflects the varied environments of old channels, sand bars, and levees, created by a constantly shifting river channel. Although frequently inundated during spring flood, the bars and levees quickly warm up when the flood waters subside and during low water may be somewhat droughty. The drought-tolerant black oak and pine find a suitable

medium for growth and may eventually form extensive stands. Meanwhile, the water-tolerant silver maple colonizes the edges of old sloughs and abandoned channels.

Tamarack Swamp

Tamarack swamp was defined as wetlands where tamarack was the dominant tree. These communities developed in low-lying pockets over peat where the drainage was stagnant and where the likelihood of fire was low (Tans 1976).

Marsh

The surveyors made no distinction between marsh, sedge meadow, or low prairie, calling all treeless lowlands marsh. Soil types were used to distinguish among these three communities. Low prairies were mapped in areas of mineral soils with high organic content, including the Granby, Gilford, and Colwood series. An exception was the Marshan series which Hole (1976) associated with swamp hardwoods and sedge meadows. In areas within the study site where the vegetation is largely unaltered, this soil type is associated with sedge meadows with a low prairie border and is transitional between these communities. Sedge meadows were mapped in areas of organic soil with some mineral content, including the Adrian and Palms peats. Emergent aquatic marsh was mapped in areas of Houghton peat although sedge meadow is also found on that soil type. Noteworthy is the occurrence of low prairie on the Granby series. In the floodplain forest, silver maple sloughs occurred on this same soil type. As in the mesic forests of Green County, Wisconsin, this joint occurrence may be due to the similarity in "nutrient-pumping" ability between prairie forbs and grasses and maples.

The several wetland communities within the former glacial lake basin are affected by action of the Wisconsin River. The floodplain forests are found in areas characterized by widely and rapidly fluctuating water levels, heavy siltation and erosion, prolonged

spring flooding, and a much lower summer water table. Further inland, where conditions are less variable, are found the low prairie, sedge meadow, and marsh. Here, there is little to no siltation, ground-water is always near or above the surface, and water-levels shift gradually.

Low prairie, sedge meadow, and marsh are found along an environmental gradient of increasing water-levels. Low prairie is a fire-swept community usually located on lowlands subject to inundation by heavy rains or by floodwaters from nearby streams (Curtis 1959). The presence of low prairie in the study area is probably due to frequent fires originating from the west and possibly to occasional flooding. Sedge meadows, on the other hand, are characterized by steady ground-water discharge throughout the year and a water table at or immediately below the soil surface. The waterlogging of the soil prevents the total decomposition of plant material produced each year. This material, the peat, builds up slowly and in some areas may be many feet deep. Marshes are found within depressions in the peat where the water tables lie above the surface of the peat. Here, emergent aquatic vegetation, including cattails (*Typha* spp.) and reeds (*Scirpus* spp.), are found among the sedges (*Carex* spp.).

CONCLUSIONS

1. In study areas too small in size for quantitative analyses, one can construct a more detailed and accurate pre-European settlement vegetation map by utilizing both the original land survey records and the soil survey maps than by using either alone.

2. In the eight sections surrounding and including the Aldo Leopold Memorial Reserve, Sauk County, Wisconsin, two savanna, five tree-dominated, and three wetland herb communities existed at the time of European settlement. These communities were related to discontinuous gradients of fire stress, fluctuating water-levels, and siltation levels. Prevailing climate, regional geology, and local

topography were the main factors responsible for these environmental gradients.

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SOME HISTORICAL ASPECTS OF RUFFED GROUSE HARVESTS AND HUNTING REGULATIONS IN WISCONSIN

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Abstract

Closed hunting seasons for ruffed grouse were first instituted in Wisconsin in 1851, partly as a response to intense market hunting. The open seasons in the early 1850s were about 4 months long, but by 1921 were shortened to 4 days. This conservative period lasted for about 20 years before hunting seasons were gradually lengthened. Today, hunting seasons are as long as they were in the 1850s and ruffed grouse harvests are at record highs. These facts, coupled with an increase in hunters concentrated on public wildlife areas have warranted an examination of how modern-day harvests effect local populations of ruffed grouse. The role of research in the management of this important game species is also discussed.

In 1949, Aldo Leopold expressed the feelings of many hunters when he wrote, "There are two kinds of hunting: ordinary hunting, and ruffed-grouse hunting." In Wisconsin, the ruffed grouse was avidly sought by almost 200,000 hunters each year during the 1970s (Wis. Dept. of Natural Resour., unpubl. rep., Ruffed grouse management plan, Madison, Wis., 1978). It was the subject of several research projects and dozens of popular articles. Thousands of acres were managed in an attempt to increase grouse densities and in the late 1970s over 1 million participant days (no. hunters $\times$ no. days hunted) annually were spent in the pursuit of "partridge" (Wis. Dept. of Natural Resour., unpubl. rep., Ruffed grouse management plan, Madison, Wis., 1978).

This paper examines the lengthy record of ruffed grouse harvests in Wisconsin, the trend in ruffed grouse hunting regulations, and the impact of research on grouse management strategies. We speculate on the pos-

sible effects of harvests on local grouse populations under modern circumstances.

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THE EARLY YEARS

Early travelers in northern Wisconsin rarely noted the ruffed grouse as abundant (Schorger 1945). The forests in the northern half of the state generally lacked the understory cover needed to support high grouse densities. In the southern half of the state, open deciduous woodlands provided heavy brush cover that supported large grouse populations (Schorger 1945).

The lumber industry soon changed the structure of the northern forests and consequent grouse abundance. Logging began around 1840, and by 1870 it was Wis-

¹ In cooperation with University of Wisconsin-Madison, U.S. Fish and Wildlife Service, Wisconsin Department of Natural Resources, and Wildlife Management Institute.

consin's leading industry (McCabe 1964). Second-growth forest, interspersed with clearings created by logging and periodic fires, provided ruffed grouse with near ideal habitat. Currently, ruffed grouse are considered most abundant in the north and west-central parts of the state, common in east-central, and scarce in the southeast where there is little good habitat (Wis. Dept. of Natural Resour., unpubl. rep., Game harvest trends, Madison, Wis., 1968).

Schorger (1945) believed that the general lack of early references to ruffed grouse in Wisconsin indicated that it was not a favorite game species until other upland game birds, notably the prairie chicken (*Tympanuchus cupido*) and sharp-tailed grouse (*Pedioecetes phasianellus*), became less plentiful. However, by 1845 market hunters

were getting as much as \$1.25 per dozen ruffed grouse, and by 1898 up to 600 birds a day during the fall were being shipped to cities (Schorger 1945). The market shipments of ruffed grouse apparently never reached the magnitude of those of prairie chickens and sharptails.

It is probable that the first restrictions on ruffed grouse hunting were incidental to restrictions intended primarily for prairie chickens and sharptails. Market hunting and loss of habitat in the early 1800s caused dramatic declines in prairie chicken and sharptail populations (Schorger 1944, McCabe 1964), and in 1851 Wisconsin responded by passing its first game law which not only protected prairie chickens but also ruffed grouse, bobwhite quail (*Colinus virginianus*), and woodcock (*Philohela minor*)

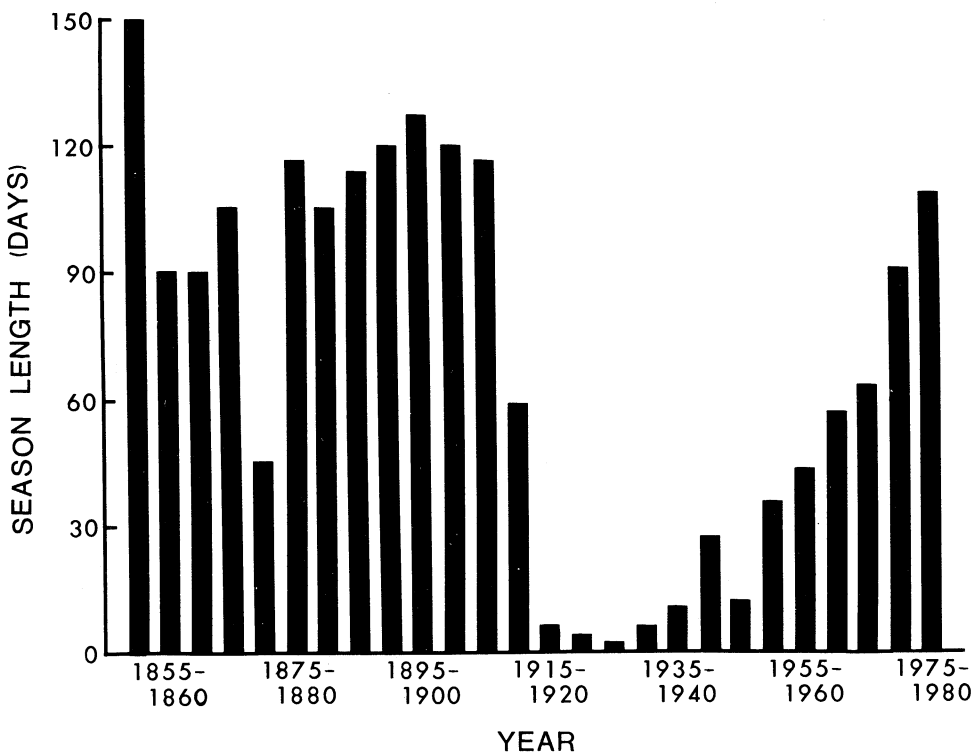


Fig. 1. Five-year averages (1851-55 to 1975-80) of season lengths for ruffed grouse hunting in Wisconsin. Open seasons were first instituted in 1851 and were usually within September-January. Year-long closed seasons were 1917-20), 1929-30, 1936-37, and 1945-47, all inclusive. Data were compiled from Wisconsin Department of Natural Resources Hunting Regulations and Scott (1937a-d, 1938).

from 1 February to 1 August (Scott 1937*a*, Schorger 1944). The idea of closed hunting seasons² for ruffed grouse was not new; New York had closed seasons as early as 1708, and Massachusetts in 1818 (Schorger 1945).

THE TREND TOWARDS CONSERVATIVE GAME LAWS

Since the first closed season for ruffed grouse in 1851, hunting season lengths have undergone frequent, sometimes annual changes. During the first 2 decades following 1851, open seasons varied between 90 and 150 days annually, but were shortened to 45 days in 1871. By 1880 the open season was lengthened to about 120 days, and season duration remained relatively stable for almost 2 decades before the first statewide, year-long closed season was abruptly instituted in 1917 (Fig. 1).

During the last half of the 19th century and the first few decades of the 20th century, several other laws were enacted partly on behalf of the ruffed grouse. The sale of upland game birds was made illegal in 1853, became legal shortly thereafter, and was again made illegal in 1903 (Scott 1937*a,d*). Exportation of ruffed grouse from the state was prohibited in 1878, 1883, and for the final time in 1887, with periods of unprohibited interstate shipment in between (Scott 1937*b,c*). The legal methods by which these birds could be "reduced to possession" were often amended: game bird nests were protected in 1867; nets, traps, and snares were outlawed for all gamebirds in 1874; and by 1878 the use of firearms for hunting was restricted to guns which were discharged from the shoulder (Scott 1937*a,b*). Even the use of dogs for hunting upland game birds was briefly prohibited from 1891 to 1893 (Scott 1937*c*).

² "Closed seasons" in this paper refers to hunting seasons closed for part of a year, whereas "year-long closed seasons" are closed to hunting for an entire 12 months.

The first Wisconsin daily bag limit, set at 25 in 1905, was reduced to 15 in 1907, 10 in 1913, and 5 in 1921 (Scott 1937*d,e*). Since 1921 the limit has ranged from 3 to 5, and presently stands at 5 (Scott 1937*a-d*, 1938).

THE CONSERVATIVE PERIOD

It is probable that the fluctuations in early game laws were a reflection of fluctuations in ruffed grouse populations. The fluctuations of ruffed grouse populations were not well documented, much less understood. Abrupt and dramatic natural declines were often attributed to the gun, and season closures were the logical management remedies. Certain counties in Wisconsin had prohibited ruffed grouse hunting for an entire year as early as 1873, e.g., Sauk County; but 1917 was the first year of a statewide, year-long closed season (Scott 1937*a*). In 1921, the season was reopened, but only from 4 October to 8 October. The 4-day season was in effect for 8 years. In 1929, the season was again closed for 2 entire years, reopened in 1931 for 5 years of abbreviated seasons, and in 1936 and 1937, closed for the third time in 20 years (Fig. 1).

Just as decreases in grouse numbers were attributed to overhunting, the periodic increases in the Wisconsin ruffed grouse population during the early decades of this century were often attributed to a decrease in hunting pressure. In 1922, Commissioner Barber of the Wisconsin Conservation Department wrote: "The closed season provided by the legislature for prairie chickens and partridge extending from 1916 to 1921 has brought marvelous results in the increase of these birds. Never have the results of protection of any species of wild animal been more clearly demonstrated than in this instance. At the close of the hunting season in 1915, it seemed that these birds were doomed to extermination, but the closed season and the cooperative efforts of the warden force and sportsmen in suppressing law violation brought the birds back again

more plentiful than our most optimistic hopes could anticipate . . ." (Scott 1938:33-34). His conclusion was a logical one. At that time little was known of the natural fluctuations of ruffed grouse populations, and wildlife managers did not have the benefit of the research on population ecology that would be conducted in later years. Apparently, few people believed that the periods of grouse scarcity and abundance might occur regardless of the presence or absence of sport hunting.

The Wisconsin Department of Natural Resources, then called the Wisconsin Conservation Department, began estimating annual grouse kills from hunter questionnaires in 1931, after the second period of closed seasons had ended in Wisconsin (Wis. Dept. of Natural Resour., unpubl. rep., Wisconsin game and fur harvests, a summary 1930-75, Madison, Wis., 1976). The 1931 harvest was small, but sharply increased in 1932

(Fig. 2). The grouse harvest in 1933 was similar, but the kill plummeted, and by 1935 it was at the same low level as in 1931. Consequently, the season was again closed for 2 years—1936 and 1937.

This pattern was repeated when hunting was reopened in 1938. The harvest rose sharply in the early 1940s, but subsequently crashed later that same decade. Again the season was closed, this time from 1945 to 1947 (Fig. 2). For a third time the pattern was repeated: a sharp rise in total harvest occurred in the early 1950s, but by 1960 harvests had gradually dropped to the same low level that was reported in 1935 and 1944. In the past, low harvest years had preceded closed seasons, but this time the management response to a low grouse harvest was different. The succeeding hunting season was not closed, nor even shortened. In spite of this radical departure from conservative regulations and management tra-

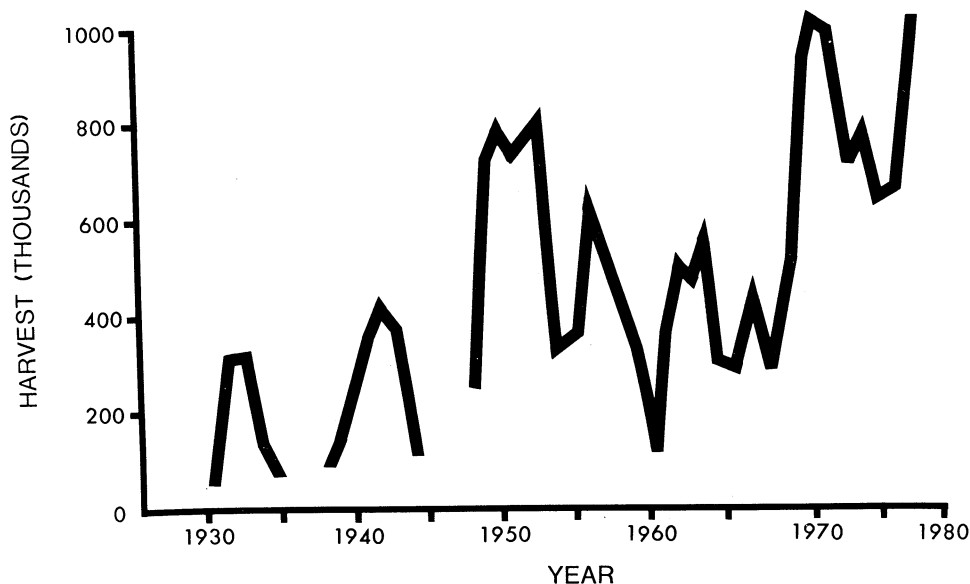


Fig. 2. Annual harvest estimates of Wisconsin ruffed grouse compiled by the Wisconsin Department of Natural Resources. Estimates were derived from voluntary game census cards from 1930 to 1958, from returned questionnaires sent to random samples of hunters from 1959 to 1969, and from returned questionnaires distributed to counties in proportion to the number of hunting licenses sold in the county from 1970 to present. All estimates are subject to non-response, prestige and memory bias, but do reflect general harvest trends (Wis. Dept. Natural Resour., unpubl. rep., Wisconsin game and fur harvests, a summary 1930-75, Madison, Wis., 1976).

dition, the kill in 1961 rose, and in 1962 the kill rose again. Harvests fluctuated in the late 1960s, but seasons were maintained or even liberalized; by the 1970s, season lengths were longer than they had been for almost 100 years and estimates of grouse harvests were at record highs (Figs. 1, 2). A change in management policy had clearly taken place.

THE TREND TOWARD LIBERAL GAME LAWS

The first major study of the life history, ecology, and management of ruffed grouse began in New York in 1930. The primary goal of the New York "Ruffed Grouse Investigation" was "to find ways and means of assuring the future of the ruffed grouse," and an evaluation of hunting was among the first assignments (Bump et al. 1947:372). They found that about 17% of the pre-season population was harvested and, because of this relatively low harvest rate, concluded that "the general effect of man's hunting on grouse, as currently practiced, is not detrimental . . ." (Bump et al. 1947:370).

Research on many other game species was conducted in many parts of North America in the 1930s and 1940s. Data from these studies (e.g., Errington and Hamerstrom 1935) provided impetus for development of the principle of compensatory mortality. In "Our Wildlife Legacy," a popular textbook in wildlife management curricula of the day, Allen (1954) cited work on ring-necked pheasants (*Phasianus colchicus*) and cottontail rabbits (*Sylvilagus floridanus*) in Michigan, ruffed grouse in Minnesota (King 1937), bobwhite quail in Oklahoma (Baumgartner 1944), and the findings of the New York Ruffed Grouse Investigation and went on to state the compensation principle in simple terms: "if we fail to take a hunting harvest, Nature does it for us" (Allen 1954: 131). Generations of students digested the principle, and most biologists came to accept the idea that most game animals present in summer and fall would succumb to late fall and overwinter mortality, and that fall

hunting would mainly harvest these surplus animals that would otherwise die of natural causes.

Data on ruffed grouse population dynamics were also beginning to accumulate. By the 1940s, many authors began to believe that the lows and highs in the population cycle were natural events, and that hunting had little or no effect on the frequency or amplitude of the fluctuations (Schorger 1945, Bump et al. 1947). In fact, many biologists believed the fluctuations in numbers of hunters and grouse harvests were a result rather than a cause of fluctuations in game abundance.

The idea that sport hunting may not be detrimental to ruffed grouse populations was further supported by evidence in the 1940s. Ruffed grouse populations in Michigan, Minnesota, and Wisconsin were at low levels during the early part of that decade (Erickson 1951). Minnesota responded by closing the season in 1944, and Wisconsin followed suit in 1945. Michigan held out, and in 1948, when the seasons in Minnesota and Wisconsin were again opened, the estimated grouse harvests for all 3 states were very similar, and a year later the harvests for all 3 were virtually identical. Minnesota and Wisconsin had apparently given up hundreds of hours of grouse hunting and gained nothing. The ruffed grouse populations rose and fell as they always had, and were apparently little affected by the presence or absence of hunters.

The research continued. Palmer (1956) monitored and compared ruffed grouse populations on hunted and unhunted areas in Michigan during a decline in numbers from 1950 to 1954. He found that spring and pre-hunting season populations were similar on both the hunted and unhunted areas, even though an estimated 30% of the pre-season population on the hunted area was harvested each year. Dorney and Kabat (1960) and Fischer and Keith (1974) also found no detectable relationship between hunting and subsequent populations, and suggested that

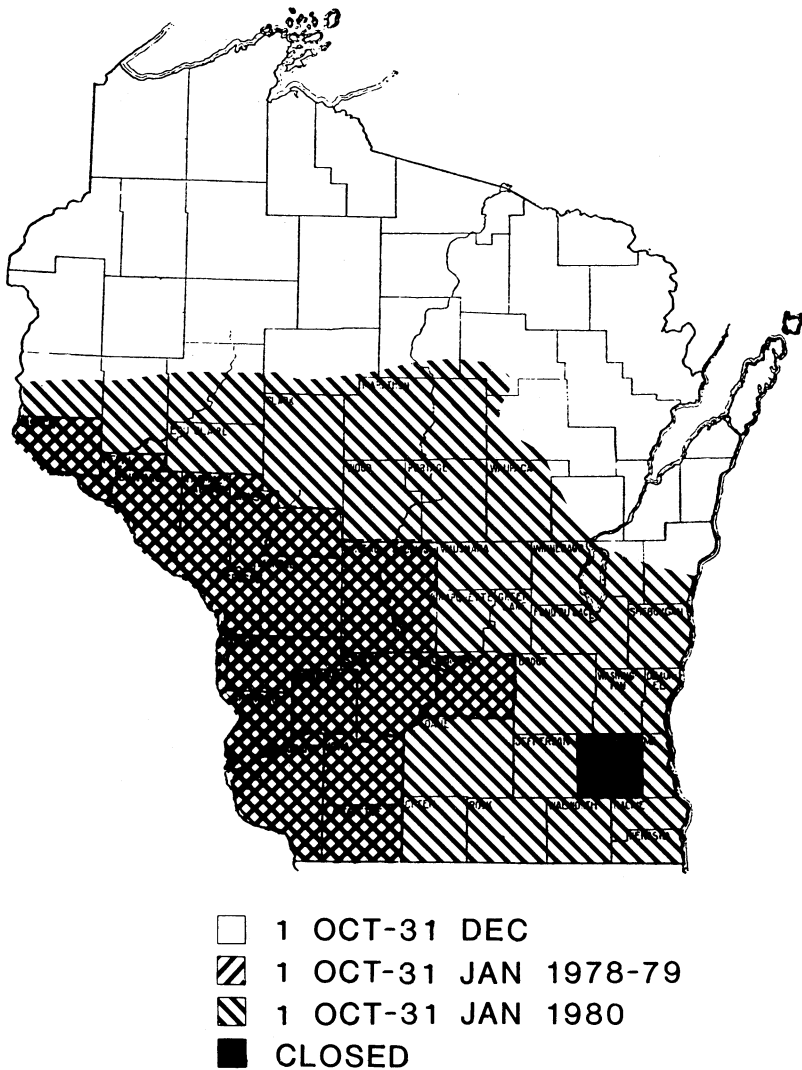


Fig. 3. Since 1925, Wisconsin has been divided into 2 or more zones with different ruffed grouse hunting seasons. From 1973 to 1979, 17 counties had roughly 1 October-31 January hunting seasons (cross-hatched area), and the rest of the state had 1 October-31 December seasons (diagonal lines and clear area). In 1980, the 4 month hunting zone was extended to include all or parts of 31 additional counties (cross-hatched and diagonal line areas) while the remaining northern third of the state retained the 3 month season (clear area). Ruffed grouse hunting has been closed in Waukesha County since 1978 because of the low grouse population in that area. Data were compiled from Wisconsin Department of Natural Resources Hunting Regulations.

ruffed grouse populations in Wisconsin and Alberta could withstand higher harvest rates.

Other researchers, working on bobwhite quail in Texas (Parmalee 1953), Gambel's quail (*Lophortyx gambelii*) in Arizona (Swank and Gallizioli 1954), and wild turkeys (*Meleagris gallopavo*) in Virginia (Weaver and Mosby 1979) came to similar conclusions.

On the basis of research and general acceptance of the principle of compensatory mortality, game managers concluded that hunting had no effect on grouse numbers from year to year. Attitudes of game managers thus changed from concern about "over-hunting" in the early part of this century to acceptance of the generalization that "hunting has no effect." Changes in Wisconsin ruffed grouse hunting regulations reflected this change in attitude. Season lengths have grown steadily since the late 1940s, and further increases in the hunting season have been instituted as recently as 1980 (Fig. 1).

MODERN RUFFED GROUSE HARVEST

In 1980 Wisconsin sportsmen could hunt ruffed grouse for 4 months in the southern half of the state and 3 months in the north (Fig. 3). Sales of small game and sportsmen's licenses have been generally increasing since 1935 (Fig. 4). In our opinion, extended hunting seasons, growing numbers of hunters, heavy concentrations of hunters on some lands, and the anticipated increase in demand for ruffed grouse hunting in Wisconsin (Wis. Dept. of Natural Resour., unpubl. rep., Ruffed grouse management plan, Madison, Wis., 1978) warrant continued scrutiny and study of population dynamics and annual harvests of Wisconsin's ruffed grouse.

Earlier studies on ruffed grouse harvests were often conducted on very large, inaccessible tracts of land. Also, relatively little was known about movements of grouse until recent years. They were assumed to be relatively sedentary, and the magnitude of dis-

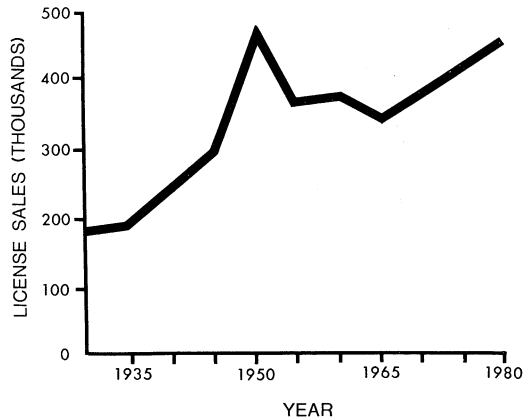


Fig. 4. Sales of small game and sportsmen's licenses in Wisconsin, 1930-80. Not all license buyers hunt ruffed grouse. Approximately 177,000 license holders hunted ruffed grouse annually in the late 1970s (Wis. Dept. Natural Resour., unpubl. rep., Ruffed grouse management plan, Madison, Wis., 1978).

persion was not fully appreciated. Later research (Chambers and Sharp 1958, Godfrey and Marshall 1969, Hale and Dorney 1963, Rusch and Keith 1971) has shown that dispersal, which occurs in fall and spring, is important to the dynamics of ruffed grouse populations, and involves large segments of the grouse population and movements of several kilometers in young grouse. Grouse may move from unhunted to hunted areas in fall and spring, thus partially obscuring or alleviating the effects of hunting on certain population segments. Scattered public wildlife areas or isolated woodlots which are not surrounded by good ruffed grouse habitat may not have a reserve of grouse to replace those shot in the fall.

Further consideration and reexamination of the idea of compensatory mortality in ruffed grouse is also warranted. It is possible that hunting in late summer or early fall, when annual grouse numbers are relatively high, would merely take birds which would otherwise suffer late fall or winter mortality. In Alberta, Rusch and Keith (1971) found

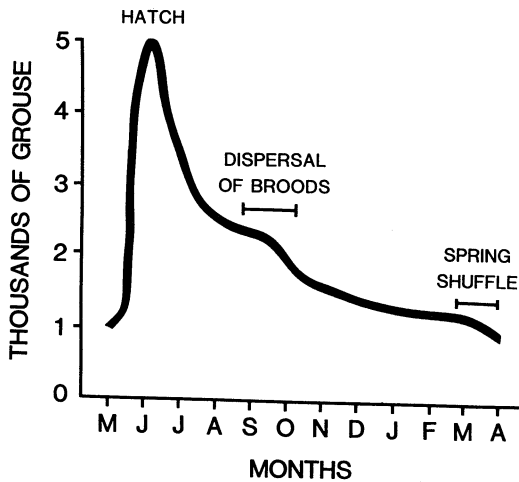


Fig. 5. Theoretical changes in numbers of a population of Wisconsin ruffed grouse over 1 year. Peak hatch for ruffed grouse in Wisconsin is approximately 1 June (Hale and Wendt, 1951). The population probably then quickly declines in early summer and levels off in late summer, after the chicks have grown and juvenile survival improves. During the fall dispersal period mortality probably again increases because grouse, especially the young of the year, move into unfamiliar and insecure areas where they are vulnerable to predation and accidents. When the dispersal period ends in late fall, the population probably levels off and remains stable until the spring breeding season. A lesser amount of movement and dispersal may also occur in the spring. Population curve was generalized from estimates of density of ruffed grouse on study areas in Alberta (Rusch and Keith 1971) and Manitoba (Rusch et al. 1978). Comparable data were not available for populations of ruffed grouse in Wisconsin.

that ruffed grouse populations declined rather rapidly in mid-fall to late fall and remained stable over winter. If our generalized annual population curve for ruffed grouse (Fig. 5) is accurate, grouse that survive the fall dispersal period have a good chance of surviving to the breeding season. Substantial and successful late season hunting—November through January, for example—may remove birds from the population that would otherwise survive to breed in the spring.

It is probable that ruffed grouse popula-

tions in Wisconsin have not yet been measurably affected by sport hunting. Yet the ideas described in this paper, like others in the past, raise questions that need to be addressed by additional research. Do ruffed grouse in Wisconsin follow the same annual population curve as that generalized for grouse in Alberta? Is late-season hunting pressure moderate or heavy in some areas of Wisconsin? Is spring dispersal adequate to replace stock taken from populations of ruffed grouse that are heavily hunted? Answers to questions like these may help managers develop new strategies for grouse harvests which will maximize or optimize breeding grouse numbers in managed and unmanaged habitats throughout the state. The ultimate goal is a management plan which will maximize harvests without adversely affecting ruffed grouse populations.

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EVALUATION OF INGESTED SHOT LEVELS IN WATERFOWL HARVESTED IN WISCONSIN IN 1980

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Abstract

A topic of current concern in wildlife biology is the poisoning of waterfowl due to ingestion of waste lead shot. In 1980, citizens of Wisconsin took political action which resulted in a legislative mandate to halt lead shot restriction and to require investigations that would determine whether such restriction was, in fact, appropriate. A Toxic Shot Evaluation Committee was formed of eight persons knowledgeable and concerned about the problem, and representative of its various points of view. The recommendations eventually offered to the Department of Natural Resources and the Natural Resources Board were based on a survey of past research from Wisconsin and throughout the nation, and on an investigation that the Committee itself performed. In five representative regions of the state, hunters were asked to contribute the gizzards of waterfowl from their hunting bag. A total of 3,801 was received. Analysis of their contents was then performed by volunteers from the hunting and non-hunting public, supervised by committee members and observed by DNR personnel. Quantitative data on total occurrence of shot, geographic and species variation in occurrence, and relative amounts of lead vs. steel shot were obtained.

INTRODUCTION

Although fatal lead-poisoning due to the ingestion of waste lead gun-shot is estimated to kill more than 1,000,000 birds annually, there has been no practical alternative to lead shot until recently. In 1977 lead shot was prohibited for waterfowl hunting with twelve gauge guns in five southeastern Wisconsin counties and along the Mississippi shoreline of six other counties. Steel shot was the required alternative in those areas. The basis for selecting these counties was the waterfowl harvest level of 20 or more waterfowl per square mile. The rationale of this restriction was that high harvest resulted from heavy hunting pressure which deposited large amounts of waste shot in those wetlands. The greater the deposition, other factors being equal, the greater the probability of lead-poisoning originating in those areas. In 1978 and 1979 the critical harvest level was amended to ten per square mile

and the no-lead (steel) "zone" expanded to include 21 counties in southeastern Wisconsin and eight along the Mississippi River.

In early 1980 political action by a number of Wisconsin citizens, both hunters and non-hunters, led to legislation which canceled, for that year, the prohibition of lead shot, on the ground there was insufficient information to demonstrate that a lead-poisoning problem occurred in Wisconsin, and that the harvest index did not validly represent geographic "hotspots."

The 1980 legislation, therefore, required formation of a citizens' advisory committee which would investigate these concerns and determine what criteria would best answer them and what specific procedures were needed to provide data. These criteria and procedures were then to be recommended to the Department of Natural Resources.

The Toxic Shot Evaluation Committee was comprised of eight members: Dr. Vern

Larsen of Shiocton, Harold McEuen of Onalaska, Charles Morgan of La Crosse, William Peterburs of Mequon, James Rehbein of Beloit, Jeff Renard of Neenah, Herb Theisen of Friendship and David Strohmeyer, representing the Oshkosh area and serving as chairman. In a series of meetings during late 1980 the committee soon discovered that documentation pertaining to lead-poisoning was actually quite abundant. Appraisal of approximately 140 references indicated that recent studies had become very specialized. Furthermore, basic information on lead-poisoning, such as places of occurrence and numbers dying, tended to remain in files and unpublished reports, apparently viewed as being too repetitious to warrant conventional publication. A substantial amount of the documentation applied to the Wisconsin situation (19 references dating from 1937 to 1980); Wisconsin had been a forerunner in the study of lead-poisoning and continues to be a focal area for many of the studies relating to lead-poisoning. The Wisconsin records supported the use of harvest levels for determining lead-restriction zones in that the locations of previous die-offs coincided very closely with the high-harvest counties.

The Committee, in concurrence with the U.S. Fish and Wildlife Service Final Environmental Impact Statement (1976), felt that steel-shot zones should be rather specifically determined. It therefore suggested a three-year program for sampling waterfowl gizzards and wetland sediments, both to update the data and to identify "hotspot" areas. Rather than delay until a recommendation for data collection could be made to the Department of Natural Resources and processed through legislative channels, the committee decided to organize its own study of the frequency of occurrence of shot in the gizzards of waterfowl harvested during the 1980 hunting season.

METHODS

The members of the Toxic Shot Evaluation Committee represented the major water-

fowl hunting regions of Wisconsin which are, essentially, the southeast quarter of the state and the Mississippi River area. The Committee members asked hunters in their areas to save gizzards from the waterfowl they shot, and to provide data regarding the locale, species and date, and to participate in regular inspection sessions at some convenient time and place. At these sessions each gizzard was opened and its contents washed into a white enamel tray and searched for shot. Shot which had been largely eroded by the gizzard's grinding action might remain as a mere fleck of metal and was difficult to detect. If any shot was found in a gizzard, the organ was inspected carefully for entrance holes that would indicate whether an uneroded shot had been fired into the gizzard when the bird was killed. Any such shot were recorded separately and not included in the ingested category. Data on species, hunting locale, date, presence-absence of shot, number of shot present, whether steel or lead, and whether eroded or not were recorded for each gizzard. The data from the various locations throughout the state were sent to David L. Strohmeyer and assembled for presentation to the Natural Resources Board and for this paper.

RESULTS

A total of 3801 gizzards was collected from 30 counties in Wisconsin (Table 1). Twelve of the counties provided very few gizzards (total of 46) and are included as a collective unit. The 3755 gizzards from the other 18 counties represent 1.5% of their annual harvest (as estimated from the 10-year mean, 1966-1975) and would seem to be an adequate sample. Some counties were more thoroughly sampled than others, perhaps even excessively so. One objective of the continuation of this study will be a more balanced distribution of samples from the various counties. One intangible in sample collection, however, is the level of cooperation by hunters from those areas.

Overall, 10.6% of the 3801 gizzards con-

TABLE 1. County Comparison of Gizzard Data, 1980.

County	1966-1975 Harvest (per sq. mi.)	Total gizzards inspected	No. with shot	% of sample with shot
Adams	8.7	165	11	6.7
Calumet*	11.4	11	2	—
Dodge*	54.0	159	18	11.3
Fond du Lac*	27.5	160	18	11.3
Green Lake*	36.4	380	34	8.9
Jefferson*	19.6	129	10	7.7
Juneau	9.9	18	4	—
Kenosha*	21.1	69	3	4.3
Manitowoc*	19.4	26	4	—
Marquette*	30.0	84	6	7.1
Outagamie*	20.5	742	70	9.4
Racine*	14.5	70	1	1.4
Shawano	6.7	87	1	1.1
Walworth*	15.8	100	4	4.0
Waukesha*	16.9	156	12	7.7
Waupaca*	20.2	219	41	18.7
Waushara*	15.3	20	2	—
Winnebago*	52.4	864	138	16.2
LaCrosse area		296	16	5.4
12 other counties with small samples		46	9	—
Total		3801	404	10.6

* Counties in 1978, 1979 no-lead zone.

TABLE 2. Occurrence of Shot in Waterfowl Harvested From Specific Wetland Areas.

County	Wetland	% Occurrence/Sample		
Shawano	Shawano Lake	0	of	66
Waupaca	White Lake	23.4	of	137
	Partridge Lake	8.5	of	59
Outagamie	Black Slough Conservation Club	9.3	of	269
	Wilderness, K & S Gun Clubs	9.5	of	442
Winnebago	L. Buttes des Morts	21.0	of	334
	L. Poygan	19.5	of	169
	Rush Lake	12.0	of	67
	L. Winnebago	9.1	of	287
Fond du Lac	Eldorado Marsh	13.9	of	108
Green Lake	Grand River Marsh	8.2	of	291
Marquette	Buffalo Lake	7.0	of	82
Adams	One mile segment of Wisconsin River	7.0	of	140
Dodge	Horicon Marsh	8.4	of	95
Jefferson	L. Koshkonong	7.8	of	129
Waukesha	Big Muskego Lake	8.0	of	103
Walworth	L. Como	8.0	of	52
Racine	L. Tichigan	2.0	of	47
Kenosha	Camp Lake	6.0	of	49

tained at least one shot at the time the bird was killed. This is a minimum value as some shot may have gone undetected and it omits all shot considered to have been fired-in. An additional 184 gizzards (5.5% of the 3361 gizzards evaluated for this condition) contained fired-in shot.

The '78 and '79 steel shot zone included 21 southeastern counties which harvested more than 10 birds per square mile. The present study provides adequate ingestion data for 12 of those 21 counties, and for two counties with a harvest of less than 10 birds per square mile (Table 1). The ingestion rates for the former counties range from 1.4 to 18.7% (median = 9.4), while for the latter two counties they range from 1.1 to 67%. Only in four counties, Adams, Kenosha, Racine and Walworth, does the ingestion level not agree well with the harvest index.

Twenty specific wetland areas contributed sufficient gizzards to permit an estimate of the extent of shot ingestion in birds harvested there (Table 2). The fewest gizzards from a single area included in this summary are the 47 from Lake Tichigan, while the largest number was the 334 from Lake Butte des Morts. Most of these areas show rather high percentages of shot. It is reasonable that those areas which can supply large numbers of gizzards are heavily hunted, and therefore are areas of high shot deposition and high potential for shot ingestion.

Wisconsin waterfowl hunters take most of their harvest from rather few species of birds. Sixty-one percent of the annual bag is comprised of just three species; adding the next six species raises the total to 88% of the annual harvest. These species do not show equal frequencies of ingestion of waste shot (Table 3). The mallard shows a high rate, while the ringneck and scaup show very high rates. The widgeon, black duck and Canada goose are all high, and all of these species are among the nine most harvested. Only the number two, three and four species (see Table 3) in the statewide bag fall

TABLE 3. Species Occurrence of Shot in Gizzards.

<i>Species</i>	<i>% of annual harvest</i>	<i>Total inspected</i>	<i>% with shot</i>
mallard	34	1405	11.3
wood duck	15	118	4.2
blue-winged teal	12	283	2.8
green-winged teal	7	201	1.5
ringneck	6	307	22.1
lesser scaup	5.5	360	15.0
widgeon	5.5	156	7.7
black duck	2.5	58	8.6
Canada goose	—	141	10.6
pintail	—	68	10.3
shoveler	—	28	0
gadwall	—	24	0
greater scaup	—	10	50.0
redhead	—	110	23.6
canvasback	—	18	5.5
ruddy	—	27	11.1
hooded merganser	—	15	6.6
common and red- breasted merganser .	—	4	25.0
bufflehead	—	47	2.1
goldeneye	—	13	7.7
scoters	—	13	0
snow goose	—	12	8.3
unknown	—	87	13.6
LaCrosse area*	—	296	5.6
TOTAL		3801	10.6

* Not separated by species.

below the five percent level which has been identified by the U.S. Fish and Wildlife Service as a limit critical to the reduction of large-scale lead-poisoning. Several of the less hunted species, such as the pintail and the redhead, also show high rates of ingestion.

Different counties show different rates of harvest for various species. Certainly the lesser scaup is more heavily represented in the harvest on Lake Winnebago than in most other areas of the state. The three most commonly harvested species (or species groups) for each adequately sampled county are presented in Table 4. Adams county, for example, harvests mostly mallards, secondly, other dabblers and thirdly, geese. Very few divers are shot there in spite of the proximity of the large pools on the Wisconsin River.

TABLE 4. Percent Shot Ingestion in the Three Most-Harvested Species Per County.

County	First in harvest	Second in harvest	Third in harvest
Adams	mallard — 3	dabblers* — 15	geese** — 14
Dodge	mallard — 13	dabblers — 9	geese — 24
Fond du Lac	mallard — 17	greenwing — 2	geese — 10
Green Lake	mallard — 13	dabblers — 5	geese — 7
Jefferson	mallard — 9	dabblers — 4	1. scaup — 0
Kenosha	ringneck — 13	redneck — 8	mallard — 0
Marquette	mallard — 6	ringneck — 14	dabblers — 0
Outagamie	mallard — 12	bluewing — 3	dabblers — 11
Racine	mallard — 0	sea ducks† — 0	woodduck — 0
Shawano	mallard — 0	scaup — 6	ringneck — 0
Walworth	dabbler — 0	bluewing — 0	mallard — 13
Waukesha	mallard — 16	woodduck — 4	bluewing — 0
Waupaca	ringneck — 30	mallard — 10	1. scaup — 21
Winnebago	1. scaup — 16	mallard — 14	ringneck — 33

* = All but mallard, bluewing and greenwing
** = Both Canada and snow
† = Mergansers, bufflehead, goldeneye and scoters

This table also shows the percent occurrence of ingested shot for those species *in that county*. For example, only 3% of the mallards killed in Adams county contained shot, although 11.3% of the state total of harvested mallards did so. Fifteen percent of the dabbler category and 14% of the geese harvested in Adams county contained ingested shot. Numerous other comparisons of this type are possible. Kenosha ringnecks show 13% occurrence, but Winnebago ringnecks show 33%. Shawano county scaup show 6% occurrence, but in Waupaca county, the next one south, the scaup show 21% occurrence of shot. Walworth and Racine counties harvest mostly low shot-occurrence species, hence their low overall ingestion levels in spite of their 10+ harvest level.

One interpretation which can be made of the different levels of occurrence between counties is that most shot is not being brought in from other areas. If it were, there would be less variation in occurrence along north-south migration routes. These regionally different levels suggest local origin of shot for certain species. For example, the

Winnebago county ringnecks seem to be getting their shot from Lake Butte des Morts (70 of 97 ringnecks came from Butte des Morts, and 21 of them contained shot). These data also suggest areas which do *not* seem to be shot sources for some or all species. As more data accumulate it may become possible to identify specific problem areas within counties.

Table 5 presents the number and type of shot found. Considering the number of giz-

TABLE 5. Number and Type of Ingested Shot.

No. of shot	No. of gizzards	Type of shot	No. of gizzards
1	252	lead	298
2	67		
3	31	steel	69
4	15		
5	5	both	21
6-10	11		
11-20	2	TOTAL	388*
21-30	2		
30+	3		
TOTAL	388*		

* 388 plus 16 unspecified from LaCrosse = 404.

zards collected in counties with lead shot restriction in 1977, '78 and '79, the amount of steel shot is rather low. This could be evidence of ingestion of the current year's supply of shot, or, possibly, of ingestion in other areas of the state. It could also suggest violation of the restriction, widespread use of 20 gauge guns (in which lead use was permitted) or long-term availability of lead shot from years prior to the restriction. Data from 1981 and '82 will help in determining which of these alternatives is correct.

The great majority of gizzards contained only one shot. The percentages of birds with various numbers of shot agree very well with those found in the Bellrose (1959) study which summarized data on 35,000 gizzards, and with a study done in England (Thomas, 1978). It would seem, then, that a typical occurrence pattern exists. It is appropriate to mention that not all birds which ingested lead shot would have died. The chances of death increase, though, as the number of in-

gested shot increases (Bellrose, 1959). Recent studies, especially one by Dieter and Finley (1979), show that even partial absorption of a single pellet can cause metabolic disorders sufficient to kill a bird or make it much more vulnerable to natural predators or to hunters.

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VEGETATIONAL CHANGE IN UNIVERSITY BAY FROM 1966 TO 1980

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Abstract

The aquatic macrophytes of University Bay, Lake Mendota, Dane Co., Wisconsin, were sampled using the line transect method. Twenty-one lines were sampled, and all plants intercepting every 5th meter segment of each line were recorded. Data were used to construct a contour map of the vegetated zone of the bay, delimit plant communities, and determine species composition. Marked vegetative changes have occurred since Lind and Cottam studied the bay in 1966. The most pronounced changes were, (1) the decline of an exotic, *Myriophyllum spicatum*, which had become the dominant species, (2) the decline of *Vallisneria americana* and *Ceratophyllum demersum*, (3) the increase in importance of *Potamogeton pectinatus*, (4) a 30% reduction in littoral zone area, and (5) reduction of large continuous stands to scattered plants. The vegetative decline in University Bay paralleled similar declines in other Dane Co. lakes.

INTRODUCTION

Many investigators have documented aquatic macrophyte change over the last century, accompanying eutrophication of lakes in North America (e.g. Lind and Cottam 1969, Harman and Doane 1970, Nichols and Mori 1971, Stuckey 1971, Crum and Bachmann 1973, Bumby 1977). An exotic, *Myriophyllum spicatum*, has invaded many eutrophic waters in the eastern U.S., including the Madison, Wisconsin lakes (Nichols 1975). In the Madison lakes, *M. spicatum* replaced *Vallisneria americana* and several *Potamogeton* species as the dominant species (Lind and Cottam 1969, Nichols and Mori 1971). Lind and Cottam (1969) reported dominance of *Myriophyllum exalbescentis*, but they evidently misidentified *M. spicatum* (Nichols 1971). *M. spicatum* has since declined in the Madison lakes (Carpenter 1979). The purpose of this study was to provide a current description of the aquatic vegetation of University Bay, Lake Mendota, extending the vegetation record for this bay to a 70 year period. Results of

this study will be useful in a concurrent study of changes in value of University Bay as a waterfowl refuge. This paper describes changes in the drainage basin with consequent nutrient and sediment input, changes in distribution of rooted vegetation, species composition changes, community change, and apparent changes in aquatic macrophyte density.

STUDY AREA

The study area was located within the Yahara River basin system of lakes in south-central Wisconsin. The 106 ha University Bay is a small bay on the south side of Lake Mendota, bounded by the University of Wisconsin-Madison campus to the south and the Picnic Point peninsula to the north (Fig. 1). The hydrography is characterized by a sand bar extending from Willow Point to Picnic Point. A large shallow flat (<1.5 m) occurs west of the bar and depth reaches 16 m to the east. A more complete description of the study area was provided by Dillon (1956).

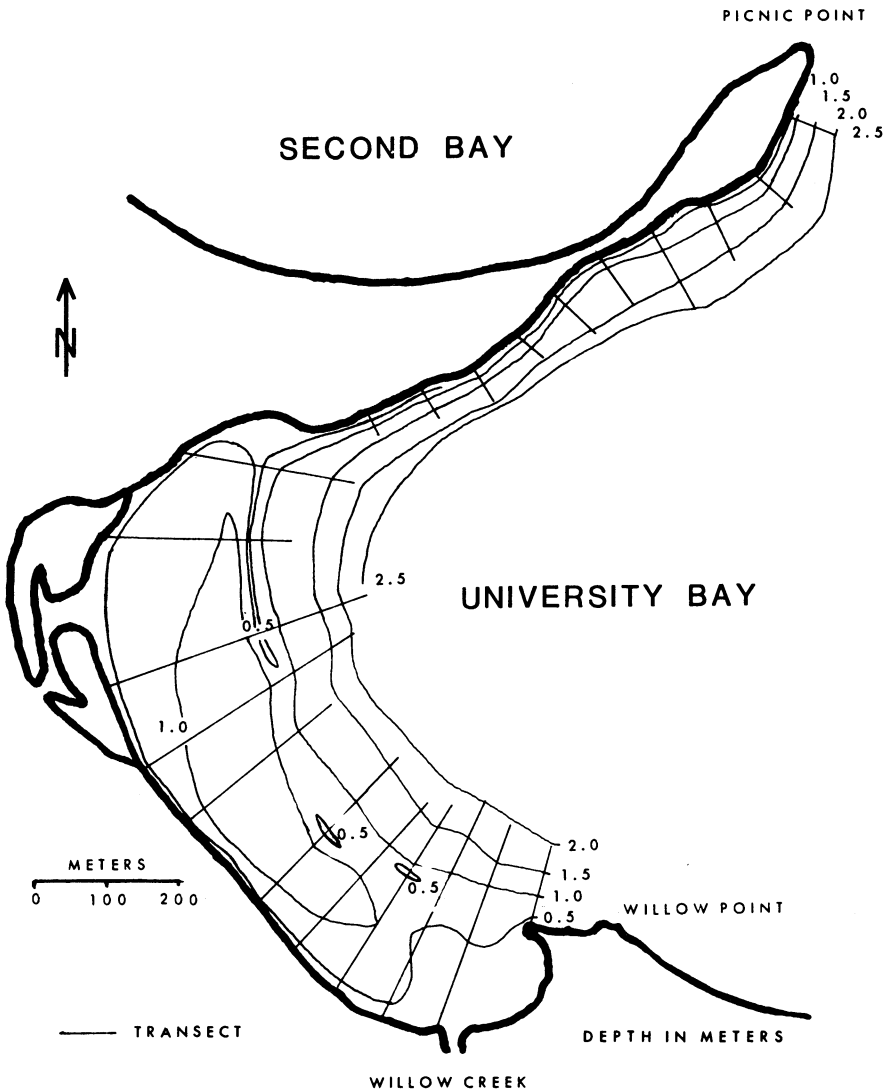


Fig. 1. Map of University Bay showing depth contours to the limit of growth of submerged aquatic plants. Transects ended where vegetation ended.

METHODS

Sampling

Sampling of vegetation in University Bay in 1980 was designed to be directly comparable with that of Lind and Cottam (1969), i.e. 21 transects were positioned in the same locations as those of Lind and Cottam. I sampled vegetation between 28 July and 11 August, 1980, using a length of polypropy-

lene rope, held at each end by an anchored buoy, as a transect line. Vegetation below every 5th meter segment of this line was sampled with a garden rake modified with $\frac{1}{4}$ inch wire mesh attached to the teeth. Each quadrat was, in essence, 1 m by 1 rake width (i.e. 36 cm). Depth at each quadrat was measured with a weighted line marked at 0.5 m intervals. The density of vegetation

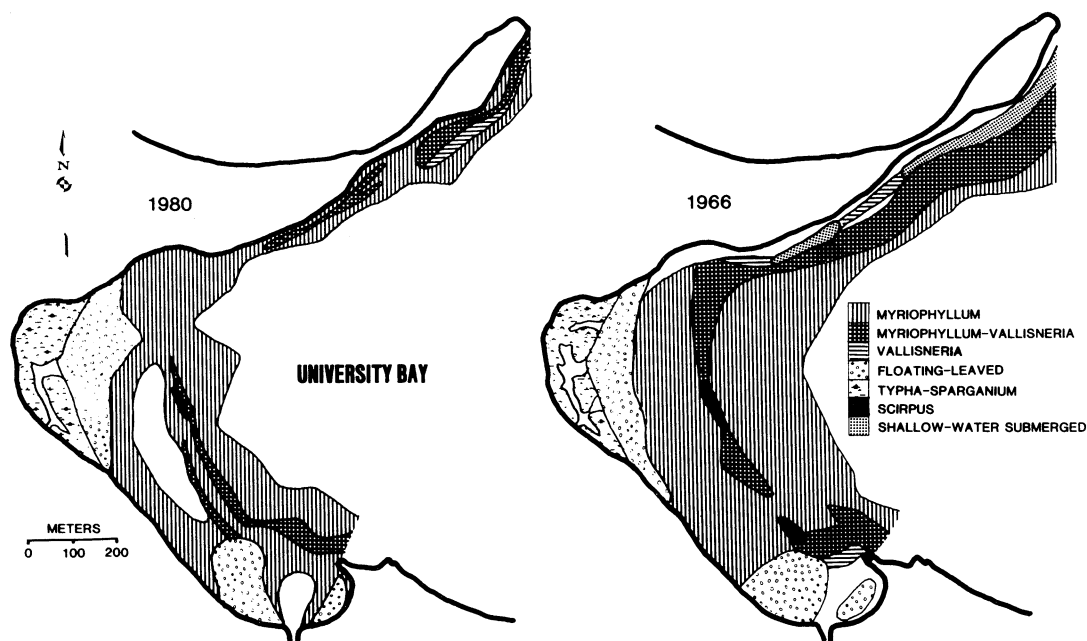


Fig. 2. Map of communities of University Bay in 1980 and 1966 (adapted from Lind and Cottam, 1969).

in each quadrat was recorded as present (1 plant), scattered (discontinuous), or continuous (solid stand). Each transect was terminated at the point beyond which no vegetation was found in five consecutive quadrats. Nomenclature of plant species follows that of Fassett (1960) as revised by Ogden.

Analysis of Data

Quadrat data from all transects in this study were combined to determine frequency and relative frequency based on the percentage of quadrats containing each species. The depth and species occurring at each quadrat were used to develop hydrographic and plant community maps of the vegetated area of University Bay (Figs. 1 and 2). Communities were delimited in the same manner as those of Lind and Cottam (1969). The floating-leaved and emergent communities were delimited on the basis of physiognomy. The remaining three communities consisted entirely of submerged plant species. These aggregations were a *Myriophyllum*

community, a *Vallisneria* community and a joint *Myriophyllum-Vallisneria* community. The demarcation of community boundaries was made at the point where the distribution of the dominant species became discontinuous as recorded from transect quadrat data, not at the point where the species ceased to exist.

Total transect length in 1966 was approximately 40% longer than in 1980 due to the presence of vegetation in deeper water. In order that percent presence (frequency) be directly comparable with that in 1966, 1980 frequency data were corrected by dividing by 1.4. With this correction, actual change in area of presence can easily be ascertained. Without the correction, a species with the same distribution in each study would have a higher frequency in 1980 than in 1966.

RESULTS

Vegetation grew to a greater depth along Picnic Point than in the southwest section of the bay (Fig. 1 and 2). Very little vege-

TABLE 1. Comparison of depths at which growth of submerged aquatics ceased in 1966 (Lind and Cottam 1969) and the present study. Depth at end of transect marks depth at which no more plants were found.

Depth limit interval (m)	No. transects ending	
	1966	1980
1.0–1.4	0	2
1.5–1.9	0	10
2.0–2.4	0	7
2.5–2.9	6	2
3.0–3.4	6	0
3.5–3.9	7	0
4.0–4.4	2	0

tation was found in water depths greater than 2.5 m (Table 1).

Submergent vegetation was generally sparse over most of the bay. Solid, continuous stands were found only in a narrow band along the eastern edge of the gravel bar, in a narrow band along Picnic Point, and in small scattered beds west of the bar. Vegetation was absent in 25% of the quadrats.

University Bay contained 14 submerged and floating-leaved plant species in 1980; only *Myriophyllum spicatum*, *Potamogeton pectinatus* and *Vallisneria americana* were common (Table 2). The other species present each had a relative frequency less than 4%.

Myriophyllum spicatum occurred in nearly all of the eulittoral zone of the bay, except on the delta at the mouth of Willow Creek and an area nearly devoid of vegetation west of the bar (Fig. 2). *M. spicatum* grew on organic and silt bottoms primarily. It was the only species commonly occurring in water deeper than 1.5 m. It occurred in greatest density along Picnic Point in water 1.0–1.5 m deep and along the eastern slope of the bar in water 0.8–1.5 m deep. Dense mats of filamentous algae (*Mougeotia* sp. and *Rhizoclonium* sp.) were present on these dense stands of *M. spicatum*.

Potamogeton pectinatus, the second most frequent species, was found in scattered

TABLE 2. Changes in aquatic macrophyte species composition in University Bay.

Species	1966 Frequency (%)	1980 Frequency (%)	1966 Relative Frequency (%)	1980 Relative Frequency (%)
<i>Ceratophyllum demersum</i>	18.1	4.2(3.0) ^b	13.6	3.7
<i>Chara</i> sp.	0.0 ^c	0.0	0.0 ^c	0.0
<i>Elodea canadensis</i>	0.4	2.8(2.0)	0.3	2.5
<i>Heteranthera dubia</i>	1.6	1.1(0.8)	1.2	1.0
<i>Myriophyllum spicatum</i> ^a	74.2	52.0(37.1)	55.6	45.4
<i>Najas flexilis</i>	0.1	1.1(0.8)	0.1	1.0
<i>Nelumbo lutea</i>	0.5	1.4(1.0)	0.4	1.2
<i>Nymphaea tuberosa</i>	9.4	6.0(4.3)	7.1	5.3
<i>Potamogeton crispus</i>	0.0 ^c	1.7(1.2)	0.0 ^c	1.5
<i>Potamogeton foliosus</i>	0.5	2.4(1.7)	0.0 ^c	2.0
<i>Potamogeton nodosus</i>	0.8	0.3(0.2)	0.6	0.2
<i>Potamogeton pectinatus</i>	1.4	22.5(16.1)	1.1	19.6
<i>Potamogeton richardsonii</i>	2.2	1.0(0.7)	1.7	0.9
<i>Potamogeton zosteriformis</i>	0.2	0.0	0.1	0.0
<i>Ranunculus trichophyllus</i>	2.0	0.0	1.5	0.0
<i>Vallisneria americana</i>	21.0	16.3(11.6)	15.7	14.2
<i>Zannichellia palustris</i>	0.0 ^c	1.4(1.0)	0.0 ^c	1.2

^a Reported as *Myriophyllum exalbescentis* by Lind and Cottam (1969).

^b Numbers in parentheses are percent frequencies corrected for a 40% greater total transect length in 1966 than 1980, for comparison with 1966 frequency data.

^c Less than 0.05.

solid stands just north of the delta, at the north end of the bar, and near Willow Point, in addition to scattered plants elsewhere. This species was primarily located on or west of the bar. There was no pattern to distribution with respect to depth or bottom type, and few fruiting plants were found. It was not as continuous as *Myriophyllum spicatum*, but grew with it in all water less than 1.5 m deep except near the tip of Picnic Point.

Vallisneria americana was limited to sandy bottom areas near Willow Point, along both sides of the bar and along Picnic Point (Fig. 2). As with the vegetation in general, *V. americana* was present in greater depths along Picnic Point than near the Willow Creek delta. The depth to which *V. americana* grew ranged from 1.5-1.9 m. It was in poorest condition west of the bar where it was silt-covered and rotting. Healthy, flowering stands were present along Picnic Point where relatively little silt was found on the plants.

The *Myriophyllum* community was most prominent in the bay (Fig. 2) and was nearly monotypic in the deeper areas. *M. spicatum* became codominant with *V. americana* forming *Myriophyllum-Vallisneria* communities on sandy bottom along the bar and Picnic Point (Fig. 2). The community dominated by *V. americana* alone was found only in a narrow strip at the distal end of Picnic Point in water depths of 1.6-1.8 m.

Two emergent communities were recorded, a large *Typha-Sparganium* marsh on the mudflats in the northwest corner of the bay and a small bed of *Scirpus validus* on the bar (Fig. 2). The former was very dense whereas the latter was sparse.

Floating-leaved communities consisting of *Nymphaea tuberosa* and *Nelumbo lutea* were situated at the northwest and southwest corners of the bay (Fig. 2). *Myriophyllum spicatum* and *Ceratophyllum demersum* were the predominant submerged species below the floating-leaved plants. Silt and marl bot-

toms were characteristic of these communities.

The continually forming sand delta at the mouth of Willow Creek and a large portion of the deeper water west of the bar (Fig. 2) were nearly devoid of vegetation.

DISCUSSION

Bay Area Changes and Nutrient and Sediment Input

In order to understand the vegetational changes in University Bay, changes in nutrient and particulate matter input should be known. Until 1910, University Bay was bounded to the west by a 53 ha marsh which undoubtedly trapped large amounts of nutrients and silt that would otherwise have entered the bay. In 1910, the marsh was drained and planted to corn. Thereafter, fertilizer-enriched water was pumped into the bay. From 1940 to 1980, the Madison population increased from 67,000 to 171,000, increasing the input of urban pollution, especially with the onset of the "detergent era." In addition, the rapidly growing communities upriver from Lake Mendota dumped treated sewage into the Yahara River until 1971. Probably the major contributor of nutrient and particulate matter to University Bay during the last 30 years has been Willow Creek (also known as University Creek), which wound through a marsh until the early 1950's. This creek was channelized, and the storm sewer outfall of the Hilldale area was placed at the head of the creek. This rapidly growing residential and commercial area increased in size from less than 8 km² to greater than 15 km² during the 1950's and early 1960's (Sterrett, 1975). This, together with increased building density and pavement surface, greatly increased runoff and thus nutrient and particulate loading to University Bay.

Ahern (1976) estimated that 922 kg of total phosphorous and 353,000 kg of particulate matter entered University Bay via

Willow Creek in 1972 alone. High sedimentation is evidenced by the delta forming at the mouth of the creek including an expanding, willow covered, island. Further evidence that nutrient loading has been most prominent since the early 1940's was provided by Bortleson and Lee (1972) when they found drastically increased phosphorous and nitrogen concentrations in the top 15 cm of the marl, representing the period of 1940 on.

Maximum Depth of Rooted Vegetation

Denniston (1921) and Andrews (1946) found rooted vegetation common to water depths of 5-7 m in University Bay. Indeed, some of the long-stem pondweeds grew profusely east of the bar to these depths. However, in 1966, most of the 21 transects ended in depths of 2.5-4.0 m, and by 1980, vegetation depth was further restricted, most of the transects ending between 1.5 and 2.5 m (Table 1). This change from 1966 to 1980 resulted in a littoral zone reduction of approximately 30%.

West of the bar, a large area of water where dense growths had occurred in 1966 was largely devoid of vegetation in 1980. This area coincides with water depths between 1.0 and 1.5 m (Figs. 1 and 2). On days when a high particulate load was carried by Willow Creek, it was evident that the current carried and deposited silt and sand primarily west of the bar. Wave action and carp activity in this shallow area further increased turbidity, preventing plants from growing in water as shallow as 1.0 m. Turbidity and silt resulting from Willow Creek also explains the shallower maximum depth of rooted vegetation found in 1966 (Lind and Cottam) and 1980 on this side of the bay (Fig. 1). It appears that factors causing major changes in maximum depth of vegetation have occurred since the early 1940s and continue to affect vegetation. Similar reductions in deep zone vegetation following eutrophication and siltation with related turbidity, have been reported elsewhere (Har-

man and Doane 1970, Morgan 1970, Felstenhausen and Rabl 1973, Bumby 1977). Turbidity reduces light penetration and thus the depth at which plants can grow.

Cover Changes

Rickett (1921:509) stated, "In University Bay, almost all of the species found in the lake are present in a dense tangled growth." Andrews (1946:8) observed that "at each end of the bay aquatics with floating leaves become so abundant that large mats of floating algae and plant fragments are held in place permitting growths of duckweed in open water." Lind and Cottam (1969) suggested that the vegetation was dense enough to impede human use. Upon casual observation, it became obvious that such dense growths of vegetation did not occur in 1980. As mentioned earlier, the area of solid, continuous stands of vegetation was very limited. Moreover, the fact that in 25% of the quadrats not even 1 plant was found implies discontinuity.

There were also indications that the floating-leaved communities have thinned. *Myriophyllum spicatum* was infrequently found in the floating-leaved communities by Lind and Cottam in 1966. Further, in Lake Wingra, *M. spicatum* occurred in the floating-leaved communities only where *Nymphaea tuberosa* leaves were widely scattered. In 1980, the corrected frequency for *N. tuberosa* was half that in 1966 (Table 2), and *M. spicatum* was the dominant submerged species in this community.

Species Composition

Extensive beds of *Vallisneria americana*, *Potamogeton* species, and *Chara* sp. found in 1921 and 1946 were replaced by *Myriophyllum spicatum* by 1966 (Lind and Cottam 1969). Whether *M. spicatum* caused the decline of these species or invaded following the decline is not known. However, other lakes, having become eutrophic yet

lacking exotic species, also have experienced a decline in native species (Stuckey 1971, Crum and Bachmann 1973). Moreover, weedy species usually require disturbance or reduction in vigor of native species before explosive growth occurs.

The greatest change in vegetation of University Bay between 1966 and 1980 has been the decline of *M. spicatum*. Corrected frequency data show a decline from 74.2 to 36.1% in 1980. *M. spicatum* was still the most abundant species with a relative frequency of 45.4% in 1980. The deep water zone of *M. spicatum* has disappeared as well as a large area west of the bar (Fig. 2). This decline was most noticeable in Lake Mendota between 1974 and 1975, and it had occurred in the other 4 Madison area lakes by 1978 (Carpenter 1979). This pattern of invasion, abundance, and decline has been typical of most *M. spicatum* invasions (Carpenter 1979).

Phillips et al. (1978) presented a mechanism for vegetative decline, whereby increasing nutrient levels result in increasing growth of filamentous algae and other epiphytes. These epiphytes shade and, consequently, reduce the growth of macrophytes. Reduction in competition and in secretion of phytoplanktonic suppressants from macrophytes then results in increased phytoplankton biomass, further shading the macrophytes. Although filamentous algae were very abundant in 1966 and 1980, they could not, alone, account for the reduction in *M. spicatum* in University Bay; the disparity in loss between different parts of the bay would not be explained.

Carpenter (1979) discounted toxic metals, harvesting, herbicides, climatic variables, and nutrient levels as the cause of decline. Carpenter (1979:57) suggested that the decline "... was a result of synergistically interacting factors, perhaps including nutrients, epiphytes, competitors, and parasites or pathogens." Competition was not likely a factor in University Bay,

because all of the common species except *Potamogeton pectinatus* also declined (Table 2); *P. pectinatus* was not dense enough to cause competition with *M. spicatum* over most of the bay. It is likely that seston and epiphytes contributed to the decline; however, something more was involved since the decline occurs with most invasions of *M. spicatum*. Bayley et al. (1978) described a disease which could be spread from one plant to another under low light conditions, such as occurs with turbidity. Perhaps this is occurring in the Madison area.

The frequency of *Ceratophyllum demersum* increased 8-fold with the first year of decline of *Myriophyllum spicatum* in Lake Wingra; it is rated highly tolerant of turbidity (Davis and Brinson 1980). *C. demersum* was described as being very abundant everywhere west of the bar in University Bay in 1970 (Gillette unpubl. rept.). However, in 1980 *C. demersum* abundance was much reduced (Table 2). I searched for this species in 1981, finding few plants; these were in the most protected areas of the bay.

Carpenter (1979) suggested the reduction in density of *M. spicatum* in 1977 reduced competition with *C. demersum*. Perhaps this was occurring in University Bay in 1970. The reduction in density of *M. spicatum* from solid stands to scattered plants since 1970, together with decreased distribution, has likely led to increased wave action and turbulence in University Bay. This would adversely affect *C. demersum* (non-rooted) and may explain its current distribution and low abundance.

Vallisneria americana frequency decreased by almost one-half from 1966 to 1980 (Table 2). It was restricted to the coarsest bottoms. Perhaps siltation or resuspension of sediments was less there. Healthy plants were most abundant east of the bar, along Picnic Point, far from the silt source, Willow Creek. Perhaps, also, *Myriophyllum spicatum* could not have competed with *V. americana* on this substrate as it has

an affinity for fine organic substrates (Patten 1956).

Most other species remained in low abundance. By 1980, *Potamogeton zosteriformis*, *Chara* sp., and *Ranunculus trichophyllus* had disappeared.

The one species that has significantly increased in importance since 1966 (Table 2), *Potamogeton pectinatus*, has survived high levels of urban pollution elsewhere (Butcher 1933, Haslam 1978, Ozimek 1978). It also doubled in frequency in L. Wingra (Carpenter 1979). The linear leaves of *P. pectinatus* remain relatively free of settling particles (Sculthorpe 1967, Sheimer and Prosser 1976). Moreover, the filamentous algae so abundant on *Myriophyllum spicatum* in University Bay were negligible on *P. pectinatus*. *P. pectinatus* is, however, very susceptible to shading in its early period of growth (Anderson 1978). These properties may have allowed *P. pectinatus* to persist and increase while other species have declined.

Community Changes

The northern pondweed communities have disappeared. The *Scirpus validus* bed has been reduced from a strip across the bar (Rickett 1921) to 3 separate beds in 1966 and to 1 bed by 1980 (Fig. 2). A delta of sand now lies where a diverse community occurred in 1950 at the mouth of the creek (White unpubl. rept.). Furthermore, there are no longer beds of shallow water communities dominated by *Elodea canadensis*, *Najas flexilis*, *Chara* sp. and *Zannichellia palustris* (Fig. 2). Now, the *Myriophyllum* community of 1966 could be better called the *Myriophyllum-P. pectinatus* community, and *Myriophyllum spicatum* has replaced *Ceratophyllum demersum* as the dominant submerged species in the floating-leaved community. Finally, the *Vallisneria* community has been reduced from near uniform distribution (Andrews 1946) to a few strips on sandy sub-

strates by 1966 and reduced even further by 1980 (Fig. 2).

CONCLUSIONS

There has been an obvious decline in the macrophyte vegetation of University Bay between 1966 and 1980. The maximum depth of rooted vegetation has been reduced; a 30% reduction in littoral zone area has resulted. The continuity or density of vegetation has been reduced considerably. The pattern of abundance and decline of *Myriophyllum spicatum* followed that of invasions of this species elsewhere in North America and invasions of *Elodea canadensis* in Europe (Sculthorpe 1967). However, the vegetative decline in University Bay was not limited to *M. spicatum*. Other species, common in 1966, have decreased considerably; some species have vanished. Only one native species, known to be relatively tolerant of urban pollution, increased significantly in importance from 1966 to 1980. Whether the factors which affected the abundance of native species also led to the decline of *M. spicatum* is not known. However, it was obvious that turbidity and siltation from Willow Creek effluent did have an effect on *M. spicatum*, because the condition of these beds differed between areas near and far from the creek mouth. As Carpenter (1979) suggested, it is likely that many factors led to its decline in the Madison lakes.

The future of the vegetation in University Bay is, of course, uncertain. The decline of *M. spicatum* has been apparent for 6 years, and only 1 native species has increased. There is considerable space where macrophytes could grow without competition from other macrophytes; however they will not likely increase in abundance if nutrients and particulate matter continue to enter Lake Mendota from its watershed. Experiments in British lakes revealed that isolation of areas from nutrients and silt resulted in a positive response from native vegetation (Phillips et al. 1978). Although the state of

Wisconsin has been addressing watershed management, it is not likely that growth of macrophytes will be actively encouraged; the state is also responsible for macrophyte control.

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SUCCESSION AND ELM REPLACEMENT IN THE DUNNVILLE BOTTOMS

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Abstract

Six forest stands were sampled in the flood plain forests of the Dunnville Bottoms. Present composition of the trees was determined and the composition of the next generation was predicted from sapling data. Elm is presently an extremely important tree in these bottoms, and Dutch elm disease will reduce its numbers and average size. Its present associates, especially hackberry and ash, will likely increase in numbers and, in some cases, in size owing to canopy gaps created by dying elms. The more open nature of the canopy may persist in places because of the occasional development of dense thickets of shrubs.

INTRODUCTION

Elm is a dominant in the bottomland forests of eastern North America, and may comprise 25% to 75% of the trees present (Fowells, 1965). The loss of elm, because of Dutch elm disease, will greatly affect the composition of these river bottom forests. Presently, elm is the most abundant and one of the largest trees in the flood plain forests of the Dunnville Bottoms. However, since Dutch elm disease entered this stand about 15 years ago, about one-third of the elms have died. This study attempts to predict the successional changes that will take place.

STUDY AREA

The Dunnville Bottoms is an extensive river bottom flood plain located at the confluence of the Red Cedar and Chippewa Rivers in southeastern Dunn County, Wisconsin (Figure 1). The bottoms are about four miles (6.4 km) long and from about one-half (0.8 km) to two and one-half miles (4.0 km) wide (Figure 2). Several small ponds occur, as well as substantial areas that are low and marshy. Several sloughs carry water in times of flooding or intensive rainfall. Much of this area was acquired by the State of Wisconsin in the 1940's, and has been managed by the Department of Natural Resources primarily

as a hunting area. Portions of these bottoms were once farmed, with the now vacant fields scattered throughout the area.

The Dunnville Bottoms is located within the Central Plains Geographic Province of Wisconsin, entirely within the older glacial drift area (Pre-Wisconsin drift). The alluvial soil is composed of nearly level sandy loams to silt loams, and nearly level poorly drained soils that have a silty clay-loam subsoil (Wing, 1969). The elevation in the bottoms ranges from 700 to 730 feet (220 to 223 meters) above sea level, and areas less than 720 feet are probably flooded annually or nearly that often. Most flooding occurs in the spring months, with April having the highest average water levels (U.S. Geological Survey, 1961-79).

The vegetation is predominantly bottomland hardwoods with silver maple and species of elm and ash as the dominants.

METHODS

Six wooded stands of at least 5 acres (2 Hectares) were selected for study (Figure 2). All occur on low, relatively level land that is subject to flooding. The six stands were very similar in composition, with elm, ash and silver maple as dominants. No evidence of recent disturbance by fire, grazing or cutting occurs in any of the stands.

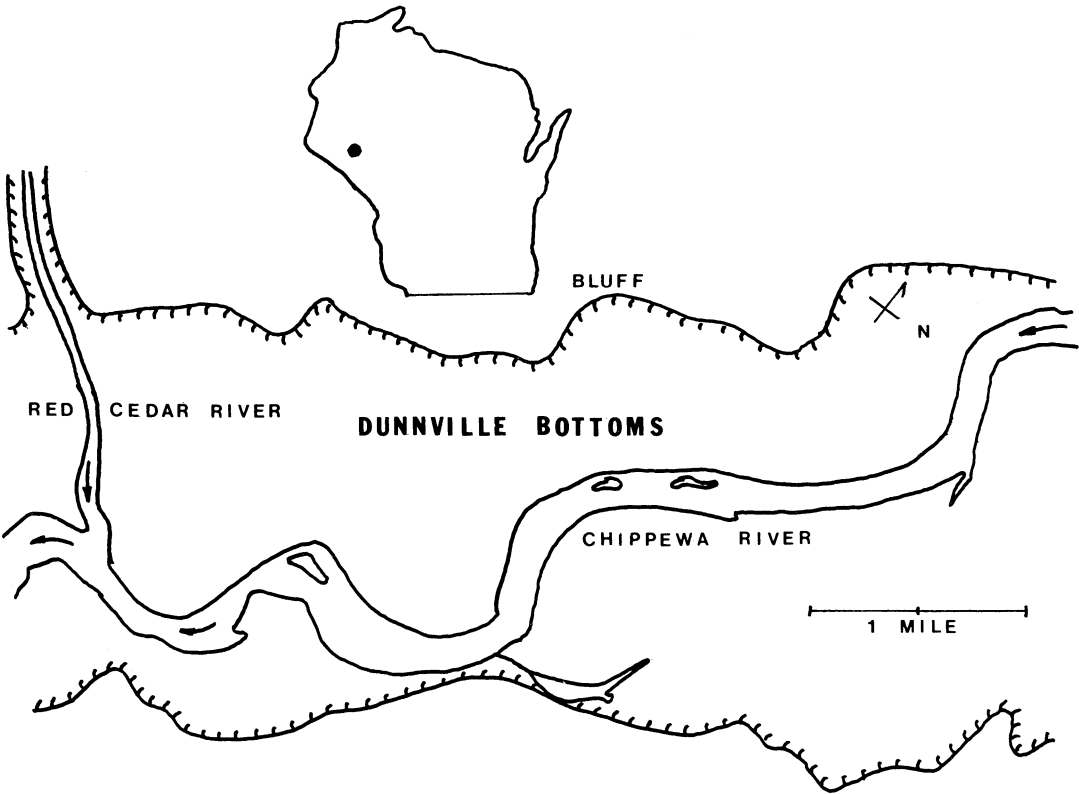


Fig. 1. The Dunnville Bottoms and its geographic setting.

Trees were sampled during September and October of 1980 using the Quarter Method (Cottam and Curtis, 1956) at 300 randomly selected points in the six stands. A total of 1200 trees were recorded, which included both live and dead elm. The names of trees whose crowns overlapped the sampled trees were also recorded.

No distinction is made between species of elm in this study because of the difficulty in identifying dead elms and reaching the branches of live elms to obtain distinguishing characteristics. Almost all of the elms that were examined were *Ulmus americana*; although individuals of *U. thomasii* and *U. rubra* also occur. Also, almost all of the trees recorded as ash were *Fraxinus pennsylvanica*, although *F. nigra* did occur in some samples. Bur oak (*Quercus macrocarpa* Michx.) is a common species throughout the bottoms. The study area is at the

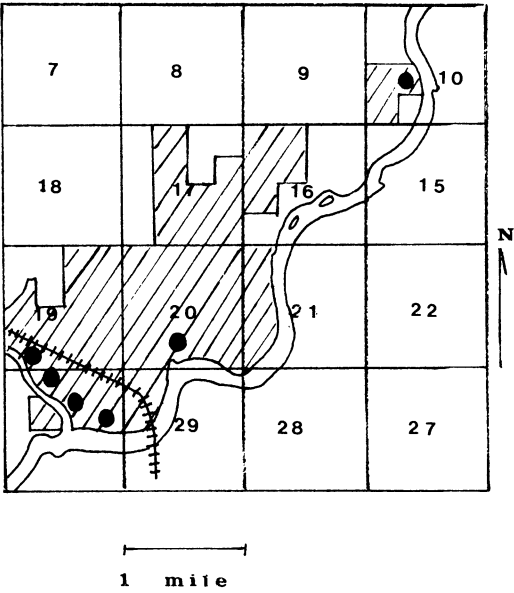


Fig. 2. Extent of the study area and the location of the six stands. Diagonal hatching indicates DNR management area.

northern limit of the range of swamp white oak (*Q. bicolor* Willd.); however, no individuals of this species were noted in the sample.

The number of individuals of each species of sapling beneath the crowns of sampled trees was also recorded. Saplings are defined as any potential overstory tree that is less than 4 inches (101.6 mm) diameter at breast height (dbh), but at least 1 inch (25.4 mm) diameter at ground level. Saplings beneath live and dead elms were recorded separately. Wedges were cut from randomly selected saplings beneath live and dead elms to observe diameter growth rates. Height growth was also observed by noting the growth increments between terminal bud scale scars for the most recent two years (1979 and 1980). The species and number of seedlings were recorded in a 39.37 inch (1 meter) diameter circular plot centered at each quarter point.

TABLE 1. Some standard phytosociological parameters for the combined data of the six stands. Two sets of data are presented for comparing the effects of Dutch elm disease on the composition of these stands.

Species	INCLUDING DEAD ELM				EXCLUDING DEAD ELM			
	RF	RD	RD ₀	IV	RF	RD	RD ₀	IV
ELM	30.3	34.5	36.7	33.8	23.8	25.7	25.3	24.9
SILVER MAPLE	18.9	20.9	32.1	24.0	20.6	23.8	37.9	27.4
ASH	19.9	18.5	11.1	16.5	21.7	20.9	13.1	18.6
BASSWOOD	10.5	9.9	9.5	9.9	11.5	11.3	11.1	11.3
HACKBERRY	8.9	7.9	5.4	7.4	9.7	8.9	6.3	8.3
BUR OAK	5.1	4.0	3.2	4.1	5.5	4.5	3.8	4.6
BOX ELDER	2.2	1.5	0.7	1.5	2.4	1.7	0.9	1.7
RIVER BIRCH	1.8	1.3	0.3	1.1	1.9	1.4	0.3	1.2
Y. HICKORY	1.0	0.6	0.2	0.6	1.0	0.7	0.2	0.6
RED OAK	0.7	0.4	0.4	0.5	0.8	0.5	0.5	0.6
BUTTERNUT	0.4	0.2	0.3	0.3	0.5	0.3	0.2	0.3
COTTONWOOD	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1
WILLOW	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2
BLUE BEECH	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1

RESULTS

More than fifteen species of trees were found in the six stands. Of these, elm (*Ulmus* spp.), ash (*Fraxinus* spp.) and silver maple (*Acer saccharinum* L.) were the most abundant (Table 1). Basswood (*Tilia americana* L.), hackberry (*Celtis occidentalis* L.), river birch (*Betula nigra* L.), bur oak (*Quercus macrocarpa* Michx.), and box elder (*Acer negundo* L.) occurred quite frequently. The remaining species, bitternut hickory (*Carya cordiformis* (Wang) Koch.), butternut (*Juglans cinerea* L.), red oak (*Quercus borealis* Michx.), jack oak (*Quercus ellipsoidalis* Hill.), cottonwood (*Populus deltoides* Marsh.), blue beech (*Carpinus caroliniana* Walt.) and willow (*Salix* spp.) occurred infrequently (Table 1).

Elm, silver maple and ash are the dominant trees based on their importance value for the combined data and were, in fact, dominant species in all of the 6 stands. The effect of excluding dead elm from the data summary is of course an increase in the importance values of the remaining species.

The average basal area for all six stands is 92 square feet/acre (20.7 m²/HA), which is somewhat less than the 100 square feet/acre (22.5 m²/HA) reported for southern Wisconsin flood plain forests by Curtis (1959). The loss of some elm, because of Dutch elm disease, may be partly responsible for this difference. The average Compositional Index (Curtis, 1959) of the six stands is about 540, quite similar to the 560 reported by Curtis (1959) for southern Wisconsin flood plain forests.

Elm is presently the most abundant tree in the Dunnville Bottoms, and was even more abundant prior to the death of large numbers of individuals. Approximately 34% of all elms sampled were dead, with a range of 21% to 53% in the 6 stands. Dutch elm disease apparently affected the larger elms to a greater extent than the smaller trees, as a greater percentage of the larger trees were dead.

Size class distribution of the more abundant trees is illustrated in Figure 3. Live elm and ash have their maximum densities in the smaller size classes; while silver maple is well represented in the largest size classes. The largest silver maple recorded had a dbh over 40 inches (100 cm) and many individuals occurred that were over 24 inches (60 cm). Some very large elm trees also occurred, the largest being a live elm of more than 50 inches (127 cm) dbh.

Hackberry is the most abundant sapling (37.1% of all saplings), while ash (17.2%), elm (15.4%) and bitternut hickory (13.9%) are also quite abundant. A fairly large number of basswood saplings (11.1%) were also recorded; however, these were almost all basal sprouts of mature trees. Silver maple is also a prolific sprouter; however, it accounted for only 3.4% of all saplings, despite being one of the most abundant trees in the mature size classes.

The kinds and numbers of saplings beneath each species of tree are illustrated in Table 2. Each entry in a row is the percent

of the total number of saplings found under a canopy tree of the species listed. Canopy trees of elm include both live and dead individuals.

TABLE 2. Number of saplings beneath different species of canopy trees. Each entry in a row is the percent of the total number of saplings found under a canopy tree of the species listed. Canopy trees of elm include both live and dead individuals.

		SAPLINGS							
CANOPY TREES		ELM	ASH	S. MAPLE	BASSWOOD	HACKBERRY	BUR OAK	BOX ELDER	B. HICKORY
		ELM	ASH	S. MAPLE	BASSWOOD	HACKBERRY	BUR OAK	BOX ELDER	B. HICKORY
ELM (live+dead)		15	22	5	1	45	0	2	10
ASH		26	13	2	2	44	0	3	10
S. MAPLE		22	29	8	0	36	0	1	4
BASSWOOD		4	4	0	60	16	0	1	15
HACKBERRY		16	24	0	1	36	2	0	20
BUR OAK		18	8	0	23	23	7	4	17
BOX ELDER		2	17	0	22	30	0	29	0
RIVER BIRCH		26	53	7	0	7	0	0	7
B. HICKORY		13	8	0	0	13	1	20	45
OTHERS		29	1	0	0	34	0	0	29

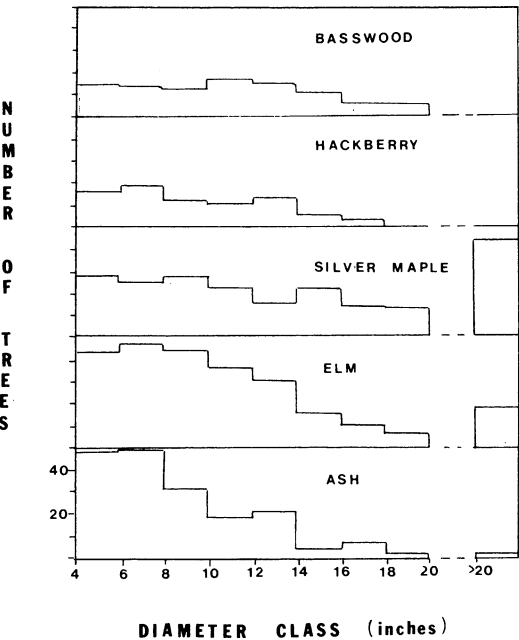


Fig. 3. Size class distribution of trees.

TABLE 3. Radial growth, in inches/year, of saplings below live and dead elms.

SAPLINGS	beneath live elm	beneath dead elm
hackberry	0.04	0.06
b. hickory	0.05	0.09
ash	0.07	0.06
elm	0.03	0.09
basswood	0.06	0.07

The average radial growth rates for the last 4 years of saplings beneath live and dead elm are illustrated in Table 3. These data are based on at least 15 samples each for all species except basswood where only 5 samples were obtained from under dead elm. Except for basswood, all differences in radial growth beneath live and dead elm were found to be statistically significant ($p < 0.001$) with a t test. All except ash exhibited greater radial growth rates beneath dead elm. Mean height growth for the last 2 years beneath live and dead elm is illustrated in Table 4. At least 15 samples each were taken for all species except basswood, where only 5 samples were obtained from under dead elm. All differences in height growth beneath live and dead elm were found to be statistically significant ($p < 0.05$) using a t test. Hackberry, ash and bitternut hickory had greater height growth rates beneath the dead elms. These data suggest that hackberry and bitternut hickory respond well to release from suppression with both radial and height growth. Ash responds with enhanced height growth; while elm and basswood respond with enhanced radial growth.

Only three species have produced relatively large numbers of seedlings in recent

years. These are ash (32.2% of all seedlings), hackberry (30.2%) and elm (27.8%).

DISCUSSION

Succession

The future composition of the forest community can be predicted by using the relative number of each species of sapling found beneath the individual mature trees (Horn, 1975). This is done by multiplying the proportion of each species of sapling below each species of canopy tree by the relative density of the canopy trees. The assumption is made that each species of sapling under the canopy of a tree has a probability of replacing that tree proportional to its numbers.

This tree-by-tree replacement model was used to predict the composition of the next generation of trees in the Dunnville Bottoms. Canopy tree data (including dead elm) and sapling data from Table 2, were used to generate the present and predicted composition values illustrated in Figure 4.

TABLE 4. Height growth, in inches/year, of saplings below live and dead elms.

SAPLINGS	beneath live elm	beneath dead elm
hackberry	7.6	11.0
b. hickory	15.0	16.5
ash	19.6	21.1
elm	10.3	9.6
basswood	9.6	4.9

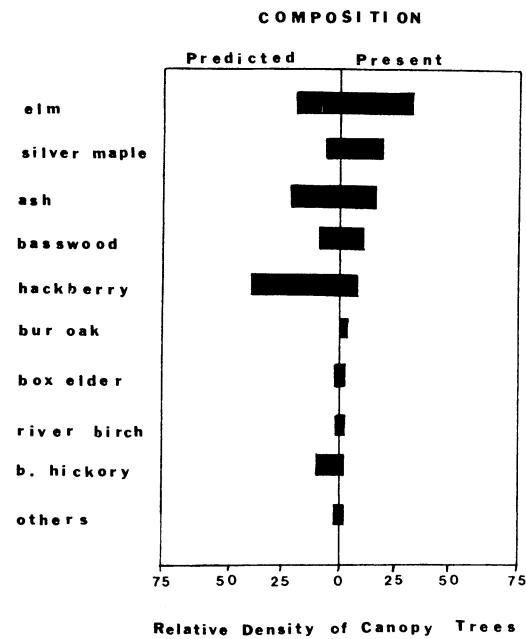


Fig. 4. Present and predicted composition of the six stands in the Dunnville Bottoms.

A system of rating trees according to age class profiles was also devised by Horn (1975) for use in successional studies. An "invading" species is defined as one with many seedlings and saplings, but only small trees. A "locally reproducing" species has individuals in all size classes, with a substantial number of young trees and saplings. A "senile" species occurs only as larger trees with few, if any, seedlings and saplings.

Silver maple is predicted to decline from its present relative density of 21.0% to 4.4% in the next generation. It is an example of a "senile" species, as many of the individuals are in the larger size classes and there is a paucity of the relatively shade intolerant seedlings and saplings. Silver maple stands usually develop on low areas at the river bank where new alluvium has been deposited. Physiographic events of this nature have not occurred in these six stands in recent years, and no new stands of silver maple are present. The location of silver maple stands in these low, frequently flooded areas, and its tolerance to flooding, may be important modifying factors in predicting its density in the next generation. Because it is more tolerant of flooding than many of the other species, and because of the probable high survival rates of basal sprouts, silver maple may be more successful in the next generation than this model predicts.

River birch, box elder, and bur oak are shade intolerant "senile" species whose densities are predicted to decline in the next generation. However, unlike silver maple, none of them is presently very abundant, with relative densities of only 1.4, 1.7, and 4.5% respectively. Bur oak occurs at higher elevations where conditions are apparently no longer conducive to its reproduction. River birch and box elder are both tolerant of flooding and usually become established on newly deposited alluvium, often as associates of silver maple.

Elm, basswood, and bitternut hickory are classified as "locally reproducing" species, although elm and basswood are predicted to

decline somewhat in density, while an increase is predicted for bitternut hickory. These three species are represented in the understory by relatively large numbers of saplings and small trees which should respond well to openings created by the death of large elms.

Basswood and bitternut hickory are both intolerant of flooding, and thus are restricted to the higher elevations in these bottoms. No seedlings of basswood were recorded and almost all saplings were of sprout origin. All basswood trees were sprouting, and it seems likely that these sprouts, with their large root systems, have a greater chance of replacing the mature stem than saplings of other species. If so, basswood density should change very little in the future. Bitternut hickory seedlings were quite sparse, although saplings were common. Good seed production in bitternut hickory occurs approximately every three to five years (Fowells, 1965), and several recent low production years could explain the present lack of seedlings. Ware (1955) found that bitternut hickory is a minor component of the flood plain forests of southern Wisconsin, and it will probably continue to be so in the Dunnville Bottoms.

Elm is more flood tolerant than basswood and bitternut hickory, and occurs on a greater variety of sites. Elm produces abundant seed, and large numbers of seedlings and saplings occur throughout the bottoms. Dutch elm disease is likely to affect the future of this species, as high mortality rates occur especially in the larger mature trees. Thus, it is expected that a general decline in the average size and number of seed-bearing individuals will occur.

Ash and hackberry are considered to be "invading" species in these bottoms. Ash trees are abundant (relative density of 21.0%), but the vast majority of trees are small (average dbh of 9.6 inches is the smallest among the six most common species). Ash is capable of producing fruit when only 3 to 4 inches dbh (Fowells, 1965), as illus-

trated by the presence of large numbers of seedlings and saplings. Ash is quite flood tolerant and should succeed on a variety of sites. Although it is not especially shade tolerant, it grows rapidly following release from suppression. Gaps created by dead elms should provide an excellent opportunity for this species.

Large numbers of hackberry seedlings and saplings occur in the Dunnville Bottoms, although mature trees are not common. Ware (1955) found this species to be a minor component of flood plain forests in southern Wisconsin. Other studies have found it to be abundant in the sapling sizes, but limited in the number of mature trees (Lindsey et al., 1961, Bell, 1974). Hackberry is a prolific "seed" (drupe) producer, and avian and mammalian dispersal is common (Krajicek, 1958). It is quite shade tolerant, and some saplings in this study were found to be over 35 years old. Height and diameter growth of this species is generally slow (Putnam, 1951). Thus, it appears that a combination of very high reproductive rates, but very slow growth rates results in proportionately more saplings and small trees and fewer large individuals. Hackberry is not very tolerant of flooding, and thus is restricted to the higher elevations.

Elm Replacement

Elm is the most abundant tree in the Dunnville Bottoms and is presently classified as a "locally reproducing" tree. Dutch elm disease entered this stand about 15 years ago, and the subsequent loss of large seed-bearing trees will ultimately reduce the number of seedlings and saplings as well as mature trees.

A clear replacement sequence of elm is not yet apparent; although some predictions can be made on the basis of the saplings now present under live and dead elm. A statistically significant difference was found ($p < 0.01$, 8 df using a Chi square test on a 2×9 contingency table) between the kinds

TABLE 5. The numbers of saplings of different species that occurred under live and dead elm trees.

Sapling	BENEATH LIVE ELM	BENEATH DEAD ELM
HACKBERRY	472	189
ASH	182	98
ELM	173	33
Y. HICKORY	137	53
SILVER MAPLE	19	35
BASSWOOD	15	10
BOX ELDER	7	2
BUR OAK	6	2
BUTTERNUT	2	0
TOTAL	1013	422

of saplings under live and dead elm (Table 5). This difference is due primarily to the greater number of elm saplings observed under elm trees than was expected on the basis of chance, and to the greater observed number of silver maple saplings under dead elm than was expected. Presently 45% of all saplings under elm (both live and dead) are hackberry; while 22% are ash. Elm (15%), bitternut hickory (10%), silver maple (4%) and basswood (2%) account for most of the rest of the saplings.

Other recent studies have predicted hackberry to increase in numbers with the death of elm (Pelz and Rolfe, 1977; Micelli et al., 1977; McBride, 1974). Hackberry is a slow-growing tree and not very tolerant of flooding, thus its future domination in these stands is probably overestimated by the techniques used in this study. Nevertheless, it possesses opportunistic characteristics such as wide-spread seed dispersal and flexible seedbed requirements. These attributes, along with relatively high shade tolerance, enable it to maintain large populations of seedlings and saplings. These large numbers of young hackberry under elm should ultimately result in some successful replacements. Only 6.1% of the trees that overlapped the crowns

of elm were hackberry. Thus, lateral growth of this species into the openings created by the dead elms is probably not of much significance.

Replacement of elm by its former associates, especially species of ash, was observed by Grittinger (1978) in some lowlands of eastern Wisconsin. Ash is the second most abundant sapling below both live and dead elm in the Dunnville Bottoms, and its crown was found to overlap with 12.8% of the elms. This tree exhibits rapid height growth when released from suppression, which may permit it to reach the canopy before other species upon the death of elms. Also, mature trees may exhibit enhanced growth as their canopies take advantage of the openings created by the dying elms.

The remaining species had relatively few saplings present under elm. Bitternut hickory and basswood crowns overlapped with the crowns of elm only 0.4 and 4.8% of the time. However, these two species are quite shade tolerant, which may permit their saplings to persist under elm until opportunity presents itself. Silver maple crowns overlapped with 24.9% of the elm crowns. The death of elms at the lower elevations, where silver maple is abundant, may result in enhanced lateral and sprout growth by this species.

Saplings were absent beneath 25% of the dead elms. A heavy cover of shrubs, especially prickly ash (*Xanthoxylum americanum* Mill.), grey dogwood (*Cornus racemosa* Lam.), chokecherry (*Prunus virginiana* L.) and brambles (*Rubus* spp.) occurred in most such cases. The shade cast by the shrubs may preclude establishment of trees, although it is possible that more tolerant species such as basswood and yellowbud hickory may eventually become established and grow through the shrub canopy. Barnes (1976), working in southeastern Michigan, and McBride (1973), working in southeastern Iowa, also found a substantial number of sites where a dense cover of shrubs developed below dead elm trees. McBride

states that inhibition of tree reproduction by the dense shrub cover will result in a more open nature of the forest.

In summary, it appears that elm will remain a component of the forests of the Dunnville Bottoms for the immediate future. However, it will be greatly reduced in numbers and in average size. Present associates of elm are likely to increase in abundance in most of the gaps created by the dying elms; while the remaining gaps may be occupied by persistent stands of shrubs. Based on sapling density under both live and dead elm, hackberry and ash are predicted to be the trees that will realize the greatest increase in abundance.

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THE WITCH TREE COMPLEX

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In an American Indian settlement¹ on the northwest shore of Lake Superior there exists a belief system which has successfully withstood the ravages of time and history. Both of its religious and socio-cultural practices are centered upon a sacred tree, and the legends, beliefs, and practices surrounding this particular tree play an integral part in the belief system.

Based upon the oral history narratives obtained from local Indian informants,² it is clear that this particular belief system developed in accordance with the unique life style of the natives who reside on the Minnesota shore of Lake Superior—a way of life characteristic of a hunting, fishing, and gathering society. The lives of these people are directly related to this belief system. Their success in hunting and fishing, their safety on, or near, the water, and sometimes the safety of their families, depends upon their knowledge and understanding of the interrelationships between the tree and the other spirits of the region. I shall examine these operational components, their relationship and interdependence in the following order: the Witch Tree and man; man, water spirits and the spirit tree; Nanabojou and the water spirits; celestial spirits and man; the Little People and man; wigwam shakers, the oracles; the Sugar Bush Rock and the Little People; and traditional rituals vs. Christian religions.

In view of related data on Ojibwa culture gathered by other writers, this study deals with a local variant of the Ojibwa Grand Medicine Lodge.³ Furthermore, due to its esoteric nature, this study describes and examines the working components according to an emic approach.⁴ For this purpose I have developed an emic model (see appendix A)

in order to more clearly present the major factors which comprise this belief system.

Each element in this belief system can operate as an independent unit; however, within the system each element is interdependent with others, and they in turn, are related to the core of the complex—the beliefs that are centered around the Witch Tree. The knowledge of the functions of these units in relation to the Witch Tree complex is dependent upon the oral transmission of information by natives of the area who understand the inter-acting complex of this belief system. In essence, this emic model is used as a vehicle to apply cognitive theory which basically seeks to view the dynamics of culture through the eyes of those who are regarded as members of that culture.

The Witch Tree and Man

The so-called Witch Tree stands within the Grand Portage, Minnesota, area which comprises the greater part of the Ojibwa Indian reservation—the Grand Portage band of Chippewa. Its geographic location is approximately four miles north of the community of Grand Portage, an area which still abounds in wilderness land. The geological formations are the remains of the Keweenaw volcanic period when molten lava poured over the region. The glacial period is represented all along the shore of Lake Superior with abundant evidence of the great ice sheets.⁵ The forests are composed of birch, aspen, mountain ash and many varieties of fir, spruce and pine. The western shore of Lake Superior is rugged and as one travels north the rocky cliffs become increasingly high. The Witch Tree, itself, is located on Hat Point which escaped the glaciers and has never been burned over. Upon it may be

found preglacial formations, rare ferns and mosses.⁶ Hat Point is located between Was-WahGonig Bay, which means "spear fishing by torchlight," and Grand Portage Bay.

This tree is centuries old and quite unlike the massive and majestic white cedars which are indigenous to this particular geographic area. The tree is a small, gnarled, and bristly red cedar. The trunk is contorted, grey with age and the ceaseless buffeting of the elements. It has a stoic appearance, as if it were made of stone. The natives say that neither the trunk nor the branches of the tree sway even with the strongest winds.⁷ It grows out of a rock separated from the main body of land by a few inches of water. There is no visible means of sustenance for the tree and the Indian people of this region consider its growth miraculous.⁸ Furthermore, red cedar is an unusual species to this area. All of these factors contribute to the mystical qualities perceived by the supporters of this belief system.

The local name of this tree was popularized either by white men who misunderstood its significance, or by local Indians who had converted to Catholicism and were led to believe that the tree and its powers were evil.⁹ Elizabeth Thbault and Peg Henderson, two of the more traditional inhabitants of Grand Portage, feel that the English name for this magnificent tree had its origin with the artist Dewey Albinson, who was instrumental in bringing the tree to the attention of the general public.

The tree is believed to have the power to influence unseen spirits and thus the ordering of natural events. It has been incorrectly reported by non-Indian writers that in the old days the Indians would make roundabout portages to avoid passing the tree. It is said they dared approach it only in large groups, drumming and singing and bearing gifts of tobacco and vermillion.¹⁰ It is true that then, as now, offerings were made, but Celia Hendrickson and Elizabeth Thbault state that it is erroneous to say that the Indian people avoided the tree.

In Ojibwa the tree is called "manido

gishigence," manido meaning spirit and gishigence meaning small cedar. Billy Blackwell informed me that natives of this area also refer to it as "the cedar" or "the old cedar." Indian people view cedar boughs as symbols of a life giving source. Cedar boughs are also used by Indians for medicinal purposes. Both red and white cedar have been used by Indians in the Southwest as well as in the Great Lakes area as sacred incense in their ceremonies.¹¹ The importance of the Witch Tree, however, lies not only in the boughs but within the tree itself. In essence, the tree is a manifestation of a land phenomenon which is directly related to the world of the water spirits and therefore, the tree is employed as an intermediary between man and the water spirits. In local native beliefs and practices, the tree is directly associated with the water and is a symbolic representative to man of that world.

From a practical point of view, since the 19th century this tree has been used as a landmark by the people of this area.¹² Fur traders, voyageurs and Indian fishermen were, and are, better able to navigate the treacherous shifting waters of Lake Superior by taking their bearing from this cedar tree.

Man, Water Spirits and the Spirit Tree

For many centuries as Indian people passed Hat Point they would stop and place offerings at the base of the tree and in the nearby waters. These offerings consisted mainly of tobacco since it is a general belief of most traditional Indians that tobacco is a special gift of the Great Spirit to be offered when praying for compassion or favor.¹³ Billy Blackwell stated that around the Grand Portage area it is believed that Indians should not take tobacco on the waters or in the air while crossing a body of water without thinking of the waters or offering tobacco to them. They believe that the water spirits are anthropomorphic and, like man, appreciate the pleasure of smoking tobacco. Therefore, if one does not offer them tobacco or at least think about doing so, the water spirits erroneously believe the tobacco

is being brought to them, and in an attempt to obtain it, they may cause the man carrying the tobacco to drown. This is not considered a malevolent act, but an error on the part of the spirits for there is no way they can know the tobacco is not meant for them. In such circumstances the tree growing between water and land is used as an intermediary between man and the water spirits.

The Grand Portage people, like other traditional Ojibwa, believe that there is a great spirit or manido above but also many other spirits who watch over and take care of the areas they inhabit and that some of these spirits are treacherous if not treated properly.¹⁴ Billy indicated that the Ojibwa know what these beings look like because some of the old people have seen them or dreamed of them. Their appearances have been described and passed down for as long as these Indians have lived in this area. Some of these water spirits, or manidos, are described as underwater serpents with one, two, or three horns, or as underwater panthers.¹⁵ Traditional natives of the area believe that the water manidos can act alone, as invisible spirits, and that they can appear as manifestations of the water panthers or horned serpents. My informants never specified whether or not the water panthers and serpents can exist when not possessed by the water spirits; however Billy Blackwell and Mark Naganub told me that they are inseparable, yet separable, depending upon the conditions under which they appear.

In examining the nature of the belief system involving the Witch Tree it is important to keep in mind that the elements can operate independently, as well as being directly and indirectly related, when assuming a major role in man's ordering of his world.¹⁶ The Witch Tree becomes a significant source of power in man's attempt to order his world as it helps him to maintain an adequate means of subsistence, establish safety, and create stability. Let us see how the outlying components which surround the Witch Tree affect this particular belief system.

Nanabozo and the Water Spirits

Nanabozo, an outlying component of the Witch Tree complex, is an Ojibwa culture hero.¹⁷ He has no power to give to these people when they are in need and although there is no evidence that the Grand Portage people recognize a direct relationship between the Witch Tree and Nanabozo, in their legends Nanabozo is seen as having encounters with the water manidos. These encounter tales, as told by Billy Blackwell and Mark Naganub, illustrate the power of the water spirits when in combat with Nanabozo. Despite the intensity of the battles between the two, neither destroys the other. Nanabozo as a culture hero has the power to combat the spirits, but he can never transfer this power to man because the great spirit has not endowed him with this power. As a demigod he has the power to encounter the elements and adequately defend himself against evil manidos, but he cannot transfer this power to man. Nanabozo is important in this belief system only because it is through his encounters with the water spirits that the people measure the power of the water spirits since, in the main, they themselves have no direct contact with them (See Appendix A).

Although the water spirits are generally evil and injurious to man, they also have the ability to grant mystical gifts of power to man. When the people deal with the water manidos, either to appease their wrath or for permission to travel the waters, they act through the Witch Tree, as intermediary, leaving tobacco at its base as a sacrificial offering to both land and water elements.

Celestial Spirits and Man

A covert relationship exists between the Ojibwa believers, the celestial beings, and the Witch Tree. Prayers are directed to the intermediary powers of the Witch Tree, which extend not only to the water spirits but also to the celestial beings such as the Thunderbirds, who control the thunderstorms and winds. Both elements are a threat

to those who travel by water and air. The natives recognize the tree's power to withstand these elements which in turn is interpreted as strength to deal with the water and with the celestial manidos.

The Little People and Man

The Little People, Maymaygwaysiwuk,¹⁸ are somewhat like the manidos, but their ability to grant power to man should not be confused with that of the manidos. Their role in this belief system is more analogous to that of the mystical "little people" of the Irish who mischievously create havoc in man's life and on rare occasions bestow supernatural gifts of power upon him.

The natives of Grand Portage accept the Little People as an integral part of an inter-related belief system of invisible power sources. These Indian people feel that they must contend with the Little People when they encounter those particular elements which relate to their survival. Those who believe in the Little People also believe in the Witch Tree. When my informants spoke of the Witch Tree in general, or of specific occurrences related to it, they also brought up stories concerning the Little People.

In their tales about the Little People these Ojibwa Indians indicate that these supernatural beings have mystical powers which can be used to either help or hinder man, though they do not make specific reference to the use of these powers. The Indians at Grand Portage hunt and fish in the area they believe to be the land base of the Little People. This area includes the waters and nearby shoreline which are believed to be under the power of the Witch Tree. The local Ojibwa believe that the Little People occupied this particular geographic region prior to their own arrival and therefore the Ojibwa feel this area belongs to the Little People. WasWahGonig Bay is a major hunting ground which belongs to the Little People. Here, and in adjacent areas, the Little People play tricks on man to discourage him from hunting and fishing, but on rare occa-

sions they perform acts of kindness to man. Jennie Hietok told me a story about a man who was having a hard time catching enough fish in WasWahGonig Bay to feed his family. He left his canoe, and when he returned found it filled with fish. He saw little foot prints on the ground and around the canoe which gave him reason to believe that the Little People had magically filled his canoe. Elizabeth Thbault told me another story, not as positive, about a man who was fishing in WasWahGonig Bay and had his canoe filled with more fish than he needed. He landed his canoe and went inland to gather firewood to cook his noon meal. When he returned there were no fish in his canoe, but there were little foot tracks around it. As he looked toward the Witch Tree he saw several stone canoes manned by the Little People.¹⁹

In general, the Grand Portage people believe the Little People resent human beings, especially when they enter the Little People's domain. They feel that because man cannot predict the Little People's behavior they should supplicate the power of the Witch Tree when entering these particular areas to hunt or fish. In doing so they believe that if the Little People are encountered they will be compassionate and refrain from playing tricks which would prevent the Indian people from successfully hunting or fishing.²⁰

The Little People apparently respond favorably to small children. Peg Henderson told me tales in which the Little People steal children, play with them, treat them to a special banquet, and then return them unharmed. It is believed that the Little People hypnotize the children, for when the children are found they are in a state of suspended animation. When asked where they have been, they will not respond for hours or days. With the exception of a few cases in which the children related that they have been with the Little People, the adults do not know where they have been. The major source of information concerning the whereabouts of these children is gained through the wigwam shakers.²¹

Wigwam Shakers: Oracles

The Ojibwa of Grand Portage view wigwam shakers as Indian oracles. Help is sought from these people in order to locate children who cannot be found, or after the children have returned to determine what happened to them while they were gone. There are several stories concerning encounters with the wigwam shakers. Elizabeth Thbault told me that there was once a little girl who had been lost for a considerable time. In order to learn her whereabouts her parents went to a wigwam shaker who said that she had been taken by the Little People. After she was found she bore witness to the divination of the wigwam shaker. Another more sorrowful story, involves a child who was lost and when her parents went to the wigwam shaker he told them specifically where they would find her—in an underwater cave off the shore of Lake Superior. They followed his directions and found her, dead, exactly where he said she would be—in an underwater cave. (In this case it is believed that through carelessness, when the parents became absorbed in berry picking and forgot to watch over the girl, the water spirits claimed her.) The local Ojibwa fear both the water spirits and the Little People. The natives who live on or near the lake-shore recognize the danger of leaving a child by the water's edge. They fear that either the water spirits or the Little People may snatch up the youngster.

The Sugar Bush Rock and the Little People

Although the wigwam shaker divines the deeds of the Little People he cannot control them. Some measure of control however, is associated with the Sugar Bush Rock which functions in much the same way that the Witch Tree does. Elizabeth Thbault and Mark Naganub told me that Indians have heard the Little People drumming and singing close to the base of the rock and some have even claimed to see the Little People in this area. To protect themselves against the wrath of these supernatural beings, these

natives supplicate the intermediary powers of the Sugar Bush Rock for a bountiful harvest of maple sugar and berries and for assurance of success in their hunting. If they offer tobacco to the Sugar Bush Rock and the Witch Tree, then the people feel they will be safe whenever they travel in any of the areas occupied by the water spirits or Little People.

Old Traditional Rituals vs. Christian Religions

Within the last decade the younger generation of Indian people at Grand Portage have begun a revival of old traditional rituals. Billy Blackwell explained one such ritual—that of offering a sacred bundle to the waters of Lake Superior. Associated with this ritual is the belief that by making such a physical religious offering the attention of both the water spirits and the Witch Tree will be gained. Since they have revived this ritual, the traditional natives of Grand Portage believe that their world has become more orderly. They feel that in the past too many Indians were giving too much attention to Christian religions and because of this their world order tended to become disrupted. Hence, by reinstating this particular ritual the Witch Tree becomes more active in helping with those ventures involving the nearby waters.

The local Roman Catholic priest, Father Jude Koll, feels that with the revitalization of old traditional rituals, the practice of attending Christian church services has begun to wane significantly. Many Ojibwa under the age of 35 feel that Christianity has not helped their people, and has, in fact, actually hindered them. John Flatt and several other older members of this Indian community stated that the Christian religion has not been the answer for their people and therefore, they feel it is a good thing that the younger generation is returning to the old Indian religious practices and beliefs.

In this analysis I have examined the nature of the belief complex surrounding the Witch Tree. I have noted that the tree itself

does not have any particular physical interaction with man. It can however, respond in a mystical way to man's supplication through his prayers and gifts. Therefore, as an intermediary between the other elements in the model it is evident that it can and does use its supernatural powers to help man successfully order his world. Man is successful in fishing, crossing the waters, hunting, and navigating the air as long as he invokes the intermediary powers of the Witch Tree.

In sum, according to the analytical model, it is evident that the Witch Tree is a particular entity upon and around which the other entities revolve and respond both directly and indirectly. Not only do they operate in such a fashion, but their interaction with each other is based on an initial action and reaction relationship to this particular entity, the Witch Tree. From a structured point of view, this phenomenon is not necessarily the core of the belief system for the system does not have a nucleus. The Witch Tree acts as a focal point and dominating entity in the interaction between the outlying elements in this belief system.

NOTES

¹For the purpose of this paper the following terms will be used interchangeably: American Indian, Indian, Ojibwa, Indian people, native, traditional inhabitants, and Chippewa.

²I interviewed the following informants during the summer of 1976 as part of a study sponsored by a joint grant from the Minnesota American Revolution Bicentennial Commission and the Graduate School at the University of Wisconsin-Milwaukee.

Billy Blackwell, age 28, Ojibwa/French Canadian
Mark Naganub, age 60, Ojibwa
Elizabeth Thbault, age 78, Ojibwa
Wilfred Montefraud, age 75, Ojibwa
Celia Hendrickson, age 75, Ojibwa
Herman Henderson, age 45, Ojibwa
Peg Henderson, age 40, Ojibwa
John Flatt, age 70, Ojibwa
Jennie Hietok, age 81, Ojibwa
Henry Flatt Peterson, age 71, Ojibwa
Father Jude Koll, age 60, Anglo-Saxon

³Selwyn Dewdney, *The Sacred Scrolls of the Southern Ojibway* (Toronto: University of Toronto Press, 1975); Carolissa M. Levi, *Chippewa Indians*

of Yesterday and Today (New York: Pageant Press, 1956); Sister Bernard Coleman, "The Religion of the Ojibwa of Northern Minnesota," *Primitive Man*, (July and October, 1937), 1ff; and Ruth Landes, *Ojibway Religion and the Midewiwin* (Madison: University of Wisconsin Press, 1968). These sources provide information concerning Ojibwa religion.

⁴R. W. Burchfield, Editor, *A Supplement to the Oxford English Dictionary* (Oxford: Clarendon Press, 1972), p. 934. The following is a definition of emic: "... in contrast to the etic approach, an emic one is in essence valid for only one language or one culture at a time; it is an attempt to discover and to describe the pattern of that particular language or culture in reference to the way in which the various elements of that culture are related to each other in the functioning of that particular pattern, rather than an attempt to describe them in reference to a general classification derived in advance of the study of that particular culture."

⁵Elizabeth Bachmann, "Our Legendary Witch Tree," *The Conservation Volunteer* (Nov.-Dec. 1966), 43.

⁶Ibid., 44.

⁷All informants reported this fact about the Witch Tree.

⁸This was the consensus of all informants.

⁹Rev. Peter Jones (Kahkewaquonaby), *History of the Ojibway Indians; with Especial Reference to their Conversion to Christianity* (London: A. W. Bennett, 1861). This book deals with conversion methods.

¹⁰Elizabeth Bachman, "Our Legendary Witch Tree," *The Conservation Volunteer* (Nov.-Dec. 1966), p. 41.

¹¹H. B. Alexander, *The World's Rim: Great Mysteries of the Native American Indians* (Lincoln: University of Nebraska Press, 1970). See this source for more information.

¹²Bachmann, p. 42.

¹³Ruth Underhill, *Red Man's Religion* (Chicago: University of Chicago Press, 1965). See this source for further information.

¹⁴Gerald Vizenor, *Anishenabe Adisokan; Tales of the People* (Minneapolis: Nodin Press, 1965). This book contains many tales relating to this subject.

¹⁵Norval Morriseau, Selwyn H. Dewdney, editor. *Legends of My People the Great Ojibway* (Toronto: The Ryerson Press, 1965), pp. 37-40.

¹⁶Arnold Van Gennep, *Rites of Passage* (Chicago: University of Chicago Press, 1975). See this source for further information.

¹⁷Richard M. Dorson, *Bloodstoppers and Bearwalkers* (Cambridge: Harvard University Press, 1972), pp. 41-51.

¹⁸Morriseau, pp. 75-78.

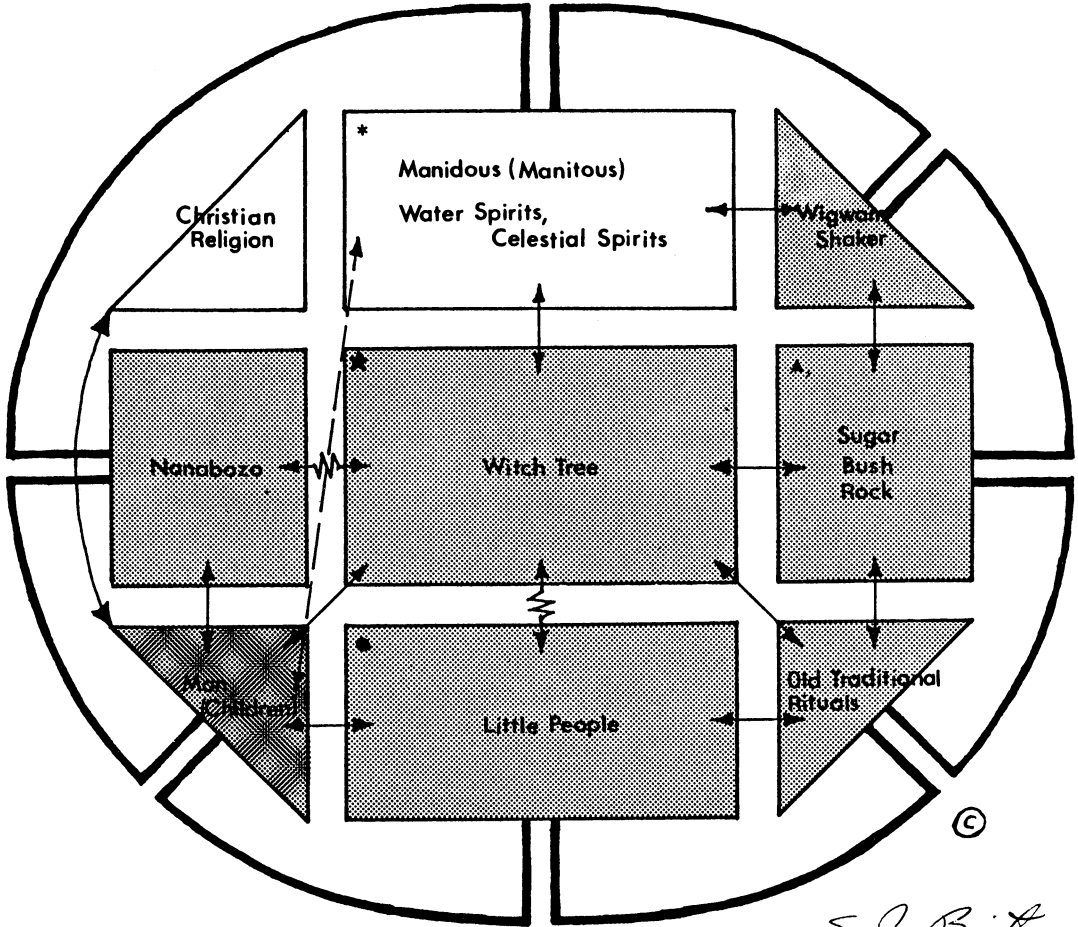
¹⁹Morriseau, pp. 79-80, records the use of stone

canoes by supernatural beings.

²⁰ Informants: Billy Blackwell and Elizabeth Thbault.

²¹ Morriseau, pp. 85-88; A. K. Black, "Shaking the Wigwam," *The Beaver* (Dec., Outfit 265), pp. 13-34. See these sources for more information.

APPENDIX A



Legend:

Emic Model of Witch Tree Complex

Triangular elements depict variable behavior

Rectangular elements depict more consistent behavior

Metaphysical-Physical Physical-Metaphysical Physical

Direct Physical or Metaphysical interaction

Relationships between Elements: Indirect or Direct
Direct Understood, not logically rational

- Affects Fishing, Hunting, Gathering, and Child Stealing
- ★ Affects Fishing (Hunting), Gathering, and Navigation
- * Affects Fishing, Navigation
- ▲ Affects Gathering, Hunting

ANIMALS AND ANTHROPOMORPHISM IN CHILDREN'S LITERATURE

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Animals have long been popular subjects in literature, especially children's literature. However, they have often been treated anthropomorphically, to the dismay of biologists who feel that endowing animals with human emotions and motives presents misleading pictures of such creatures and may lead children to false impressions and expectations of real life animals. After all, biologists could point to a period only a few hundred years ago when animals as well as men could be brought to trial for moral derelictions. A dog could be solemnly condemned for killing sheep, or a cat as the accessory to witchcraft. There are people who continue to hold a cat morally responsible for stalking birds and wolves for killing deer, as though these were decisions made by the individual creatures. One woman I know deeply disapproves of mourning doves because they make nests so shallow that their eggs are easily lost over the edge. Biologists argue that childrens' literature devoted to anthropomorphic creatures encourages the tendency to judge animals by human standards. Sometimes such judgments are legislated; laws require that the cat be belled and other laws promise a bounty for wolves or coyotes even in areas where they are no direct threat to domestic animals. In more peaceful settings a woman may be appalled that her cat doesn't recognize her own kitten of several years previous. The cat has failed to live up to the sentimental expectations of human motherhood.

Alternatively, many biologists feel that the "Bambi syndrome" resulting from anthropomorphic treatment of animals is dangerous, both to humans and to the animals,

since most children (and many adults) come to view animals as cuddly, soft, friendly creatures which they can treat as pets. In reality, of course, even squirrels and rabbits can inflict severe wounds, and many animals carry lice, ticks, rabies and other diseases and parasites. Baby animals, especially, may be picked up and carried home as "pets," where they either succumb to improper care or become a nuisance and a hazard as they get older. The Bambi syndrome is also scored by wildlife biologists as a source of pressures against rational management of wildlife populations through hunting and trapping.

Despite such well-founded uneasiness by biologists, childrens' stories continue to abound with anthropomorphic animals. Snakes got a bad press in the Bible and no author seems to have tried to endear a snake to young readers. However spiders, mice, water rats and other unlikely small creatures have shared childrens' affections with kittens, dogs, horses, pigs, and such wild creatures as raccoons, deer, bears, and foxes. Anthropomorphism is too deeply embedded in our literature, and not only childrens' literature, to be easily eliminated even if it proved desirable to eliminate it.

Aesops *Fables* illustrates one use which has been made of anthropomorphism. The didactic stories provide a means of conveying both practical and moral judgments without pointing to specific people. The creatures in these stories talk as humans do and evince human emotions including regret in "The Sick Lion," a story in which other animals insult a dying lion who now wishes that he had treated them less arrogantly in the past. Vanity is castigated in "The Fox

and the Crow" in which a fox flatters a crow into singing and therefore dropping its food. The cautionary tales were intended for adults as well as children and adults were also the original audience for animal stories such as those collected by the brothers Grimm, as well as for the tales of Reynard the Fox. In fact, there was almost no literature designed exclusively for children until the 18th century. But the 19th century produced a flood of literature for the children of the increasingly literate and education-oriented middle class. Animal stories increased dramatically in the latter half of the century, and Magee (p. 221) has suggested a connection between the emergence of Darwinism and the increased interest in animals. However that may be, the production of animal stories for children has increased with the ensuing years. During 1980-81 over 1000 children's animal books were in print in America. The books exhibit degrees of anthropomorphism ranging from the almost totally anthropomorphic to the entirely realistic. In general, the books for younger children are the most anthropomorphic and are the most likely to continue the cautionary tradition begun by Aesop's *Fables*. The books for older children are the most realistic and are often designed to teach readers about the instincts, habits and life cycles of wild and domestic animals. Thus the books for older readers, at their best, serve to counter the possible misconceptions gained from early exposure to anthropomorphic tales.

Animal stories for children can be defended on the ground that they have positive impact on children's behavior. Pet stories bring out children's desire to nurture and protect, while the vulnerability of wild creatures encourages a sense of compassionate kinship. Since many animals, particularly the wild ones, are unfamiliar to young readers, giving them human characteristics can make them seem less alien (Markowsky, p. 460) and thus engage the reader's interest and sympathy. Moreover, "talking beast stories are perhaps the first kind of fantasy that

younger children encounter" (Sutherland, p. 222). Anthropomorphic animal books may also be a child's introduction to humor in literature. Children too young to have seen any of the animals represented seem to be amused by pictures of animals wearing clothes, not because they know that animals don't wear clothes but because they are familiar with clothing on people and a kitten's face and paws peeking out of the garb they associate with themselves or their parents strikes them as funny. At a somewhat more sophisticated level the discrepancy between the animal and its actions and clothes may be a source of humor. At a still higher level of sophistication the anthropomorphic animals can become caricatures of tradesmen, grumbling grandfathers, or fearful children. The child is amused by the recognizing the types while the text is simultaneously suggesting methods for dealing with such people.

Animal stories can be divided into three broad categories based on the degree of anthropomorphism present: 1) those in which animals behave like human beings; 2) those in which animals behave like animals except that they talk and may wear clothes; and 3) those in which they behave entirely like animals (Sutherland, p. 341). It has been suggested that these categories represent the chronology of a child's reading. However, adults also enjoy anthropomorphic animal tales, particularly in satire, and children of any age often enjoy both realistic and fanciful animal stories, alternately.

The three categories of animal stories can be illustrated best by examining one or two of the best known stories in each category.

In the category of complete anthropomorphism *Little Bear* and subsequent books in the series by Else Homelund Minarik are widely available in bookstores and libraries. *Little Bear* is a child with childlike feelings and experiences, with whom child readers can identify. He and his friends entertain themselves by trying to stop his hiccups. They discover their imaginative capacities

when he and Owl pretend that a log is their boat for a fishing expedition, and when they imagine that they find a mermaid in the river near where they are picnicking. Little Bear consciously plans his future—he will be a fisherman some day. He also learns to write a letter to his friend Emily who has gone away to school. Little Bear appears to be a biological bear—meaning that he has fur and looks like a bear, but he really is only a nominal bear. He lives in a house with furniture with father Bear, who wears suits, and mother Bear, who wears dresses and cooks dinner. Family relationships and the imaginative play of childhood form the basis of the stories.

A more complex story in which the characters are animals dressed and acting like human beings is the childhood classic, *The Wind in the Willows* by Kenneth Grahame. Each chapter tells a complete story of the four friends: reflective Mole, kindly Water Rat, shy Badger and rich, conceited, troublesome Toad. The characters assume quite different traits from those commonly associated with their species. Their thoughts, personalities and actions are clearly those of children rather than animals. When Mole was lost in the deep wood, Rat became alarmed. "The rat looked very grave, and stood deep in thought for a minute or two." He armed himself with pistols to look for his friend and as he passed through the wood, "wicked little faces . . . vanished immediately at the sight of the valorous animal." Rat brought "a fat, wicker luncheon basket" on a fishing expedition. When Rat offered to teach Mole to swim, "Mole was so touched by this kind manner of speaking that he had to brush away a tear or two." In a burst of creativity Rat composed poetry.

The friends and other creatures owned property that only humans have. Toad's house was grand, with stables, a boathouse, and a banquet hall. "Toad is rather rich, you know, and this is really one of the nicest houses in these parts, though we never admit as much to Toad." Toad prepared a cara-

van for his friends and himself so that they could travel.

The friends are overtly kind to each other in human manner. Toad, according to Rat, "is indeed the best of animals . . . [although] he is both boastful and conceited." Badger had a fire and a fine dinner prepared for his friends who had just come in from a frightening night in the deep wood. Toad loved cars, but was a careless driver so that Rat and Badger tried to figure out a way to keep him from being killed by accident.

The equally classic tale of *Winnie the Pooh*, while superficially belonging to the class of anthropomorphic animal tales, is technically a tale of anthropomorphic dolls, since these are stuffed toy animals and, unlike Little Bear, must first be endowed with life and only then with characteristics either bear-like or human.

The category of partially anthropomorphic stories is in some ways the most complex. The animals in such tales usually behave like animals except that they talk. They may also have some human characteristics which provide a familiar footing for the reader, but "the secret of the good 'dressed animal' is that it never loses its believability as an animal, even though it wears clothes and talks" (Sutherland, p. 97).

The stories which are partially anthropomorphic are those which are most altered by illustrations. "Goldilocks and the Three Bears" has been reprinted for a hundred years and in that time has had dozens of illustrators. The bears' house is more or less tree-like depending upon the illustrator's vision. The bears' beds may be nests of leaves or four posters. The chairs and the cooked porridge as well as the conversation make the story partly anthropomorphic, but as other household details and clothing are depicted by the illustrator the story can seem much more anthropomorphic than the text warrants. Southey's bears were still bears and Goldilocks prudently fled for her life. (I have heard rumors of a modern version of the story in which Goldilocks is invited

to stay for breakfast and accepts—an alteration which makes Southey's 'dressed animals' nearly the equivalent of Little Bear and his family.)

Peter, in Beatrix Potter's classic *Tale of Peter Rabbit* is another dressed animal. Although the animals wear clothes, talk and go to the market, they never lose their believability as animals. They live in a hole in the ground and eat what rabbits normally eat. Peter stole vegetables from a garden, which is what rabbits often do. When he was chased and again when he was lost, he was frightened, but no human motives or thoughts are attributed to him. He and his family continue to live rabbit-like lives despite their clothes and language. Death occurs, as it does in nature, but is treated in a matter of fact way. Children can identify with Peter, who is much like a child, except that his basic rabbit nature is not changed.

E. B. White's masterpiece, *Charlotte's Web* contains barnyard animals who look and act just like ordinary animals to everyone except the little girl, Fern, but who can communicate with each other remarkably. Wilbur, the runt pig who was raised on a doll bottle, is the focal point of the story. His banishment to the barnyard starts the amazing fantasy in which animals understand each other and are understood by Fern. Charlotte, the aloof, intelligent spider, feels sorry for Wilbur, who has been marked for butchering, and weaves messages into her webs which eventually save him. The fact that Charlotte can write and Wilbur can mourn his own demise mark the animals as having human characteristics. Wilbur is a child needing affection, "Wilbur didn't want food, he wanted love"; he is also a true pig who loves to roll in the muck, "So he pushed the straw aside and stretched out in the manure," and would love to be "in a forest . . . searching and sniffing along the ground, smelling, smelling, smelling." Charlotte lives like a spider, "I drink them—drink their blood. I love blood," yet feels emotions, as she said to Wilbur, "You're

my best friend, and I think you're sensational." She was at once a believable spider and a feeling being, as she sat ". . . moodily eating a horsefly and thinking about the future." Templeton, the rat, ". . . had no morals, no conscience, no scruples . . ." He said of himself, "I prefer to spend my time eating, gnawing, spying, and hiding." He also took frequent trips to the dump. The animals, who remain true to the characteristic of their species (Charlotte dies after laying her eggs), speak and show emotion in a story that is a believable fantasy.

Partially anthropomorphic animals are human enough through their dress and speech to enable children to identify with them. Yet despite their appearance, each remains true to the basic biological pattern of his or her species.

The third category of animal stories is limited to tales in which animals both look and act like animals. However they often display characteristics which children admire in human beings. There is greater variety in these stories than in those in the other two categories. Realistic stories for young children are usually cheerful, while the tragedy which occurs in the lives of many animals is more often portrayed in the stories for older readers.

The primary criterion for realistic stories about animals is that the animals be portrayed objectively. If there is conjecture about motives it should agree with interpretations recorded by animal behaviorists. Sentimentality and melodrama should be used very sparingly.

The well known author, Marguerite Henry, specialized in horse stories. Her *Misty of Chincoteague* portrays the lives of two captured wild ponies, Misty and her mother Phantom. The story is realistic throughout. Both ponies act as ponies normally do. Phantom never lost her wildness although she had been captured and became well trained. Misty loved attention and did pony-like pranks to obtain it. As Misty gave the boy, Paul, a great swipe with her tongue,

"it was as if she had said, 'Why is everyone so quiet? I'm here! Me! Misty!'" Both ponies nuzzled for sugar and loved treats. Throughout the book when the animals are credited with emotions, it is clear that the interpretations are being made by people. During a hard rain after they had been caught, "Misty's head fell across Paul's lap, not because she wanted human comfort but because she was tired from the hard drive and the rain." As Phantom ran back to her island after being freed, she turned once to look back to her people. "'Take good care of my baby,' she *seemed* to say. 'She belongs to the world of men, but I—I belong to the world of wild things!'" Motives are never imputed directly to the horses and the animals are never sentimentalized.

Realistic stories designed to teach children about pets and to counter the sentimentalized animals and the "dressed animals" they may have encountered in earlier reading have begun to appear in recent years. Stories of children overreacting to their pets and their assumed needs are among the fine realistic stories to be published in the past decade. None of these has the classic reputation of the books previously discussed, but they deserve mention because they are representative of a modern approach to animal stories. . . . A boy believes that a baby bird he has rescued needs help in learning to fly in the book *Bird* by Liesel Skorpen. . . . Dick Gackenrack's *Do You Love Me?* is the story of a small boy with no playmates who accidentally kills a bird he had found by too much

fondling. He later discovers that his new puppy enjoys cuddling as much as he does. *Leave Herbert Alone*, by Alma Whitney, is amusing in a wry way. A girl is so eager to show her love for a cat that she frightens him and must learn gentler methods in her approach.

Perhaps the problem of anthropomorphism in childrens' animal stories is less important than it has been made to appear. Certainly anthropomorphism has literary and practical virtues of engaging the attention of young readers, serving as a vehicle for slightly veiled teaching about social relationships, and introducing young readers to fantasy and to humor in books. Moreover, there are so many excellent animal stories in print that as readers become older they will inevitably be exposed to realistic animal stories, some of them deliberately designed to correct more fanciful representations of animals and many of them designed to provide biologically accurate accounts of the lives of wild and domestic animals.

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BODY LENGTHS, BODY WEIGHTS AND FECUNDITY OF SEA LAMPREYS (*PETROMYZON MARINUS*) FROM GREEN BAY, LAKE MICHIGAN

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Abstract

This paper describes the results of measurements of body length, body weights and egg counts of ovarian samples in a representative collection of female sea lampreys from the Peshtigo River, and compares these data to other published regional sea lamprey studies. Specimens were collected during spring spawning runs of 1979 and 1980. Fecundity was determined by counting the number of eggs in one gram samples from each of 14 ovaries, and then multiplying by the total ovarian weight. For each of these parameters, our samples showed means of body length, 484.5 mm; body weight, 267.4 grams, and eggs per female, 97,016. These mean values were greater than any yet published for landlocked Great Lakes sea lamprey populations. Green Bay and its tributaries appear to be highly productive sea lamprey habitat.

This study compares morphological and fecundity data of Green Bay samples with data from selected sea lamprey studies from other Great Lakes sites and an original anadromous population.

The sea lamprey (*Petromyzon marinus* L.) is a primitive vertebrate belonging to the Class Agnatha. It is characterized by having no jaws or paired fins, seven gill pouches and a slender eel-like body form. There are well developed dorsal and caudal fins and a single median nostril. The oral disk has many strong, sharp, horny teeth which with a rasping tongue are used to break the skin of prey and allow the parasite to feed on the body juices.

The species has a nonparasitic larval, or ammocoete, stage that lasts for several years (3-10) before they metamorphose and become parasitic on fish. After 12-20 months as adults (Applegate, 1950), they migrate in the spring into fresh-water streams to spawn and die. The species is native to the Atlantic coasts of North America and Europe, but has invaded the Great Lakes in recent times.

The history of the progress of the sea

lamprey through the Great Lakes has been well documented by fisheries biologists (Applegate, 1950; Smith, 1971). It has been an aggressive colonizer and rapidly increased in numbers in this new and rich habitat. Control programs began in Lake Michigan in the 1950's and have continued to the present in various degrees of intensity and with different methods. Initial control used mechanical traps, then electrical weirs and finally chemical agents that kill ammocoetes in the spawning streams. The selective lampricide, 3-trifluoromethyl-4-nitrophenol (TFM) has been dramatically effective although streams have to be treated periodically to guard against reestablishment of the population. Complete eradication appears impossible due to difficulty in the treatment of certain streams and the possibility that some lampreys are spawning in Green Bay itself.

PROCEDURE AND METHODS

Although collections have been made during the spawning runs on the Menominee and Peshtigo Rivers each year since 1978, specimens for this study were collected pri-

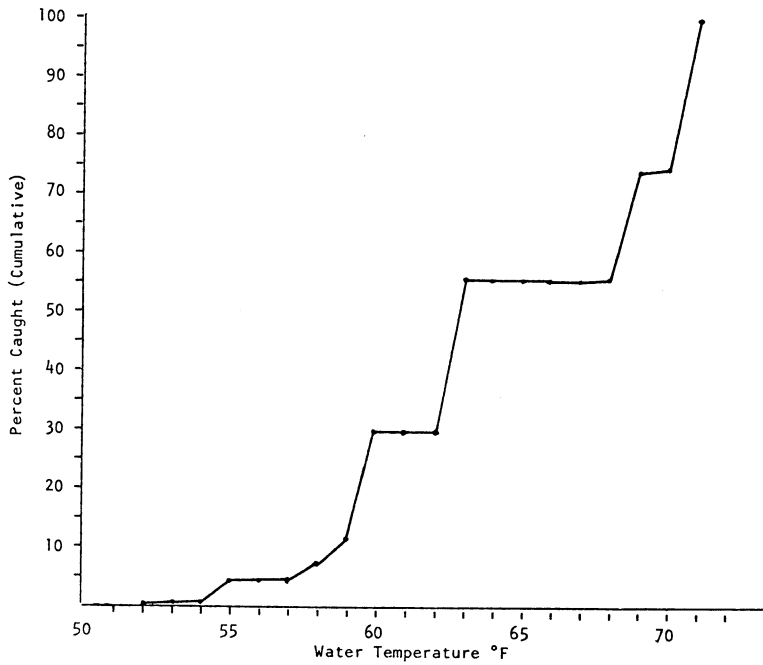


Fig. 1. Captured Peshtigo River Sea Lampreys—1980. (n = 300)

TABLE 1. Sizes of Peshtigo River Sea Lampreys—1980

Captured Dates	Body Length (mm.)		Body Weight (gms.)	
	Males	Females	Males	Females
May 1-15	n = 29 $\bar{x}$ = 485.4 s = 42.9 r = 391-565	n = 48 $\bar{x}$ = 471.4 s = 39.5 r = 403-545	$\bar{x}$ = 264.9 s = 76.2 r = 134-391	$\bar{x}$ = 241.2 s = 66.3 r = 136-391
May 16-31	n = 93 $\bar{x}$ = 470.5 s = 36.4 r = 400-538	n = 121 $\bar{x}$ = 489.2 s = 36.6 r = 380-569	$\bar{x}$ = 220.8 s = 46.2 r = 121-350	$\bar{x}$ = 240.4 s = 52.7 r = 134-381
June 1-20	n = 3 $\bar{x}$ = 426.3 s = 4.6 r = 421-429	n = 6 $\bar{x}$ = 480.0 s = 17.2 r = 461-504	$\bar{x}$ = 192.3 s = 22.8 r = 172-217	$\bar{x}$ = 234.8 s = 20.7 r = 204-267
Total	n = 125 $\bar{x}$ = 473.3 s = 38.5 r = 391-565	n = 175 $\bar{x}$ = 481.8 s = 42.8 r = 380-569	$\bar{x}$ = 230.8 s = 58.2 r = 121-391	$\bar{x}$ = 241.0 s = 55.6 r = 134-391

s—standard deviation calculated as $\sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$

marily during the 1980 run. Five female lampreys from 1979 were also used in the egg counts.

Three small ($2 \times 4 \times 1\frac{1}{2}'$) mechanical traps designed to catch spawning sea lampreys were operated for approximately eight weeks from late April to mid-June. Traps were checked five days per week and reset according to water levels. All sea lampreys were kept in our laboratory, weighed, measured and the sex determined. All lampreys and ovaries were preserved in a ten percent formaldehyde solution.

Total body length was measured to the nearest millimeter and body weight was taken to the nearest gram.

The fecundity methodology used was pioneered by Vladikov (1951), where because of the extremely large number of eggs, number of eggs in a one gram unit was determined and then the total egg number was estimated by multiplying eggs/gram $\times$ total ovarian weight. Adult females have only one ovary.

The ovary was removed from each female, dried on paper toweling and weighed to the nearest gram. A one gram sample was then removed from the central region of the elongated ovary and all eggs were counted in that sample. Counting was done using a Bausch and Lomb binocular zoom microscope.

This method of determining the fecundity of lampreys is tedious but fairly accurate. Lampreys spawn only once so approximately one-half of the primary ova are developing into mature eggs (Hardisty, 1964), which are all the same size. The weight of the ovary consists mainly of the eggs, while connective tissue accounts for only a small percent of the weight.

RESULTS

Time of Spawning Run

Sea lampreys began entering our traps when the river water temperatures reached about 10°C (50°F). However, as is shown in Figure 1, the peak spawning period was

between 15.6 to 21.1°C (60° to 70°F) when 50 percent of the Peshtigo River specimens were taken. Trap catches rapidly drop off once the water temperatures pass 21°C (70°F).

Body Length

As indicated in Table 1, Peshtigo River adult female sea lampreys were longer than males; females = 481.8 mm. (± 42.8), males 473.3 mm. (± 38.5). In Table 1 the spawning run is divided into three periods; early (May 1-15), middle (May 16-31) and late (June 1-15). The middle period could probably be considered the peak spawning period.

Body Weights

This sexual dimorphism continues with body weights as the females in the samples had approximately a four percent heavier mean body weight of 241.0 gm. (± 55.6). However, males apparently enter the rivers heavier (note May 1-15 subsample), but lose weight more rapidly than females. With both sexes, the heaviest weights were from individuals in the first subsamples. Applegate (1950) suggests that the larger size of early migrants may be due to an earlier attainment of sexual maturity among larger specimens than among the smaller ones. Neither sex feeds during the spawning run (Applegate 1950) and, therefore, they are utilizing stored energy.

Fecundity

Fourteen adult sea lampreys, five from 1979 and nine from 1980, were used to obtain representative samples of ovarian weights, eggs per gram sample and extrapolated total egg counts. Mean value for these three parameters were 48.8 g (± 18.6), 2141.4 (± 416) and 97,016.4 ($\pm 29,398.1$) respectively. As can be seen in Table 2, there is a great deal of variability between samples. There does not seem to be a directly linear relationship between lamprey lengths and ovarian weight or total egg counts

TABLE 2. Fecundity of Green Bay Sea Lampreys (n = 14)

	<i>Lamprey Length (mm.)</i>	<i>Lamprey Weight (gm.)</i>	<i>Ovarian Weight (gm.)</i>	<i>Eggs/ Gram</i>	<i>Eggs/ Ovary</i>
Mean	484.5	267.4	48.8	2,141.5	97,016.4
Standard Deviation	41.8	67.7	18.6	416.0	29,398.1
Variance	1,626	4,255	322	160,709	802,518,601
Range	410-560	169-378	22-83	1,404-2,795	48,974-146,132

although larger females tended to have higher egg counts. Egg diameters were also measured with the mean value (0.98 mm.) very close to one millimeter.

DISCUSSION

The purpose of this study was to compare morphological and fecundity data between the Green Bay samples and selected published sea lamprey studies from other Great Lakes sites and an original anadromous population. Table 3 illustrates these com-

parisons and shows the distinctively longer, heavier body and greater absolute fecundity of the anadromous form from Quebec in contrast to the land-locked forms which have been referred to as a dwarf race (Vladykov, 1951). Although individuals in the present Green Bay samples are larger than in any of the other reported Great Lakes studies, our specimens are still much more diminutive than the marine samples. Smith (1971) earlier found that among males, Green Bay samples from Michigan rivers were generally

TABLE 3. Comparative Body Lengths, Body Weights and Eggs Per Ovary Among Selected Sea Lamprey Populations.

<i>Location</i>	<i>Mean Body Length (mm.)</i>	<i>Mean Body Weight (gm.)</i>	<i>Mean Eggs per Ovary*</i>
Lake Michigan			
Green Bay	482	249.9	97,016
range	(380-569)	(134-391)	(48,974-146,132)
n	189	189	14
Door County (Vladykov, 1951)	359	127	62,870
range	(291-439)	(59-208)	(38,678-85,712)
n	10	10	10
Lake Superior (Manion, 1972)			
Marquette County (Chocolay River)	406	158	68,599
range	(340-511)	(85-315)	(43,977-101,932)
n	29	29	29
Lake Huron			
Ocqueoc River, MI	440	—	61,500
Carp Creek (Applegate, 1950)	—	186.6	
range	(320-536)	(61-436)	(21,000-107,000)
n	10,411		
Anadromous Population			
Quebec (Vladykov, 1951)	742.9	842.0	171,589
range	(666-841)	(560-1,145)	(123,873-258,874)
n	10	10	10

* estimated number of eggs

larger than lampreys from the main lakes. He suggested the difference in size may have been caused by differences in food supply, in the environments, or in the timing of establishment and decline of the lamprey populations. Since the last treatment of the Menominee and Peshtigo Rivers, the U.S. Fish and Wildlife Service has noted a slight decline in lamprey size (John Heinrich, Pers. Comm.).

Vladykov noted that fewer oocytes matured in the dwarf forms and suggested this was due to their reduced body size. Hardisty (1964) suggests a possible theory for the origin of the land-locked race is that those individuals with low reproductive fecundity, reduced body size and ill-equipped physiologically for life in the sea tended to remain in lakes and upper reaches of the river systems after metamorphosis throughout the trophic period.

However, among the Great Lakes populations, the Green Bay samples appear to be representative of a rich and productive habitat. Presently, the tributaries of Green Bay, i.e. the Menominee and Peshtigo Rivers, are carefully monitored and periodically treated with a lampricide (TFM) to destroy ammocoetes in the sediment of the stream bottom. Despite the reduction in adult lamprey in the spawning runs of 1979 and 1980, the sea lamprey because of its tremendous egg production, maintains a potential to rapidly reinfest suitable streams. The sex ratios on the Menominee and Peshtigo Rivers are skewed toward females with the percentage of males being 45.8 in 1977, 48.9 in 1978, 53.8 in 1979 and 42 in 1980. This preponderance of females suggests a population declining and under stress (i.e. from the lampricide) as has been reported by Hein-

rich et al. (1980). This shift to female dominance has been recorded earlier in Lakes Michigan and Superior as lamprey populations decrease in numbers from peak levels (Smith, 1971). Monitoring the Menominee and Peshtigo Rivers will continue for the next several years.

ACKNOWLEDGMENTS

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A NEW DISTRIBUTION RECORD FOR A WISCONSIN CRAYFISH (*ORCONECTES IMMUNIS*)

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Little has been written in Wisconsin about the distribution and abundance of the various crayfish species. Yet, interest in the status of the various species has heightened with the rapid spread of a newly encountered species for Wisconsin, namely *Orconectes rusticus*. This report concerns a seldom encountered species, *Orconectes immunis* (Hagen), which was reported in Creaser's 1932 original distribution work but has not been reported since.

In September of 1981, I visited a minnow dealer, Mr. James Larson, in the northwestern part of Wisconsin near New Richmond. He had a collection of crayfish from Fish Lake in Polk County that appeared to have much different characteristics than other common Wisconsin species. He graciously gave me four specimens—two males and two females—for identification.

The specimens were identified as *Orconectes immunis* with the use of Hobb's (1976) general reference on crayfish and Creaser's (1932) reference for Wisconsin. The males were clearly I Form (sexually mature) and had the usual characteristics of the genus *Orconectes*. The distinguishing character for the genus is a two-pointed gonopod. Vital measurements on all four specimens appear in Table 1.

Identifying characteristics were as follows: The carapace had no lateral spines on it and was relatively smooth. The acumen was relatively short, flat, and blunt, the tip being about as long as the width. There were no upturning or lateral spines such as are characteristic of some other species. The cheliped of the males was distinctly larger than that of the females—a characteristic of most crayfish species. *O. immunis* is characterized by a tooth in the middle of the lower digit

or, as described by Creaser in 1932, an indentation at the base of a movable finger which creates the impression of having a tooth.

The male gonopods (I Form) were two-pointed and had a distinctly downward turn from the normal horizontal position. This bend amounted to a full 90° from horizontal—much more of a bend than is typical of other *Orconectes* species, in which the gonopods are either straight or gently curved. The presence of I Form males is suggestive of late summer and early fall mating for the species.

The female orifice or *annulus ventralis* had shoulders, a mesiad rise and a depression to the left. In this respect, it is unique among the other Wisconsin *Orconectes* species which have a valley in the middle.

Normally, color is not a reliable characteristic of crayfish species, but it is unique enough to be distinctive for *O. immunis*. The overall body color is greenish-brown to olivaceous with no distinct marks. However, the chelipeds are very strikingly colored a reddish-purple which tends to merge with the olivaceous color on the outside but is quite bright to the interior. This characteristic was reported for *O. immunis* in New York as well (Crocker, 1957).

Fish Lake is a 56-acre winterkill lake with a four foot maximum depth (Sather and Threinen, 1961). Thus, it must be assumed that the species will prosper in adverse environmental conditions. This record confirms the presence of *Orconectes immunis* in northwestern Wisconsin. The nearest and only previous reported Wisconsin records were for the shores of Lake Pepin and Milwaukee County (Creaser, 1932). Given its entry into the bait distribution

TABLE 1. Sizes of four specimens of *Orconectes immunis* from Fish Lake, Polk County.

	♂ I Form	♂ I Form	♀	♀
Total length (cm)	7.8	8.0	8.5	9.5
Carapace length (cm)	3.7	4.1	4.1	4.3
Cheliped length (cm)	3.8	3.5	3.0	3.0

circles with widespread markets, an expanding distribution can be expected.

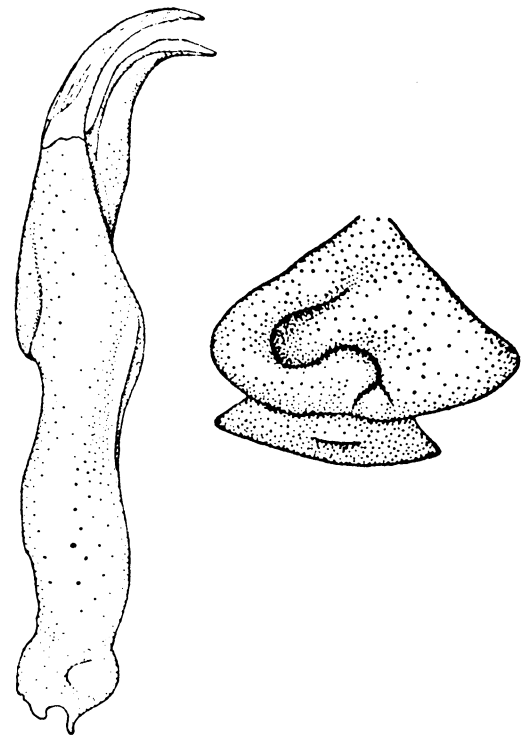


Fig. 1. The gonopod and annulus ventralis of the crayfish *Orconectes immunis* (from Crocker, 1957).

The national distribution is reported as being from New England to Wyoming in the north, southward to Alabama. This distribution record for Wisconsin would fall well within that area. As Creaser (1932) noted, the species is probably more abundant than indicated by isolated encounters. The species was also reported in 1981 in the muskellunge rearing ponds at the Spooner Fish Hatchery, although not yet formally confirmed.

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OUR LANGUAGE — A SMORGASBORD OF TONGUES: THE SCANDINAVIAN INFLUENCE

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"I am of this opinion that our own tung should be written cleane and pure, unmixt and unmingled with borrowings from other tungen,"¹ so wrote Sir John Cheke (1514-57), Regius Professor of Greek at Cambridge University, in the latter years of his life. Such an opinion was not restricted to a commentator of the sixteenth century. The nineteenth century English historian, Edward A. Freeman, while working on his five volume *History of the Norman Conquest*, saw as one result of the Norman Conquest the abiding corruption of our language. Both men would rather have seen an "English" term used instead of borrowing from Latin and French as English did extensively throughout the centuries after 1066. Thus, one would say crossed for crucified, mooned for lunatic. Both would have preferred more use of the process of word creation as was used by the Anglo-Saxon writers, by German and Icelandic even today. Thus, for example, one would say foresayer for prophet, likejamme for parallelogram, and leechcraft for medicine. Neither of these writers was fully aware that, "of all the aspects of a language, vocabulary and meaning are the most sensitive to the external social and historical forces that determine which words a culture preserves and which it borrows from another."²

Our tongue has become, one might say, a smorgasbord of tongues. It has not remained "unmixt and unmingled with borrowings of other tungen," but has borrowed from many and varied languages over the centuries. Let it suffice to list here in the interests of space: million and rocket from Italian; barbecue and cigarette from Spanish; smuggle and hustle from the Low German Languages

(Dutch, Frisian, Plattdeutsch, Afrikaans); plunder and zither from High German; mammoth and polka from the Slavic languages; assassin and gazelle from Arabic; amen, Sabbath and cabal from Hebrew; spinach and shawl from Persian; horde and vampire from Turkic; nabob and pajamas from Sanskrit and Hindi; calico and atoll from Dravidian; silk and ketchup from Tibeto-Chinese; tycoon and geisha from Japanese; amok and kangaroo from Malay-Polynesian and Australian Aborigine.

And the Scandinavian influence? It began long before any of the words just cited were borrowed. Alas, Cheke's and Freeman's desire to return to what they considered native English words was doomed even before 1066 and the Norman Conquest. The language of the seaborne invaders from the North, the Danish tongue (ON *dönsk tunga*, Sw. *dansk tunga*) had begun to penetrate almost every domain of the English language.

These seaborne invaders, the Vikings, all called *Dene* by the English, raided and settled England for almost 300 years. First they came as roving bands, raided on a small scale and left, then they came with large armies, invaded and began to establish settlements in that area of England later appropriately named the Danelaw. Finally they deposed the English King Ethelred the Unready and became rulers of England, Norway, and Denmark. The Scandinavians had come to England along two main routes: the Danes accompanied by some Swedes came directly across the North Sea to Yorkshire and East Anglia; the Norwegians came by stages. They had settled the Shetland Islands, the Orkney Islands, and the Western Isles off the coast of the North of Scotland. They

had settled, too, in Northern Ireland and the Isle of Man in the Irish Sea. From these places they sailed to the northwest of England and established permanent colonies in Cumberland, Westmorland, North Lancashire and West Yorkshire.

It is not known how many Vikings came and settled but since more than 1400 places in England, particularly in the areas mentioned above, the East and the North, bear Scandinavian names, the number was considerable and their influence on English vernacular speech was not small. It has been said that Scandinavian vocabulary was ubiquitous in the English language. We use many Scandinavian words in our standard English and many remain in English dialects.

We first obtain a clear picture of Scandinavian loan words in English in the writings of the thirteenth century. Hundreds of Scandinavian words appear and we know that they are Scandinavian loan words because we cannot trace them to an OE source, we know that an Old Norse original exists, and further most of these texts were written in areas where the Scandinavians settled. We are often helped in our proof when we have strong evidence that the word is used in present day dialects. Examples of this latter phenomenon will be given later in this paper. In some instances we can tell that words are borrowed from Scandinavian because of differences in the development of certain sounds in North Germanic and West Germanic. For example, the sound *sk*. In OE, this became *sh* as in *ship*, *shall*, *fish*. In ON it remained *sk* (ON *skip*, *skal*, *fisk*). Thus we have a word from OE meaning *shirt* and one from ON meaning *skirt* yet both come from the same Germanic word. *Sky*, *skin*, *scrape*, *scrub* and “*scot*” in *scotfree* (*scot* meaning *tax*) are examples of borrowed Scandinavian words beginning with *sk*. Similarly, words retaining the hard pronunciation of *k* and *g* which became *ch* and *y* in OE are of Scandinavian origin. *Kid* (as in *kidgloves*), *dike*, *get*, *give*, and *egg* are all

Scandinavian, as are *kirk* for *church* and *brig* for *bridge*. The latter two are evident in place names quite frequently. *Aye*, *nay* and *hale* as in “*hale and hearty*” are borrowed words that also show a difference in sound development. English has *no* and *whole* for the latter two.

Here we see both the English and Scandinavian words retained and there are other examples of this phenomenon. (The English word is given first): *Rear*—raise, from—fro, craft—skill, hide—skin, sick—ill. Nearly all the examples given are common words yet they are not necessarily used by us all in the same way. In England *sick* and *ill* mean two different things, here they mean the same. Sometimes the ON word prevailed over the English word so that we use *anger* (ON *anгр*) rather than the original English words, *torn* or *grama*, wing rather than *feðra*, sky for *wolcen*, boon for *ben*, bark for *rind*, take for *nima*, sister for *swe-oster*, window (*vind auga*) instead of “eye thurl,” plow as a verb rather than as a noun meaning “a measure of land,” *holm* meaning islet or watery meadow not ocean. The Old English word *dream* meant joy, the Old Norse, vision in sleep. Thus “*dream*” as we use it is Norse in origin. It will perhaps surprise the reader that the pronouns “they,” “their,” and “them” are all of ON origin and yet we assume such words are English words. To these we can add “both,” “same,” “though,” and “till.”

Who would think that “law,” “outlaw,” “flat,” “loose,” “low,” “odd,” “tight,” “awkward,” “rotten,” “tattered,” and “to die” are Scandinavian words? They are, and there are many more common words too numerous to mention here. Of course many also have faded from common use and other words (from French, Latin and other sources) have prevailed. Earlier the number of place names of Scandinavian origin and the locations in which most of them occur were mentioned. The Scandinavian origin of these place names is shown usually by a suffix, sometimes by a prefix. For example,

by meaning a "farmstead" or "town." There are 600 place names ending like this in the East and Northeast. Grimsby, Derby, Newby, Rugby, and Thoresby are but a few. We also retain the meaning "town" in our word "by-law," i.e., town law. Other words used to form place names are *beck* (ON *bekkr*) meaning stream, *brig* (ON *bryggja*) meaning bridge, *holme* (ON *holm*) meaning watery meadow, *lathe* (ON *hlatha*) meaning barn, *thorpe* (ON *þorp*) meaning village, *thwaite* (ON *þveit*) meaning an isolated piece of land, *toft* (ON *toft*) meaning a piece of land. Some examples are: Drybeck, Brighouse, Lindholme, Silloth, Scunthorpe, Braithwaite, Micklethwaite, Lowestoft. There are 300 names like Scunthorpe, almost 300 like Braithwaite, and 100 like Lowestoft. The largest group of the 1400 Scandinavian place names is found in the county of York and county of Lincoln. These are the areas settled predominantly by Danes and some Swedes. The second largest group is in Cumberland and Westmorland, those areas settled by the Norwegians. In some districts of Yorkshire over 75% of the place names are of Norse origin.

This county, Yorkshire, was divided by its Viking settlers into three parts which they called *priðjungr*, a word which subsequently became "thriding," a thirding so to speak. Later this became "riding" and hence we had the West Riding, the East Riding, and the North Riding (the latter made known to Americans by James Herriott's novels). In these ridings and the surrounding areas it is common to find natural features bearing Norse names. People walk up banks in North England, that is, up hills, and ants live in banks (ON *bakki*—elevation). They climb in gills (small ravines, ON *gil*), walk through carrs (marshes, ON *kjarr*), down into slacks (hollows, ON *slakkî*), along riggs (ridges, ON *hryggr*), may have fellwalking (fell, ON *fjall*—hillside) as a hobby and, on walks, may view a large force (waterfall, ON *fors*), watch the trout swim in a beck (stream, ON *bekkr*), and fish in the rivers

of the Yorkshire dales (valleys, ON *dalr*).

In the areas settled by the Vikings dialects are preserved, particularly in the farming communities, and much of Northern England is farmed in one way or another. Traditional regional dialects are best preserved in such communities, and farming—a universal industry—provides us with a large scale of material from Old Norse. Thus we have *lea* for scythe (ON *le*), *garth* for croft (an enclosed pasture for sick animals—ON *garðr*), *midden* for bin (a place to put ashes—ON *mydding*), *gosling* for gosling (ON *gæslingr*), *steg* for gander (ON *steggi*), *stithy* for anvil (ON *steði*), *stee* for ladder (ON *stige*), *stack* for cock as in haystack. (To the author, Little Boy Blue slept under a haystack, not a haycock, ON *stakkr*). The people *clip* sheep not shear them (ON *klippa*), a farmer plows his field *athwart* (diagonally, from ON *um þvert*), calls *giss* to his pigs (cf. Norwegian *gis*), addles his money (from ON *oðlast*—to acquire property, later meaning earn), perhaps keeps a *clatch* of chickens (ON *klekja*) and calls the farm equipment for his horses *gear* (ON *görvi*). This last word came to be used in a general way for equipment. As boys, Yorkshiremen among others say "get your gear" before they go to play soccer or rugby.

Since games have been mentioned, let it be said that, in parts of Northern England, boys lake (*leik* from ON *leika*) football, not play it and the game the bairns, i.e., children (ON *börn*), play here called "tag" is "tig" (from the Old Norse word *tjuga* meaning to touch) to children in Northern England. The boys are called "lads" and a daughter "our lass," both lads and lass being most likely of Norse origin. It is hoped one's children do not grow up to be gormless, i.e., silly, dumb (from ON *gaumr*—wit/sense), or gowks (fools from ON *gaukr*—cuckoo), that, when they are playing with wood they don't get spells in their finger (ON *spjölr*—splinter/sliver), that while they are outside, the rain does not teem down (ON *toema*—

to pour), that their families don't *flit* (ON *flitja*—move), and we readily accept it if some have big lugs (ears, c.f. Norwegian *lugga*—to pull by the ears) and are kayfisted (ON *kei*—left). All of the examples given here are current words and place-names, some to be sure only in dialects but many in our standard language and all from the Viking settlers.

It is surprising that our stock of Scandinavian words contains very few recent loan words from the modern Scandinavian languages. "Rug," "muggy," and "ski" came into use in the late nineteenth century. "Skol" is a much more recent addition to frequent use, although it was used in Scotland in the sixteenth century. "Geyser,"

"rune," "skald," and "saga" all came from Icelandic in the eighteenth century, and in this century we have borrowed "ombudsman" from Swedish and lest it be forgotten "smorgasbord"!

This paper has been written by a Yorkshire *tyke*, the name of which all Yorkshiremen are proud. Little did he know that it came from ON *tik* and meant originally a dog, a low fellow. He, like Cheke and Freeman, was not totally aware of which words a language would borrow and why.

NOTES

¹ Quoted from Joseph M. Williams, *Origins of the English Language: A Social and Linguistic History* (New York: The Free Press, 1975) p. 88.

² Op. cit., p. 41.

MORE WISCONSINESE

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Dictionary of American Regional English
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This paper represents a continuation of the material I have collected about Wisconsin speech. Previous findings have been published in *Transactions* of the Wisconsin Academy of Sciences, Arts, and Letters, Vol. 69, 1981. The data for this paper was collected in a similar manner as the material for the last paper. Students from Linguistics 101: *An Introduction to Human Language*, an introductory-level course for non-majors at the University of Wisconsin-Madison were sent out over Thanksgiving vacation 1980 and Easter break 1981 to interview speakers of English about some aspects of Wisconsin speech. Each student was to interview a person 15-25 years of age, one 40-50 years of age, and one 65 years old or older. In the first group, 191 questionnaires were tabulated; in the second, 77. All the speakers were Caucasian or Semitic except for five Blacks from Milwaukee.

The first construction I will look at is the use of *by* to mean "to," as in the sentence: "Let's go by John's this evening." This sentence was accepted by 93 percent of the informants, with nearly unanimous approval by speakers along Lake Michigan. Speakers in Sheboygan, Calumet, Manitowoc, and Milwaukee counties would even accept the sentence, "Let's go by John this evening" where no possessive is marking the Proper Noun. This expression comes from German *bei*, which when construed with the dative case means "near" or "at."

The next construction I will examine is *aft* as a shortening for *afternoon*. Informants were asked if they would say the sentence "What are you doing this aft?". Thirty-two percent said they would say the sentence; 27 percent of the young, 45 percent of the

middle-aged group, and 26 percent of the oldest group. This form seems to have stabilized among all age groups, show no particular geographical distribution, and be a relatively stable lexical item.

Speakers were asked if they would say, "It's a nice day, in so." This use of *in so* as a tag would be equivalent to standard English *isn't it* in this particular sentence, but in negative sentence this tag is positive; for example, "It isn't a nice day, is it?". The tag rule for English is *extremely* complicated. The verb in the tag must agree with the verb in the main sentence in tense, number and the opposite of positive or negative. In addition, the speaker must know what the expected answer will be. Negative tags usually elicit a positive answer; positive tags a negative answer. Most languages have much simpler all-purpose tags. German has *nicht wahr*, literally "not true," or *gel*, short for "Ist es geltig?" ("Is it valid?"). French uses *n'est ce pas* "is it not." Canadian English has the simple tag *eh?*, as in a sentence my bridge partner, who is from Toronto said to me the other day, "You would have led a spade, eh?". The implication, of course, was that I should have since the verb of the sentence was positive. Eight percent of the speakers interviewed admitted using the construction *in so*. These responses were from the counties of Dane, Door, and Sheboygan.

We asked our informants what they called athletic shoes made of canvas. The overwhelming reply was *tennis shoes*. Six percent called them *sneakers*, which is still used in the urban areas of the East Coast. All the speakers in our survey who said *sneakers* were from the more urban areas of our state—Green Bay, Madison, and Milwaukee.

Sneakers was used by more older informants than younger speakers. We did not collect a single instance of *tennies*. This is probably due to our lack of informants under the age of 15, since this word seems to be popular among school-aged children.

An item which amused me when I moved to Wisconsin seven years ago from California was the period in school when one exercises. In Junior High School, we called it *gym* and in High School *P.E.* No one here in Wisconsin seems to call it *P.E.* I said to a group of new-found Wisconsin friends, "Are you going to take any *P.E.* this semester?" and all I received were puzzled looks, no answers. Then one woman, who must have done some travelling to another area of the country, said "Oh, you mean *Phy. Ed.*" Sure enough, 39 percent said *Phy. Ed.*, 10 percent said *Phys. Ed.* and 51 percent said *Gym*. But the expression does seem to be changing over time; *Phy. Ed.* is gaining currency among the young, *gym* is losing it, and *Phys. Ed.* is remaining the same. The statistics are, for the young: 50 percent *Phy. Ed.*, 10 percent *Phys. Ed.*, 40 percent *Gym*; for the middle-aged: 30 percent *Phy. Ed.*, 10 percent *Phys. Ed.*, 60 percent *Gym*; for the oldest group: 35 percent *Phy. Ed.*, 6 percent *Phys. Ed.*, 59 percent *Gym*.

We found a very interesting distribution for the lexical item for *soft drink*. Among the young and the middle group, pop was preferred by the majority of the state with a noteworthy pattern of exception. From Manitowoc County to Racine County on Lake Michigan with the inland county of Waukesha, part of the greater Milwaukee area, all speakers prefer "soda." There were examples of *soda* and *soft drink* scattered

throughout the state, most usually in the older age group.

In Calumet, Manitowoc, and Sheboygan counties, residents *fry out* rather than "cook out," when cooking bratwursts over coals. There exists the corresponding noun *A fry out*, to which one may be invited to fry out these brats. I would venture to say this is a direct translation of the German verb *braten*, used for frying rather than *kochen*, used for cooking generally and boiling in particular. This is the same verb stem seen in the word *Bratwurst* itself. Calumet, Manitowoc, and Sheboygan counties were settled by a large percentage of German immigrants.

About half the informants surveyed syllabified *Wisconsin* as [wI·skən·sɪ] rather than the standard [wIs·kən·sɪ]. This distinction, however, is somewhat muddled by the fact that most speakers use extremely heavy stress on the second syllable. I have been unable to hypothesize a reason for this phenomenon. It does give a particular quality to a native's speech when he says, "I'm from Wisconsin." I might add that in casual speech the word is often shortened to [skənsɪ].

Of the informants surveyed, 10 percent said the name of the largest city in the state is [mwɔ·ki] in two syllables, 25 percent said [mi·wɔ·ki] without the [l] and 65 percent said [mɪl·wɔ·ki] in three. Since [m I w l] are all sonorants, it is rather a simple matter of assimilation to come out with [mwɔ·ki]. Note that this does not happen, however, to Pewaukee, a city 25 miles to the west of Milwaukee. [pwɔ·ki] seems odd and unnatural. [p] is not a sonorant and cannot be easily merged or assimilated with neighboring sounds.

DISCOVERING THE BEST OF BOTH WORLDS: A LOOK AT ENGLISH TEACHING IN GERMANY AND AMERICA

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When one has spent years teaching lower-division composition and literature in the United States and then teaches essentially the same courses in the English Department of a German university, comparisons between the two academic systems become inevitable. Such a comparison will discover the advantages of both systems: "In America you can assume that the students will actually read the texts" or "Germans believe human beings have a *right* to a paid vacation!" Some of the contrasts between the two systems are amusing. Others are instructive: for example, the differences in course loads, in the students' background, in methods of evaluating students' progress, in curriculum, and in departmental structure. The following discussion of English teaching at one particular German university will by no means be an indictment of American English departments. On the contrary, my experience in Germany has taught me—believe it or not—that we Americans do many things right at our universities.

First, the reader should know several facts about the English Department at the Justus Liebig University in Giessen, Germany, where I taught for two years, and the corresponding department at the University of Wisconsin-Milwaukee, where I had previously taught for eleven years. In the late 60's and early 70's the UWM English Program had about one hundred staff members (including 40-50 teaching assistants, as well as lecturers who concentrated on composition and lower-division literature courses). There were several hundred majors, and in addition, the department served the entire university as instructors of literature and basic writing. The department at Giessen also has

several hundred "majors," although it does not serve the entire university as do American English departments. This is one reason why the faculty is relatively small: seven professors, five tenured faculty of lower rank, half-a-dozen graduate assistants (who teach only one literature seminar per semester), nine lecturers, and three or four part-time instructors. The department has its own "teacher-training" institute; it does not deal with a separate education department. It should be remembered that the *German* department at Giessen would be equivalent to an American *English* department, while English is part of the foreign language program (although it is the most popular foreign language, which accounts for the large number of majors). The courses taught by lecturers like myself include essay writing, translation, phonetics, grammar, American, British, and Canadian studies, and an amorphous course called "Listening and Comprehension."

I first learned of the vacant position at the Justus Liebig University through Professor Ihab Hassan, who has many friends at German universities. Giessen was trying to build a partnership with UWM (Wisconsin is the sister-state of Hessen, where Giessen is located). The Giessen English department in particular wished to establish relationships with English-speaking universities for the sake of both student and faculty exchanges, since it is essential to have a certain number of native speakers teaching university-level English in Germany. I was not only qualified to handle the teaching assignments, but could also speak and read German fluently as the result of a year's study in Berlin; thus, I was an obvious candidate

for the two-year lecturer's position. Naturally, the thought of returning to Germany as a teacher instead of a student was enormously appealing. Just as appealing was the salary, which was double that of my lecturer's pay in Milwaukee. Even with the higher prices in Germany, it represented a substantial salary boost. It was paid over twelve months, with a Christmas bonus of one month's pay. True, these lucrative pay scales are a factor in the financial problems which German universities are also suffering. Still, for the first time in my life, I was being paid what I thought I was worth.

The English program as it existed at the time I began teaching in Giessen (September, 1979) allowed the individual instructor a great deal of freedom in selecting topics for courses in American and British studies (called *Landeskunde*). I was scheduled to teach three of these courses; my orientation in teaching them came mainly from the other instructors. First, there was the question of specific subject matter. *Landeskunde* classes are intended to give students a broad understanding of culture, society, and government in the English-speaking countries. On the whole, German school classes about America focus on a narrow range of topics, particularly the problems of blacks and Indians. Without downplaying the racial problems in the United States, I tried to introduce my students to other aspects of American civilization.

At first I picked impossibly broad topics: American institutions, social relationships, arts and culture. My best inspiration was a course on the American frontier, which I taught a second time because it was so popular. Germans are extremely interested in cowboys and Indians; in fact, the whole complex of images associated with the Wild West signifies "America" to the average German. Later I taught courses on protest movements and on religion in America. I knew the former topic would be a sure-fire student draw. The latter topic attracted more

interest than I had expected. Germans seem both repelled and fascinated by the enthusiasm for, and commercialization of, religion in the United States. Church attendance in Germany is very low (although most people still belong officially to a church). The Protestant churches, in particular, have rather unexciting services and their programs have little popular appeal. Moreover, some people feel the churches compromised themselves by not opposing the rise of Nazism in the 1930's. Interestingly, many clergymen today are vocal opponents of nuclear armament, perhaps in an effort to promote the Church as an anti-establishment force.

My essay writing classes were much like similar classes in the United States, focusing on themes drawn largely from personal experiences and opinions. In retrospect, I believe I should have required at least one research project, since the students did not understand research concepts and often showed little imagination when writing from their own experience. For instance, given an assignment on comparison, almost half of the students compared country life to city life. This apparently is a hot topic in Germany, but the papers it inspired were dismayingly dull, repetitious, and generalized. Technically, the students' errors were mainly in vocabulary, spelling, and idiom usage. There were few of the gross errors in grammar, syntax, or sentence completeness which frustrate English teachers in America, which testifies to the quality of basic English instruction in Germany.

The "Listening and Comprehension" course was both the despair and delight of the lecturers. No two people ever seemed to be able to agree on just what its goals and methods were supposed to be. In theory, it was supposed to give the students their main opportunity to hear and speak English. In fact, since there were no limits on class size, it was almost impossible to get even most of the students to talk in one class period. I also learned, to my surprise, that many English majors avoided actually speaking En-

glish if at all possible. On the other hand, the looseness and vagueness of the course allowed for all kinds of experimentation, as well as providing a chance to really know one's students. I used a variety of material: newspaper reports, tapes, music, jokes, simulations, games, films, and video tapes ("Laverne and Shirley" got mixed reviews). At the time I considered the course fun and hoped the students were learning something; in retrospect, I realize that I learned more about teaching language from this course than from any of the others I conducted in Germany.

In preparation for my *Landeskunde* courses, I drew up reading lists based on the books available in the departmental library (something worth initiating in America, by the way). Although instructors of literature courses usually expect their students to procure copies of the basic texts, most language instructors do not require students to buy books, relying instead on handouts and copies (copiers and ditto machines are even more important at German universities than in the States). There are no university bookstores as we know them, so that required texts must be ordered through private bookstores; as a result (and also because of the expense of buying books for every class), far fewer textbooks are required.

All the instructors as well as the full professors, complained of the students' unwillingness to read, and indeed, very few of my students seemed to derive much pleasure from actually reading English. There are several reasons for this. Most students take ten or twelve different two-hour courses per week. It would be impossible for a student to do the amount of reading and writing that the typical American instructor would expect for each of these courses. A student is only required to do written work or heavy reading for a few classes each semester. He need only attend the rest of his classes, and at the end of the semester will receive the signature of the instructor on his class list to certify his attendance.

A second reason for the lack of interest in reading is, unfortunately, more basic: many of the students just don't enjoy reading English and are not highly motivated to study the language. One explanation I heard was that many would-be doctors who couldn't get into medical school decide to major in English instead, reasoning that their nine years of secondary school English would provide the basis for a major. As in the United States, English Departments in Germany are refuges for students who are not exactly sure what they wish to do for a career. In the past, most of these English majors ended teaching in the high schools, but since these job opportunities have almost dried up, the Giessen English faculty has tried, with mixed success, to develop programs to train English majors as something other than teachers. Unfortunately, as in the states, there are large numbers of students who must be pushed, pulled, and cajoled through their "chosen" program of study.

Nevertheless, most students in all areas of study come to the university with an enviable knowledge of English and with generally strong academic backgrounds. There are only about forty universities in Germany (for a population of 60 million) and they must accept a much more elite group of students than American universities. The students are somewhat older than American undergraduates, since they leave the *Gymnasium* (the most demanding level of secondary school) at the age of nineteen, after which the men must serve fifteen months in the armed forces before beginning their studies. I found the students intelligent and generally well-prepared for university work. My essay writing students were not used to writing themes in the form which I demanded but they quickly adapted to my requirements. A more serious problem, for students who had learned British English in the schools, was my American accent; although this, too, was only a temporary obstacle. Most of my students were well-in-

formed about current affairs and surprisingly knowledgeable about American politics. On the other hand, I missed that touch of goofiness which characterizes American students, that willingness to say something outrageous to stimulate discussion or just to show off.

Under the German system there is no limit on the sizes of classes. Typically, in the first week or two of the term, students visit many courses and then pick out the ones they want to attend for the rest of the semester. Thus, new teachers have significantly fewer students than instructors who are better known. By the same token, notoriously poor teachers get very few students. Classes offered at favorable times are always overcrowded. Moreover, students may take required courses repeatedly in order to raise their grades in these subjects. At the same time, at least when I started teaching, there was very little monitoring by the administration of *when* classes were scheduled by the lecturers. Lecturers were not supposed to schedule courses on Wednesdays or on Tuesday or Thursday mornings, since these time slots were reserved for the required courses taught by the professors. Aside from that, instructors had great freedom in scheduling; after a semester one learned that certain times would draw fewer students. For example, although five of my courses were always packed, the sixth, a "Listening and Comprehension" section at 2:00 p.m. on Friday, never had more than ten students. This I regarded as my "fun" class. Other lecturers were less scrupulous about the timing of their classes. The system insured that favorably scheduled courses would be overcrowded, resulting in a lack of individual attention from the instructor. This freedom to choose whatever classes they want, without enrollment restrictions, is jealously guarded by the students and is not likely to change. It leads to composition classes of forty or fifty students and to "discussion" sections of thirty. In this light, regulation of class sizes and scheduling by American universities appears sensible and justified.

I should mention that at Giessen, at least, attempts are being made to regulate the lecturers' course loads and class schedules.

Another problem related to class scheduling is the academic calendar itself. The winter semester lasts from the middle of October until the middle of February, sixteen weeks in all. There is then a break until the beginning of April when the summer semester starts; this lasts thirteen weeks, until the beginning of July. The disparity in semester lengths is increased because there are many one-day holidays during the summer semester. Thus, a course scheduled on a day when classes are often cancelled may meet only ten times. This usually requires extensive reorganization of syllabuses from one semester to another, since the amount of material which can be presented to the students in the summer is much less than can be handled during the winter.

After two years, I still do not entirely understand the grading system at German universities, and there seems to be some confusion about it among Germans themselves. Our students were supposed to gather a certain number of certificates, called *Scheine*, from their instructors. On each certificate is written the course title, the instructor's name, the work which was done for the grade, and the grade itself. The grading scale goes from "1" (the highest) to "6" (total failure). A "4" was the lowest passing grade, but in fact was considered a disgrace. These grades are not recorded on any permanent record, only on the *Schein* itself, which is kept by the student.

The real determinants of a student's progress are the intermediate examinations and the state (final) examinations, which in the English Department consist of an essay, a translation, and an oral test. A student has three chances to pass each of these examinations. Although students must earn a given number of *Scheine* before taking these examinations, only the grades on the examinations actually determine whether a student will pass. Thus, the grades for the individual

courses do not count in a students' final evaluation, serving the students mainly as clues to their own progress and ability. The major examinations are graded like the separate courses, with "4" being a passing grade, but in fact the kiss of death for future job prospects. Worse, a "4" test cannot be retaken for a better mark. The American system, where good grades mathematically compensate for poor ones, is far less traumatic than the German system, where, as you can imagine, each examination is preceded by a period of incredible anxiety to the student.

One of the hardest things for an American instructor to adjust to is the hierarchy of a German university department. Because there are fewer professors in the typical German academic department than in the typical American one, and because it is more difficult to become a professor in a German university, the professors have more prestige. Even within the professorial ranks there are gradations which determine salary size, the number of student assistants one gets, and whether one deserves a personal secretary or not. The professors determine the policy in every department, despite the token presence of representatives of students and lower-level faculty in the Departmental Council. There is no "junior faculty" in the American sense, that is, assistant professors who may have been lecturers the year before and who will work their way up to a full professorship within the same department. In practice, the distance between professors and lecturers is very great and communication is difficult and hedged about by formalities. The German language contributes to the problem as well. People of higher rank are always addressed as "Mister" or "Mrs." (*Herr* and *Frau*) plus the surname, or with the formal form of "you" (*Sie*). This contrasts with the American situation, where full professors are typically on a first-name basis with most of the staff, and sometimes even with students.

The departmental structure and the accompanying formalities have, inevitably, a

strong effect on the way programs are developed and taught, because they tend to impede direct consultation. Programs of study are developed with minimal input from the lecturers who may be doing the actual teaching. There are few of the informal discussions between high-ranking and low-ranking instructors so frequent in American colleges and universities, which often alert administrators that a course of study is running into trouble. Few German professors have had the extensive experience teaching lower-division courses, especially composition, which fosters understanding of what a composition teacher really faces in the classroom.

One of the new programs created by the Giessen English Department is the "Foreign Language English Major" (the actual name has undergone several changes). This program, which went into effect shortly before I began teaching at Giessen, is a response to the declining market for English teachers in Germany, the consequent threat of declining enrollments in the English department, and cuts in departmental funding and personnel. The goal of the program is to train students in English, a second foreign language, and a subject such as economics or agricultural science. After completing the program the students are supposed to have the competence to work for international corporations, the government, airlines, etc. The program has been criticized because the administration had not determined whether there was actually a demand for people with this kind of specialty. Until now, however, there have not been enough graduates from the program to test the market.

An important part of this new foreign language program is the "Intensive Course," a mini-course meeting three hours a day during the last two weeks of February, that is, just after the formal end of the semester. The exact content of this class is still being debated. Some feel it should concentrate on the spoken language, others believe it should be a review of writing, translating, and read-

ing as well as speaking; still others feel there should be an extended written and oral examination at the end to determine whether students should be allowed to continue in the program. This very basic question of content has been complicated by the lack of coordination between professors and lecturers in planning the course. The expectations of the professors have changed several times, as have the testing procedures for the course, and as a result, many instructors have come to regard the course as a futile exercise. Before I left, there were earnest efforts on both sides to produce a sensible course plan, but this was occurring only after long delays. Ironically, most of the students would benefit from a two-week immersion in spoken English, as this is the area where most of them are weakest.

I mention the difficulties with the Intensive Course because it was one of the most unfortunate examples of the lack of communication among instructors and professors. Without giving exhaustive details of other controversies, I will simply state that the lack of a forum for sitting down and hashing out problems on a basis of equality contributed to many of these conflicts. The problem of reconciling the objectives of a program with what can actually be done in the classroom is a very familiar one on American campuses. Many people in the UWM English Department will recall the confusion a few years ago when the College of Letters and Sciences decided to require that every student pass a test on grammar and essay writing before he or she could become a junior. Nevertheless, once this policy was decreed, the composition staff itself was given the responsibility for developing a new program to meet the requirement. Moreover, the looser hierarchy of the typical American academic department makes it easier to thrash out these problems.

Compounding these difficulties is the fact that bureaucrats in the Hessian educational ministry have great power and sometimes exercise it in unpredictable ways. This was

brought home to the entire staff several years ago, when there was a sudden rumor that lecturers' teaching loads were about to be increased to 24 hours per semester. Technically, the loads are 16 hours, which works out to six two-hour courses per week, the other hours being accounted for by the intensive course and time spent grading the various examinations. However, some bureaucrat had noticed that, for salary purposes, most language courses only counted one-half (like laboratory courses in the United States), meaning that lecturers might have to put in as many as 24 classroom hours to receive credit for 12 teaching hours. The rationale behind this system was that language courses require little or no preparation, an obvious absurdity to anyone who has ever taught any language class. In the course of discussions the University president admitted that he thought language classes consisted largely of rote drills from workbooks. On this issue, both lecturers and professors were united in their opposition, and, as of this writing, course loads have not been raised. However, the "half-credit" rule is still the official standard for calculating course loads.

The attitude toward pedagogical technique shown by these rules suggests another difference between American and German universities. There is, I believe, less appreciation in Germany for the art and technique of teaching than in the United States. This may be a holdover from the days when German universities were much more elite and students were highly motivated and more capable of learning on their own, regardless of whether the professors were capable *teachers*. Now the universities have more students who are there simply because they do not know what else to do. Particularly in the English Department, there are many students who need to do "catch-up" work in writing, speaking, or translation. All this requires that instructors think carefully about how they teach, organize their classes methodically, use a variety of techniques,

bring in films and tapes, and stay alert for signs that students are bored or incomprehending. Especially in the area of language and composition, Americans are continually experimenting and exploring the "how" of teaching. No one assumes that language courses can be taught simply by means of written or spoken drills taken from a book. There is a growing awareness of this fact in Germany as well, although respect for university pedagogy is still not as widespread as in America.

The last few pages have been critical of some practices at German universities. Let me emphasize that the years I spent at the Justus Liebig University were enjoyable and rewarding. I made many friendships, learned a great deal about teaching, and acquired an admiration for my colleagues and my students as well. My criticisms are not made from an attitude of superiority but from a sense of frustration that many capable people had so much difficulty communicating and cooperating.

It was also a pleasure and a challenge to instruct students with such solid training behind them. Few of my colleagues had had any experience teaching at an American university, and they frequently groused about the abilities of the German students. I could never be as critical as they were. Most college instructors in the United States would envy the intelligence, ability, and motivation of the students at Giessen. Although I was teaching English as a foreign language, I learned a great deal about teaching literature and composition to native speakers as well. Explaining the peculiarities of English grammar and sentence structure to German students forced me to consider why these features had been bedeviling my American students. I became a more sensitive, thorough teacher as a result. In addition, I was able to counter or at least balance out some of the German stereotypes about the United States, while becoming aware of the German point of view on other matters: their frustration with our simplistic attitudes towards the

Soviet Union, their perception of our personal shallowness, their disgust with the cheapness of much of our culture, symbolized for them by the MacDonald's restaurants proliferating across Germany. Still, many Germans, even those who are anti-American, are fascinated by the United States; the harshest criticism of our country is often the sign of a profound interest.

American universities have much to offer those in Germany, especially in the areas of course structure, registration, and teaching technique, while Germany can show us the value of high standards, the importance of foreign language training, and the need for solid high school instruction as a preparation for college. Yet for all the differences between the two systems, I came to realize that some basic concerns are identical. The problems of decision-making responsibility, instructional freedom, and the sharing of authority are common to universities in both nations. Moreover, the financial crunch has come at last to German schools. Everyone is preoccupied with retaining teaching positions, keeping up salary levels, maintaining enrollments, fending off massive increases in teaching loads, and trying to prove that one's own department is useful at a time of high deficits and falling birth rates. Germany and the United States can both take pride in some aspects of their university systems. Yet sometimes the issues of class scheduling, course loads, even pedagogical methods and authority seem minor in comparison to the survival of the universities in anything like their present form.

My experience in Germany helped me see the strengths and weaknesses of the American system more clearly. But ultimately, my stay in Germany was valuable because it showed me that certain problems are common to all universities, perhaps even inherent in the very structure of a university. I became a better teacher not only because of what I learned in the classroom, but because I deepened my understanding of the position of universities in the 1980's.

THE HOUSE OF THE SEVEN GABLES: CLASSICAL MYTH AND THE ALLEGORY OF REDEMPTION

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It is a commonplace in Hawthorne criticism that his works have been influenced by such great English writers as Bunyan, Milton, and Spenser. Not much has been written, however, about ancient classic influences on his art. No one seems to have been sufficiently intrigued by the classical references in *The House of the Seven Gables*¹ to analyze the book in terms of classical influences. Perhaps the reason for this neglect is that direct, patent references to the classics are rare in the Hawthorne romances. In *The House* there are only four. But this sparing use of references is important because it indicates that Hawthorne chose carefully and did not employ them lightly. Investigation of these references reveals that three of the four come from *The Aeneid*, which suggests that Virgil's epic was either one of Hawthorne's favorite books, or that it was simply much on his mind at the time he wrote *The House*. Whichever conclusion is correct, it seems only logical to look for echoes of *The Aeneid* in *The House*.

Another reason for suspecting the influence of the classics in *The House* is that Hawthorne wrote two children's books, *The Wonder Book* (1851) and *Tanglewood Tales* (1853), in which he retold the classic myths of Greece and Rome. Shortly after publishing *The House*, Hawthorne began *The Wonder Book* and finished it in less than two months.² The manuscript, according to his son-in-law, has few corrections and no extensive revisions. These facts give evidence of familiarity with the myths and indicate that they had occupied Hawthorne's mind for some time.³ The classical myths, it would seem, were not only a part of Hawthorne's general cultural heritage, but conscious objects of his art and thought during

the years of his greatest productivity. Therefore it does not seem unreasonable to speculate about their influence on his fiction.

Even more important to any theorizing about the influence of classical myth on Hawthorne's art is his statement about the enduring value of myth and its use. In his preface to *The Wonder Book* he states:

No epoch of time can claim a copyright in these immortal fables. They seem never to have been made; and certainly, so long as man exists, they can never perish; but, by their indestructibility itself, they are legitimate subjects for every age to clothe with its own garniture of manners and sentiment, and to imbue with its own morality.⁴

These words, written on July 15, 1851, not long after the publication of *The House of the Seven Gables*, are sufficient cause in themselves for the curious critic to ask if, beneath the "garniture of manners and sentiment" of Hawthorne's romance, there might not be a myth.

The text of *The House of the Seven Gables*, I believe, affords ample evidence that echoes of *The Aeneid* are present in the romance. Of the four direct references to classical myth found in the book, the reference to Midas⁵ in association with Judge Pyncheon is the only one not connected with *The Aeneid*. The meaning of the reference is obvious and commonplace. The judge, like Midas, is foolish in his greed. Hawthorne, however, also associates the judge with another, more obscure legend, the myth of Ixion. In the myth Ixion committed a murder but was pardoned by Zeus. Ixion then became arrogant and even sought to win the love of Hera. Zeus, therefore, formed a phantom Hera from clouds to which Ixion

made love and boasted that he had won the real Hera's affection. Zeus finally condemned Ixion to Hades where, tied to a wheel, he must revolve endlessly. When Judge Pyncheon tried to kiss Phoebe and she instinctively turns away, he is said to be "a modern parallel to the case of Ixion embracing a cloud, and was so much the more ridiculous. . . ."⁶ In book six of *The Aeneid* (line 484) the hero, on his journey through the Underworld, meets Ixion spinning on his wheel of torture.

A third classical reference is associated with Hepzibah. It occurs early in the book and has no particular thematic value but does indicate that Hawthorne had *The Aeneid* in mind. As Hepzibah awaits her first customers "her breast was a very cave of Aeolus."⁷ Aeolus is the god of the winds and keeps them penned up in his cave where they race about frantically until he lets them loose on the earth. Aeolus figures prominently in the first book of *The Aeneid* (lines 52 through 141).

The final direct classical reference is associated with the Pyncheon elm, which is certainly one of the main symbolic elements in *The House*. Without detracting from the common interpretation of the tree as the cosmic force of nature straining to reclaim for itself the artificial domain of the house, I would like to suggest that the tree-symbol contains still another level of meaning. Because of other echoes of *The Aeneid* and because of Hawthorne's concern with myth during this period of his life, I think the tree can also be seen as a mythical tree found in *The Aeneid*. In introducing us to the Pyncheon elm, Hawthorne writes: "In front . . . grew the Pyncheon elm, which, in reference to such trees as one usually meets with, might well be termed gigantic."⁸ The rhetoric here is strange enough to make one think that Hawthorne is giving the reader a clue that this elm is a very strange and special tree. He does not simply compare the elm and its size to other trees. He writes

"which, in reference to" as if to indicate that we cannot really compare this tree to others, but only make reference to it in relationship to "such trees as we usually meet with." This may seem to be slight evidence for the point I am going to make, but it becomes significant in view of the final classical reference. In the chapter "Alice's Posies," Hawthorne describes the elm as it appeared on the morning after the Judge Pyncheon's death.

This aged tree appeared to have suffered nothing from the gale. It had kept its boughs unshattered, and its full complement of leaves; and the whole in perfect verdure, except a single branch, that, by the earlier change with which the elm-tree sometimes prophesies the autumn, had been transmuted to a bright gold. It was like the golden branch that gained Aeneas and the Sybil admittance in Hades.

This one mystic branch hung down before the main entrance of the Seven Gables so nigh the ground that any passer-by might have stood on tiptoe and plucked it off. Presented at the door, it would have been a symbol of his right to enter and be made acquainted with all the secrets in the house.⁹

Aeneas and the Sybil, referred to in this passage, are found in the sixth book of *The Aeneid*, the account of the hero's journey through the Underworld to visit his father. The Golden Branch, which enables him to pass unharmed through the Underworld, and return to the land of the living, was taken, not from an elm, but from a holm-oak.¹⁰ Hawthorne, of course, knew this but still made the strange imagistic connection. He did it, perhaps, because he wanted to clearly associate the Pyncheon elm with that sixth book of Virgil's epic and the congeries of images which that association would evoke. For in that section of *The Aeneid* there is a vast and shadowy elm beneath which Aeneas and the Sybil, bearing their golden passport, must travel. It stands in the ante-chamber to Hades in front of the main entrance. False

dreams cling to all its branches. Beneath it are the beds of Grief, Resentful Care, Ugly Poverty, and Forlorn Old Age. Around it lurk the Harpies, the Furies, and other monsters symbolic of guilt, evil, and pursuing Fate (LL. 263-289).

The Pyncheon elm is meant to be associated with this mythic tree. It towers over the house "sweeping the whole black roof with its pendent foliage." Beneath its leaves dwell Hepzibah and Clifford, forlorn in their old age, victimized by false dreams, threatened by ugly poverty, torn by resentful care, and haunted by evil. In the shadow of the elm stands the main entrance to the house, the passport to which is the golden branch. Considering these parallels between the Pyncheon elm and Virgil's Underground with its mythic elm, it seems logical that the house can be seen as Hades, or at least its antechamber with all its attendant miseries.

The house is also described as a human heart because so much of mankind's varied experience has passed there, "so much had been suffered, and something, too, enjoyed—that the very timbers were oozy, as with the moisture of a heart. It was itself like a great human heart, with a life of its own, and full of rich and sombre reminiscences."¹¹

In another context the house is said to be the emblem of many a human heart that is surrounded by the roar of life but is itself gloomy and desolate.¹² The outward imagery of the house reflects the somber inward state of its old inhabitants' hearts. Hepzibah's heart is a dungeon in which joy lies enchained.¹³ Clifford is a material ghost, a dark and ruinous mansion in which the heart's hearth-fire is cold and the light of intellect darkened.¹⁴ Both are prisoners of the house, ghosts doomed to haunt it; and they cannot even follow Phoebe to church.¹⁵ But, the authorial voice makes clear, the prison-house simply reflects the fact that no "dungeon is so dark as one's heart" and no "jailor so inexorable as one's self."¹⁶ Hepzibah and Clifford are Shades who dwell in a twilight

Hades, and their exile from life can never be ended until their hearts can be exorcised. They must be freed from the terrors that bind their own hearts.

Hawthorne once described the human condition in terms of the human heart visualized as a dark cavern.

At the entrance there is sunshine, and flowers growing about it. You step within, but a short distance, and begin to find yourself surrounded with a terrible gloom, and monsters of diverse kinds; it seems like Hell itself. You are bewildered, and wander long without hope. At last a light strikes upon you. You peep towards it, and find yourself in a region that seems, in some sort, to reproduce the flowers and sunny beauty of the entrance, but all perfect. These are the depths of the heart, or of human nature, bright and peaceful; the gloom and terror may lie deep; but deeper still is the eternal beauty.¹⁷

The problem of human life is to get beyond the depths where gloom and terror lie, to break out of the private hell of the human heart chained by its own obsession with evil. Clifford and Hepzibah cannot escape because they have inherited the burden of the Pyncheon past and have been absorbed into the life of the house with its reiterated pattern of "perpetual remorse of conscience, a constantly defeated hope, strife amongst kindred, various misery, a strange form of death, dark suspicion, unspeakable disgrace."¹⁸ This psychological, moral, spiritual trap, embodied in the hell of the great heart-house and its inhabitants' imprisoned hearts, is Hawthorne's poetic statement of the problem of evil. His solution, at least in *The House of the Seven Gables*, is his poetic statement of the mode of human redemption.

For Hawthorne there is no cosmic, social or religious scheme that will solve this problem of evil. "Earth's Holocaust" rejects such schemes, and Hawthorne's conclusion in that sketch is: "Purify that inward sphere [the human heart], and the many shapes of evil

that haunt the outward, and which now seem almost our only realities, will turn to shadowy phantoms and vanish of their own accord. . . ."¹⁹ There is no cosmic human heart to be purified, and so redemption must come to each individual through the gift of human love. Hawthorne's theory is based on his one great emotional experience, giving himself in love to Sophia Peabody. In knowing himself to be the object of her love, he felt such an acute awareness of being freed from the prison of himself that he wrote, with a fervor rare for him, "We are not endowed with real life . . . till the heart is touched. That touch creates us,—then we begin to be."²⁰ Out of this deep, real-life experience grew Hawthorne's conviction that the work of redemption, the work of Christ himself, belonged to women because of woman's greater tenderness and ability to touch other hearts with her love. In *The Blithedale Romance* Coverdale states:

Heaven grant that the ministry of souls may be left in charge of women . . . God meant it for her. He has endowed her with the religious sentiment its utmost depth and purity, refined from that gross, intellectual alloy with which every masculine theologist—save only One, who merely veiled himself in mortal and masculine shape, but was in truth, divine—has been prone to mingle it.²¹

Coverdale goes on to cite the Virgin Mother as an example of how divine love can be more fittingly received by mankind since it is filtered through the medium of a woman's tenderness.²² In *The Scarlet Letter* Hawthorne introduces the same theme again when he writes that "The angel and apostle of the coming revelation must be a woman indeed, but lofty, pure, and beautiful . . . the ethereal medium of joy . . . showing how sacred love should make us happy. . . ."²³ Hawthorne's redeemer is a woman, and the grace she brings is her ability to love.

When composing *The House of the Seven Gables*, his most obvious allegory of redemption, Hawthorne faced a gigantic problem.

He had to redeem Clifford and Hepzibah and exorcise the house. But his Puritan conscience would not allow him to create a female Christ²⁴ nor could he "impale the story with its moral as with an iron rod."²⁵ He made his female redeemer a pagan goddess, a source of life and fertility.

In creating Phoebe as the redeemer-figure of *The House*, Hawthorne wisely chose her name. The Phoebe of mythology was a late-comer to the mythological scene. Consequently she was identified with many other goddesses. One of these was Proserpina, part-time goddess of fertility and young maidenhood, and part-time Queen of Hades.²⁶ Though gloomy Pluto's partner in ruling the dead, Proserpina seems to have been a benign influence in the dread kingdom of Hades. The Golden Branch of *The Aeneid*, for example, is Proserpina's privileged passport for heroes, plucked from her sacred grove and brought to her in the Underworld as a gift. (Bk, VI, Ll. 139-42) In Hawthorne's version of the Proserpina myth²⁷ the goddess is an even more benign figure. Abducted by Pluto and imprisoned in the Underworld, the child goddess of sunshine and flowers carried nature and sunlight with her to the dark kingdom. As she walked through Pluto's palace, the eternal gloom fled before her. She so warmed the hearts of the King and all his subjects that the dark kingdom was never the same again.

The parallels between Phoebe of *The House* and the child goddess of sunshine and flowers, who brings light and warmth to the Underworld, are unmistakable. When Phoebe comes to the house of the Seven Gables, she stands in the shadow of the mythic elm before the house's "antique portal" and we are told:

The sordid and ugly luxuriance of gigantic weeds that grew in the angle of the house, and the heavy projection that overshadowed her, and the time-worn framework of the door,—none of these things belonged to her sphere. But, even as a ray of sunshine, fall

into what dismal place it may, instantaneously creates for itself a propriety in being there, so did it seem altogether fit that the girl should be standing at the threshold.²⁸

Phoebe spends one night in a musty, long-unused bedroom and her mere presence exorcises the gloom and purifies it of all former sorrow and evil.²⁹ Clifford immediately sees Phoebe as the essence of sunshine and flowers in a much more agreeable form of manifestation.³⁰ The old house itself, the Hades-like prison, is changed by Phoebe's presence. From the time of her appearance in the house the grime and sordidness of the old dungeon seemed to disappear. The dry-rot of its timber skeleton ceases its gnawing process. The shadows of gloomy events and the scent of death yield to the power of her presence.³¹ As the house, which objectifies the inward state of its aged inhabitants' hearts, yields to the young "goddess's" influence, the hearts of the old people also begin to open. Joy escapes the chains around Hepzibah's heart.³² Clifford, from her presence, breathes in harmonious life.³³ Phoebe is also angel,³⁴ a prayer,³⁵ a religion in herself,³⁶ the ideal woman,³⁷ exorcising evil from house and heart.

When she is about to leave, both Holgrave and Venner tell her that she is the source of all blessings.³⁸ When she has gone, evil and gloom creep back into the dark realm of the house. Weeds overtake the garden around the house and all living creatures forsake the garden.³⁹ The Grimalkin waits on the window sill like a devil waiting to clutch a human soul.⁴⁰ Judge Pyncheon enters the house with his evil scheme. Death follows in his footsteps, and the old people are gripped in terror.

Just as evil had closed in on the house when Phoebe departed, it must flee as she approaches again. During her absence of five days nature had been unkind. The sun had refused to shine. But the young nature goddess's return, heralded by the appearance of the golden branch, is a signal for nature

to make amends. The sky puts on an aspect of benediction and the street is genial with sunshine. "Vegetable productions, of whatever kind, seemed more than negatively happy, in the juicy warmth and abundance of their life."⁴¹ Even the old house seems to have gained a kind of familiarity and sisterhood with this renewed luxuriance of nature. When Phoebe arrives and enters the garden, the demon-like Grimalkin flees before her. The garden, devoid of all other living things, suddenly becomes alive with the Pyncheon fowl.⁴²

Before Phoebe enters the house, Hawthorne, as if to make sure that the reader will not miss the point of his imagery, asks if "her healthful presence" is "Potent enough to chase away the crowd of pale, hideous, and sinful phantoms, that have gained admittance there since her departure."⁴³ Within the house broods the corpse of Judge Pyncheon, symbol of generations of accumulated evil. Fortuitous as his death may seem, it too is connected with Phoebe. She, the golden branch of the Pyncheon family, and also the goddess-redeemer of the old Hades-house, was absent when he forced his way into the Underworld. But he who enters the Underworld without the protection of the golden branch can never exit. Like Ixion chasing the phantom Hera, the judge has pursued the phantom Pyncheon fortune. Like Ixion he received a fitting punishment and died in the old oaken chair in which so many other stern Pyncheon masters had hugged the same delusion. It remains for Phoebe to exorcise the aura of gloom with which his presence fills the house. When Phoebe enters the house and meets Holgrave, the descendent of old Maule gives us the answer to Hawthorne's question about the effect of Phoebe's redemptive presence.

Could you but know, Phoebe, how it was with me the hour before you came! . . . The presence of yonder dead man threw a great black shadow over everything; he made the universe . . . a scene of guilt and of retri-

bution more dreadful than the guilt. . . . The world looked strange, wild, evil, hostile; my past life, so lonesome and dreary; my future, a shapeless gloom, which must mold into gloomy shapes! But, Phoebe, you crossed the threshold; and hope, warmth, and joy came in with you.⁴⁴

Because of Phoebe's presence, the final remnants of evil have been exorcised from the old house and when Clifford and Hepzibah return, filled with dread, they too are released from their burden of gloom by her simple, loving presence. The allegory of redemption is complete.

NOTES

¹ For the sake of brevity the title is often abbreviated to *The House*. All references to Hawthorne's works are to the tenth Riverside edition of *The Complete Works of Nathaniel Hawthorne*, 12 vols. (Boston: Houghton Mifflin & Co., 1883). Documentation in this text will be to volumes and pages in this edition.

² *Works*, Vol. IV, p. 10.

³ *Ibid.*, p. 11.

⁴ *Ibid.*, p. 13.

⁵ *Works*, Vol. III, p. 77.

⁶ *Ibid.*, p. 145.

⁷ *Ibid.*, p. 53.

⁸ *Ibid.*, p. 43.

⁹ *Ibid.*, p. 337.

¹⁰ Virgil, *The Aeneid*, translated by H. Rushton Fairclough. (The Loeb Classical Library, no. 63.) (Cambridge: Harvard University Press, 1967), Book VI, line 209.

¹¹ *Works*, Vol. III, pp. 42-43

¹² *Ibid.*, p. 348.

¹³ *Ibid.*, p. 127.

¹⁴ *Ibid.*, p. 131.

¹⁵ *Ibid.*, p. 204.

¹⁶ *Loc. cit.*

¹⁷ Nathaniel Hawthorne, *The American Notebooks*, ed. Randall Stewart (New Haven: Yale University Press, 1932), p. 98.

¹⁸ *Works*, Vol. III, p. 222.

¹⁹ *Works*, Vol. II, p. 455.

²⁰ *Works*, Vol. IX, p. 223.

²¹ *Works*, Vol. V, p. 458.

²² *Loc. cit.*

²³ *Ibid.*, p. 311.

²⁴ Jean Norman, *Nathaniel Hawthorne: An approach to an Analysis of Artistic Creation*, trans. from the French by Derek Coltman (Cleveland and London: Case Western Reserve University Press, 1970), p. 208.

²⁵ *Works*, Vol. III, pp. 14-15.

²⁶ Oskar Seyffert, *Dictionary of Classical Antiquities*, ed. and rev. by Henry Nettleship and J. E. Sandys (New York: Meridian Books, 1957). cf. entries, Artemis, Diana, Persephone, Phoebe, Proserpina.

²⁷ *Works*, Vol. IV, pp. 341-378.

²⁸ *Works*, Vol. III, pp. 90-91.

²⁹ *Ibid.*, p. 95.

³⁰ *Ibid.*, p. 135.

³¹ *Ibid.*, p. 166.

³² *Ibid.*, p. 127.

³³ *Ibid.*, p. 172.

³⁴ *Ibid.*, p. 106.

³⁵ *Ibid.*, p. 202.

³⁶ *Ibid.*, p. 202.

³⁷ *Ibid.*, p. 171.

³⁸ *Ibid.*, p. 257 (Holgrave) and p. 264 (Venner).

³⁹ *Ibid.*, p. 295.

⁴⁰ *Ibid.*, p. 332.

⁴¹ *Ibid.*, p. 336.

⁴² *Ibid.*, p. 353.

⁴³ *Ibid.*, p. 351.

⁴⁴ *Ibid.*, p. 362.

THE VORTEX OF TIME: POUND AND HIS *CANTOS*

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One of the most revolutionary concepts implicit in *The Cantos* of Ezra Pound is the configuration of time as a spinning gyre: a VORTEX. The image of a vortex is an ancient one, but in Pound's era it began to crop up more frequently as a kind of generator to make things happen in art, hence the "Vorticist" movement. It was a situation of Vortex vs. Vulgarly. At least this is the twist Yeats gave to the matter when he said that "great art, now that vulgarity has armed itself and multiplied itself, is perhaps dead in England."¹ Yeats's concept of the vortex, inherited from Empedocles and conditioned by Blake, is a paradigm of intersecting vortices (cones), one within the other, turning in opposite directions. This paradigm signifies a contradiction of opposites (Concord/Discord, Objectivity/Subjectivity, Primary/Antithetical).² Pound's concept of vortex, however, is more complicated. A single cone or series of cones (vortices) arranged circularly or linearly, depending on one's point of reference, seems to be the best model.

Time is a VORTEX, or series of vortices joined by a single axis, the base of each vortex being a supreme concentration of energy, a point of Infinite Density, which sets into motion ever-widening circles of energy which become entropic at their widest circumference: the principle of convergence and dissipation.

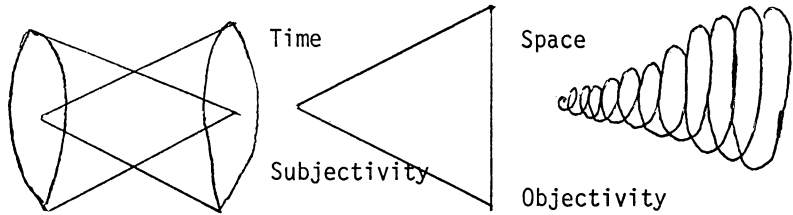
Energy was a key word for the Vorticists. A favorite text of Pound's was *The New Word*, in which its author Allen Upward speaks of the double vortex as a waterspout expressing "the true beat of strength, the first beat . . . which we feel in all things that come within our measure, in ourselves, and in our starry world."³ In his *Essays* Pound insisted that energy is the motive force of

art and "the point of maximum energy may be called the vortex."⁴

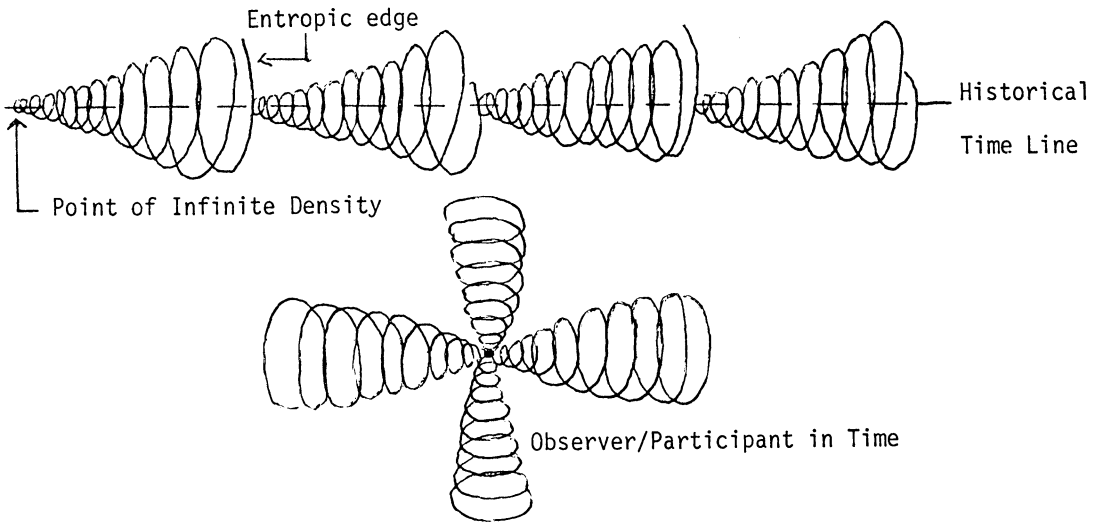
Time as process is linked to continuous shaping and unshaping, forming and deforming patterns. Under this rubric of energy, matter is "Irritable and unstable,/Is formed, is destroyed,/Recomposes to be once more decomposed . . ." (Canto 37).⁵ Pound's understanding of creative energy combined with the principle of the instability of matter led him to search for new patterns in the making of poetry. His openness to the non-literary arts, particularly sculpture and painting, allowed him to incorporate the ideas of such artists as Gaudier-Brzeska, Wyndham Lewis, and Brancusi, in his own work.⁶ Cubism, anti-naturalism, and possibly futurism⁷ were more than catch words for Pound; they were working principles to be transposed into poetry—" (to break the pentameter, that was the first heave)" (Canto 81)—in order to break up traditional poetic grammar with its logical connections and parallelisms. It was a credo of the Vorticists to juxtapose images which do not coincide in the perceptual world to keep their art from becoming adversely mimetic, and to uncover the truth in appearances. The sources of the poem are found in the shapes and sounds of the world, they become energized in the vortex of the poet's mind, and they are given back to the world as "patterned messages."

Whether or not these patterned messages are "true" messages, or "good" art time will reveal. Time as a revelatory medium is the arbitrator of truth and the discoverer of good. When a poem reports the truth, it stands a chance of being considered good art, in time, whereas bad art is "inaccurate art." It makes "false reports" about existence.⁸

Yeats's vortex:



Pound's vortex:



Only poems which have enduring value are carried through the vortex of time. Only poems which transcend the time in which they were created give a sense of freedom from time/space limitations. We may go as far as to say with one contemporary poet, Octavio Paz, that "the poem is a means of access to pure time, an immersion in the original waters of existence. Poetry is nothing but time, rhythm perpetually creative."⁹

The vortex of time, as both idea and image, permits the interpenetration of past, present, and future as given in the data of consciousness, and it accommodates the Bergsonian notions of duration and intensity. "We do not know the past in chronological sequence . . . what we know we know by

ripples and spirals eddying out from us and from our own time," Pound says, confirming the configuration.¹⁰ When the flux of time—Heraclitean flow—is perceived both linearly and circularly, "messages" from recorded history, and the historical process itself, exert immense pressure on the creation of a literary text, even to the extreme of becoming, in Pound's case, a philosophical and structural principle. Being-in-the-world means being fixed in a historical time through birth/death and being unfixed by the waves of the past and thrust toward the future. Heidegger says, "Each man is in each instance in dialogue with his forebears and perhaps even more and in a more hidden manner with those who will come after

him."¹¹ Pound, perhaps, would not deny this supposition, for he sought to make his *Cantos* a kind of secular Bible to instruct his own and future generations in aesthetic, ethical, political and economic conduct. He believed that humankind neither progresses nor regresses—though he did entertain utopian dreams—but experiences periods of high-energy levels that correspond to what he called "The Great Ages of Kulchur."¹²

While it is relatively easy to agree with Pound's thesis on the relationship of energy to art, and even his concept of high and low creative periods, it is more difficult to accept his judgment as to what constitutes a great age of culture. Pound had an obvious need to shore himself up with the Myth of Utopia, to cling to the notion of a dream society wherein beauty, order, harmony and good will are inviolable. So it was that he selected certain epochs for eulogization, epochs which signified for him not only the flourishing of great art, but also harmonious relationships between man and nature, between just words and moral action ("Get the mot just before action"—Canto 85), between polity and economy. The epochs of "the Gods," of ancient Egypt, of certain Chinese Dynasties, of Homer's Greece, of Quattrocento art, and Jefferson and Adams' America, to name the most striking examples, were imbued with this utopian gloss, and chosen to be transmitted, through poetic text, as paradigmatic societies.

Pound's vision is highly personal and unmediated by empiricism. All the intercultural borrowings are governed by the boundaries of his aesthetic and socio-economic taste: "I have seen what I have seen" (Canto 1), he says in the persona of Odysseus, his literary alter-ego. Yet, a quest for a personal truth with a possible universal application shines through this Pound-Odysseus linkage. In this quest—questioning?—transformed into text, Pound sees himself engaged in the practice of "weaving an endless sentence," that is, a sentence that never resolves itself,

a perpetually spinning gyre (the vortex of time), a continual questioning, and a "knocking at empty rooms, seeking for buried beauty" (Canto 7). His engagement carries echoes of the divine injunction, "Ask . . . seek . . . knock" (Matthew 7:7). We could say, figuratively, that in the process of writing his *Cantos*, Pound went about knocking on doors of rooms which contained segments of former civilizations, in order to recoup those elements of the tradition which were still viable for contemporary and future life. Rooms which rendered buried beauty were restored, since "tradition is a beauty which we preserve and not a set of fetters to bind us,"¹³ and rooms which emitted mildew and "old men's voices" were sealed off with ridicule.

It is time to listen to the text. Light and water are the two elements necessary for creation, i.e., the creative act. The fundamental model is given in Genesis I:2-3: ". . . the Spirit of God moved upon the face of the waters. And God said, 'Let there be light.'" Pound speaks of an *a priori* light, in the infinite domain of pre-life:

Gods float in the azure air,
Bright gods and Tuscan, back before dew
was shed.

Light: and the first light,
before ever dew was fallen.

(Canton 3)

The "first light" is the point of Infinite Density, the dynamic concentration of energy, "the white light that is allness" (Canto 36), emanation before differentiation. It is the "light that sings eternal" (Canto 115)—timeless, but not static. It is erratic light, spinning in the center of the vortex. Then, light and water join to create life—"rain also is part of the process" (Canto 74). While Pound does not specifically associate light with the masculine principle and water with the feminine principle—he does present Aphrodite, the feminine symbol of erotic energy and transformation, in association

with some form of water, such as cloud or "tide's change."

"I am the torch" wrote Arthur "she saith"
in the moon barge βροδοδάκρυμῆος Ἡώς
[rosy-fingered Dawn]
with the veil of faint cloud before her
[Aphrodite] Κύθηραδελνὰ as a leaf borne
in the current/pale eyes as if without fire
(Canto 80)¹⁴

In the above passage, torch(light), moon (light), and dawn(light) are carried in the divine form of Aphrodite who moves across the water, veiled with faint cloud, directionless as a leaf on the water. She is a symbol of creative power which is unwilling and natural, without artifice. Notice that both light and water are conjoined in her, yet her light is pale: the "torch" is diffused by the cloud before it; the moon is a weak light in comparison with the sun; the light of dawn is fainter than the light of midday. Her "pale eyes as if without fire" also suggest that her "fire" is tempered with water so as not to turn destructive—as in the sacrificial pyres, firearms and artillery, hellfire, and "cigar-butts" of the "monopolists, obstructors of knowledge" (Canto 14) and other manifestations of the fire-that-destroys found throughout the *Cantos*.

In the same way that Aphrodite contains both creative elements within herself, the great civilizations are depicted with an interplay of light and water:

and North was Egypt
the celestial Nile, blue deep,
cutting low barren land
Old men and camels
 working the water wheels;
Measureless seas and stars,
Iamblichus' light,
 the souls ascending . . .
 (Canto 5)

Clarity of form (the Nile cutting through the land), fecundity (the Nile), unity of man and nature (men and camels), work for one's own sake and not for power over

others (working the water wheels), and the absence of calculation (measureless seas and stars) are the components of a sane society, in Pound's opinion. His rosy view of Egyptian civilization was partially conditioned by his friend, Gaudier-Brzeska, who called Egypt one of "the three primary civilizations": "The *hamite vortex* of Egypt, the land of plenty—" ¹⁵

Pound and Gaudier-Brzeska are also in agreement regarding the convergence of energy in the Age of the Five Rulers and the Hsia Dynasty and its eventual dissipation in the lesser dynasties of Han, T'ang, and Ming.

Gaudier-Brzeska's text:

The blackhaired men who wandered through the pass of Khotan into the valley of the *Yellow River* lived peacefully tilling their lands, and they grew prosperous.

Their paleolithic feeling was intensified. As gods they had themselves in the persons of their human ancestors—and of the spirits of the horse and of the land and the grain.

The sphere swayed.

The vortex was absolute.

The Shang and Chow dynasties produced the convex bronze vases. . . .

The vortex was intense maturity. Maturity is fecundity—they grew numerous and it lasted for six thousand years.

The force relapsed and they accumulated wealth, forsook their work, and after losing their form-understanding through the Han and T'ang dynasties, they founded the Ming and found artistic ruin and sterility.¹⁶

Pound's text:

YAO like the sun and rain,
saw what star is at solstice
saw what star marks midsummer
YU, leader of waters,
black earth is fertile, wild silk still is
from Shantung

(Canto 53)

sary, not only for planting the land—"Two oxen are yoked for plowing" (Canto 47)—but also for sexual planting, which is a form of organic renewal.

By prong have I entered these hills:
That the grass grow from my body,
That I hear the roots speaking together,
The air is new on my leaf . . . (Canto 47)

The instruction to "Think thus of thy plowing" in Canto 47 is not given to satisfy technological purposes or hedonistic needs. It is to remind us of our deep rootedness in nature and our interconnection with all forms of being, a divine vision advanced throughout the canto by the poet's "naming" of the gods. Pound evokes the divine names of Prosperine, Tamuz, Adonis and Tellus, divinities of fertility and sacrifice, over against the preponderance of scientific and rational thought governing 20th-century behavior. He seems to say that in our reliance on scientific knowledge, our confidence in a power no higher than ourselves, we run the risk of "knowing less than drugged beasts," the risk of our own extinction. The exclamatory naming of the gods and the ecstatic atmosphere of the canto jars us into a way of knowing that is both sexual and spiritual: "The light has entered the cave. Io! Io! The light has gone down into the cave, Splendour on splendour!" (Canto 47). The light in the cave symbolizes, first, the union of man/woman, a holy microcosm ("sacrum, sacrum, inluminatio coitu"—Canto 36) within a holistic macrocosm (in contrast to the eunuchs who represent de-holification), and secondly, Platonic enlightenment, knowledge of things as they are in totality. The healing power for a broken world resides both in human nature and in transcendent nature:

KAI MOIRAI' ADONIN
that hath the gift of healing,
that hath the power over wild beasts.
(Canto 47)

At this nearly half-way mark in the *Cantos*, Pound has enlarged his quest by moving out of the corridor of culture, with its many

diversified "rooms," into the natural world, into the space where "the roots are speaking together." Yet, in order for him to experience the "truth" of nature, "First must thou go the road/ to hell" (Canto 47). On this road to hell, the poet comes face to face with the knowledge that man cannot dwell as a "root," that he cannot step outside his own awareness of himself as a self, and exist "unknowingly." Also on this road to hell, the poet comes to realize that the gods come and go, even if, paradoxically, they are always-there.

The hells move in cycles,
No man can see his own end.
The Gods have not returned. "They have
never left us."
They have not returned.
(Canto 113/ 787)

Man is "sentenced" to exist between nature and divinity, and the tension of this "betweenness" often produces overwhelming anxiety. The poet in an anxious state can no longer hear the voices of the gods and the voices of nature, as he could previously:

Through all the wood, and the leaves are
full of voices,
A-whisper, and the clouds bowe over the
lake,
And there are gods upon them,
(Canto 3/11)

nor can he enter the "rooms of culture" to find redress, since anxiety tends to be a-historical in that it obliterates all that is not anxious. This is the state Pound is describing when he says

no Empire handle
Twists for the knocker's fall, no voice to
answer.

· · ·
Damn the partition! Paper, dark brown
and stretched,
Flimsy and damned partition.
Ione, dead the long year
My lintel, and Liu Ch'e's lintel.
Time blacked out with the rubber.
(Canto 7/25)

Anxiety is the barrier, the "flimsy and damned partition" that separates the poet

from the presence of the gods, from the speaking voices of nature, and from the messages of history. The "Time" that is "blackened out" is organic and historical time, upon which all enduring poetry is structured. All that remains is clock-ticking time, which Heidegger calls "ravenous time,"¹⁸ which Pound calls "the evil Evil/A day, and a day" (Canto 30/147). When "(Clock-tick pierces the vision)"—(Canto 5/18) the poet becomes so disordered and displaced that he can no longer *see* with clarity, or *hear* the totality of mediations. He characteristically views the world with dis-trust.

To understand Pound's eventual breakdown, we must rid ourselves of the notion of nature as a balanced system. Artemis, who appears sporadically in *The Cantos*, is the goddess of the hunt and of nature. In Canto 30, she sings a song against pity:

Pity causeth the forests to fail,
Pity slayeth my nymphs,
Pity spareth so many an evil thing.
Pity befouleth April,
Pity is the root and the spring.
Now if no fayre creature followeth me
It is on account of Pity,
It is on account that Pity forbideth them
slaye.
All things are made foul in this season,
This is the reason, none may seek purity
Having for foulness pitey
And things growne awry;
No more do my shaftes fly
To slay. Nothing is now clean slayne
But rotteth away.

(Canto 30/147)

Pity is, essentially, failure of will. It is false sentiment for that which should be cut away, the emotion which prevents man from acting ruthlessly to rectify wrongs. Pity is the desire for comfort and consolation at the expense of truth. Pity operates in a context of clock-time or mechanical time, in the dull regularity of "a day and a day," forgetful of organic time. Those who are susceptible to pity have impaired vision, in that they refuse to see ruthlessness in nature itself, which allows for seasonal change. Daniel Pearlman, in his interpretation of Canto 30, gives lip

service to the need for ruthlessness in man, yet, curiously, he sees nature as otherwise. He claims Artemis "is symbolic of the self-regulatory principle in nature, the ecological balance by which nature maintains itself in a sort of timeless perfection."¹⁹ This "reasonable" view of nature is not Pound's view at all. Throughout *The Cantos* nature is depicted dynamically as fertility, force, energy, the continual upheaval of life-forms, the surging of seas, storms, earthquakes, the slaying of beasts and men: alternating construction and deconstruction. Nature is, by its very nature, imbalanced.

Though Pound, in the beginning, desired to create a work of "timeless perfection," approximating the ordered harmony of a Bach fugue or Dante's *Divine Comedy*,²⁰ in the course of his lifetime, which paralleled the creation of *The Cantos*, his lifework, he encountered such a turmoil of new ideas and creative strife, that he had to give up his first desire, lest he make a "false report." He was ahead of his time in his willingness to see truth emerging as relative and uncertain, and nature as disruptive and disjunct.

Jungle:

Glaze green and red feathers, jungle,
Basis of renewal, renewals:
Rising over the soul, green virid, of the
jungle,
Lozenge of the pavement, clear shapes,
Broken, disrupted, body eternal . . .

(Canto 20)

Always Pound was "Willing man look into that formed trace in his mind/ and with such uneasiness as rouseth the flame" (Canto 36). The disjunctive and fragmentary patterns of verse in the *Cantos* mirror the process of nature and the breakdown of civilizations as Pound actually conceived them. But it is clear that his willingness to confront the world "wide-open" drove him toward such mental disorder that he had to search again for an idea of order, hence his misguided move towards Mussolini.

The tragedy of Pound lies in the fact that he did not recognize he had lost the poetic totality of mediations. He entered into a

period of dis-trust, instead of breaking vision, i.e., the ability to see and hear through the barrier of his anxiety, which was "Paper, dark brown and stretched," that is, a "paper tiger," dangerous to life, but defeatable. He chose to speak with an evil and ravenous tongue as a means of combatting anxiety. Specifically, he used the Jews as a scapegoat, epoused the destructive totalitarianism of Mussolini, and finally, blamed his friends for the failing of his creative energy—"Their asperities diverted me in my green time" (Canto 115). Nor could he understand why those messages which had risen out of his deep frustration were not tolerated.

in short/ the descent
has not been of advantage either
to the Senate or to "society"
or to the people
(Canto 83)

As I have indicated, it is the poet's mission to bring the messages of the gods, and of nature, to the people, to con-verse with the people,

Sd Mr. Yeats (W.B.) "Nothing affects
these people
Except our conversation.
(Canto 83)

But the poet who has lost a holistic vision of the world, who succumbs to distrust of and alienation from the people, is the poet who should remain silent. "Tempus loquendi,/ Tempus tacendi" (Canto 31). Pound's most redeeming moment came near the end of his life when he questioned where he had "gone wrong? What had been his root error? 'That stupid, suburban anti-semitic prejudice?' "²¹

Pound suffered, in the vortex of time, the dissipation of creative energy, the mental entropy, the "beclouding" leading to sectarianism and obscurantism, common to most sentient beings. We can emphathize and learn from his sufferings, but more importantly, he deserves to be remembered for his moments of force and clarity, the

converging lines of holistic vision which rise to majestic word-peaks in *The Cantos*. He sought with passion to speak of what is constant and abiding amidst a background of confusion and disorder, and he "gathered from the air/ a live tradition" (Canto 81).

The poet is the person who "lays hold of something permanent in ravenous time". . . . [T]he permanent must be fixed so that it will not be carried away, the simple must be wrested from confusion, proportion must be set before what lacks proportion. . . ."²² Pound attempted to fulfill this large task. The most permanent, simple, and finely-proportioned image in *The Cantos* is the *conjoining* of light and water, already alluded to in the figure of Aphrodite. This combination of basic elements signifies creativity and the renewal of life, and in addition, carries the promise of intermittent peace:

With clouds over Taishan-Chocorua
when the blackberry ripens
and now the new moon faces Taishan
one must count by the dawn star
Dryad, thy peace is like water
There is September sun on the pools
(Canto 83)

In such imagery, nature and the word become one vast single text.²³ The "poet is he who, beneath the named, constantly expected differences, rediscovers the buried kinships, between things, their scattered resemblances."²⁴ Pound takes the focus off time as a "sequence of nows" unrelated to future and past, and redirects our attention to the importance of kinships, historicity, and "the tradition." In this sense *The Cantos* strive toward the Heideggerian concept of time in relation to being, i.e., the verse contains a "rendering present" which is "anticipating" (future) and "bearing in mind" (past) at the same time.²⁵

Was Pound's failure to summon up the energy to hold fast to a holistic poetic vision the fault of his historical existence in a fragmented and uncentered world, or is the holistic poetic vision merely a myth of the

imagination? The answer to this question is one the reader must seek out for himself. In a time characterized by "God's self-withholding,"²⁶ we have lost the ground of certainty. Foucault's observation that "the age of resemblance is drawing to a close . . . leaving nothing behind it but games," troubles us. Yet, in the absence of God (gods), nature's presence remains as the source of the poet's affirmation:

How drawn, O GEA TERRA,
 what draws as thou drawest
 till one sink into thee by an arm's
 width
 embracing thee. Drawest,
 truly thou drawest.
 Wisdom lies next thee,
 simply, past metaphor.
 Where I lie let the thyme rise
 and basilicum
 let the herbs rise in April abundant
 (Canto 82)

Pound's text is in con-text with all previous and contemporaneous texts which carried positive or negative significance for him, and his text projects "messianic" words on yet-to-be-created texts. Explication of these matters of vortex, time, history, and intertextuality open up *The Cantos* to new understandings.

NOTES

¹ W. B. Yeats, "Symbolism in Poetry," *Essays and Introductions* (New York: Collier Books, 1968), p. 154.

² W. B. Yeats, *A Vision* (New York: Collier Books, 1966), pp. 67-79.

³ Allen Upward, *The New Word* (London: A. C. Fifield, 1908), p. 195.

⁴ Ezra Pound, "The Serious Artist," in his *Literary Essays*, ed. T. S. Eliot (New York: New York: New Directions, 1954), p. 49.

⁵ Ezra Pound, *The Cantos* (New York: New Directions, 1948). All further references to this work will be cited within the text.

⁶ Timothy Materer, *Vortex: Pound, Eliot, and Lewis* (Ithaca: Cornell Univ. Press, 1979).

⁷ Robert H. Ross, "Sound and Fury: Realism, Futurism, Vorticism, Imagism, Early in the Second Decade," *Backgrounds to Modern Literature*, John Oliver Perry (San Francisco: Chandler, 1968), pp. 39-46.

In 1909 a Milanese painter named Marinetti published the first Futurist "Manifesto," which, among other things, called for a new poetic movement:

The foundations of our poetry shall be courage, audacity and revolt.

We announce that the splendor of earth has become enriched by a new beauty, the beauty of Speed . . .

All beauty is based on strife. There can be no masterpiece otherwise than aggressive in character. Poetry must be a violent assault against unknown forces to overwhelm them into obedience to man . . .

Pound seems to have been attracted initially to the tenets of Marinetti for he introduced the loquacious painter to London artistic circles. In 1914, Pound wrote to Joyce that Lewis was "starting a new Futurist, Cubist, Imagiste Quarterly . . . mostly a painter's magazine with me to do the poems." Later the Vorticists "disowned Futurism because it denied tradition, and were wary of Cubism because it seemed indifferent to personality." See Kenner, *The Pound Era*, p. 236-8.

⁸ Pound, "The Serious Artist," p. 43.

⁹ Octavio Paz, *The Bow and the Lyre*, trans. Ruth L. C. Simms (Mexico, D.F.: McGraw-Hill, 1975), p. 15.

¹⁰ Ezra Pound, *Guide to Kulchur* (New York: New Directions, n.d.), p. 60.

¹¹ Martin Heidegger, *On the Way to Language*, trans. Peter D. Hertz and Joan Stambaugh, 1st. ed. (New York: Harper & Row, 1971), p. 31.

¹² Pound, *Guide to Kulchur*, see especially Part I, Section II; Part II, Section III; Part III, Section VI; Part IV, Section VIII.

¹³ Pound, "The Tradition," *L.E.*, p. 91.

¹⁴ Transcriptions of the Greek are taken from John Hamilton Edwards and William W. Vasse's *Annotated Index to the Cantos of Ezra Pound: Cantos I-LXXXIV* (Berkeley: Univ. of California Press, 1957). *Kúθηρα δελνὰ* literally means "dread (or fearful) Cythera," another name for Aphrodite. I have taken the liberty to render the Greek as "Aphrodite" in my text for the purpose of consistency.

¹⁵ Pound, *Guide to Kulchur*, p. 64.

¹⁶ *Ibid.*, pp. 65-66.

¹⁷ Kenner, p. 53.

¹⁸ Martin Heidegger, "Holderlin and the Essence of Poetry," *Existence and Being*, intro. and analysis by Werner Brock, Gateway Edition (Chicago: Henry Regnery, 1949), p. 279.

¹⁹ Daniel Pearlman, *The Barb of Time: On the Unity of Ezra Pound's Cantos* (New York: Oxford Univ. Press, 1969), p. 118.

²⁰ *Ibid.*, pp. 11-14.

²¹ Kenner, p. 556.

²² Heidegger, "Holderlin and the Essence of Poetry," p. 280-1.

²³ Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (New York: Vintage-Random House, 1973), p. 34.

²⁴ *Ibid.*, p. 49.

²⁵ Martin Heidegger, *Being and Time*, trans. John Macquarrie & Edward Robinson (New York: Harper & Row, 1962).

For a full explication of this concept of time see Division Two: Dasein and Temporality.

²⁶ Werner Brock, "An Account of 'The Four Essays,'" *Existence and Being*, Martin Heidegger, Gateway Edition (Chicago: Henry Regnery, 1949), p. 175.

²⁷ Foucault, p. 51.

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TO POLISH A CROWN: SHAKESPEAREAN DIALECTIC

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It is sometimes said, by T. S. Eliot for instance, that Shakespeare has no meaning, no thought.¹ One variation of this idea is that Shakespeare himself never “says” anything, but only presents voices on a variety of questions. If one traces the concept of voices to its relationship with “votes,”² then one might argue that Shakespeare presents various votes on an issue—such as nature in *King Lear*—but never tells which side won the election, or which side should have done. Perhaps Shakespeare dramatizes the questions but never the answers.

Certainly Shakespeare is no Plato. Shakespeare has no Socrates to speak for him, no Socrates to define a system of metaphysics from which may come a theory of ethics, knowledge, or politics. If Plato is a metaphysician of nature—or if Kant is—then Shakespeare represents with language the nature of which Plato and Kant try to make sense. But language—including rhyme, meter, diction, thought, and metaphor—constitutes only one of Shakespeare’s strong suits. There is also psychology—the relationship between varieties of action and the characteristics of the soul; and there is playwrighting, which is what Shakespeare’s contemporaries thought he did for a living.

As a playwright, Shakespeare is a play-builder, even as an arkwright in his day built arks. The English Renaissance (this is now a commonplace) had a highly-developed sense of craft. In Shakespeare’s craft the basic unit of construction is the scene. Thus, were Shakespeare to “say” anything—were he to suggest an issue, raise a question, voice a debate, even make an argument—he would do so partly by placing scenes together in a certain order. In this sense the affinities between him and Plato become greater, for both, in different ways, are dialecticians.

Shakespeare the Dialectician writes a scene in which subjects are voiced, then follows that scene with the same subjects voiced in different ways, and so on. The result is a dramatic debate. But the order in which the topics are voiced may provide clues, to the attentive listener, about what Shakespeare is saying.

The example I have chosen to illustrate these assumptions and methods is the first act (or first three scenes) of *Henry IV, part 1*. I have selected a chronicle play partly because any examination of “dialectical argument” in a comedy or tragedy would have much tougher going in a brief essay. The generosity of viewpoint in Shakespearean comedy—and mystery of viewpoint in his tragedy—make clear dialectical argument harder to find. But a chronicle play addresses the issue of political power, so arguments become naturally inherent as to how power is acquired, used, and lost. Although this “argument of history” is treated in different ways by Christians and Machiavellians,³ an argument it is: more susceptible to dialectical clarity than are comic festivals or tragic riddles.

In the first three scenes of the first part of *Henry IV*, Shakespearean voices are heard on four topics: theft, penance, rebellion, and parenthood. In the first scene the topics are presented in just that order. As to theft, Henry Bolingbroke sits in his London throne room, there state business to do, with a stolen crown on his head. Of course the crown had been stolen from a politically inept king, and political necessity would well argue that Richard had to go. But Henry has gone counter to a myth of legitimacy-by-primogeniture. Whether such a myth be Christian natural law or Machiavellian fraud

is beside the main point, which is that a stolen crown is hard to keep.

But Henry's penance—to send a crusading English legion to rescue from infidels those “holy fields” (I.i.24)⁴ over which Christ Himself had walked—is an attempt to meet at once the Christian and Machiavellian objections to his crown. Such a crusade would signal personal penance to God, and Machiavelli himself would approve such a united English diversion from the fact of Henry's theft. It is a bright idea from a king both politic and penitent. But Rebellion says no. Owen Glendower has defeated the Crown's forces led by Mortimer; and although Henry Percy has defeated on the king's behalf a variety of rebellious Scots, even Percy himself is rebellious in refusing to turn over all his prisoners to the Crown. Such impudence is blamed on Percy's uncle Worcester—which is even worse since Worcester would be a rebel of significant power against the king.

Henry is therefore back to penance again, but not the bright executive penance of the planned crusade, which must now be postponed. Henry's new penance means that all is to be endured and nothing to be done. Such penance is related to parenthood, the fourth topic: Henry fears he is to be punished for his stolen crown by the rebellion of his own son, Hal Bolingbroke, Prince of Wales. Toward the end of the scene, when Henry wishes that Henry Percy, not Henry Bolingbroke, were his son, the King reflects on all four topics at once. In his utterance of regret mixed with wish-fulfillment this player-king has just performed a Shakespearean synthesis of four great themes, each of them a burden to him. In effect, he who had robbed the firstborn fears that his own firstborn will punish him.

But Henry is hardly to be kept down for long. At the very end of his scene he is ever the doer and commander, giving orders about the next council (to be held on the next Wednesday at Windsor) and urging his lieutenants on to efficient action. For Henry time is important—he will race it

hard to outrun the twin bugbears of suffering penance and fearful rebellion. Henry would never be caught asking the question posed to his son in the next scene by Sir John Falstaff: “Now, Hal, what time of day is it, lad?” (I.ii.1)

In this scene the four topics are voiced in a different order: rebellion, theft, parenthood, and penance. Thus, the order of topics in the second scene is in good part the reverse of the first. What the first scene approaches rather late—because Henry would forget about rebellion for as long as possible—the second scene starts with as a *given*, because rebellion comes naturally to the prince and his unreliable companion. And what Henry has immediately on his mind as cure for the rebellion he might otherwise wish away—penance—Hal and Falstaff get to only later in the scene; and even then Falstaff's vow that he will “give over” (81) his “wicked” (81) life is but one more moment in a kidding career. Henry is immediately penitent; Falstaff and Hal approach it, jokingly, rather later, as an implicit comment on the sincerity of any conventional penance in this play.

As for parenthood, the king comes to that topic fairly late. Henry dwells late on his son partly because Hal too is one of those unpleasant subjects better left alone. But Hal seems to think on his father not at all—as though he has no concern for his father's fears. It is only Falstaff, rather early in the scene, who reminds Hal that it's “here apparent” that “thou art heir apparent” (48-49); and Falstaff's begging point is that Hal use his parental inheritance to good advantage by giving thieves complete license. What Henry would forget about his son, the son's new patrimony—represented by the king of Eastcheap Tavern⁵—underlines pointedly: that the heir of a stolen crown would not wish to discourage theft.

Finally, there is theft itself. In the first scene, before the scene itself opens, *it* is the given. In the second scene, what was unmentionable in the first is mentioned with abandon. Falstaff and Hal kid early and profusely

about their thefts, past and future. The bulk of the scene is given over to plans for the robbery of the travellers at Gadshill, and to Poins' and the prince's plans to rob Falstaff and company after they have robbed the travellers. It is as though the king's worst fears about realm and son have come true. What he would avoid—various rebellion and regretful parenthood—this second scene presents with immediacy and abundance: a wayward, impenitent son planning a rebellious theft of respectable pilgrims, and then planning a further theft of the thieves themselves. Could Henry see this scene with *its* order of topics, he would see his own son perform an analogy of the king's own likely and fearful situations: rebellious thieves stealing from those who had earlier stolen—in the instance of Henry IV, stolen a crown.

But in this dialectical allegory if Theft and Rebellion are to be the king's foes, unknown to him Parenthood and Penance will be his friends. Parenthood and Penance have the last vote in this scene: when Hal confides to listeners and readers that, when the time is most to be redeemed, he will repent and pay the debt consistent with his true parental heritage. Hal will steal—but only from those unsuspecting among his father's foes who think him a failure. And he will rebel—but only against those who would rebel against his father. Hal will put together the four topics in a unique equation. Later in the play he will become the full player-prince,⁶ and the topics will dance to the order of his choreography. He plans to be in the play yet outside it.

But first we must encounter those who, on both sides of the conflict, manage only to be trapped in the play and in history. In retrospect it is a shrill and desperate Henry whom we meet, along with a voluble and unknowing Henry (Hotspur) Percy, plus a priggish and scheming Worcester who clumsily makes self-survival the occasion for conspiracy against the king. Relative to Hal's announced gambit, confined only to us, these (partly excepting energetic Hotspur) are a diminished lot.

If unmentionable theft, mounting rebellion, and flawed parenthood are the subjects of King Henry's trepidation in the first scene, and if the prince and Falstaff approach these very subjects without fear in the second, then the third scene is different still. Naturally, as in the previous scene, it presents rebellion first; but this time the rebellion is seemingly directed straight to the king's face—for the first time. Here is not merely the sign of rebellion, as were the loquacious quibbles on thievery in the last scene. Here, to Henry's mind, is rebellion itself: the refusal of Hotspur to give up his prisoners. Nor will a worried regal "we" accept Hotspur's insistence that he did so because the crown sent a regular sissy to request the prisoners. For Hotspur the king's related accusation of Hotspur's brother-in-law Mortimer turns Hotspur's apparent rebellion into a real one. Hotspur's honor, however much rooted in glands rather than reason, is offended. This king is dishonorable, so he will get all the rebellion the fighting Hotspur has to offer. A king, because oversensitive to rebellion, acts to provide himself even more of it.

The balance of the scene, after this obvious analogy between the small-time rebellion of the Gadshill kids and the big-time one of the London adults, may be called "The Political Education of Henry Hotspur." As such, this education fleshes out the other three themes: in order of presentation they are theft, penance, and parenthood. Hotspur hears for the first time that King Henry slanders Edmund Mortimer because King Richard had declared that only Mortimer could rightfully receive his crown. Thus Hotspur realizes now that Henry had stolen it. Thus also Hotspur vows to defeat Henry as penance for his own family's role in helping Bolingbroke rob the crown from its rightful owner—Hotspur's own brother-in-law the Earl of March.⁷ Finally, there is the theme of parenthood, for Northumberland can do little more with young Hotspur than the King with young Hal. Henry wants Hal to reform and act as though he is Prince of Wales. Northumberland wants something simpler

from the ranting Hotspur: he wants Hotspur to shut up. That Hotspur has known little of the theft by which Henry has taken the crown, that his rebellion and penance are rooted entirely in personal slights against himself and his brother-in-law, and that he can barely conquer garrulity enough to listen to a complex plot against the king he hates—these are signs that events are in the saddle and will ride Hotspur. In sum, although this is Hotspur's scene his opposition and remorse are pubescent, his knowledge of political theft shallow, and his relations with father and uncle both cantankerous and inconstant. His apparent union with them against Henry, given the background of Hal's confidential soliloquy, may well be no match for Hal's promised union with Henry against them all. Already Hal is one-up because of his superior stealth. If Hotspur approaches theft, rebellion, and penance as elements in a first-reader political education, then Hal seems already to have advanced knowledge in these subjects, which he will redefine from the roots up.

The crown has been stolen, and so it is tarnished. Henry tries to polish it by the diversion of the crusade, which simultaneously defines penance with the two great metaphors of his time, one religious and one political. In theory it is a wonderful idea to give mischievous minds the business of fighting infidel Turks instead of Henry or each other. But the rebellion has gone too far, so no crusade can polish the crown. And both Henry's worries at the end of the first scene, and Hal's comportment through most of the second, would seem to confirm that Henry's firstborn (should he get the crown at all) will only tarnish it further. Nor would the rebels of the third scene seem to have much promise of polishing this crown, since they helped tarnish it, show no disposition to get it for the apparent proper heir Mortimer, and have as their noblest pretender only the impetuous and inept Hotspur. That leaves in reality, as crown-polisher-to-be, only Hal the Prince of Wales. He would inherit a tar-

nished crown, but he announces secretly his plans to polish it. He will do so by giving rebellion, theft, penance, and parenthood fresh cordons in new places. Here, roughly, would be his new meanings:

Rebellion: not the conventional act of opposing a king vulnerable because of how he acquired sovereignty, but rather a new opposition to the primogenitive myth itself. The new, substitute myth would be acquired by a new political fraud of exquisite timing: the sudden admiration which accrues to one "Redeeming time when men least think I will" (I.ii.187).⁸

Theft: not the conventional concept of stealing a crown from a firstborn king, but rather a new concept: that a stolen crown is up-for-grabs to anyone who can take it and confer upon it a new legitimacy. Much to the point are Hal's robbing the robbers at Gadshill, and his overeagerness to take the crown from his sleeping, seemingly dead father in *Henry IV, part 2*.⁹

Penance: not the bright but finally traditional idea of his father—the pious crusade to busy abroad scheming minds—but rather the penance of success: defeat of the "illegitimate" rebels, expansion of the realm into France, and (for even Hal conventionally obeys God) many almshouses at state expense in Richard's memory. The true penitent, then, both polishes a tarnished crown and makes it brighter than ever. The name of Richard may take care of beggars, but the true salvation of men lies in the brilliantly sovereign state.

Parenthood: not merely the conventional fealty owed to the father-king, but also a dual loyalty to a dual fatherhood. Hal is finally loyal to the historic father who holds the crown and can give it to the prince for polishing. But the princely dialectician is typically loyal—for a while—to an alternate patrimony: his inheritance of the corpulent companion who professes indifference to history. Whether Falstaff is a seductive sophist or a Christian parable¹⁰ is beside the real point, which is that he stands outside Machiavellian history, drinks sack while immensely

concerned with survival to drink more, and ribs both sides as thieves jousting over a dirty crown. The agile Hal needs such a friend in part when he paradoxically leaves him, for maximum political surprise. But Hal needs Falstaff also to practice the juggling of opposites, and to learn, like Falstaff, to bide his time outside history until he is ready to join and direct it. Of course, unlike Falstaff—who knows that “To the latter end of a fray and the beginning of a feast/Fits a dull fighter and a keen guest” (IV.ii.67-68)—Hal knows contrarily that one joins a fray only when it needs one most. But if Falstaff times to survive, it is no accident that his princely chum times to win. His ultimate duelling victory over Hotspur, deserted by his own father in battle, only confirms by ritual the political suppleness of Hal’s dual parentage.

So the old notions of power attached to the crown are tarnished beyond any polishing that even Prince Hal could do. This crown can only be polished by brilliance—by the new man of new meanings: rebellion against the hackneyed ideas of rebellion; audacious theft of an already-stolen crown; contrition that drives the quest for victory; and parenthood that stands both in and out of history.

A few plays later the crown of Henry V becomes dazzling indeed.

NOTES

¹ See “Shakespeare and the Stoicism of Seneca,” *Elizabethan Essays* (New York, 1964), pp. 46-47.

² Compare D. J. Gordon’s implicit tracing of the voices/votes connection in “Name and Fame: Shakespeare’s *Coriolanus*,” *Papers Mainly Shakespearean*, ed. G. I. Duthie (Edinburgh, 1964), p. 55.

³ The single best interpretation I know of the contrast between Christianity and Machiavelli is Isaiah Berlin’s “The Question of Machiavelli,” *New York Review of Books*, XVII (4 November 1971). The same basic essay is in Berlin’s *Against the Current* (New York, 1980) as “The Originality of Machiavelli.”

⁴ All quotations from the play are from *The Complete Works of Shakespeare*, ed. David Bevington (Glenview, Illinois 1980).

⁵ One does not have to resort to the crudest Freudian conceptions in order to see that Hal has two patrimonies in this play. It would be inaccurate and simplistic to say that Falstaff represents an “id-father,” and Henry a “superego-father.” For one thing, Hal has never really given up his fealty to King Henry. For another, Falstaff is much too shrewd a survivalist to have quite the self-destructive riot of the id. But Falstaff is definitely “king” of his world—the green world of play and historical indifference—even as Henry is king of his: the red-and-white world of political consequence. For a fuller exposition of these two worlds see Northrop Frye’s “The Argument of Comedy,” *English Institute Essays, 1948*, ed. D. A. Robertson (New York, 1949), pp. 58-73.

⁶ For a full analysis of the Shakespearean *player-king* see Eilleen Allman’s *Player-King and Adversary* (Baton Rouge, 1980).

⁷ Indeed, a point sometimes overlooked about Hotspur’s early professions of “honor” in attacking Henry is that much more important to Hotspur than the historical robbery of Richard is the slight to his brother-in-law Mortimer, which he takes as a personal offense. Here is another example of Hotspur’s incessant present-mindedness and unfitness to rule. Such present-mindedness in a different theme—not in honor but poetry—led to the downfall of Richard himself.

⁸ At the same time Hal gives a new twist, obviously, to the Christian doctrine of “redemption.” In this new Machiavellian context redemption is mixed up with proper timing. An implicit theme of *The Prince* is that timing is all. One must know *when*, for instance, to be good and when to seem so (chapter XV).

⁹ See Act IV, scene v. Of course there is a lot of predictable human nature in this scene: Henry, dying, is predictably upset that Hal has taken the crown from Henry’s only-sleeping, not-yet-dead, side. And Hal is predictably penitent when he discovers that Henry is still alive. But human terms aside, the event also suggests the extent to which stealing seems still associated with the crown which once belonged to Richard.

¹⁰ For classic, representative, but diverse views of Falstaff see Samuel Johnson’s edition of Shakespeare, introductory headnote to the first and second parts of *Henry IV*; and W. H. Auden’s “The Prince’s Dog” in his *Dyer’s Hand* (New York, 1968). A more accessible source of Johnson’s headnote is *Johnson on Shakespeare*, ed. Walter Raleigh (London, 1908), especially p. 125.

TEXTUAL POLITICS: THE USES OF IMAGINATION IN JOANNA RUSS'S *THE FEMALE MAN*

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It is a commonplace in SF (science fiction) today that most of the best younger writers are women. One of the most admired—and controversial—is Joanna Russ. In the five novels, numerous short stories, reviews and critical essays that she has produced since 1959, the acuteness of Russ's analytical powers and the virtuosity of her technical range have won many readers—and confused or angered others. *The Female Man* (written in the Sixties but not published until 1975) is a particularly good example of her work and the uses of SF.

The Female Man (hereafter *TFM*) has always disturbed a lot of people. In Section Seven of the novel, Russ herself anticipates some of their responses:

Shrill . . . vituperative . . . no concern for the future of society . . . maunderings of an antiquated feminism . . . this shapeless book . . . twisted, neurotic . . . some truth buried in a largely hysterical . . . of very limited interest . . . no characterization, no plot . . . really important issues are neglected . . . a not very appealing aggressiveness . . . another shrill polemic which . . . the tired tricks of the anti-novelists. . . . (Seven:III)¹

When I have taught the novel, a typical series of reactions goes like this:

So far I don't like reading this book; I'm confused . . . I'm starting to enjoy it . . . it's venting some of my anger . . . I don't know whether to cry or yell . . . It's as if Russ has been bugging scenes from my own life . . . very motivating . . . told me I have to do what I want; no one will do it for me.

This set, of course, is from women. But in either set, the first problem for readers is the fact that *TFM* is hardly constructed in

conventional novel form. Form it does have, however: a very carefully considered one.

What kind of form? One useful answer is to say that the novel is not a work but a "Text." Roland Barthes, one of the first to stress this distinction, reminds us that any time we write (anything), we offer others the last word, whether we will it or not. In the particular case of literature, a writer is concerned to multiply meanings without "filling" or "closing" them.² The writer, Barthes says, uses language to shape a world "which is emphatically signifying but never fully signified": that is, we know that what we read is meaningful, but the meaning is not complete or certain.

But writers differ in how complete they intend their meanings to be and in how much of the "last word" they want readers to have. In Barthes' distinction, a *work* is an object, a thing, whose meaning readers consume or "get." A *text* is an activity, a production, of both work and reader together. To make room for readers to create with authors, texts often test conventional limits of rationality or readability: they don't follow our conventional expectations about plot and characterization. Instead of packaging a meaning for us to get, texts keeping deferring a final or single meaning; they aim for multiple, even conflicting, meanings which can't be reduced to a single, "author's" meaning. In short, texts *play*. By delaying and shifting meanings, a text plays within a field with potentially infinite patterns that vary with each reader and even each reading by one reader. Readers play the game of text by experimenting to produce the experience for themselves. They perform and interpret instead of passively imitating or consuming what they experience as they

read. That is why Barthes claims that a text "participates in its own way in a social utopia . . . the space in which no language [writer's or reader's] has a hold over any other, where languages circulate."⁴

Texts are also what Jerome McGann called "visionary art": art that is a vehicle of our perception (not an object of it). Such art "would urge no programs and offer no systems," but would provide a method to help us deliver ourselves from systems. Whichever term we use, the point is that we are challenged to choose between the responsibility for constructing our own "systems" of meaning as we read or the abdication of responsibility.⁵ The pleasures and perils of texts are simply a specialized form of what is the game of life for human beings: the creatures who have the unique freedom to make meanings. As Hayden White points out, we have the ambiguous power to shape ourselves and our worlds through our languages—although human language has the power both to create meaning and to frustrate all our efforts to express definitive, unambiguous meanings.⁶

In defining visionary art, McGann was talking of William Blake, who had his own vivid description of what happens in the experience of a text. Blake's image was the apocalyptic moment when the fourfold "Human Form Divine" wakes in an individual or a culture: for, according to Blake, what we call God *is* the Human Imagination. This description of the moment when it fully wakes also dramatizes how a text, its readers and its infinite number of meanings interact:

And they conversed together in Visionary
Forms dramatic which bright/ Rebounded
from their Tongues in thunderous majesty,
in Visions/ In new Expanses, creating
exemplars of Memory and of Intellect/
Creating Space, Creating Time according
to the Wonders Divine/Of Human Imagination. . . .

(*Jerusalem* 98:28-31)⁷

In a word, Blake's synonym for what texts and readers engage in is "conversation."

In *TFM*, the character Jael herself uses a Blake quotation to help explain her actions, a quotation which again describes how texts operate:

. . . as Blake says, the path of Excess leads to the Palace of Wisdom, to that place where all things converge, but up high, up unbearably high, that mental success which leads you into yourself under the aspect of eternity. . . . (Eight:IX)⁸

Or, as one of the other narrators says, "You never know what is enough until you know what is more than enough" (Three:VI).

Russ's work has many allusions to Blake, which is logical enough. For although 150 years separate them, Blake and Russ shared a common problem: how to respond directly to a political situation with a work of art. Blake's *Jerusalem* took on the Napoleonic wars that marked the failure of the apocalyptic hopes which so many people had of the French Revolution. *TFM* takes on not only sexual politics, but the underlying assumptions and conditions of our culture that produce those politics.

Russ's alternatives are not Blake's. But, like Blake, she aims to liberate, not enslave, the reader's imagination. Both believe that to achieve that aim, art must somehow "trouble what exists"⁹ in our world in order to make us re-imagine it. If we do shape ourselves and our worlds through our languages, then our human problem is how to be both free and responsible manipulators of language. For an artist, there is an added problem: how to induce others to be so as well.

When an artist speaks for or from an "oppressed" group (some group always is in any culture we've known so far), this emphasis on liberating the imaginations of both artist and audience is hardly surprising. Russ writes from the periphery of American culture, as an "outsider" in a literary, economic, social and sexual sense. From that position, in *TFM* she undertakes a journey within herself and throughout her universe: the inter-relationship is a significant part of the point.

Russ also undertakes a solution to the problem of teaching freedom or of providing an opportunity for the reader to exercise freedom.

To do that, Russ chose to write SF, a form which can re-envision or re-write the novel (and its world) as Blake did with the Bible and Milton (and their worlds). Novels, what fans love to call "mundane fiction," take the world and its systems as given; they reflect the world that is. Against that constant background, the only thing that a novel can change or vary is the human figure we focus on. Novels can warn you what the world will do to you, advise you to escape a particular social group, tell you how to behave in order to be what the world calls successful. But novels can't *re-imagine* the world and its systems.¹⁰

Science fiction can, and often does. It can present a possibility of difference, a created and not-yet-existent world or systems or institution. That is important because our experience of that nonexistent world in SF like *TFM* provokes a dialogue, a conversation, with the world we know.

Joanna Russ is not the first SF writer to do a SF novel with more than one protagonist, shifting points of view, or an amazing variety of forms. She's not the first to construct a non-linear plot or to use SF to explore the kind of fundamental philosophical and social issues raised in *TFM*. The point is that like any writer of texts, she aims to disturb our expectations of form, to trouble our notions of what we and the world are, in order to encourage *us* to re-envision both what is and what could be: to liberate our own imaginative energy.

For these reasons, *TFM* presents (to the readers) and allows (for the narrators) a journey inward to our own inner condition *in relation to* the conditions of our world. As Jael says, the text operates through *excess*: it isolates, exaggerates, reconnects, *plays* with certain personality components under varying conditions. In this novel, Russ shapes aspects of her own psyche as characters: one characterized by narcissism, fear, hatred,

masochism, passivity and dependence (Jeanine); one characterized by strength, intelligence, imagination, adaptability and self-love (Janet); a third, characterized by fierce independence, cunning, power, savage wit and anger (Jael). The fourth character, torn among these three is Joanna.¹¹ Joanna, who says she is the author of the novel, isolates each of these potentialities within herself and pushes them to excess by gradually building up a picture of the kind of world, the kind of technological and economic state, the kind of culture that would be most likely to evoke each potentiality. And she does all this to envision how all four operate in relation to each other, interplay, in Joanna and in Joanna's/our world.

But our question is what kind of form the novel has. Each of *TFM*'s nine parts is further subdivided into segments, some of which are only a sentence or phrase long. The point of view shifts back and forth from third- to first person narration, and among first-person narrators. The sequence of events is not linear: it makes sudden, disorienting leaps, often circling back to continue or revise an earlier segment. Some segments do have topical connections: e.g., Part One:IX shifts from Jeannine's attitude toward work to the Whileawayan one. Yet focussing on the fact that Joanna makes herself increasingly conspicuous as an author, the maker of a fiction we're reading, makes it possible to sort the novel's nine Parts into four main divisions: (A) Parts One to Four, (B) Parts Five and Six, (C) Parts Seven and Eight, (D) Part Nine. After a relatively detailed look at the first section to see how the pattern of Joanna's inward journey emerges, the significance of the other three can be perceived more quickly.

(A) *A Choice of Evils: Fear and Fantasy (Parts One to Four)*

TFM opens with the character Janet Evason's introduction of herself. Born "on Whileaway," she obviously comes from a planet and a culture radically different from ours. Janet's 187 I.Q. and her work history

may not seem so alien, but her references to Whileawayan childhood experiences like stalking wolves, or wandering in bands to visit the North Polar Station, are; most alien of all are her mention of "my mother" and "my other mother," her "Wife," Vittoria, and her family of nineteen. The "tripods of computer beacons everywhere" indicate an advanced technology. In little more than a page, Janet presents life on Whileaway as freer, more varied, more *interesting* than it is for most of us.

The second segment shifts to a third-person narrator (unidentified) who introduces Jeannine Dadier; her character and world contrast highly with Janet's. SF readers can quickly add up the details of this segment to conclude that Jeannine comes from an alternate or parallel world. The year is 1969, but World War II has never occurred (war with Japan is being discussed) and the U.S. is still in the grips of the Great Depression; this world's 1969 technology is behind ours. Where Janet is active, adventurous, emotionally fulfilled, Jeannine is passive and day-dreamy, tied to a dreary part-time job at a library and to a "lover" whose presence she can hardly bear. The reader eventually notices that Jeannine is the only "J" who never relates her own tale: the narrative of Jeannine is always someone else's.

In the next two segments, the third-person narrator tells how Janet appeared in our world; this narrative becomes Joanna's first-person introduction of herself, an inhabitant of our world and time. As Janet returns to Whileaway after her first brief appearance, Joanna remarks that she has "just turned into a man, me, Joanna. I mean a female man, of course; my body and soul were exactly the same" (One:IV).¹²

Continuing with these kinds of shifts, Part One serves to introduce these three protagonists, to explain the device of "probability universes" (One:VI) and to expand on the opening views of Janet's and Jeannine's worlds. Whileaway, in the portrait that gradually emerges, is over 900 years ahead of us in another probability. Before

the "catastrophe" that produced the current women-only culture, both technology and ecological thinking had achieved the re-formation of the earth itself into two large continents and had established colonies within the solar system. The society which has slowly been built up since the men disappeared is small in numbers, decentralized and agrarian, but technologically sophisticated: they've developed biological engineering, matter-antimatter reactors, induction helmets that permit direct human-computer interaction, space travel and the probability mechanics that sends Janet to Joanna's world. Thanks to the computers, there is a small administration, a geographical parliament and a guilds council. The legal system is even more minimal: one of the reasons Janet is chosen is that as a Safety and Peace Officer, she can be spared. (She has that job, we'll find, because her I.Q. is lower than most Whileawayans': "I am stupid," she says in Seven:IV.) Only social and personal relations are complex, given their family and clan systems. Whileawayans work very, very hard, we are told—16 hours a week is typical.

Presuming some knowledge of American history, Part One presents less detail about Jeannine's world; Jael will later state that Joanna's and Jeannine's worlds are "almost the same moment of time" (Eight:V). In her 1969, there is no television, only radio; presumably other forms of technological lag contribute to the shortage of full-time jobs and the low pay for existing ones. The federal government plays a large role: we hear of the WPA, rationing and government vs. free market stores. The tension that results from the profound contrast between this world and Whileaway intensifies throughout the novel. Running through the views of these worlds and, later, of Joanna's and Jael's, are recurrent thematic links: the question of self-image and the "female man" concept, as well as ideas of work and pleasure, and varieties of aggressive behavior on both personal and social levels.

Despite what we learn about probability

universes and how the Whileawayans sent Janet off as ambassador, two puzzles emerge about how all the protagonists move from one probability to another. Jeannine's arrival on Joanna's world is presented very ambiguously. While watching Janet on TV in a cocktail lounge, Joanna meets Jeannine, looking "very much out of place" (Jeannine agrees) and comments, "I can't imagine how she got there, except by accident" (One: VII). Joanna will still be insisting that she doesn't know how she's gotten "stuck with Jeannine" when all three of them are transported to Whileaway (Five: I)—where Jeannine will feel even more out of place, repeatedly muttering, "I'm not here" (One: XIV). The opening of Part Two presents an even bigger puzzle: a new and nameless "I" who says explicitly that she is not any of the other three. "'You'll meet me later,'" she says, and apparently disappears until Part Eight.¹³ But this mysterious "blond Halloween ghoul" with a face that scares children asks a question that is central to the novel:

Who am I?

I know who I am, but what's my brand name? (Two: I)

It seems a cryptic question, but think of what a brand name tells us: what the "product" is; who "makes" it and how; who "sells" it and how; who profits from it in a particular method of distribution and exchange; what it's *for*, both in terms of literal use and in terms of the desires which having it is supposed to fulfill (economic status? sexual attractiveness? etc.). In short, who *uses* it? *How? Why?*

Except, that the "it," the "product," here is a woman.

Think, too, of the fact that brand names imply some kind of capitalist economy—and that such an economy does not exist in Janet's world, though it does on Joanna's, Jeannine's and, we'll discover, on the world of Jael, the mystery voice.

The question, of course, is ultimately Joanna's. *TFM* explores how and why

women's lives are shaped in our society; therefore, it explores the nature of our society, period, for women and men. But in this reading of the novel, we also note the fact that Joanna's questions erupt out of nowhere at this point: displaced in an unrecognized voice, unconscious, just as her reason for being "stuck with" Jeannine is also unconscious.

It is right after Jael/Joanna's question that Joanna reminds us that she turned into a man on Feb. 7, 1969 (Two: II). "What's my brand name?" is an angry question. When Joanna finally details her transformation into "the female man" (to a person with full status) in Part Seven, it becomes clear that the essential catalyst is her anger. Only then do Jael and her world appear, and only then do we see that Jael has in fact been the agent who brought all three J's together and to Womanland.

Part Two, then, primarily concerns how Janet, Joanna and Jeannine come together, although some segments continue the narrative of Janet's dealing with our military and the police (III, V, VI, IX) and her TV interview (VII). There are scenes of Janet collecting Joanna and Jeannine (in a stolen car) or picking them up at the Chinese New Year Festival (where Jeannine's boyfriend Cal sees her go off with *three* other people). Joanna's narrative again uses ambiguities that play upon her authorial role. In segment VIII, she remarks that Janet "lived with me for a month. I don't mean in my house," mentioning Janet's ubiquitous media presence [to sell what?]; however, Part Three will focus on the six months that Janet does live with her. Joanna then adds, "With somebody I suspect was Miss Dadier appearing in my bedroom late one night," saying "I'm lost." Jeannine disappears, but Joanna says, "In my dream somebody [Jael?] wanted to know where Miss Dadier was"; when she wakes, Jeannine is on the other side of Joanna's mirror, "Semaphoring frantically." When Joanna tries to remove this presence by turning out the light, Jeannine "remained lit up. Dismissing the whole thing as the

world's aberration, not mine," Joanna goes back to bed while Jeannine calls, "Janet?" As Jael later remarks, "people don't recognize themselves except in mirrors, and sometimes not even then" (Eight:V).

If Jeannine's world contrasts painfully with Whileaway, so does Joanna's; they are, as we noted, close. Part Three ("This is the lecture. If you don't like it, you can skip to the next chapter.") divides between scenes of life on our world, especially the notorious party, and scenes of life on Whileaway, especially the extended summary of Whileawayan life and character.

In segment I of Part Three, Joanna refers to herself as author as well as character even more blatantly. Before Janet, she admits, all she did was:

dress for The Man
smile for The Man
talk wittily to The Man
sympathize with The Man
flatter The Man
understand The Man
defer to The Man
entertain The Man
keep The Man
live for The Man

(Three:I)

However, Joanna goes on, "After I called up Janet, out of nothing, or she called up me (don't read between the lines; there's nothing there)," not only her zest for life but her physical health improved. Ambiguous tags like "I made that woman up" or "I imagine her" recur frequently.

One thing Joanna imagines is what would happen to Janet on our world *if* she followed "the opera scenario that governs our lives": she sketches how Janet would meet a man at a party and charts the course of the romance, culminating in Janet's avowal that "I Am In Love With That Man. That Is The Meaning Of Life." But what really happens in Joanna's tale is that Janet spends six months with her, devouring information of all sorts and driving Joanna crazy by going naked, dialling phones with her feet, dropping into judo crouches while dressed in ac-

ceptable feminine style, and commenting about sex with men: ". . . to me they are a particularly alien species; one can make love with a dog, yes? But not with something so uncomfortably close to oneself" (Three:II).

But then Joanna and Janet do go to a party (Three:II), Joanna obsessed but dissatisfied with her appearance and physically miserable, Janet pleased, excited and cheerfully unconcerned about her "Disappearing Lipstick." The party is such a formally brilliant capsule satire of male-female relationships in our society, and such a perfect exemplar of the tension between how Joanna has been trained to behave and how she'd like to, that it's hard to resist quoting it all, though of course we must.

But every reader of the novel remembers the climax. As Joanna and Janet try to leave, their host tells them they're *not* going. If we watch the pronouns here, we see a clear little model of Joanna as the locus of the multiple J's. "He took *us* by the wrist," Joanna says.

"Let me go," said Janet.

Say it loud. Somebody will come to rescue you.

Can't I rescue myself?

No.

Why not?

All this time he was nuzzling *her* ear and *I* was showing my distaste by shrinking terrified into a corner, one eye on the party. Everyone seemed amused.

"Give us a goodbye kiss," said the host, who might have been attractive under other circumstances, a giant Marine, so to speak. *I* pushed him away.

"What's a matter, you some kinda prude?" he said and enfolding *us* in how powerful arms et cetera. . . . [pronoun *italics* mine]

(Three:II)

"Shrinking terrified into a corner" is the hallmark of *Jeannine's* behavior, the passive persona whose labels are "vanishing," "shrinking," "disappearing." What we are seeing at this moment is Joanna's split between the passive, helpless self that she still

can't escape, but hates, and the active, competent self that she can imagine and desires to be. Joanna spends the entire party being placating to the men who insult them and begging Janet to be "polite." The only moment of anger she allows herself (the only hint of Jael's repressed presence) is directed at Janet for daring to argue—and is only a fantasy act: "(Picture me on the back of the couch, clinging to her hair like a homuncula, battering her on top of the head until she doesn't dare to open her mouth.)"

In contrast, the free citizen of Whileaway resists the host's aggression with a control and competence appropriate to each stage of provocation. When words fail to deter the host and he invites her to *make* him let go, Janet "dumps" him once. The host escalates to obscene and violent insults. Janet is unmoved until he hits the one that is meaningful to a Whileawayan: "a Goddamned scared little baby virgin." (The key word is "baby.") At that point, Janet gives him "a big stinging theatrical come-on-get-your-guard" slap. When "the Marine" attacks in earnest, Janet "deflects" him twice until she gets him in a "cool and technical" hold, warning him that he'll break his arm if he moves. He does. With "astonished good humor," Janet asks, "'But why do you want to fight when you do not know how?'" (Three:II). In Segment III, Janet extends the point about "all this uneasy aggression" that she's encountered here: "for the temperamental thing, sometimes you can't stand another person," the only cure is "distance." When it comes to physical conflict, "For sport, yes, okay, for hatred, no. Separate them." So is she sorry she hurt the host? "Not me."

At this dramatic moment, then, let me anticipate the final shape of the novelistic structure I'm proposing.

Joanna's increasingly overt and frequent references to herself as the source and manipulator of her characters and fiction focus our attention on her, on a women considering her situation and her own history in contemporary American society. The first

fact about that situation is an internal conflict between what she is or has been and what she wishes she could be; and the conflict brings dissatisfaction, unease. That impels analysis, but Joanna turns to fantasy and imagination as her methods to isolate and model (ultimately) four characters, or aspects of herself, and the environments that would produce the clearest form of each.

At this stage of her inward journey, Joanna most clearly pictures only two of these aspects, Janet and Jeannine, and she's caught between them, unable to detach herself from Jeannine or to become Janet. We could, therefore, say that although Janet is using her imagination—being active, creating—she is also merely fantasizing—being relatively passive, unable yet to fully direct and control her creations in relation to herself or to make them active in reality. Although they seem fully-imagined, Janet and Jeannine remain "fantasies" for three reasons. First, Joanna can't see why she's stuck with Jeannine, this model of the worst she could be, whose world is so close to her own. Second, Janet is only an alien, a temporary visitor to our world. Even when Joanna, Janet and Jeannine physically come together, there is no agreement, no harmony, no *connection* among them yet. Joanna can't *see*, by which I mean *imagine*, what possible connections could exist. She merely pictures herself travelling with two other characters, one of whom represents everything she's afraid she'll become, and one of whom represents everything she desires to be, could be, if only the world were different.

Third, there is one aspect of herself that Joanna doesn't see yet, because her socialization impels her to repress it. That aspect, her justified frustration and anger, does find outlets long before she can recognize and portray it as Jael. The voice of anger and frustrated desire erupts with increasing frequency in the voices of Joanna and Jeannine from Part Four on, in comments that don't sound like either character or that the reader can't ascribe to any one character for sure.

This gradual emergence of Jael's voice makes perfect sense, just as the later revelation that Jael is the agent who brought the J's together does. However hidden she is from Joanna's consciousness in the novel's early stages, it is precisely this force of frustration becoming anger that motivates Joanna's exercise of fantasy and imagination to begin with. Russ herself has commented on how hard, and important, it is to get that anger articulated. At that stage of her career, she says, it was easy to write the scene (Part Eight) where Jael actually kills a Manlander, but the one where Janet breaks the host's arm was "very difficult": "The taboo here, I think, is the same one that makes 'man-hater' such a dirty word. It is the abandonment of passivity, the vehement assertion that I Come First, Not You, and all this through the release of perfectly justified anger." For, Russ says, Jael, "with her claws, her teeth, and her ferocious adrenalin highs is . . . Anger"; and "It is Anger that mediates between Oppression and Freedom."¹⁴

The fact that Joanna is still stuck somewhere between fantasy and full imagination in Part Three does not mean that her efforts are useless; on the contrary. It's true that by the end of Part One, Joanna has reached a static opposition of extremes. After the party, Part Three turns by contrast to social life on Whileaway. Part Four turns the contrast again as Joanna relates Janet's experiences with an American family and her love affair with Laura Rose. But pursuing these contraries to their painful extremes will at last produce the mirrors or foils, the dialogue with what is, that allow Joanna to examine herself and to articulate her anger at what is. Thus in Part Five, the novel further examines the freedom of Whileaway in Joanna's account of her "actual" trip there with Jeannine; in Part Six, we return to the oppression of Jeannine's world.

And *then* Joanna's use of fantasy and imagination makes her able to see and speak *her* self, *her* world, in Part Seven: "Let me tell you how I turned into a man." But Joanna's journey is not then over. Expressing

anger is a step, not a solution—but to what? Is anger the same as aggression? How should either be expressed?

For the answers, Joanna will return to the methods that have brought her this far, now with even more conscious self-involvement, more active imagining instead of passive fantasizing. In the remainder of Part Seven, Joanna will return her text to Janet, finally telling the story of how and why Janet's duty as Safety and Peace Officer led her to shoot the old woman Elena Twason. But Joanna also allows herself to imagine desiring Elena, conceiving a desire doubly taboo on the grounds of age and gender (IV). Part Seven ends with the three J's summarizing their outlooks on life (V).

With Part Eight, Joanna has moved almost completely from fantasizing to fully imagining, creating an image that changes herself and her world. Two of the opposites are nearly fused: Jael and her world blend the worst-case environment we connect with Jeannine and the freedom and energy of action we identify with Janet. But Jael is another instance of "excess," a hypothesis that allows Janet to explore and play with—to *use*, not be used by—new images of desire, including aggression.

Joanna's imagination becomes fully active in the here and now with the novel's last section. Part Nine, "The Book of Joanna," fuses not only all four J's but also inner journey with outward act. At the conclusion of *TFM*, Joanna reveals a reshaping of both aggression and sexual desire in her own behavior and then relates the final meeting of all four characters in our world. Even then, she is not finished with her exercise in imaginative discovery and creation: Jael's last revelation will call the whole model of Joanna's desire, Whileaway, into question. But her final act in her text is to make her exercise in imagination into ours. Reclaiming the characters as her personae, Joanna formally bids farewell to her book. Through this concluding gesture, Joanna acknowledges and thus shapes her community—those whose lives she has shared in person and as a

reader—and extends that community by inviting her readers to share and transform her experiences into their own. Because this text, an act aimed at and shared with her community, images the worst women and men can be, it is aggressive, a challenge. Because it images more mutually satisfying ways we could be, and because its very form invites us to share in its creation, the text is also an act of unselfish desire.

With this overall pattern in mind, we can note a few of the specific ways in which the rest of *TFM* develops it, focussing especially on details concerning the formation of self, self-image, and desire.

The rest of Part Three, as noted above, shifts to an extended description of how very different it is to grow up and live on Whileaway. In Part Four, the text gathers up all these issues and again pictures how a Whileawayan deals with our handling of them when Janet stays with the Wildings.

Laura Rose Wilding illustrates how a female child grows up and learns to see herself in our society. Among the things she learns, by her own account, are that she's a victim of penis envy and can't lead a happy or normal life, but that being a girl is wonderful "because you can wear pretty clothes and you don't have to do anything; the men will do it for you," so that she can "conquer the conqueror of Everest" instead of climbing it herself. However, men don't want to "make it" with aggressive girls: "Either they try to dominate you, which is revolting, or they turn into babies." She couldn't sleep with a girl because it's "abnormal" (Four: XI). How could Laur not fall in love with the woman from Whileaway? In her society, men and women define themselves only in the mirror of the other: women by what they *lack*, men by what they *have*. In Janet, Laur finds not a mere mirror of her desire to be a "human being," but a window onto new possibilities of how to be.

The multiple narrator of Part Four has far more difficulty with Janet. The voice

of Jael—who will later announce that she is the "plague" of murder and revolt that exterminated Whileawayan men (Nine:VII) and repeat insistently that she's "an old-fashioned girl" (Eight:IX,X,XI)—gets even stronger as the J's confront a new model of desire. The "I" who describes Janet's arrival says, "I drifted into the attic; my spirit seized possession of the old four-poster bed . . . and slowly, slowly, I infected the whole house" (Four:II); a later "I" calls herself "the plague system" trying to keep Janet from Laur (Four:X). When Janet and Laur begin to act on their desire, the other three J's both share in and fear Janet's feelings, being bound by taboo. Janet breaks the Whileawayan taboo against sex with someone a generation younger, not for selfish reasons, but because of Laur's need. As the narrator relates it, "Janet—I—held her, her odor flooding my skin, cold woman, grinning at my own desire because we are still trying to be good," but when Laur kisses "Miss Evason," the narrator's had enough: "Janet's rid of me. I sprang away and hung by one claw from the window curtain" (Four:XIII).¹⁵ When Laur and Janet make love, the narrator is presumably involved with Janet until near the climax, but then flees, "shrieking": "There's no excuse for putting my fact between someone else's columnar thighs," yet her desire shows in her appreciation of "the cool smoothness . . . the *architectura*, the heavenly technical cunning of those limbs."

Janet takes over in segment XVI to tell Laur the story of how she first "fell in love" with her wife Vittoria, an experience Whileawayans see as a "sickness," a painful obsession that merely projects self onto the whole world. "Romantic love" (not love) is seated in the solar plexus, a "radiation disease" that they are "mean and mocking" about because of "the self-consequence that comes with romantic passion," that "parasite." Unlike the "friendly" and non-possessive love that sustains their marriage, Janet says, "the operatic kind" or "that abyss

opening on nothing" comes and goes; "I run away usually."

(B) *Without Contraries, No Progression: The World Re-Imagined and The World Reflected (Parts Five and Six)*

In Part Five, the trip to Whileaway (engineered by the unseen Jael, motivated by Joanna's inability to escape Jeannine) begins in Jeannine's world as she and Joanna meet Janet. Joanna perceives Janet as "our only savior," but Jeannine "did not want to admit that Janet existed" (Five:I). A clue to Jael's presence is the narrator of segment VI, who "has never visited Whileaway in my own person" and who relates how Janet, Jeannine and Joanna arrive there. Jeannine can't believe in Whileaway because she's sure it can be destroyed. Jeannine's world has taught her a simple lesson. Somebody will always get you: invade, "infect you with plague," "infiltrate," or "corrupt"; life is "just horrors. Horrors!" (Five:VII). But Joanna gets angrier on Whileaway, tartly noting in the next section that Jeannine "loves to be sat on" and basically wants to be "relieved of personality forever" (Five:VIII). The growing anger strengthens both the need for and the ability to continue imagining (travelling on) Whileaway. Along the way, "I" notices that, unlike the worlds where there are brand names, advertising, and other male mirrors and representations of women, on Whileaway, "there are no pictures made out of anybody or anything" (Five:XI).

The trip to Whileaway is useful only if it helps Joanna to deal with the Jeannine-potential. Thus in Part Six, it is Jeannine who "wakes from a dream of Whileaway," feeling that "everything in the world . . . makes her cry, . . . seems to say to her, 'You can't.'" Jeannine dismisses the recurrent dreams, defining Whileaway as "To while away the time. That means it's just a pastime" that "would sound pretty silly" if she told anyone. Where Jael asks, "What's my brand name?" Jeannine sees herself in

the mirror and wonders "who is to use all this loveliness, who is to recognize it, make it public, make it available?" Not Jeannine, says the narrator; "Jeannine is not available to Jeannine" (Six:I).

But the energetic J's emerge in Jeannine, too. "I" has two arguments with Jeannine over what she wants. Playing devil's advocate, "I" argues for the status quo, but two voices give contrary answers for Jeannine. When her brother grabs Jeannine, he finds Janet in his grasp; "*Touch me again and I'll knock your teeth out!*" someone says (Six:IV). During the second argument, Jeannine looks in a mirror and jumps—"Who's that!" ("Was it Janet? Me?" the narrator asks.) Momentarily "shocked right out of her sorrow," Jeannine demands "with unwonted energy" to know what her sister-in-law wants out of life (Six:VII).

But Jeannine can't sustain this energy; she flees "from the unspeakableness of her own wishes" to land "in the lap of the possible" (marriage). Having said *yes* to Cal (she dialled his number without realizing it), Jeannine has one moment of self-love in her family's approval, while the narrator stands compassionately "with my arm around the shadow of her dead self"—and why not? For ". . . there but for the grace of God go I" (Six:IX).

(C) *The Uses of Imagination: Liberating Anger and Desire (Parts Seven and Eight)*

With those words, Joanna turns her attention and her text to herself (Part Seven). To become a female man, Joanna first had to become a woman: "someone automatically not above reproach . . . mirror and honeypot, servant and judge"—until you're 45 and "disgusting." When she rebels in rage against the suppression of all her own desires, the self-image her world gives back is: "I'm a sick woman, a madwoman, a ball-breaker, a man-eater," who doesn't "consume men gracefully," as a seductress, but cracks their joints "with these filthy ghouls' claws." Against the mirror-image set up by

advertising, Joanna sees “my matted hair, my filthy skin, my flat plaques of green bloody teeth. I don’t think my body would sell anything. O of all diseases self-hate is the worst and I don’t mean for the one who suffers it!” (Seven:I). Eventually, the suffering of experiencing everything “through two systems of value, two habits of expectation,” drives Joanna to her one choice: “To resolve contrarities, resolve them in your own person.” Picking up the mirror image, she cites Plato’s statement that “we love . . . that in which we are defective,” having learned that we pursue “our magical Self in the mirror of another,” but “how on earth can one then possess it? Fucking, if you will forgive the pun, is an anti-climax.” There is only one way to possess what we lack, need, want: “Become it.” Joanna concludes, then, that “I am a man (And you are a woman.),” demanding “Move over”—or else, “By God and all the Saints, I’ll break your neck” (Seven:II).

This conclusion, however, simply reverses what is; still self-centered, it leads only to vengeance. Again Joanna turns to Janet and Whileaway (Seven:IV), imagining what grounds would justify violence there (Elena Twason apparently was executed because her assertion that no one else exists is a denial of/attack on society and life itself) and imagining how she’d like to break both Whileawayan and our taboos with Elena.

This doesn’t solve the problems with Joanna’s conclusion, so she deals with them imaginatively in Part Eight, Jael and her world. In Jael’s world, men and women have literally been at war; Jael herself illustrates what kind of “female man” results from simply reversing and extrapolating from the problems of our world: an assassin whose “own erection” is her unsheathing of hidden talons and teeth, whose last effort at diplomacy ends with her murder of a Manlander, who keeps a computerized male android as a sexual toy, who wants to reopen and *win* the war.

Joanna calls Jael “The Woman Who Has No Brand Name” (Eight:II) because Jael

is something new, a woman who won’t be used: who has the strength born of anger and near-despair to follow the path of Excess and find “the One Genuine Thing” possible *within the circumstances of her world*. In this gender-role reversal, Joanna pictures a woman defining herself as men do, by violence to others. The blood Jael sheds is “restitution,” a “truthful reflection in the eyes of a dying man” that makes her existence a little more real in a world that taught her that to be a woman at all was already to be “guilty” (Eight:X).

In Jael’s world, human(e) love and desire are impossible: “How can you love anyone who is a castrated You?” she asks of men. Yet since she still defines herself by Manland concepts, her observation that “Real homosexuality would blow Manland to pieces” is true of Womanland as well (Eight:VIII). In her world, violence—war—is the only form of desire left. She asks the other three J’s to act on that desire with her, to provide bases for the war: “‘Do we do business?’” (Eight:XV).

(D) *Uniting “Contrarities”: The Book of Joanna (Part Nine)*

Jeannine (life is “just Horrors”) is all for *Jael’s* use of her world, not her own: “take the whole place over; I wish you would” (Nine:VII); Janet disapproves; Joanna does not answer directly.

So Jael is not The Answer for Joanna, but her equation of “Who am I?” with “What’s my brand name?” has helped to lay open the fault in all the non-Whileawayan worlds. When we take our perception of a barrier or void between “I” and “Object” and assume it can’t be crossed (though we desire to), it’s “natural” to give primacy to this isolated “I.” When we then use these assumptions to structure all the forms of our desire and all our social roles and institutions, sexism, racism, nationalism, capitalism, and so on are equally “natural” results. In a system where “I” is always defined *against*, excluding, the other, there can always and only be user and used, domi-

nator and dominated; every "I" is a potential commodity to every other.

Whileaway is also not The Answer, only an alternative, the imagination of a better life and the conditions that might allow it.

By Part Nine, however, Joanna's imagination has freed her to begin committing "revolutionary" acts: breaking a man's thumb (IV) or "bringing my fantasies into the real world" in her own love affair with Laura Rose (VI), but then inviting us to join and reshape her "revolution" with the book itself.

What should be stressed here is that it is *questions* which effect the last fusion of the four J's and involve Joanna and her readers in *ongoing*, communal, action. Jael fuses the other three worlds to Whileaway, the dream of unselfish desire, by raising a fundamental question about how it evolved. According to Jael's last revelation, there was no "plague" that killed the men on Whileaway, only "I and those like me" who gave peace to Whileaway with "the bones of the men we have slain" (Nine:VII). Janet, however, refuses to believe that. In Joanna's and our "probable universe," will we make a world of unselfish desire through slow historical progress or violent revolution? Joanna's text excludes neither possibility, just as Joanna excludes none of her *personae* at this moment, knowing Jeannine to be her past, liking Jael best ("when I stop to think about it, which is not often"), disbelieving in Janet but recognizing her as "our savior from utter despair" (Nine:VII). From start to finish, therefore, Joanna's "little book" has called itself into question through both its structure and content. Her farewell to it suggests that we will do the same as we use her imaginative creation, so that our action will hasten the day when it is "quaint and old-fashioned" and "no longer understood": when "we will be free" (Nine:VII). *TFM*'s structure as a text liberates our imaginations without violence, offering us the experience of a process that we might learn to enact on a social level, too.

NOTES

¹ Joanna Russ, *The Female Man* (New York: Bantam Books, 1975). For the convenience of readers with other editions, Part and segment numbers are substituted for page numbers and are indicated in the essay.

² Roland Barthes, Preface to *Critical Essays* (Evanston: Northwestern University Press, 1972), p. 267.

³ Barthes, "Literature and Signification," *Ibid.*, p. 268.

⁴ This paragraph summarizes Barthes' "From Work to Text" in *Image, Music, Text*, trans. Stephen Heath (New York: Hill and Wong, 1977), pp. 155-64.

⁵ Jerome McGann, "The Aims of Blake's Prophesies and The Uses of Blake Criticism" in *Blake's Sublime Allegory*, ed. Stuart Curran and Anthony A. Wittreich (Madison: University of Wisconsin Press, 1973), pp. 8-11.

⁶ Hayden White *Topics of Discourse* (Baltimore: Johns Hopkins University Press, 1978), p. 276.

⁷ William Blake, *Jerusalem in The Poetry and Prose of William Blake*, ed. David V. Erdman (New York: Doubleday and Co., 1970).

⁸ The quotation is from "The Proverbs of Hell," *The Marriage of Heaven and Hell* 7:3.

⁹ Barthes, "Literature and Signification," p. 267.

¹⁰ See, for example, the transcription of Samuel R. Delany's 1977 speech, "The Word Is Not The Thing," in *Janus IV* (Summer/Autumn, 1978), pp. 5-8.

¹¹ "Joanna," I wish to stress, is the fictional character, including the *fictional author*, the authorial persona who comments about herself in the novel. The historical person is always referred to as *Russ* or *Joanna Russ*.

¹² Careful readers will have noted that Joanna's first account (One:IV) said that she was at a Manhattan party, while here the party is in Los Angeles: another playful device to remind us of author-Joanna's presence.

¹³ The paperback editions of the novel give a clue to the presence of a fourth speaker. The first-page blurb on all the editions I have seen is the section of Jael's speech in Eight:V where she describes finding the other three J's.

¹⁴ "Creating Positive Images of Women: A Writer's Perspective," Forum on Women and Literature, Cornell University, n.d., p. 5. I am indebted to Dr. Beverly Friend of Oakton Community College for a copy of this speech.

¹⁵ It is the "old-fashioned" Jael who literally has claws.

THE SEARCH FOR EQUALITY IN WISCONSIN

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In the twilight of the struggle for woman's enfranchisement, Robert M. La Follette, progressive senator from Wisconsin, sat in California, attending his eldest son who was recovering from a serious illness. Upon receiving word that the Nineteenth Amendment, giving women the ballot, was up for a vote, he dashed back to Washington. There he was joined by his wife Belle, a feminist and ardent suffrage worker. On June 4, 1919, with his wife looking on from the balcony above the Senate floor, La Follette voted for enfranchisement. Immediately after the victory, Belle Case La Follette wired her husband's colleagues in the Wisconsin legislature, urging prompt ratification of the new federal amendment. Within days the men in Madison responded and Wisconsin added ratification to its list of progressive accomplishments.¹

The passage and ratification of the amendment marked the culmination of an effort which began with the 1848 Seneca Falls Conventions and carried American suffragists through seventy-two years of debate and sacrifice. In the course of the struggle, the founding generation of Elizabeth Cady Stanton, Susan B. Anthony, Lucretia Mott and Lucy Stone gave way to another, Carrie Chapman Catt, Alice Stone Blackwell, Anna Howard Shaw, Alice Paul and Jane Addams. The original movement fractured in the 1860's over issues of strategy, leadership and priorities, only to be reassembled as the National American Woman Suffrage Association in 1890.² Even after the new organization was formed, incipient divisions existed among the women. On the one hand stood the feminists who advocated equal rights as well as the vote, while on the other were the social reformers, women who perceived the ballot as a tool for moral betterment.

Though such differences predated passage of the suffrage amendment, it was not until after the victory that they threatened to sunder the movement. Then, in the afterglow of their greatest success, the women split over issues of strategy and social reform gains. The gulf widened when the National Woman's Party introduced its national Equal Rights Amendment in the 1920's. The controversy centered around the issue of protective labor legislation for women. Social reform groups such as the League of Women Voters and the National Consumers' League emphasized the need to safeguard such hard-won advances as minimum wage laws, maximum hour laws and protective legislation for women and children. In short, they believed women deserved special consideration because of their weaker physical state and their roles as mothers. As May Dean Smith, a reformer and writer, stated, "to deny that women require care and protection is equal to a denial of her physical mission of motherhood."³

The Woman's Party, by contrast, felt that protective legislation grouped women with children, an admission of inferiority and dependence. Progressive judge Ben Lindsey stated, "What is known as special legislation for women is in fact not for women at all, but for children."⁴ The NWP felt that protective legislation was acceptable only if instituted for both men and women. Gail Laughlin, a Woman's Party officer, explained the Party's position in this way;

"The so-called eight hour laws for women, glibly called 'protective,' mean the shutting of the door of opportunity to women. If we are to have legislation concerning hours of labor—and I believe we should have that legislation—it should be based along the lines of industry, not along the lines of sex."⁵

Many feminists claimed that whenever protective laws had been enforced, women had lost their jobs to men. The Woman's Party felt that laws containing blatant discriminations should be abolished.

The argument over the constitutionality of protective legislation had raged throughout the progressive era, finally receiving judicial resolution in the famous case of *Muller v. Oregon*. In response to a challenge to the state of Oregon's ten-hour work day restriction on women, the social reformers had recruited Louis D. Brandeis to prepare the brief in behalf of special legislation. Relying primarily on European sources and statistics, he had persuaded the Supreme Court to uphold the state's practice. He asserted that "women are fundamentally weaker than men in all that makes for endurance; in muscular strength, in nervous energy and in the power of persistent application and attention."⁶ In short, Brandeis chose a social defense of Oregon's statute. Yet from the standpoint of the more radical feminists, such laws violated the concept of gender equality; women could not seek status comparable to that of men while at the same time benefiting from special governmental favors. Thus in the 1920's only years after the suffrage victory, the women's movement faltered and splintered. By the middle of the decade, it was clear that the gulf could not be bridged and passage of an equal rights amendment would await the action of future generations.

It was against this backdrop of controversy and division at the national level that the members of the Wisconsin state legislature met to consider an equal rights law in 1921. Since the 1890's, Wisconsin had been the leader in progressive reform, due largely to the political devotion of Robert M. La Follette and his wife Belle. During the La Follette years Wisconsin went from a backward, politically corrupt state to one which emphasized democracy and reform. During his several terms as governor, La Follette broke trusts, regulated railroad companies and big business, instituted the direct pri-

mary and defeated the Republican party machine. He created a progressive coalition of his own, a machine which placed progressive men in government positions throughout the state. Moreover, La Follette stressed the need for cooperation between the University of Wisconsin and the state government. The alliance between the capitol in Madison and the University, "the Wisconsin Idea," resulted in thorough and lasting reform.⁷ With the assistance of his family, La Follette also created a progressive journal, *La Follette's Magazine*, which took the progressive message to the homes of constituents.

Wisconsin women had been involved in the progressive movement from the beginning. Throughout the state's history, they had been politically active and by 1890 had won equal property rights, the right to practice law, and suffrage in school elections. The first woman was appointed to the Milwaukee school board in 1895.⁸ As the Wisconsin progressive movement matured, many women became dedicated social reformers, participating in labor and prison reform efforts. Later they championed city improvement programs through which they developed playgrounds, libraries and kindergartens, as well as manual training programs.⁹

Woman suffrage was, therefore, an obvious item on the progressive agenda in Wisconsin. In 1912, Robert La Follette himself directed the effort for statewide enfranchisement, while Belle traveled extensively, speaking for the cause. She even utilized the family's mailing lists to send pamphlets and leaflets to potential allies.¹⁰ When the votes were tallied, however, the issue was defeated by a two-to-one margin.¹¹ By 1921, having ratified the Nineteenth Amendment, they were again ready for action, this time banding together to move their representatives in Madison to support equal rights for women. The legislators, meanwhile, now regarded the women as potential constituents and openly courted their favor. The state Republican platform observed that women had

"come into full partnership with men in the conduct of the affairs of government." As a consequence the party endorsed revision of laws "to the end that in all matters men and women should be upon a basis of equality."¹² On that platform John J. Blaine was elected governor.

With Blaine's pro-feminist administration in power, the Wisconsin chapter of the National Woman's Party felt that an equal rights law was attainable. Mabel Raef Putnam, the state chairman of the Woman's Party, explored the possibility by traveling to the state capitol where she met with feminist author Zona Gale and Ada James, the former president of the Political Equality League of Wisconsin. Both women were friends of the La Follette family and were active in the progressive movement. The three women addressed the Wisconsin Senate Judiciary Committee concerning the feasibility of an equal rights bill.¹³ A few members of the committee expressed interest in such legislation but others voiced violent opposition.

The women realized that a strong force of dedicated workers would be needed to successfully institute such a law. Mabel Putnam met with the members of state women's organizations, and found that nearly every organization was willing to assist in the effort.

Next, Putnam called on Governor Blaine, who indicated his support and suggested a visit to Charles Crownhart, the Revisor of Statutes. Crownhart was a dedicated progressive, who had been Robert La Follette's campaign manager for many years. He agreed to draw up the equal rights bill. Although at first Crownhart suggested that the bill should provide only for choice of voting residence and jury service, he soon realized that an inclusive law would be more practical. He favored a "woman's bill of rights" which would "remove every disability" appearing "in the statutes. . . ."¹⁴ a proposal the women heartily endorsed.

The Equal Rights Law was introduced into committee in May 1921. The bill stated:

"Women shall have the same rights and privileges under the law as men in the exercise of suffrage, freedom of contract, choice of residence for voting purposes, jury service, holding office, holding and conveying property, care and custody of children, and in all other respects. The various courts, executive and administrative officers shall construe the statutes where the masculine gender is used to include the feminine gender unless such construction will deny to females the special protection and privileges which they now enjoy for the general welfare."¹⁵

The special protection clause was inserted in the bill as a compromise between the feminists and the reformers.

Mabel Putnam immediately wrote to United States Senators La Follette and Irvine Lenroot encouraging them to aid in passing the bill. She noted that; "Wisconsin women's organizations want Wisconsin to be first state thus to complete the grant of equal suffrage. We want you to urge your friends in Senate and Assembly to work and vote for this bill."¹⁶ Lenroot sent back a short letter of approval, while La Follette responded by telegram, stating,

"You doubtless are aware of the fact that the reactionaries are in control of the legislature, but I have today taken this matter up with friends at Madison, and I am certain they will be glad to give their co-operation."¹⁷

With the support of the La Follette progressives, the women gained needed political allies and awaited the debate on the bill.

Assemblyman Alexander Matheson led the opposition against equal rights, contending that the bill was a threat to the home. In debate he declared, "This bill will result in coarsening the fiber of woman—it takes her out of her proper sphere."¹⁸ Many other reactionary members agreed with him. Senator Claire Bird felt that an amendment striking out "freedom of contract, choice of residence for voting purposes" and "in all other respects" was needed. The Senate

voted and the Bird amendment was passed. The conservative sector supported the amendment, explaining, "Why, a woman could establish her residence separate and apart from that of her husband, and continue to live away from him forever while he would have to support her and could never divorce her."¹⁹ The women felt that this amendment legalized slavery. One of their advisors typified their viewpoint:

"It is a relic of barbarism that leads some to believe that a husband, no matter how great a tramp he may be, should start out on a vague quest and call upon his wife like a squaw to pack her papoose on her back and follow."²⁰

The women's associations threatened to use the La Follette tactic of reading the roll call vote, and in that way oust any reactionary legislator who dared to vote against equal rights or for the Bird amendment.²¹ Putnam and her legal advisors discussed the amendment with progressive members of the Assembly and agreed that the omitted parts must be restored to the bill's text. The Assembly complied by voting to discard the Senate's amendment.

The Wisconsin Equal Rights Law was passed in its entirety in June, 1921 and was signed by Governor John J. Blaine a month later. Although the bill had met with some opposition, careful politicking and the support of progressive congressmen and United States Senator Robert M. La Follette propelled the bill through the legislature in an amazingly short period of time. From Washington came the joyous reaction of the National Woman's Party. Wisconsin, they observed, had become "the first state in the Union to remove women from a subject position in the law." It was "the only place in the English-speaking world where women had equal rights with men."²²

While the rift in the national woman's movement stifled any hope for an equal rights amendment at the federal level, Wisconsin had triumphantly passed its Equal

Rights Law, the only state to accomplish such a feat during the post-suffrage period. Hence, it is apparent that Wisconsin's progressive environment was hospitable to feminist victory. Unlike the national women's organizations, Wisconsin's associations, both feminist and reform oriented, were not hostile toward each other. Most of these women had grown up in the progressive movement and were acquainted through this common experience. This fact enabled them to compromise their differences and work toward equality in Wisconsin. They subordinated ideological and tactical differences to rally around a common progressive cause and work toward gender equality. The result was a powerful coalition of dissimilar groups, including the Daughters of the American Revolution, the Polish Housewives League, the State Association of Catholic Women's Clubs, The Wisconsin League of Woman Voters, the Young Women's Christian Association and the Wisconsin Consumers League, as well as the Wisconsin Women's Progressive Association, the Wisconsin Federation of Business and Professional Women and the state chapter of the National Woman's Party.²³ The alliance between traditional reform and feminist organizations was sealed when both agreed to support the special legislation clause of the Equal Rights Law, which promised women the protection and privileges granted in prior statutes. Hence, the Wisconsin law protected special legislation for women in addition to guaranteeing them equal rights. The women thus avoided the divisive debate which characterized national efforts to reach agreement on the issue of protective legislation.

While the women did most of the footwork required to present the bill, male members of the legislature provided needed support and state court members later upheld the Equal Rights Law in several vital court cases. In addition, Governor John Blaine and the bill's author, Charles Crownhart, aided the women with advice and assistance. Like the women, male advocates of the bill

were overwhelmingly progressive in political outlook. Too often in the past, male involvement in the women's movement had stifled genuine progress. In Wisconsin, on the other hand, the male-dominated Progressive Party had championed enfranchisement long before the Republicans or Democrats took up the cry.²⁴

Wisconsin's unique brand of progressivism was largely the creation of Robert and Belle Case La Follette; the passage of the Equal Rights Law was a mark of their political acumen. By the time the bill was introduced the Senator was viewed as the champion of America's common men and women. Earlier in his career he had spoken ardently for woman suffrage, in the small towns which dotted the Chautauqua circuit. When American suffragists marched to Capitol Hill with their petitions, La Follette had been among the group of officials who greeted them in the rotunda. There he welcomed his daughter Fola, the carrier of Wisconsin's suffrage petition.²⁵ Later in his presentation of the memorial to a Senate committee, La Follette expressed his convictions stating; "I cannot remember a time when I was not in favor of extending the suffrage to women. I have always believed in co-suffrage," as well as "coeducation, equality of property rights," and "equality of opportunity for men and women alike."²⁶ True to his convictions, La Follette had often advocated enfranchisement on the floor of the Senate and opposed all efforts to modify the suffrage amendment.²⁷ He later explained the historic passage of the Nineteenth Amendment in a letter to his sons:

"Mamma sat in the gallery all day and was rewarded, as were the other fighters for suffrage and equal rights, by seeing the Susan B. Anthony Amendment pass by 56 to 25—after a 70 year struggle. Six votes to spare. I started the applause on the floor and it swept the galleries again and again without any rebuke from the Chair, President Cummins presiding. All felt that it was a great victory."²⁸

Above all, according to the Senator, it was a triumph for democracy.

With the vote secured, he turned his attention to the equal rights issue, a decision which culminated in his active endorsement of the Wisconsin bill. When that campaign reached its successful conclusion, La Follette wired his congratulations to Mabel Putnam. "I am deeply gratified to learn that the Wisconsin legislature has passed the bill granting equal rights to women, for which they have been fighting for so many years."²⁹ La Follette acted from conviction, but also from political expediency. He recognized that women had been active in the progressive movement long before they had gained the ballot, particularly in the area of social reform. Within his own political organization women had played a crucial role. Hence with enfranchisement a reality, the Senator courted the woman's vote, especially as he turned his eyes toward the Presidency in 1924.

He formulated a new strategy which relied in part on capturing a substantial portion of women's ballots. In fact, the candidate continued to depend on numerous women volunteers, many of whom were members of the Wisconsin Women's Progressive Association. In addition he recruited the support of such well-known figures as Jane Addams, Helen Keller, Florence Kelley, Rose Schneiderman, Zona Gale and Alice Stone Blackwell.³⁰ During the autumn of 1924, the campaign sponsored a series of articles by such distinguished women in the *New Republic* and the *Woman Citizen*, each treating a matter of particular concern to the nation's women voters. The candidate's platform was especially attractive to the newly enfranchised bloc. Often it reflected the agenda established by such organizations as the League of Woman Voters. La Follette embraced the standards of peace, disarmament, conservation, labor, wage and benefit improvement, child labor reform and equal rights. Alternatively, he condemned trusts, big business and political machines. To these

stands, the Senator added a ringing endorsement of progressive hopefuls throughout the country, many of whom were also pledged to support an Equal Rights Amendment to the Constitution.³¹

La Follette clearly valued women as an addition to his political constituency, but he also was responding to strong sentiment within his own family. Both his wife Belle and daughter Fola were zealous proponents of feminist causes. Even the Senator's sons were active in behalf of women's rights. Once when their mother was unable to attend a suffrage parade in Washington, they marched in her stead. Of all the children, Fola was the most active advocate of women's causes. She was a frequent speaker and marcher in suffrage campaigns and refused to abandon her maiden name when she married George Middleton. Often Fola and her husband worked together in the movement. Family friends were also active participants in the campaign for the vote and equal rights. In a household frequently buzzing with discussion of pertinent issues and controversies, women's concerns received high priority.

The La Follette machine was staffed almost completely by friends and family who shared like views and loyalties. It was distinguished also by the number of women who occupied key positions. Above them all stood Belle Case La Follette. No single woman did more to advance Wisconsin progressivism. Although raised in an era when women were expected to be quiet and passive, Belle's early life on a pioneer farm produced an independent spirit. She was brought up under the tutelage of progressive parents, who had always sympathized with the woman's movement.³² At the age of sixteen Belle Case enrolled at the University of Wisconsin where she met Robert La Follette. Belle finished near the top of her class and at graduation she won the Lewis Prize for the best commencement oration.³³ Belle Case and Robert La Follette married soon after graduation. Before the

ceremony Belle aired her feminist views by asking the minister to delete the words "to obey" from her vows.³⁴ In 1885, at the age of 26, Belle Case La Follette became the first woman to graduate from the University of Wisconsin Law School. Although she never practiced law, Belle aided her husband with his law work, often writing his briefs.³⁵

She also pursued her own endeavors. Her first major project was woman suffrage. Belle Case La Follette was a member of both the National Woman's Party and the National American Woman Suffrage Association.³⁶ Like her husband, Belle was a skillful speaker. She was a diligent supporter of the Wisconsin effort to enfranchise women in 1912, barnstorming across the state, making from five to seven speeches in a single day.³⁷ Belle also contributed to campaigns for the ballot in Ohio, Oregon and Michigan.³⁸ In addition she participated in marches and parades, and wrote on the suffrage topic. In 1913 she presented her arguments to the Senate Committee on Woman Suffrage.

While residing in Washington, D.C. Belle was alarmed by the appalling effects of racism in that city, and became a supporter of the black rights movement. Soon after, she joined the National Association for the Advancement of Colored People. She denounced lynching, segregation and the disenfranchisement of black voters in the south.³⁹ Furthermore she was one of the few suffragists who urged black women to join in the "traditionally" white cause of equal suffrage. James Weldon Johnson, a black author, wrote of her:

"Belle Case La Follette believed not only in justice for the Negro, she believed in the Negro. She believed in his powers, his capabilities and in his innate gifts. She believed in his ability to make vital contributions to our national well-being and to our common cultural store."⁴⁰

Unlike many women reformers, Belle Case La Follette favored equal rights with men. Belle urged wives to free themselves from their parasitic dependence on their

spouses, to develop their own talents and be of service to humanity.⁴¹ She drew on her own experiences and attempted to educate women to their potential for good. Belle felt that equality should come in three areas; "political—the right to vote; economic—the right to work; and legal equality—the removal of all discriminations against women under the old common law."⁴² She also stressed that women should not be afraid to step into the political arena, or compete in other predominantly male occupations.

After the ratification of the suffrage amendment, Belle supported the equal rights work of the National Woman's Party, and in 1921 attended the party convention as a delegate of Wisconsin. She believed that the NWP should concentrate specifically on equal rights, leaving other organizations to deal with the remaining reform causes.⁴³ Always the arbitrator, she felt that reformers like Jane Addams and Florence Kelley did not understand the women of the NWP, explaining: "I have been assured by those who are active and have strong influence among the leaders that there is no intention of abandoning the ground gained by women's welfare work."⁴⁴ Even after the Woman's Party denounced labor legislation for women, Belle never wavered from her original equal rights stance.

The Wisconsin Equal Rights Law was heartily endorsed by Belle Case La Follette. When women's reformers sought her opinion on this topic, she explained: "The Wisconsin law expressly provides that it shall not be construed to deny women the special protection and privileges which they now enjoy for the general welfare. In this respect it furnishes a safe and conservative model."⁴⁵ Belle Case La Follette devoted continuous attention and energy to the woman's movement, participating in the campaign for suffrage at the national and state levels, writing articles in support of the ballot and championing the Equal Rights Law in Wisconsin. In the view of feminist leader Alice Paul,

"Belle La Follette was the most consistent supporter of equal rights of all the women of her time."⁴⁶

Belle served as counselor and advisor to her husband and two sons, Robert Jr., who succeeded his father in the Senate, and Philip, who served as governor of Wisconsin. She believed that women were particularly effective when working with male allies; hence she used her family's political position to further her own special projects. Often standing beyond the limelight, she allowed other family members to receive acclaim for work she had performed. Burton K. Wheeler, the Senator's 1924 running mate, explained Belle's lack of popular recognition in this way; "She was free of personal ambition and never sought political office or social position for herself, but was contented to remain in the background."⁴⁷ Still her influence on La Follette's career is undeniable. She affected his policy positions, took care of his correspondence, attended important debates and conferences, participated in speaking tours and edited a department of *La Follette's Magazine*.⁴⁸ Although not technically editor of the magazine until the Senator's death in 1925, La Follette's frequent absences often placed the burden of chief editor upon his wife. La Follette went for long periods without writing for the journal, and Belle often signed his name to articles which she herself had written.⁴⁹ She was also rumored to be the author of her husband's speeches.⁵⁰ In turn, La Follette recognized his wife's essential contribution. He once commented that she was "altogether the brainiest member of my family. . . . Her grasp of the great problems, sociological and economic, is unsurpassed by any of the strong men who have been associated with me in my work."⁵¹ Others were even more open about Belle's role in the political partnership. When asked about her father, Fola La Follette wrote: "To write of my father without writing of my mother is an impossible task. . . . Their relation has al-

ways made our home and not father's office the center for all important conferences and discussions."⁵²

The woman's movement did not produce many women as dedicated as Belle Case La Follette. Zona Gale, friend and author, commented: "Belle Case La Follette will stand as one who, ambitious for her husband and sons, was ambitious first of all that their ideals of social justice, which were also her ideals, should prevail."⁵³ In short, "Battling Bob" La Follette did not climb the political ladder himself, but alongside his partner. To a significant extent, the progressive tradition in Wisconsin was their joint creation. This reform climate was essential to the success of the Wisconsin Equal Rights Law, dwarfing all other contributing factors. Neither the remaining states nor the federal government had created a similar progressive machine. President of the National Woman's Party, Alice Paul, herself admitted that Wisconsin was able to pass its Equal Rights Law due to the progressive influence of the La Follette team.⁵⁴

Eventually Alice Paul and the other members of the National Woman's Party would denounce the Wisconsin Equal Rights Law, particularly its protective legislation clause. Their rejection was precipitated by a 1923 ruling by the state attorney general that Wisconsin women could not become legislative employees due to the law's unique protective provision. In fact, the statute did yield mixed results for the women of the Badger State. Between 1921 and 1933 the Wisconsin Supreme Court used the Equal Rights Law to protect women in six test cases. Three of the cases involved women's employment, while two concerned a married woman's voting residence.⁵⁵ All of the decisions upheld the statute and protected the rights of these women. The ruling by the state attorney general was the exception in this list of feminist achievements. In 1923 the special protection clause was tested when a statute,

written in 1905, was brought before the court. The law excluded women from legislative employee positions because such employees worked "long and unreasonable hours."⁵⁶ The earlier statute was declared legal, due to the protective provision of the Equal Rights Law. For such reasons women in Wisconsin had mixed feelings about the bill and watched it closely. The Wisconsin State Federation of Women's Clubs created a committee of women from various organizations to study the effects of the law. They found that, "The law had worked for a greater degree of justice and greater equality of women with men than they had before the passage of the law."⁵⁷ Other women felt that the Equal Rights Law was not sufficient. Zona Gale, for instance, regarded the law as a single step toward total equality for women. She wrote, "The status of women in Wisconsin even under our Equal Rights Law is but a stage in that long march."⁵⁸ Although the law gave Wisconsin women equal rights with men in most cases, the special legislation clause provided a loophole which would be used against feminist reform. Nevertheless, the Equal Rights Law effectively eliminated many inequalities under the old common law and provided a valuable precedent for future reform.

NOTES

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³ "Should Women Have Equal Rights?," *The Forum* (1927), 421.

⁴ "A Telegram from Judge Ben B. Lindsey," *Equal Rights* (March 8, 1924), 27.

⁵ William L. O'Neill, *Everyone Was Brave* (Quadrangle Books, Inc., 1969).

⁶ Flexner, *Century*, 220-21.

⁷ James I. Clark, *Chronicles of Wisconsin* (The State Historical Society of Wisconsin, 1955), 19.

⁸ David P. Thelen, *The New Citizenship* (University of Missouri Press, 1972), 86-91.

- ⁹ *Ibid.*, 92-98.
- ¹⁰ Clark, *Chronicles*, 11.
- ¹¹ Herbert F. Margulies, *The Decline of the Progressive Movement in Wisconsin, 1890-1920* (The State Historical Society of Wisconsin, 1968), 142.
- ¹² Mabel Raef Putnam, *The Winning of the First Bill of Rights for American Women* (Frank Putnam, 1924), 23.
- ¹³ *Ibid.*, 12.
- ¹⁴ *Ibid.*, 24.
- ¹⁵ Zona Gale, "What Women Won in Wisconsin," *Nation* (1922), 184.
- ¹⁶ Putnam, *The Winning*, 25.
- ¹⁷ *Ibid.*, 37.
- ¹⁸ *Ibid.*, 49.
- ¹⁹ *Ibid.*, 29.
- ²⁰ *Ibid.*, 30.
- ²¹ *Ibid.*, 25.
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- ²⁴ Zona Gale, "Why I Shall Vote for La Follette III," *New Republic* (October 1, 1924), 116.
- ²⁵ La Follette, *Robert M. La Follette*, 477.
- ²⁶ *Ibid.*, 478.
- ²⁷ *Ibid.*, 891.
- ²⁸ *Ibid.*, 963.
- ²⁹ Putnam, *The Winning*, 67.
- ³⁰ Jane Addams, "Why I Shall Vote for La Follette I," *New Republic* (September 10, 1924), 36-7; Alice Stone Blackwell, "What La Follette Will Do and Has Done," *Woman Citizen* (October 18, 1924), 15; Gale, "Why I Shall," 115-16; "The La Follette Record of Achievement," *Woman Citizen* (September 20, 1924), 14.
- ³¹ O'Neill, *Everyone*, 281.
- ³² Dee Ann Montgomery, "An Intellectual Profile of Belle Case La Follette: Progressive Editor, Political Strategist and Feminist," (Indiana University Ph.D. Dissertation, 1975), 12-15.
- ³³ Patrick J. Maney, "Young Bob" *La Follette* (University of Missouri Press, 1978), 8-9.
- ³⁴ *Ibid.*, 9.
- ³⁵ *Ibid.*, 9.
- ³⁶ Montgomery, "An Intellectual," 83.
- ³⁷ *Ibid.*, 85.
- ³⁸ *Ibid.*, 84.
- ³⁹ Maney, "Young Bob," 9 and Montgomery, "An Intellectual," 112.
- ⁴⁰ James Weldon Johnson, "Belle Case La Follette Believed in the Negro," *The Progressive* (November 7, 1931), 9.
- ⁴¹ Maney, "Young Bob," 10.
- ⁴² Montgomery, "An Intellectual," 51.
- ⁴³ Belle Case La Follette, "National Convention of the National Woman's Party," *La Follette's Magazine* (March 1921), 42-3.
- ⁴⁴ Montgomery, "An Intellectual," 68.
- ⁴⁵ *Ibid.*, 67.
- ⁴⁶ *Ibid.*, 225.
- ⁴⁷ Burton K. Wheeler, "A Great Mother to the Human Family," *The Progressive* (November 7, 1931), 2.
- ⁴⁸ La Follette, *Robert M. La Follette*, 313-14.
- ⁴⁹ Montgomery, "An Intellectual," 43.
- ⁵⁰ La Follette, *Robert M. La Follette*, 313-14.
- ⁵¹ Russell H. Austin, *The Wisconsin Story* (The Journal Company, 1948), 257.
- ⁵² Montgomery, "An Intellectual," 169.
- ⁵³ Zona Gale, "Brotherhood: It Was as Simple as That," *The Progressive* (November 7, 1931), 2.
- ⁵⁴ Montgomery, "An Intellectual," 225.
- ⁵⁵ Gale, "What Women Won," 184.
- ⁵⁶ Lemons, *The Woman*, 189.
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THE FORMATION AND PROBLEMS OF THE FRENCH-INDIAN ALLIANCE, 1748-1758

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As a result of the loss of their naval base on Cape Breton Island during King George's War (1744-1748), the French in Canada were subjected to a naval blockade by England that deprived New France's trading posts of essential goods for the Indian trade. Due partly to the influence of English traders, the Indians in the French alliance system rebelled in 1747, causing the alliance to collapse.

When the peace of Aix-la-Chapelle ended the war in 1748, New France regained her naval base on Cape Breton Island, which seemed to insure New France's supply lines in any future war. With new trade goods arriving in Canada, order and control were again imposed upon the interior Indian tribes. New France's efforts in rebuilding their alliance were concentrated upon the Great Lakes, Ohio Valley, and Iroquois nations. This paper will deal with the first two Indian groups, and will explore both the problems and the ultimate failure of the French-Indian alliance.

The empire of New France had undergone a severe strain during King George's War (1744-1748). England, with her naval and economic strength, had tested the defenses of Canada almost to their limits. These Canadian defenses depended heavily on the support of many Indian tribes in eastern Canada and the Great Lakes region.

It is almost impossible to estimate accurately the numerical strength of these potential French allies. However, according to one 1736 source, 16,323 warriors were available in the Great Lakes area alone.¹ Colonel Henry Bouquet gives a total of 56,500 fighting men for all Indian nations then known. If the fighting men of the western and southern Indian tribes are sub-

tracted, an estimated 35,600 warriors potentially could be gathered from Canada, the Great Lakes area, and the Ohio Valley.²

Clearly, whether the preceding estimates are accurate or not, whoever controlled these Indian tribes had a considerable source of power at his disposal. France's involvement with the Indians had begun in the sixteenth century, but its control of the west was challenged after 1642 by the New York Iroquois, supported by their Dutch and English trading partners. In the 1690's, French control was temporarily re-established through a rebuilt fort system. In 1696, King Louis XIV, at the urging of the Jesuits, closed all the western posts, withdrew the garrisons, and ordered the traders out of the lake country. As a result, traders from New York, Pennsylvania, Virginia, and Charleston invaded the west to trade with Indians previously allied with the French. During Queen Anne's War (1702-1713), British privateers created a shortage of trade goods in Canada, and further disadvantaged the French. It was not until after 1716, following the death of Louis XIV, that the French began to consolidate their holds on the lands and Indians of the Great Lakes by constructing a series of forts and posts throughout the interior regions and garrisoning them with soldiers and traders. These posts served several purposes: they were visible symbols of the French King's right to rule and control this part of North America; they were "recognized agencies" for keeping peace between tribes; they blocked English expansion into the area; they served as centers for receiving furs; they served as a "point of departure for expeditions seeking to uncover mines . . . [and an] approach to the Western Sea."³

The post commanders were not only to keep peace between the Indian tribes, but they were also to convince the Indians to join the French both in the fur trade or in war.⁴ However, as the eighteenth century progressed, this became more difficult due to increasing numbers of English traders entering the Ohio Valley and eastern Great Lakes area. The English traders paid higher prices for the Indians' furs, did not discriminate between "good" furs and "bad" furs, and their trade goods were much cheaper. English traders, in an attempt to gain more furs spared little expense to woo the Indians away from the French posts. The English told the Indians that the French were not fair traders; that they attempted to rob the Indians by offering very little for even high grade furs.⁵ Consequently the Indians became resentful and threatened to leave their French "fathers."

The French were well aware of the disparity in prices between the British and themselves. As early as 1689, the Governor of Montreal, made a table entitled "Differences in the Indian Trade between Montreal in Canada and Orange in New England, 1689."⁶ The following are a few examples from his table:

<i>The Indian pay for</i>	<i>At Orange</i>	<i>At Montreal</i>
8 pounds of powder	One beaver	Four
A gun	Two beavers	Five
40 pounds of lead	One beaver	Three
A blanket of red cloth	One beaver	Two

The French, however, paid more for the furs of cats, fox, and wolves, and were competitive for mink, marten, fisher, otter, and weasel. The Indian therefore took one type of pelt to the English, and another to the French. Yet, because of the strength of the English industrial system, and the greater distance the French had to carry goods in order to reach their posts,⁷ there was little that could be done to lower prices other than subsidize traders with monies from the home government.

By the 1740's the Indian's dependence on European goods was very great. When King

George's War began in 1744, the disparity in the price of trade goods became even more acute. In 1745, the British captured the strategic fort and naval base of Louisbourg, located on Cape Breton Island at the mouth of the St. Lawrence River.⁸ Louisbourg had served as a base for the French warships guarding the supply routes from France to Canada. Deprived of this base French supply ships were prevented from sailing up the St. Lawrence to Quebec. And the stock of supplies in store houses was rapidly depleted due to unusually large consumptions of goods for war purposes. From that point onward, the French position with the interior Indian tribes steadily declined. Because the French were without the means to supply the Indian's wants and needs,⁹ many of the nations rebelled, or simply turned to the English for goods.¹⁰

This situation peaked during the years 1744-1747, when many of the Great Lakes and northern Ohio Valley tribes entered a conspiracy to destroy the French trading centers around the Great Lakes.¹¹ The Huron chief Nicholas instigated the plot. Nicholas and his band had moved from Detroit in 1738 after becoming dissatisfied with the French and their goods; he also feared the other tribes gathered around Detroit. The French attempted to persuade Nicholas to move back to Detroit, but instead Nicholas and his followers remained at Sandusky Bay with other bands similarly dissatisfied with the French.¹²

At Sandusky, English traders from Pennsylvania had erected a blockhouse in 1745. These traders persuaded Nicholas to break with the French and destroy all the French posts during the holidays of Pentecost. Nicholas' plan called for widespread destruction and participation by a total of 17 tribes.¹³ Nicholas' Hurons were to destroy the French at Detroit; the Potawatomi were to kill the Frenchmen at Bois Blanc Island at the mouth of the Detroit River; the Miami were to seize Fort Miami; the Fox were to take Green Bay, the Sioux and Sauk had

plans to destroy Michilimackinac, and the Shawnee, Ottawa, and Chippewa were also to assist.¹⁴ However, the conspirator's plans went wrong, and the French, on their guard, thwarted the rebellion. Even though the uprising failed to accomplish its goals, it succeeded in disrupting not only the fur trade of the Great Lakes but also the system of alliances that the French had cultivated.

With the collapse of his efforts, Chief Nicholas and his followers moved to the Illinois country, where Nicholas died in the autumn of 1748.¹⁵ Some of the other "rebel" Indian bands that had been at Sandusky joined the group of Miamis led by La Demoiselle and immediately established another center for English traders, called Pickawillany.¹⁶

The French blamed the English for the collapse of their Indian alliance, claiming that the English "have succeeded . . . well in making them [the Indians] their devoted Creatures."¹⁷ Indeed, the French felt that if something was not done quickly, the Indian's dissatisfaction would surely grow. One Frenchman wrote gloomily, "I hope the evil [of the English traders] will not become greater, but I should not Be Surprised if it did."¹⁸ This same Frenchman felt that

The only way to remedy it [the situation of the English encroachments] and to secure the fidelity of all the Savages, the peaceful and Complete possession of all the upper country, and the Entire Trade . . . Is . . . to deprive them [the Indians] of all Communications with the English. To succeed in this, and to Establish a lasting peace in the whole of the upper country, let Your Grace make England Agree in the next treaty of peace with This Crown, that the English shall abandon and Give up to the King for ever the Complete possession of the fort of Chouegen [Oswego]; that they Renounce having any relation with the Five yrocoisses [Iroquois] nations, . . . that they shall carry on no Trade either directly or indirectly throughout the territory Around lakes hontario, lake herrier, lake huron [lakes Ontario,

Erie and Huron], Riviere Blanche and Belle Riviere [the Ohio Valley area]; that all the English Traders . . . shall Withdraw to their own country for ever Without ever being allowed to Return and carry on any Trade, or even Under any pretext whatsoever. . . .¹⁹

The English, of course, did not see themselves as being that influential with the Indians. One Englishman protested that the French

. . . know all that affair [dealing with the Indians] better than we do Their Ministers are well inform'd which I doubt ours are not They take much pains to be inform'd & never fail to incourage such as can give information or any way improve their Trade & Interest & they constantly employ men of sufficient abilities for that purpose while we take no pains & know little else besides what we learn from their books.²⁰

Another fact that the Englishmen were quick to point out was that New France's one significant source of income, the fur trade, gave her an immense advantage in dealing with the Indians. Not only were there trading posts throughout the interior, but as one Englishman complained, the French traders "live and mary among them, in short are as one people which last is not Comendable [*sic*] but gains their affection. . . ."²¹

However by 1748 the French alliance system needed more than fraternizing traders; it had utterly collapsed. Nor did the peace of Aix-la-Chapelle (1748) bring relief to the two warring countries, for it was looked upon as "a temporary halt to the general struggle, and both sides began at once to prepare for the early reopening of hostilities."²² For France, this meant reorganizing and strengthening their Indian alliance. This would prove to be a very great undertaking, for the rebellion of 1747 had not only disrupted the organization of the fur trade, but it had also cost the French government heavily.

The Governor-General of Canada, Comte de la Galissoniere, accurately evaluated the situation shortly after the rebellion. Galissoniere felt that as a result of the Indian disturbance, the fur trade had been so disrupted "that far from The Posts yielding any Revenues, they have been the cause of considerable expenditure."²³ He doubted "whether the proceeds of the most profitable ten years of the posts could have paid the expenses of the last two years."²⁴

La Galissoniere also realized that the loss of Newfoundland and Acadia (by the treaty of Aix-la-Chapelle), coupled with an aggressive English policy in the Ohio Valley, meant any new war could easily be lost by France if something was not done to strengthen Canada. Consequently, orders were issued to increase Canada's permanent military establishment, build new fortifications in the Ohio and Illinois area as barriers to British expansion, insure the alliance or neutrality of the various Indian nations, and if possible, destroy the harmful English trading post at Oswego.²⁵

Yet another critical aspect for the French was their loss of prestige among the western tribes. Again, the French blamed the English almost entirely. And, although the French realized that the only way of insuring that the Indians would remain loyal was to keep English goods out of their hands, they had first to restore tranquility among the rebellious tribes. In February 1748, Galissoniere received a letter from the French Minister stating that a convoy of trade goods should arrive shortly for distribution at Detroit and Michilimakinac, and that:

The goods transported there by them [voyageurs], and also what the nations have heard concerning the supplies the colony has received, must have enabled them to see what little foundation there was for the rumors carefully spread by the enemy regarding its alleged state of exhaustion.²⁶

The minister suggested that after tranquility was brought by the trade goods, the Great

Lakes tribes might be coerced by "inflicting signal punishment on the Sautaux [Chippewa]," whom he believed had instigated the rebellion.²⁷

However, Canada, was in no position to pursue and crush the rebels. Therefore, although the French officials would have liked to see the disobedient Indians punished, it appeared the French would have to adapt a policy of conciliation. Far from aiding in the restoration of French prestige, the lack of force shown by the French served further to undermine their authority.

In an attempt to impress the tribes with New France's power, two strong detachments of troops were sent to Detroit and Michilimakinac in 1749.²⁸ Also, post officers were instructed to "inspire in them [the Indians] proper dispositions, and break the intrigues that the English only too often put in practice to attach these savages to themselves."²⁹ But, should the Indians' dispositions be "bad or wavering," then they must be dealt with severely.

The general order for Detroit, June 2, 1748, read:

Should any Huron or other rebel be so daring as to enter the fort without a pass, through sheer bravade 'twould be proper to arrest him and put him to death on the spot.³⁰

The instruction to use force upon "bad" Indians was seldom adhered to. It was far more common to give the "bad" Indian a stern lecture about the evils of the English, and then send him on his way with a gift.

These measures still did not get to the heart of the problem. The end of the war had brought back trade goods, but they were not of pre-war quality or price. Beauharnois claimed that "the goods there [at the posts] are at such a price as to Completely disgust the savages."³¹ Therefore, the French sought to strengthen their fur trade through closer regulation. This, they felt, would not only endear them to the Indians but also secure the French traders from the harmful English competition.³²

The French exploited their posts under three systems: farming out, the license system, and exploitation by the post commander. Under the system of farms, the right to trade at a certain post was sold to the highest bidder. Not only was the initial cost of obtaining the post expensive (especially for lucrative posts such as Green Bay), but also the farmer was required to pay a specified amount every year to the government. This cost, in turn, was passed on to the Indians. Farmers were assured that once they obtained a post, they would have sole trading rights there. However, in return for this protection, the farmer was required to provide services and aid to the post commander. Also, the farmer's cargo was strictly regulated, especially in regard to the amount of liquor he could carry.³³

When a private merchant was given the right to carry on trade at a specific post, he was said to be licensed. The usual process for obtaining a license was simply to apply to the Governor-General for one. Supposedly, the Governor-General issued the licenses as a form of pension to needy officers or their families. This license then allowed the merchant to trade without paying the government for the right to do so. However, this system, like the farms, was often abused by profiteering traders and government officials. In addition to the benefits of trading under the license system, there were obvious disadvantages. For one thing, the trader was again strictly controlled as to the content of his cargo, the number of men he could employ, and the route he was to take to his post. Also, the licensee was required to carry as a part of his cargo a certain percentage of goods for the king, such as gifts that the post commandants distributed yearly. The last system of exploitation, trade by the post commander, was carried out much like the system of farms.³⁴

Galissoniere and his Indentant, Bigot, argued that the lack of trade regulation during the war years, and the resulting confusion, had caused the trade to be exploited by the

farmers and post commanders. They felt a return to a single license system, would stimulate competition between traders, and that, coupled with a return to lower prices as a result of peace, would be attractive to the Indians.³⁵ Galissoniere's replacement, Pierre-Jacque de Taffenel, Marquis de la Jonquiere, echoed these opinions. Because of the fear that the Indians would "carry their trade entirely to the English," the minister felt that the license system was one way in which the French could once more attach the Indians to themselves.³⁶

The license system to be re-established at the various posts was connected to yet another stipulation. The officers in charge of the posts were given orders not to exploit their posts by selling the most coveted trade goods at very high prices, with the officer collecting the rewards. The order read that post officers should "enjoy only the allowances . . . according to their rank and to the expense . . . of the post."³⁷

The trade that the Great Lakes tribes had been carrying on with the British at Oswego, on the southeastern shore of Lake Ontario, badly hurt New France's fur trade economy and the attempts at forming an alliance. In an effort to put an end to this "illegal" trade, La Jonquiere ordered that a post be built between the French posts of Fort Frontenac and Niagara. This new post, named Fort Rouille (Toronto), would block the Indian route from the upper country to Oswego. La Jonquier carefully explained to the minister that Ft. Rouille would be licensed, and that it would not be very expensive to build or maintain since he ordered it constructed of logs instead of stone. In addition, Fort Rouille would be manned by only one officer and fifteen soldiers.³⁸

Oswego had been a thorn in the French side since its construction in 1724. Because it deprived the principal French trading post of Niagara of valuable furs, the French had always sought ways to destroy it or at least reduce its attractiveness. However, Oswego stood on Iroquois lands, and the French did

not wish to anger such a powerful nation. By the 1730's Indians from many French areas were making the long journey to Oswego to take advantage of the high fur prices there.³⁹ By 1749, the situation was not as acute as formerly, but it still concerned the French. Their attempts at rebuilding the Indian alliance would suffer should the tribes continue to trade with the English.

La Jonquiere felt he could undermine Oswego's influence by providing cheap goods at Detroit and Niagara. Traders and merchants, he ordered, were to "sell their goods for two or three years in the future [i.e., on a type of credit], at the same prices as the English. . . ." This, he felt, would greatly help influence the tribes toward the French (in April, 1748, the Ottawa, Potawatomie, Huron, and Chippewa returned to the French alliance).⁴⁰

At the same time that the French were trying to undercut Oswego's power by lowering prices on their goods, they also appealed to the Iroquois. Writing to La Jonquiere in May 1749, the minister stated that

. . . if, on account of what may have occurred between them [Iroquois] and the English, they could be induced to destroy the post of Choueguen [Oswego] standing on their lands, it would be obtaining from them a service most useful in every respect.⁴¹

The Iroquois never destroyed Oswego. The benefits that they and other tribes reaped from the English there far outweighed what the French offered in return.

The Governor-General also determined on the rigid enforcement of orders forbidding all trade with the English. The order was meant

. . . to put an end to the infringements on the prohibitions inserted in the licenses, to prevent the farmers and voyageurs encroaching upon one another's rights, to stop the *coureurs de bois*, to forbid the trade carried on by certain voyageurs with

the English, and finally to divert the savage nations from the said trade.⁴²

The problem of the *coureurs de bois* that La Jonquiere mentioned in the above order had always been a serious one. These illegal traders (men who traded without government authority and with complete disregard for trade regulations) had become numerous during the war, and despite constant orders for their arrest, siphoned off unaccountable quantities of furs. Taking them to the English traders, the *coureurs de bois* brought back to the Indians English goods, which only served to whet the Indians' appetite for the high quality British wares.⁴³

La Jonquiere, like many of Canada's Governor-Generals, wished to stop this illegal trade. Not only did La Jonquiere order post commanders to assist in this effort, but also the numerous and powerful Chippewa were to be employed. If the Indians would denounce these smugglers, they would be assured a "good reward" if they handed over the confiscated material. La Jonquiere added, however, that he did not trust the Indians to keep their promise to apprehend such smugglers, and he instituted a watch as a precaution.⁴⁴

One of the last actions La Jonquiere took before his death in 1752 was to send Sieur Chevalier de Repentigny to Sault Ste. Marie to "establish a post there at his own expense." This new post would lie astride yet another Indian trade route, and La Jonquiere believed it would inhibit the northern Indians' use of that trail in their journeys southward to the English. La Jonquiere wrote that this new post will

. . . stop and forestall the consequences of the messages and presents that the English send to those nations that they may corrupt and win them completely over to their interests, and inspire them with feelings of hatred and aversion to the French.⁴⁵

Governor-General La Jonquiere's attempts at making the Great Lakes Indians

a strong ally of New France were generally successful. When the French and Indian War broke out between New France and the English colonies in 1754, the upper country Indians could be counted on as the most loyal and dependable Indian force that the French had. Like other tribes, the Great Lakes Indians needed goods, gifts, and inspiring speeches to prod them into military action. However, one weapon that the French held over the upper country inhabitants was the fear of resisting the French, and hence being destroyed as the Fox had been twenty-five years earlier.⁴⁶ Even though these northern allies traded at times with the English, they may have been moved by the better quality of the English goods, and not by a wish to see the French replaced by the British.

Another important aspect of the French ability to maintain their ascendancy over the tribes was their systematic way of handling both the fur trade and the Indian nations. Whereas the English were independent traders competing for the Indian trade, the French traders were, as a rule, under orders from the government. This government, unlike that of the English colonies, spoke and acted in a unified manner. And, although it was generally the post commanders who had the task of keeping peace among the tribes and subjecting them to French control, it was the Governor-General who sought to impress them at the annual spring meetings in Montreal. It was also the Governor-General's duty to direct the overall Indian policy so that it conformed not only to the desires of the fur trade, but also to the military aims of the government of New France.⁴⁷

New France's attitude was hardening in relation to the growing competition from the British traders. When La Jonquiere died in 1752, the temporary Governor-General, Longueuil, echoed the opinion of many of the post commanders that the whole upper country was "menaced by a general conspiracy."⁴⁸ In fact, Longueuil decided to make his position quite clear, "There is no doubt,

my Lord, but 'tis the English who are inducing the savages to destroy Fort Toronto, on account of the essential injury it does their trade at Choueguen."⁴⁹ This attitude was taken wholeheartedly by the newly arriving Governor-General Sieur de Menneville, Ange de Quesne. A foresighted man, he immediately began reinforcing Canada's military position in the Ohio Valley.

While the French had been securing the trade and alliance of the Great Lakes tribes, they had neglected the Ohio Valley. Although the Ohio region was less populous than the upper country, its tribes were important to both England and France. France was particularly worried that England might utilize the Ohio nations to sever communications between Canada and Louisiana and to isolate such major trading centers as Detroit. As a result of France's negligence, English traders were firmly established there. The French were aware that they could not control the Indian nations of the Ohio area unless they also controlled the trade there. Yet, it was not really the furs of the Ohio Valley that drew the French. Although the Ohio was rich in mammals, the milder climate yielded furs of lesser quality than the colder Great Lakes region. These furs, racoon, fox, marten, and to a lesser extent, beaver, were all placed below the medium of exchange in the Ohio area—buckskin.⁵⁰ This buckskin, although not so valuable as northern beaver, found a nearby market with the English.⁵¹ The French saw that they must break this trade.

Lewis Evans' 1755 map of the Ohio Valley and Great Lakes area, entitled "A General Map of the Middle British Colonies," amply demonstrates English penetration and knowledge of the Ohio region. Evans illustrated all French and English trading centers, forts, the various Indian tribes, and the principle trade routes. It is quite apparent from that map and others that the English were in an excellent position to take "proper Step towards checking the Encroachments of the French by interrupting part of

their Communication from their Lodgements upon the great Lakes to the River Mississippi.”⁵²

Many Indian tribes claimed domination or rights over the Ohio Valley: the Catawba, Cherokee, Erie, the Iroquois Confederacy, Miami, Mingos, Shawnees, and the Wyandots. However, the only group able to exert any degree of power was the Iroquois, which largely dominated the northern Ohio Valley tribes and lands.⁵³ All of these groups, especially the Miami, had been trading with the English from the Carolinas since approximately 1715.⁵⁴ The French had planned to drive the English traders from the Ohio in 1744, but the wartime lack of trade goods had lost them the support of the northern tribes. As a result they were forced to give up the plan.

The English, of course, denied that they controlled the Ohio, although it was quite apparent that they did. In 1748, a large number of gifts, supplied by Pennsylvania and Virginia, had been distributed at Logstown by English traders. Mingo, Delaware, Shawnee, and Wyandot tribes had then pledged their loyalty to the English.⁵⁵ The English, with their established trading areas, were in a very good position to refute the French claims to the Ohio. France, in control of the western areas of the Ohio Valley, felt deeply threatened, especially after the Ohio Company was chartered in 1748.

The Ohio Company, with funds provided by such families as the Lees, Washingtons, and Fairfaxes, as well as London merchants, had obtained a half million acres in the Ohio Valley. However, before the company could begin to realize profits from land sales, the area had to be surveyed, forts had to be constructed, and the Indians had to be solidly pro-English.⁵⁶ The company, determined that nothing should stand in its way, also attempted to pacify the powerful Iroquois nation. Meeting again in Logstown in June 1752, the English stressed friendship because they also desired “to protect and secure a

peaceable Possession [of the Ohio Valley] to the Ohio Company.”⁵⁷

Fearing what the British could do with the Ohio nations, as demonstrated by the 1747 uprising, the French wished to know the status of the Ohio area, as well as the disposition of the tribes toward them. In June 1749, Pierre-Joseph de Celoron de Blainville left Canada accompanied by 15 officers, 20 French regulars, and approximately 200 French-Canadians and Indians under orders from La Galissoniere to claim the lands of the Ohio for the King of France (see map). Celoron was to warn any English traders he might encounter that they would henceforth not be tolerated in the Ohio area. If necessary, he was to use force. Celoron was also to instruct the Indians that the government of New France intended to take control.⁵⁸

When Celoron reached the English center at Logstown, he ordered the British flag lowered and the flag of France raised in its place. He told the English traders operating there to leave, and he sent warnings by them to the colonial governments. The Indians were hostile toward Celoron, but they dared not attack so large a force. Although Celoron attempted to impress upon the Indians that the French were their new leaders, his diplomacy was weakened by the fact that he carried few trade goods for distribution. At Pickawillany, Celoron confronted La Demoiselle, a pro-English leader, and secured La Demoiselle's promise to move his band (largely Miami) back to the Miami post on the Maumee River. It was a hollow promise. At all of the villages that Celoron visited, he found the Indians cool or hostile toward French overtures. In fact, Celoron shortened his expedition to avoid a possible engagement with these unruly Indians. Although he was under orders to drive the English traders from the valley of the Ohio, he found he was not sufficiently strong to accomplish this due to the attachment of the Indians to the English. (There were pro-French factions

within some of the tribes, but generally speaking, they tended to be pro-British.)

Upon his return to Canada, Celoron noted that although "a solid establishment [in the Ohio] would be useful," he doubted it would be possible to obtain. He went on to state that

All that I can say is that the tribes of those localities are very badly disposed toward the French and entirely devoted to the English. I do not know by what means they can be brought back. If force is employed they will be notified and will take flight. They have a great refuge among the Testes plates from whom they are not so very far away. If we send to them for trade, our traders can never give our merchandise at English prices on account of the costs that they are obliged to incur. Besides I think it would be dangerous to make conditions easier [he is probably speaking of subsidizing the traders] for those who inhabit the Beautiful River [Ohio] than for those of the posts of Detroit, Miamis, and others. It would depopulate our ancient posts and perpetuate the tribes on the Beautiful River, which are convenient to the English governments.⁶⁰

La Galissoniere's replacement, La Jonquiere, had been informed upon assuming office in 1749, that of all his duties, "that which demands the most exacting care . . . is the government of the savages."⁶¹ La Jonquiere felt that rather than build expensive posts in the Ohio, he would try bribery and the lavish use of gifts first.

Like most Indian nations, the Ohio tribes wanted neither side to dominate them, but if they had to choose, it would be the side that supplied their wants, and that appeared to be the most powerful. In 1749, it was clear to the Ohio nations that the English had the advantage.⁶² A large part of the Ohio Indian's unwillingness to join the French alliance was the very poor quality and selection of French trade goods in relation to the finer, less expensive English items. These items were goods such as the follow-

ing: calicos, bed gowns, broad and narrow ribbon, silk handkerchiefs, silver brooches and hair plates, wrist bands and rings, Holland ruffled skirts, embossed flannels, gartering, bed lace, brass penknives, strouds, duffels, and the like.⁶³ The French failed in their efforts to woo the Indians away from the British through the use of trade goods. At the time of La Jonquiere's death in 1752, the Ohio was still heavily British.

When Du Quesne assumed the leadership of New France in 1752, he reasserted that the valley of the Ohio must be held and be made part of New France's North American empire. Furthermore, Du Quesne felt that the Indians there should be able to cross the mountains to trade with the British any time they wished, but that no English trader should ever establish himself on French territory. Considering La Jonquiere's failure using bribery, Du Quesne's policy stressed action. In June 1752, a French-Canadian officer, Charles-Michel Langlade, led 240 Chippewa and Ottawa warriors to La Demoiselle's village of Pickawillany, which had been a growing center of English influence. Langlade's party plundered the village, captured or forced out the English traders operating there, and seized an estimated £3,000 sterling of furs and goods. To demonstrate French brutality, Langlade and his warriors killed and ate one of the British traders, as well as the pro-British chief La Demoiselle. Writing to the minister, Du Quesne said, ". . . I hope that my action in the Belle Riviere [Ohio area] country will awe all the Nations."⁶⁴

Because of Pickawillany's importance to the Indians and the English as a trading center, its fall was significant. Not only did the destruction of Pickawillany remove one of the barriers to French control over the region, it also removed the leader that had inspired the others to resist going over to the French. After Pickawillany's fall, tribes such as the Mingo, Miami, Shawnee, and Wyandot felt that they could not defend themselves against the savage, French-led

Great Lakes tribes. This weakened their pro-English stance and unwillingly impelled them into the French alliance.

English influence in the Ohio Valley immediately began to wane, for Langlade's attack demonstrated to the Ohio Indians that France was able to muster a powerful force, transport it over a considerable distance, and destroy those who opposed French rule. Shortly after Langlade's venture, Du Quesne sent Pierre-Paul de la Malque, Sieur de Marin, to establish fortifications in the Ohio area. Throughout the summer of 1753, Marin drove his men hard, losing many. However, he succeeded in establishing Fort Presqu'île on the southern shore of Lake Erie, and Fort le Boeuf farther south, on the banks of the Riviere aux Boeufs.⁶⁵ Although Marin's expedition did not enter the Ohio Valley proper, Du Quesne was anxious that French posts and forts be started there. In the spring of 1754, Du Quesne sent Pierre Claude de Contrecoeur with 1,000 men to pick up where Marin had left off. Reaching the forks of the Ohio, Contrecoeur's men drove away a smaller English force and began construction of what was to become powerful Fort Du Quesne. This action on the part of the French destroyed the remaining hold the English had on the valley of the Ohio.⁶⁶

Governor-General Du Quesne realized that it was not enough to make a show of strength without doing something to reinforce French sovereignty. If the Indians were to back French military expeditions, French influence would have to be much stronger than it was. This increase in influence could come only through French traders and voyageurs. However, Du Quesne soon found that Canadian traders were unwilling—even fearful—to venture into the Ohio Valley because of the closeness of the British and the possibility of Indian hostility. Besides, it was profitable to stay with the already established trade at the safer posts of the upper Great Lakes region.

To lure French traders and merchants into

the Ohio Valley, Du Quesne offered 1) that they would be aided in every conceivable way by the commandants at the various posts; 2) that their trade goods would be carried over portages without charge by garrison troops; 3) that if the traders ran out of goods, they would be able to obtain them from the post storehouses at low prices. In addition, Du Quesne also imposed restrictions. The staples of the trade, powder, lead, blankets, brandy, and firearms, had to be offered at only slightly higher prices than at Montreal, with the French government subsidizing the traders for any losses they might incur by this practice. Merchandise other than necessities could be sold for whatever the trade would bear. Du Quesne felt that by offering staples as low as possible, he would remove some of the reasons that the Ohio Indians might give for resuming trade with the English, as well as preventing the Indians from being cheated by overzealous merchants. As essential as the Ohio tribes were to the defense of New France, Du Quesne realized that their allegiance would be costly.⁶⁷

England reacted predictably to French actions in the Ohio region. By the summer of 1754, France was engaged in the French and Indian War (1754-1763). New France and her Indian allies held the advantage initially. However, they recognized that the Anglo-Americans, with their superior population and industry, would benefit from a long war. Therefore, France's policy was geared toward a short, decisive, and highly offensive war, with her Indian allies carrying the bulk of the fighting. By the end of 1755, France had gathered virtually every upper country and Ohio Valley tribe into her alliance.⁶⁸ About this time, as New France's post commanders were encouraging the Indian nations to ravage the outlying English settlements, the lesson of English naval superiority taught during King George's War was retaught to the French.

In June 1755, a squadron of French ships carrying soldiers and supplies to Canada was

intercepted by British Admiral Boscawen, and although only two of the ships were captured, it illustrated the tenuous military position of New France. It also demonstrated the importance of having secure lines of supply and communication to France. Shortly thereafter, 300 French vessels and approximately 6,000 French seamen (roughly the number required to man ten ships-of-the-line) were seized either on the high seas or in English ports.⁶⁹ This left France a total of 62 ships-of-the-line, with about 45 fit to sail immediately, against England's 130.⁷⁰

Although Du Quesne's successor, Pierre Francois Rigaud de Cavagnial, Marquis de Vaudreuil, was a Canadian who knew North American style warfare very well, it was the French general, Montcalm, who dictated New France's war policy. Vaudreuil urged that the few French regulars available (probably close to 4,000 men) be used to guard the central approaches to Quebec. The colonial regulars, the militia, and the Indians, would then be free to devastate the English frontier from Massachusetts to the Carolinas. Montcalm's attitude was one of defeat: that Canada was in reality already lost. He wanted to wage war in the European style, relying heavily on the French regulars, and very little on the detested Canadians and Indians. Despite Vaudreuil's knowledge of the Indians, Montcalm's strategy prevailed.⁷¹

In spite of Montcalm's attitude, Vaudreuil felt it was necessary to use the Indian alliance to the utmost while it was still possible. One of his first objectives was the destruction of Oswego. Recognizing Du Quesne's neglect of the upper country, he believed that if Oswego fell, New France would finally achieve "the perfect attachment of all the Upper Country Indians."⁷² Oswego continued to draw the Indian trade regardless of the undeclared war raging in North America. (Britain and France did not officially declare war until May 18, 1756.)

Under the command of Montcalm, a force

of French regulars, Canadians, and Indians succeeded in capturing Oswego in August 1756. News of its fall created enthusiasm for the French cause among north country nations. Believing France to be the ultimate victor, almost eighteen hundred Indians volunteered for campaigns in the upcoming year.⁷³ In Ohio country the Indians did not take the news of Oswego's fall lightly. The commandant of Ft. Du Quesne, writing shortly after the fall of Oswego, remarked that the Indians of his region "appear glad that Chouaguen has fallen, but at the bottom of their hearts they are not satisfied."⁷⁴ This was probably because French goods were still very expensive for the Ohio tribes, who had long experience with the cheaper English items. Montcalm let his defeatist attitude show when he said that the taking of Oswego had a worthy effect upon the courage of Indians "belonging" to the French (i.e., the upper Great Lakes tribes). However, the courage "of those, who were like the Huron of Detroit in the depths of their hearts on the side of the English," lowered considerably when they found that strong Oswego had fallen.⁷⁵

Although Indians were essential to the French for scouting and reporting on British military activities, keeping the British on the defensive, spreading fear, and keeping the enemy guessing as to France's true strength, they were also a colossal, seemingly unsolvable problem. For one thing, few of the Indians in the alliance kept their courage when facing disciplined fire from the Anglo-Americans. Likewise, they could not be depended upon to face an enemy using artillery, and virtually all major and minor English strongpoints had artillery of some type. When military affairs were going well for the French, Indian support was very good. However, when the French were faced with an equal number of British troops, or forced to retreat, the Indian support melted away as the Indians simply went home.⁷⁶

Another problem was the regular officers from France. Aside from their obvious dis-

like of Canadian officers, the Frenchmen looked upon Indians with great contempt. Louis Antoine Bougenville, Montcalm's aide, claimed that Indians in the service of France are "naked, black, red, howling, bellowing, dancing, singing the war song, getting drunk, yelling for 'broth,' that is to say blood, drawn from 500 leagues by the smell of human flesh."⁷⁷ Furthermore, Bougenville felt it was next to impossible to utilize the Indians efficiently and in their fullest military capacity.

We now have six hundred Indians, and hold a council to send them off in detachments, but it is a long job to get them to make up their minds. It requires authority, brandy, equipment, food and such. The job never ends and is very irksome.⁷⁸

Bougenville also wrote that once the Indians had finally been prodded to action, the trouble was not ended.

At last they get started, and once they have struck, have taken only a single scalp or one prisoner, back they come and are off again for their villages. Then for a considerable time the army is without Indians. Each one does well for himself, but the operation of the war suffers, for in the end they are a necessary evil.⁷⁹

And yet Bougenville was not shortsighted enough to completely discount the importance of New France's Indian alliance. When after the defeat of Fort William Henry by Montcalm's forces in 1757, Montcalm was forced to counsel with the Indian chiefs on the warriors' brutality toward captured prisoners, Bougenville stated, "One sees by this action of the Marquis de Montcalm to what point one is a slave to Indians in this country. They are a necessary evil."⁸⁰ Indeed, military plans often had to be altered or postponed in accordance with the availability of sufficient numbers of warriors from the alliance. Also, French officers feared insulting the Indians lest they decide to go home.

Strategic Louisbourg on Cape Breton Island once again fell to the English in 1758.

The few supplies and men that had been reaching Quebec via French ships diminished.⁸¹ Any goods the French received had to come, for the most part, from the New England smugglers who operated with such audacity for much of the colonial period.⁸² Shortly after Louisbourg fell, another French outpost, Fort Frontenac, surrendered to the British. The Indian nations sensed the shifting tide of battle and grew more receptive to English peace appeals. In the autumn of 1758, the French were forced to destroy their fort at the forks of the Ohio to prevent its falling into the hands of an approaching English army. This, coupled with renewed and vigorous appeals for peace by English officials, caused the Ohio nations to largely abandon the French alliance of 1759.⁸³

The upper country Indians remained loyal to the French longer than the Ohio Indians. As late as the summer of 1759, Langlade was still able to bring approximately 1,000 Indians to Montreal.⁸⁴ Montcalm very early felt that the upper country was already lost. Writing early in 1758, Montcalm felt that "the war, rendering merchandise dear, has made these posts worth little or nothing."⁸⁵ Although he was here speaking about the economic value of the posts to New France, he implied that the terrible expenses involved were not worth the meager return in furs and Indian aid. Seventeen fifty-nine saw the French defeated before Quebec, and by the following year, the Indians of the upper country, despite their "good dispositions" toward the French, were "repairing to the English" in very significant numbers. Governor-General Vaudreuil summed up the French-Indian alliance, as well as the whole Indian situation, when he wrote in June 1760, "The English . . . profit by our scarcity of goods."⁸⁶

France's North American position was never as strong as that of the English colonies. Indeed, Canada not only had a small population unable to defend itself against the powerful English colonies, but it was actually a financial liability to the French

Crown. As Lawrence H. Gipson points out in his multi-volume work on colonial North America, New France's income was almost totally dependent on the fur trade. As a result, France was forced to continually subsidize her North American colony, at a great drain on her own economy. For example, in 1749 the total expenditures for maintaining New France amounted to 2,031,199 livres, while the total income received from Canada was but 233,016 livres. These expenses, due largely to the ineptitude of the indentant Francois Bigot, and the increased efforts to win the Indian tribes, rose dramatically during the 1750's. In 1753, the expenses of New France amounted to 3,495,675 livres, far above the total Canada exported.⁸⁷

France, then, realized that Canada was not a profitable colony. But she also felt that it was essential to keep Canada to prevent further commercial and military expansion of England. (And perhaps because of plain stubbornness and pride.) However, to stockpile arms, ammunition, and supplies and keep a force of French regulars in Canada would have been far too costly. French officials saw an Indian alliance as the answer to their financial and military problems. But the question still arises as to why the Indian alliance, after such strenuous efforts to form it, was not more effective.

The two previous wars fought in eighteenth century North America, Queen Anne's (1702-1716) and King George's (1744-1748), apparently did not teach the French government any useful lessons about either the use of their allies or its own tenuous position. Quite true, the Indians were very important to any engagement in North America simply because of their numbers and their knowledge of the land. To discount them altogether seems foolish, but then so does basing a whole country's defense on them, especially when seen in the light of prior experience. But then, the French and Indian War did not develop into the type of war France anticipated. Perhaps this is the

key to understanding the French Indian policy.

France was weak on the North American continent. This fact was recognized both in France and in Canada, as was the financial drain the colonies imposed. It was far cheaper to base the defense on Indians rather than on conventional troops when the war was expected to be short and fought mainly in the wilderness, and not to escalate past the colonies. England realized how important the tribes were and sought to deprive France of them. England succeeded in doing so not by the use of land forces or trade, but by striking at France's navy.

A weak navy, more than the lack of money or of high quality goods, caused the alliance and hence New France to fall. When it was realized in 1760 that a strong navy was needed if Britain was ever to be defeated, it was already too late. The vital lessons of King George's War had been ignored. Canada's defeat was foretold as early as June 1755, when French transports and warships were seized by the Royal Navy. The Indian alliance was only as strong as the stock of French goods at the various posts, and the display of military strength that Canada could muster, and both of these were tied to the success of French armies and fleets back in Europe.

NOTES

¹ Extract from an enumeration by an unknown person, October 12, 1736, in Wisconsin State Historical Society, *Collections of the State Historical Society of Wisconsin*, 21 vols. (Madison: State Historical Society, 1854-1931), vol. 17: *The French Regime in Wisconsin-II, 1727-1748*, edited by Reuben G. Thwaites, pp. 245-252. Hereafter cited as *Wisconsin Collections*.

² Colonel Henry Bouquet, 1764. "Names of different Indian Nations in North America, with the Numbers of their Fighting Men. Historical Account of the Expedition against the Ohio Indians in 1764," London and Philadelphia, 1766, cited in U.S. Bureau of Indian Affairs, *Information Respecting the History, Condition and Prospects of the Indian Tribes of the United States*, by Henry

R. Schoolcraft, *Ethnological Researches Respecting The Red Man of America*, 6 parts (Philadelphia: Lippincott, Grambo and Co., 1853; reprint ed., Ann Arbor, Michigan: Xerox University Microfilms, 1974), 3:559.

³ Lawrence H. Gipson, *The British Empire Before the American Revolution*, vol. 5: *Zones of International Friction, The Great Lakes Frontier, Canada, the West Indies, India, 1748-1754*; 16 vols. (New York: Alfred A. Knopf, 1942), pp. 50-51.

⁴ Lawrence H. Gipson, *The British Empire Before the American Revolution*, vol. 4: *Zones of International Friction, North America South of the Great Lakes Region, 1744-1754*; 16 vols. (New York: Alfred A. Knopf, 1939), p. 146.

⁵ *Ibid.*, p. 147.

⁶ New York Colonial Documents, IX, 404-409, quoted in Gipson, vol. 5: *The Great Lakes Frontier*, p. 45.

⁷ Norman W. Caldwell, *The French in the Mississippi, 1740-1750*, Perspectives in American History Series, no. 2 (Urbana, Illinois: University of Illinois Press, 1941; reprint ed., Philadelphia: Porcupine Press, 1974), p. 51.

⁸ George F. G. Stanley, *New France, The Last Phase, 1744-1760* (Toronto, Canada: McClelland and Steward Limited, 1968), p. 76.

⁹ Pouchot, *Memoir on the Late War*, II, p. 49, as cited by Caldwell, *French in the Mississippi Valley*, p. 47 n. 33, lists the following as common trade articles at the posts: hunting guns, lead, balls, powder, steel for striking fire, gun-flints, gun screws, knives, hatchets, kettles, beads, men's shirts, cloth (red and blue) for blankets and petticoats, vermilion and verdigris, tallow, blue and green ribbon of English weaving, needles, thread, awls, blue, white and red rateen for making moccasins, woolen blankets of three points and a half, three, two and one and a half of Leon cloth, mirrors framed in wood, hats trimmed fine, and in imitation, with variegated plumes or in red, yellow, blue and green, hoods for men and children of fringed rateen, galloons, real and imitation, brandy, tobacco, razors for the head, glass in beads made after the fashion, wampum, black wines, and paints.

¹⁰ W. J. Eccles, *The Canadian Frontier, 1534-1760* (New York: Holt, Rinehart, and Winston, Inc., 1969), p. 151.

¹¹ Captain William Trent, *Journal of Captain William Trent from Logstown to Pickawillany, A.D. 1752*. Edited by Alfred T. Goodman (Cincinnati: R. Clarke and Co. for W. Dodge, 1871; Microfiche, Library of American Civilization, LAC 16624, n.d.), p. 15.

¹² Gipson, vol. 4, *North America South of the Great Lakes*, p. 174.

¹³ Trent, *Journal of William Trent*, p. 15.

¹⁴ See Memoir of Raymond to the French Minister, November 2, 1747, in *Wisconsin Collections*, 17:474-475; and Trent, *Journal of William Trent*, pp. 17-18. Trent recounted the tribes and conspiracy in an extended footnote.

¹⁵ Trent, *Journal of William Trent*, p. 21 n. Nicholas was pardoned for his part in the rebellion provided he help maintain peace. However, he soon began to invite English traders back to his village. When the French heard of this, they ordered punitive measures be taken; Nicholas then decided to leave for the west.

¹⁶ Thwaites, *Wisconsin Collections*, p. xvii.

¹⁷ Memoir of Raymond to the French Minister, November 2, 1747, in *Wisconsin Collections*, 17:475. Although the French blamed all the English in general, the rebellion was aided by independent English traders and was not officially sanctioned by the colonial governments. What aid there was to the Indians was too little too late.

¹⁸ *Ibid.*, p. 476.

¹⁹ *Ibid.*

²⁰ Colden to Peter Collinson, December ?, 1743, The Colden Papers, New York Historical Society Collections, 1919, III, pp. 42-44, quoted in Caldwell, *French in the Mississippi Valley*, p. 51.

²¹ Philip Livingston to Storke and Gainsborough, 31 October, 1734, Manuscripts Miscellaneous, V. New York State Library, as quoted in Douglas E. Leach, *Arms for Empire, A Military History of the British Colonies in North America, 1607-1763* (New York: Macmillan Co., 1973), p. 177.

²² Caldwell, *French in the Mississippi Valley*, p. 5.

²³ La Galissoniere and Hocquart to the French Minister, October 7, 1747, in *Wisconsin Collections*, 17:470.

²⁴ La Galissoniere to the French Minister, October 23, 1748, in *Wisconsin Collections*, 17:503.

²⁵ W. J. Eccles, *France in America*. The New American Nation Series, edited by Henry S. Commager and Richard B. Morris (New York: Harper and Row Publishers, Inc., 1972), p. 179.

²⁶ French minister to La Galissoniere, 12 February 1748, in *Wisconsin Collections*, vol. 18: *The French Regime in Wisconsin, 1743-1760, The British Regime in Wisconsin, 1760-1800. The Mackinac Register of Marriages, 1725-1821*, edited by Reuben G. Thwaites, p. 11.

²⁷ *Ibid.* Chippewa bands had attacked French boats on Lake St. Clair.

²⁸ French minister to La Jonquiere, May 4, 1749, in *Wisconsin Collections*, 18:22. This letter was

written to new Governor-General, La Jonquiere, but it refers to Galissoniere's requests and actions.

²⁹ Memoir of the king, April 30, 1749, in *Wisconsin Collections*, 18:19.

³⁰ New York Colonial Documents and Colonial Records of Pennsylvania, as quoted in Trent, *Journal of William Trent*, p. 22 n.

³¹ Beauharnois to the French minister, October 9, 1744, in *Wisconsin Collections*, 17:443. Although this statement is attributed to Beauharnois, the previous Governor-General, it applies to the situation as Galissoniere found it in 1748-1749.

³² Caldwell, *French in the Mississippi Valley*, p. 63.

³³ *Ibid.*, p. 52.

³⁴ *Ibid.*, p. 53.

³⁵ Bigot to the French minister, October 22, 1748, in *Wisconsin Collections*, 17:502.

³⁶ French minister to La Jonquiere and Bigot, May 4, 1749, in *Wisconsin Collections*, 18:26.

³⁷ *Ibid.*

³⁸ La Jonquiere and Bigot to the French minister, October 9, 1749, in *Wisconsin Collections*, 18:34.

³⁹ Gipson, vol. 5, *International Friction, The Great Lakes Frontier*, p. 62, gives an excellent example of the great price disparity in the period 1734 to 1748. The English offered 92 sols for any grade beaver skin, whereas the French offered 55 sols a pound for winter grade skins.

⁴⁰ La Jonquiere and Bigot to the French minister, October 9, 1749, in *Wisconsin Collections*, 18:34.

⁴¹ French minister to La Jonquiere, May 4, 1749, in *Wisconsin Collections*, 18:23-24.

⁴² La Jonquiere to the French minister, September 27, 1750, in *Wisconsin Collections*, 18:70.

⁴³ Caldwell, *French in the Mississippi Valley*, pp. 55-56. Caldwell presents some interesting examples of how the French sought to deal with the *coureurs de bois*; deportation and use as privateers.

⁴⁴ La Jonquiere to the French minister, September 29, 1750, in *Wisconsin Collections*, 18:73.

⁴⁵ La Jonquiere to the French minister, October 5, 1751, in *Wisconsin Collections*, 18:99.

⁴⁶ From 1730-1734, the French had attempted to destroy the Fox nation, who were an obstacle to their fur trade. They ruthlessly pursued the Fox far beyond what would have been necessary, despite pleas by other tribes to stop. This made the Indians not only fear what the French could do, but it also made the tribes very apprehensive of them.

⁴⁷ Caldwell, *French in the Mississippi Valley*, pp. 64-65.

⁴⁸ Longueuil to the French minister, April 25, 1752, in *Wisconsin Collections*, 18:116.

⁴⁹ *Ibid.*, p. 112.

⁵⁰ Gipson, vol. 4, *International Friction, South of the Great Lakes*, pp. 188-189.

⁵¹ Anderson, *Scraps, Du Semetiere Papers*, Library Company of Philadelphia, quoted in Gipson, *International Friction, South of the Great Lakes*, pp. 188-189 n.2, gives the following table of the value of deer skins:

A Buck is a Buck-skin

A Buck is equal to hundred grains of black wampum

A d⁰ . . . to two hundred grains of white wampum

A d⁰ . . . to two doe skins

A d⁰ . . . to one otter skin

A d⁰ . . . to one Beaver skin

A d⁰ . . . to two Small Beaver skins

A d⁰ . . . to five foxes skins

A d⁰ . . . to six raccoons skins

⁵² Lords to Gooch, March 4, 1748/9, Virginia Correspondence, 439-443, Public Records Office, Colonial Office, 5 V. 1366, quoted in Caldwell, *French in the Mississippi Valley*, p. 96 n. 44.

⁵³ Gipson, vol. 4, *International Friction, South of the Great Lakes*, pp. 153-154.

⁵⁴ Trent, *Journal of William Trent*, p. 11.

⁵⁵ Gipson, vol. 4, *International Friction, South of the Great Lakes*, pp. 184-185.

⁵⁶ See Eccles, *The Canadian Frontier*, p. 156; and Reuben Gold Thwaites, *France in America, 1497-1763* (New York: Harper and Brothers Publishers, 1905; reprint ed., Westport, Conn.: Greenwood Press, 1970), pp. 152-153.

⁵⁷ Instructions to the commissioners, Virginia Magazine of History and Biography, XIII, pp. 147-152, quoted in Gipson, vol. 4, *International Friction, South of the Great Lakes*, p. 253 n. 69.

⁵⁸ Journal of Celoron, 1749, in *Wisconsin Collections*, 18:36, 39.

⁵⁹ *Ibid.*, pp. 42-56.

⁶⁰ *Ibid.*, p. 57.

⁶¹ Memoir of the King, April 30, 1749, in *Wisconsin Collections*, 18:17.

⁶² Eccles, *The Canadian Frontier*, p. 159.

⁶³ Ohio Company Papers, I, pp. 7, 17, cited in Gipson, vol. 4, *International Friction, South of the Great Lakes*, p. 207.

⁶⁴ See Du Quesne to the French minister, October 25, 1752, in *Wisconsin Collections*, 18:129 n. 67; and Gipson, vol. 4, *International Friction South of the Great Lakes*, pp. 222-223.

⁶⁵ Eccles, *The Canadian Frontier*, p. 162.

⁶⁶ Gipson, vol. 4, *International Friction, South of the Great Lakes*, pp. 307-310.

⁶⁷ Eccles, *The Canadian Frontier*, p. 166.

⁶⁸ Lawrence H. Gipson, *The British Empire Before the American Revolution*, vol. 7: *The Vic-*

torious Years, 1758-1760; 16 vols. (New York: Alfred A. Knopf, 1949), pp. 63-64.

⁶⁹ See Alfred T. Mahan, *The Influence of Sea Power Upon History*, 12th ed. (Boston: Little, Brown and Co., 1947), pp. 284-285; and William M. James, *The Influence of Sea Power on the History of the British People*, The Les Knowles Lecture on Military History for 1947 (Cambridge: The University Press, 1948), p. 14.

⁷⁰ Mahan, *Influence of Sea Power Upon History*, p. 291. Spain joined the war on France's side in January 1762, adding 46 ships-of-the-line. However, to quote Mahan, "... it may well be doubted if its worth were equal to its numbers."

⁷¹ Eccles, *France in America*, pp. 188-190. Montcalm and Vaudreuil eventually became very bitter enemies, which did not help the war effort.

⁷² New York Colonial Documents, X, p. 309, quoted in Stanley, *New France, The Last Phase*, p. 97.

⁷³ New York Colonial Documents, X, p. 630; and "Journal of Levis," in Levis MSS., i, pp. 89-91, cited in Thwaites, *Wisconsin Collections*, 18: 196 n. 49.

⁷⁴ M. Dumas to M. de Makarty, August, 1756, in *Wisconsin Collections*, 18:164.

⁷⁵ Journal of Montcalm, November 21, 1756, in Casgrain, *Levis Manuscripts*, in *Wisconsin Collections*, 18:164 n. 6.

⁷⁶ Stanley, *New France, The Last Phase*, pp. 98-99.

⁷⁷ Louis Antoine de Bouganville, *Adventure in the Wilderness: The American Journals of Louis Antoine de Bouganville, 1756-1760*, trans. and ed. Edward P. Hamilton (Norman, OK: University of Oklahoma Press, 1964), p. 331.

⁷⁸ *Ibid.*, p. 36.

⁷⁹ *Ibid.*, p. 60.

⁸⁰ *Ibid.*, p. 170.

⁸¹ See Mahan, *Influence of Sea Power Upon History*, p. 294; and Leach, *Arms for Empire*, p. 419. France did not make the mistake of neglecting her navy after 1760. By then, however, it was too late. By the outbreak of the American Revolution, many historians have felt France's rebuilt navy equalled or surpassed Britain's.

⁸² Lawrence H. Gipson, *The Coming of the American Revolution*, ed. Henry S. Commager and Richard B. Morris, New American Nation Series (New York: Harper and Row, 1954), p. 28.

⁸³ Idem, vol. 7, *Victorious Years, 1758-1760*, pp. 278-279, 283-284.

⁸⁴ Memoir of Pouchot, May, 1759, in *Wisconsin Collections*, 18:211.

⁸⁵ Extract from Montcalm's journal, December 10, 1758, in *Wisconsin Collections*, 18:206.

⁸⁶ Vaudreuil to the French minister, June 24, 1760, in *Wisconsin Collections*, 18:217.

⁸⁷ Gipson, vol. 5, *International Friction, The Great Lakes Frontier*, pp. 25-27.

RICHARD T. ELY AND THE DEVELOPMENT OF THE EUROPEAN SOCIALIST AND LABOR COLLECTIONS AT THE UNIVERSITY OF WISCONSIN-MADISON

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In 1890 the University of Wisconsin was an aspiring but undistinguished school with a modest program of instruction and a library of 19,000 volumes. During the next decade a dramatic transformation of its educational program took place, "in intellectual as well as in material terms, in direction as well as in organization."¹ Inevitably, this rapid but necessarily uneven expansion was accompanied by academic growing pains in curriculum planning and in library development. It became a matter of concern to the university administration that the natural and physical sciences were assuming a disproportionate role in the curriculum and in the disposition of research funds. To achieve a more equitable balance of faculty interests, President Thomas C. Chamberlin, though a geologist, decided to build up the social sciences at Wisconsin by recruiting research scholars trained at the leading universities in the East.

Two years later, in 1892, President Chamberlin announced the formation of a School of Economics, Political Science, and History which would offer practical training in citizenship as well as advanced work in public administration. Its instructional program would aspire to do "for civic life what West Point did for the military."² Chamberlin's proposal evoked a quick and favorable response from the local newspapers, from the alumni of the university, and especially from the faculty. Frederick Jackson Turner, then a young history professor, warmly supported this new school "which would allow Wisconsin to build a graduate program in the social sciences more prestigious than Chicago's. It will be the center of post-graduate work in the Northwest."³

As the Director of this newly organized school, Chamberlin appointed one of the country's leading economists, Professor Richard T. Ely of Johns Hopkins University, who had taught John R. Commons, Frederick Jackson Turner, and Woodrow Wilson, among others. Ely immediately became Wisconsin's most distinguished faculty member and retained this position for 33 years until his retirement in 1925.⁴ He was induced to leave the East by an offer of \$3500 a year, a substantial salary for those days, and the unprecedented sum of \$5000 for the purchase of library materials. This sum represented a considerable outlay of public funds since the entire library book budget was then \$3000 annually. A decade later another \$2500 was made available to Ely for special purchases in the social sciences. "Without a good library," the Board of Visitors noted approvingly, "you cannot possibly have a first class university."⁵

Since his main interest was then in the labor movement and in economic reform, Professor Ely confined his purchases largely to books in these fields. "The labor movement in its broadest sense" he wrote, "is the effort of men to live the life of men. It is the systematic organized struggle of the masses to attain, primarily, more leisure and larger economic resources.—Man shall never become truly prosperous so long as any class of the population is materially wretched."⁶ At Johns Hopkins, Ely had championed gas-and-water socialism and strict Federal management of the country's mineral and forest reserves. He had made many friends among middle class reformers and Christian socialists in the East whose financial assistance he now sought for the acquisition of research

materials. He was later assisted in this endeavor by John R. Commons who joined his faculty in 1904 and took over Ely's project of collecting documents on American labor history.

"I am a firm believer in the principle of state universities," Ely informed President Chamberlin, "but I think that private philanthropy should cooperate within the state in their development."⁷ In 1900, a favorable opportunity to stimulate private contributions occurred when an important collection of the works of Robert Owen was offered for sale by an English bookseller. Ely immediately wrote to a number of prominent Wisconsinites of Scottish descent asking them to underwrite the cost of the works of the "Sage of New Lanark." Robert Owen was, of course, a Welshman, but his most significant reforms were carried on in Scotland, and he had become a beloved figure there. Ely was successful in this nationalistic approach, the required sum was soon subscribed and the collection purchased. That same year he raised \$2000 from the German community in Milwaukee for the purchase of German language books on European economic problems. A few years later Ely's close friend William Dodge, a railroad tycoon from New York City, added \$500 to the fund for the new school.

In the East, Ely had pioneered in the seminar method of graduate instruction, which he continued at Wisconsin. Over the years he offered seminars on such professional topics as Economic Theory, Economic History, and German Socialism.⁸ They included research reports as well as general discussion of current literature.

While still at Johns Hopkins, Professor Ely had written a history of French and German socialism and had lectured widely on this subject. In the course of a series of Chautauqua appearances, he met William English Walling, a wealthy social reformer "who was then perhaps the most provocative mind in American socialism."⁹ Walling was a founder of the NAACP and a charter

member of the League of Industrial Democracy. Through Walling's generosity, several hundred books on European economic thought were presented to the University library in 1907. Approximately 200 of these volumes were kept in Madison, and the duplicates sold to the University of Illinois for \$1500.¹⁰ In the following year Walling purchased over eight hundred volumes from the personal library of Herman Schlueter, the veteran editor of the socialist *New Yorker Volkszeitung*. Walling gave the American titles to the Wisconsin State Historical Society, and the European portion, consisting of some 600 titles, to the University library. These works were welcome additions to both libraries. Thanks to Milwaukee's Victor Berger, socialism enjoyed greater public esteem in Wisconsin than it did in most other midwestern states. It had, in fact, become "synonymous with honest, humane municipal government."¹¹

The European portion of the Schlueter collection pertained largely to German socialism and to the First International. The most important single item was unquestionably Friedrich A. Sorge's manuscript report on the Amsterdam meeting of the First International in 1872, which was published much later by the University of Wisconsin Press.

There was also a wealth of material on the German Social-Democratic Party, including minutes of meetings and election handbills and posters. On the revolution of 1848 there is a considerable body of contemporary pamphlets, books and periodicals. Also impressive were the periodicals of later years, particularly those published in the seventies and eighties, which, like those of the forties, are to be found in few American libraries. Of the books written by important socialist and labor leaders of Germany there was a gratifying array. A group of socialist song books was also in the collection. And as a dash of spice, there were the books of about seventy literary figures whose novels, essays, and poetry could be characterized as socially progressive. But one would search in vain for

materials pertaining to individual labor unions, for seemingly Schlueter was interested only in books that dealt with theory and the problems of political organization.¹²

Walling's donations formed the nucleus of the European socialist collections in the University Library. His influence and his interest in Wisconsin did not stop there, however. Later, in 1909, it was Walling who sent the then nineteen year old Selig Perlman to Madison to study under John R. Commons.¹³ Perlman was to become a distinguished member of the Wisconsin Economics faculty and the library collections were to benefit greatly from his wide knowledge of the European scene. Other Wisconsin scholars whose work touched on aspects of socialism included William Scott, Edward A. Ross, and Frederick Ogg.

In the summer of 1913 Richard T. Ely made a trip to Ireland in order to study a development which he believed to be unique in history, the transfer of ownership of a large part of the island from one economic class to another.¹⁴ He decided to collect materials for the study of Irish history, its economic problems and culture. Back in Madison, Ely sought the help of Monsignor Patrick B. Knox, a Catholic priest who passed on Ely's request for funds to several prominent Irishmen. A generous gift was then made by the Ancient Order of Hibernians for the purchase of books which were presented on March 14, 1914 at a special ceremony in the State Historical Society Building. Most of these materials were added to the Historical Library at that time but were later transferred to the University Library when the division of fields was established.

Meanwhile despite Ely's efforts the library was not keeping abreast of other state universities with "which Wisconsin was fond of comparing itself."¹⁵ By 1920 the University of Wisconsin Library had only 480,000 volumes, ranking well below such comparable midwestern institutions as Michigan, Minnesota, Illinois, and Chicago. Housed

with the State Historical Society in a building completed in 1900, its physical quarters were already congested and "disgracefully overcrowded."¹⁶ Enrollments rose steadily from seven to twelve thousand undergraduates while appropriations for books and periodicals stagnated. Although the librarians complained constantly of the shortage of book funds and the "painfully inadequate" provisions for undergraduates, little was done to improve this situation. Temporary relief was secured by the establishment of branch libraries and the removal of the reserve collections to the basement of Bascom Hall, but the stacks soon became crowded again.¹⁷ In the 1930's the idea of a separate undergraduate library was briefly considered and rejected.¹⁸ It was apparent after this rebuff that "the library was not particularly well thought of in university circles."¹⁹ Consequently, building collections of specialized materials for intensive use by a few researchers was out of the question. It appears that faculty members of this period relied heavily on their own private libraries and a liberal leave policy in order to carry on their research projects.

In September, 1937, Louis Kaplan, a recent graduate of the University of Illinois Library School with a Ph.D. in European history from Ohio State, was named chief of reference at the university library. He brought to this newly created position a mind trained for scholarly research, and consequently a comprehension of the needs of scholars.²⁰ Kaplan began his long tenure at Wisconsin by building up a reference collection through purchases, stack transfers, and the creation of special files. He also formed a wide acquaintance with the faculty who kept him apprised of their research needs and interests. In 1949 Kaplan was appointed Associate Director for Public Services, assuming a heavy responsibility for collection development. In this capacity, he became the prototype of all the later subject bibliographers at Wisconsin.²¹

Wisconsin's socialist collections, estab-

lished by Ely, presented a rare opportunity to build on existing resources. Prices were still relatively low for many books in this field, and inexpensive copies of early imprints frequently came on the market. Kaplan gradually identified the gaps in Wisconsin's collections and built up an extensive want list on the back of old catalog cards. Dealers' prices for books purchased and for books missed were recorded along with Kaplan's bibliographic notes on editions and rarities. He purchased mainly periodical runs, trade union publications, tracts, and specialized monographs. Many of the important works were acquired from Hugo Streisand in Berlin and from H. P. Kraus in New York. To supplement this historical collection with more recent titles Kaplan recommended that Wisconsin assume original responsibility for the Farmington Plan's coverage of Social Reform Communism, anarchism, Socialism, and nihilism (LC categories HN and HX). From their specialized dealers a steady flow of these publications now began to enter the university library. A new building, completed in 1953, solved the storage problem for the time being.²²

Believing strongly that source materials of this quality ought to be known and used by the national and even the international community of scholars, Kaplan set out to publicize Wisconsin's holdings of "socialistica." In 1953 he wrote a bibliographical essay for *College and Research Libraries* on socialist rarities, "their prices on the current market, and (the holdings) of leading library collections."²³ Four years later he published a descriptive article on Wisconsin's collection of books, periodicals, newspapers, and labor party reports.²⁴ When Kaplan became Director of the University Libraries in the late fifties, he turned over his "want file" of socialist titles to the newly appointed Social Studies librarian who continued to select heavily in this field. At Kaplan's suggestion the Social Studies librarian located and acquired copies, mostly on microfilm, of

most of the stenographic reports of the early French Socialist Congresses, bringing together at Madison the most complete sets of these reports in North America.²⁵ Also about this time Kaplan, through the auspices of Professor Perlman, acquired for the university the personal papers of the late William English Walling.²⁶

In succeeding years, Wisconsin's socialist collections continued to grow and prosper, partly through a standing order with the West German dealer Harrassowitz for "underground literature" and partly through the selection of the library's bibliographers. Richard T. Ely's modest initial investment in socialism has doubled and tripled in value. Today, these extensive holdings are recognized as a major international resource of interest to scholars in many fields of study.

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THE INFLUENCE OF REGULATION ON TOP LEVEL EXECUTIVE COMPENSATION FOR LARGE CORPORATIONS

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Abstract

Recently, attention has been focused upon studies of individual decision makers in the organizational setting. This study concerns the compensation of the chief executives of large corporations as it is influenced by regulation. In contrast to most other studies, executive compensation in this study includes gains from stock options as well as salary and bonuses. This empirical research demonstrates a difference in levels of executive compensation between large utilities and large industrial corporations and suggests an explanation for this difference.

INTRODUCTION

The chief executive officer is at the apex of the organizational structure. He is a key decision maker affecting the firm's behavior. The factors that motivate him influence his role as a decision maker. Of many such factors, compensation is an important one. Much of the current theoretical work places great emphasis on internal decision processes and motivation and behavior of executives. Assumptions about the effects of compensation upon these decision processes are often critical. Recently, Harvey Leibenstein suggested an alternative to the traditional micro theory called micro-micro theory. He differentiated his theory from the well known "complex objective function" theories: those associated with the names Tibor Scitovsky, William J. Baumol, Robin Marris, Herbert Simon and Oliver E. Williamson. The common element in the property rights approach, managerial theories and micro-micro theory is that they all study individuals within organizational contexts. This study concerns the compensation of the chief executives of large corporations as it is influenced by regulation. Empirical studies of chief executives' compensation are not new, however, empirical studies of the influence of regulation on

chief executive compensation for large corporations are new. Also in this study gains from stock options are included as part of total compensation.

BACKGROUND OF THE STUDY

The chief executive maximizes his utility subject to the limits established by the existing organizational structure. The rates that a public utility is permitted to charge are set at levels which are intended to allow the utility to cover its costs and earn a fair rate of return. In effect, regulation imposes a ceiling on the profits a regulated firm can earn.

The property rights theories offer explanations of the behavior of executives working for firms under regulation. Because of regulation, there is attenuation of the rights of chief executives over the residual profits. Thus executives will have incentives to strive for profits above the legal limit provided they can conceal such profits from the regulators and capture them, which to some extent they can do. Better offices, more congenial colleagues, and more relaxed business operations with shorter hours, for example, are means of "converting" potential profits into "higher cost" activities. The foregoing

TABLE 1. Summary Results of the Tests for Hypothesis.

Year 1976	Year 1977	Year 1978
$\bar{X}_{1COMP_1}^1 = 532.98; S_1 = 299.42; n_1 = 114;$ $\bar{X}_{1COMP_2}^1 = 189.85; S_2 = 85.61; n_2 = 34;$ $SS_{\bar{X}_1 - \bar{X}_2} = \sqrt{\frac{(299.42)^2}{114} + \frac{(85.61)^2}{34}} = 31.65$ $z = \frac{(532.98 - 189.85)}{31.65} = 10.84;$	$\bar{X}_{1COMP_1}^1 = 530.96; S_1 = 228.28; n_1 = 107;$ $\bar{X}_{1COMP_2}^1 = 202.72; S_2 = 87.21; n_2 = 32;$ $SS_{\bar{X}_1 - \bar{X}_2} = \sqrt{\frac{(288.28)^2}{107} + \frac{(87.21)^2}{32}} = 26.92$ $z = \frac{(530.96 - 202.72)}{26.92} = 12.19;$	$\bar{X}_{1COMP_1}^1 = 649.54; S_1 = 450.00; n_1 = 103;$ $\bar{X}_{1COMP_2}^1 = 230.97; S_2 = 96.85; n_2 = 31;$ $SS_{\bar{X}_1 - \bar{X}_2} = \sqrt{\frac{(450.00)^2}{103} + \frac{(96.85)^2}{31}} = 47.63$ $z = \frac{(649.60 - 230.97)}{47.63} = 8.79;$
Reject the Null Hypothesis at %5 level of significance; in otherwords the Alternate Hypothesis is accepted		

¹ Mean executive compensation (including stock option gains) for the non-regulated firms.
² Mean executive compensation (including stock option gains) for the regulated firms.
(s = standard deviation; n = sample size)

analysis can be stated as a hypothesis: Executive compensation is higher for non-regulated firms than for regulated firms.

METHODOLOGY

Data were divided into large industrial corporations and the large utilities: over 100 large industrial corporations were compared with over 30 large utilities. This research is cross-sectional in character and the years chosen for the study were 1976, 1977, and 1978. Major sources of data were, *Fortune*, *Business Week*, proxies filed with the Security Exchange Commission and COMPU-STAT tapes.

The method uses traditional hypothesis testing of the null hypothesis. The basic format is as follows:

- 1) Null hypothesis $H_0: \mu_1 - \mu_2 \leq 0$
- 2) Alternate hypothesis $H_1: \mu_1 - \mu_2 > 0$

where μ_1 is defined as the population mean compensation of chief executive officers of all the firms in the non-regulated industries and μ_2 is the population mean compensation of chief executives of all the firms in the

regulated industries. The alternate hypothesis states that executive compensation is higher for non-regulated firms than for regulated firms. The rationale for this hypothesis is described above. Further, since corporation assets may influence compensation, a similar calculation was run using the mean of compensation divided by assets for each corporation, to correct for differences in assets.

EMPIRICAL RESULTS

In order to test for the hypothesis, the statistical test using equations 1) and 2) above was calculated, as shown in Tables 1 and 2. The sample size varied somewhat from year to year, but for the non-regulated firms n was around 100 and for the regulated firms n was a little over 30 each year.

From the results as shown in Table 1, based on 1976, 1977 and 1978 data, the null hypothesis is rejected; therefore the alternate hypothesis is accepted.

A similar test was conducted combining the data for all 3 years of 1976, 1977, and 1978. The combined sample size of non-regulated firms was more than 300 and for regulated firms was nearly 100. Table 2,

TABLE 2. Summary Results of the Tests for Hypothesis.
(Combined data, 3-year means for 1976, 1977, and 1978)

(A)	(B)
$\bar{X}_{1COMP_1} = 569.49; S_1 = 345.39; n_1 = 313;$	$\bar{X}_{1Y_1} = 0.238; S_1 = 0.215; n_1 = 313;$
$\bar{X}_{2COMP_2} = 207.24; S_1 = 90.57; n_2 = 97;$	$\bar{X}_{2Y_1} = 0.056; S_2 = 0.034; n_2 = 97;$
$S_{\bar{X}_1 - \bar{X}_2} = \sqrt{\frac{(345.39)^2}{313} + \frac{(90.57)^2}{97}} = 21.58$	$S_{\bar{X}_1 - \bar{X}_2} = \sqrt{\frac{(.215)^2}{313} + \frac{(0.034)^2}{97}} = 0.012$
$z = \frac{(569.49 - 207.24)}{21.58} = 16.79;$	$z = \frac{(0.238 - 0.056)}{0.012} = 14.96;$

Reject the Null Hypothesis at 5% level of significance; in other words the Alternate Hypothesis is accepted.

¹ Mean executive compensation (including stock option gains) for the non-regulated firms.

² Mean executive compensation (including stock option gains) for the regulated firms.

³ $\bar{X}_{1Y_1}$ is the mean of compensation ÷ assets for non-regulated firms.

⁴ $\bar{X}_{2Y_1}$ is the mean of compensation ÷ assets for regulated firms.

(s = standard deviation; n = sample size)

part A is based on total compensation, which includes salary, bonus and stock option gains. Means of executives' compensation ($\bar{x}_{Tcomp}$), their standard deviation (S) and sample size (n) are presented. From the results of this table, the null hypothesis is rejected, which also means the alternate hypothesis is accepted.

Table 2, part B contains the results of compensation which includes salary, bonus and stock option gains, but for each corporation these values are deflated by the assets. Means of executives' compensation deflated by assets, their standard deviation and sample sizes are presented. From the results of this table, once again, it is seen that the null hypothesis is rejected.

Overall, these tests provided conclusive evidence for accepting the alternate hypothesis developed in this paper: i.e. executive compensation is higher for non-regulated firms than for regulated firms.

CONCLUSIONS

This research is focused on the individual, the chief executive officer of the large corporation. From the empirical evidence based on the sample, this research shows that the executives (individuals) can be studied in the organizational context. The theory of property rights explains the differences in regulated and non-regulated property organizations. Because of these differences, it is probable that the executives of regulated corporations compensate for lower monetary rewards by more comfortable surroundings shorter hours, and perquisites, which are not budgeted as compensation and are not taxable to the individual.

This study differs from most of the earlier studies in the following aspects: inclusion of the gains from stock options, the influence of regulations on executive compensation, the influence of corporate assets and the use of more recent data from 1976, 1977 and 1978. It brings out the role of regulation which may have policy implications for management and ownership of the large corporations.

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REDISTRIBUTION OF FALLOUT ^{137}Cs IN BRUNNER CREEK WATERSHED IN WISCONSIN

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Abstract

The distribution of fallout ^{137}Cs was studied in Brunner Creek watershed, Wisconsin. In noncultivated areas, the highest concentration of ^{137}Cs was in the upper 5 cm of the soil profile and decreased with depth; whereas in cultivated areas, ^{137}Cs was distributed uniformly in the upper 25 cm. Losses of about 12 percent of the input of ^{137}Cs were occurring from the cultivated soils. The marshy area around White Clay Lake, into which Brunner Creek drains, had 1.5 times more ^{137}Cs than the forested areas in the watershed. The marsh area appears to be acting as a filter, removing both particulate matter and ^{137}Cs moving in the runoff water from the upland area to White Clay Lake. Sediment accumulation has averaged 11.5 cm between 1964 and 1975 in the marsh area.

Key words: fallout, ^{137}Cs , ecosystems, watersheds, radionuclides, runoff distribution, White Clay Lake

INTRODUCTION

Man, in his efforts to develop nuclear weapons and to control nuclear fission, has released many radionuclides into the atmosphere. These radionuclides are deposited on the earth's surface from the atmosphere either as dry fallout or in rainfall (Klement, 1965; Engelmann and Slinn, 1970). The amount and type of radionuclide fallout is monitored at several locations within the United States (Hardy, 1975).

With its long half-life, 30 years, and an energetic gamma ray, 0.662 mev, ^{137}Cs is an important radionuclide, radiologically and biologically, and is relatively easy to detect in environmental samples. Once in contact with the soil, ^{137}Cs is tightly bound by the clay-size soil fraction and organic matter, and its further movement by natural chemical processes in the environment is limited (Davis, 1963; Durrsma and Gross, 1971; Tamura, 1964). Therefore, the movement of fallout ^{137}Cs after it reaches the soil, is mainly associated with physical processes such as plowing, erosion, or deposition

(Rogowski and Tamura, 1970; Ritchie, *et al.*, 1970, 1974).

A study was made on Brunner Creek watershed, which drains into the southeast side of White Clay Lake in Shawano County, Wisconsin (Figure 1), to determine the distribution and movement of fallout ^{137}Cs in the watershed.

METHODS AND MATERIALS

Soil samples, including all organic matter on the surface, were collected under the different land uses in the Brunner Creek watershed in 1974 and 1975. Major soil types in the watershed are Onaway loam, Salona loam, and Shiocton silt loam. Land use types sampled were from a 40- to 50-year old upland oak-maple forest that showed no evidence of soil erosion, from corn and alfalfa fields, from pastures, and from a low marshy area where Brunner Creek enters White Clay Lake. Samples of the sediment in the delta area where Brunner Creek enters White Clay Lake were also collected. Sample sites were chosen that

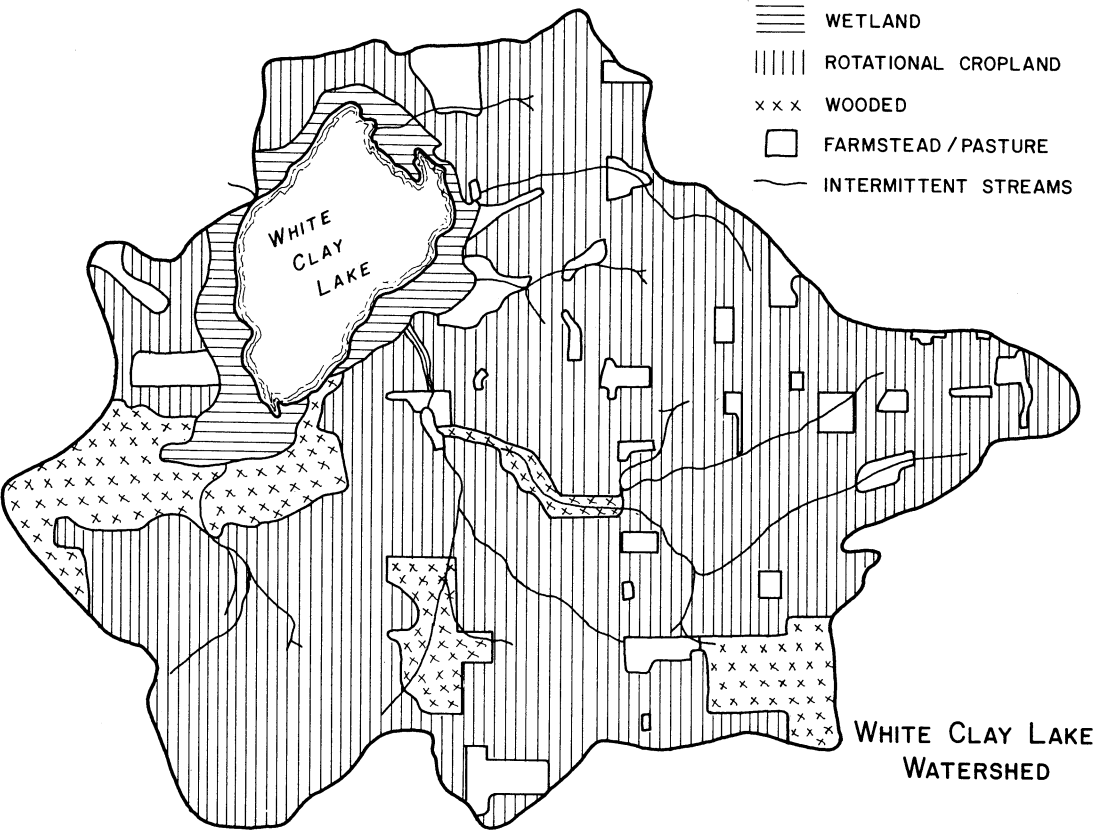


Fig. 1. Land use types in the Brunner Creek study area.

TABLE 1. Average concentrations and standard error of the mean of ¹³⁷Cs (nCi/m²) in soil profiles under different land use types in Brunner Creek watershed, White Clay Lake, Wisconsin.

Depth	Land Use Types					Sediment
	Oak-Maple	Pasture	Corn	Alfalfa	Marsh	
cm						
0- 5	53.7 ± 2.0	54.9 ± 3.5	19.3 ± 0.8	18.7 ± 0.8	38.6 ± 4.0	51.8 ± 11.5
5-10	41.6 ± 2.8	40.0 ± 0.8	19.8 ± 0.8	20.2 ± 0.8	45.0 ± 4.7	17.3 ± 5.0
10-15	18.1 ± 2.7	14.3 ± 0.1	19.5 ± 0.6	19.8 ± 0.8	33.2 ± 5.8	3.0 ± 1.3
15-20	6.6 ± 0.9	3.6 ± 1.6	19.4 ± 0.5	18.1 ± 0.9	28.7 ± 7.0	3.0 ± 1.3
20-25	3.1 ± 1.1	2.5 ± 0.4	17.5 ± 0.9	14.7 ± 1.4	29.2 ± 8.2	0.8 ± 0.5
25-30	ND	ND	9.6 ± 1.4	9.8 ± 1.5	9.1 ± 2.8	0.8 ± 0.5
30-35	ND	ND	7.6 ± 1.6	9.0 ± 1.2	ND	ND
35-40	ND	ND	3.2 ± 0.8	3.4 ± 0.7	ND	ND
40-45	ND	ND	1.6 ± 0.8	0.9 ± 0.2	ND	ND
Total**	123.6 ± 5.1	115.2 ± 0.5	110.0 ± 4.1	107.8 ± 5.1	184.0 ± 17.6	69.9 ± 16.7
Range**	102-141	114-116	88-128	68-141	89-256	31-176
N***	6	2	23	23	7	9

* ND No samples collected.
** Total and Range are based on the summarization totals for each sample site.
*** Number of samples per depth and number of sample sites per vegetation type.

were representative of the major land use types and soils in the watershed. At least two sites, and as many as 23 sites, were sampled from each land use type. Samples were collected by 5-cm layers at each sample site. Each 5-cm layer sample was sieved through a 12-mm screen to ensure uniform aggregate size and dried at 105°C for 48 hours. About 3,000 g of the dried samples were put into Marinelli beakers and stored 3 to 4 weeks before gamma ray analyses were made using a 1024 multichannel analyzer with $10 \times 12.5\text{-cm}$ thallium activated sodium iodide crystal (Ritchie and McHenry, 1973a). Counting time of each sample was sufficient to limit counting and machine errors to less than 1 percent. The complex gamma ray spectra were reduced to give ^{137}Cs and associated natural gamma ray-emitting radionuclide concentrations, using a least squares routine (Schonfeld, 1966). Cesium-137 is expressed in nanocuries per square meter (nCi/m^2) or in picocuries per gram (pCi/g). Average and standard error of the means of the concentration of ^{137}Cs were calculated for each land use type by 5-cm layer and for the total profile (Table 1). Concentration of ^{137}Cs in the total profile at each sample site was calculated by summing the concentration of ^{137}Cs of the 5-cm layers at the site. A budget accounting for the distribution of ^{137}Cs in the watershed was prepared showing the gains and losses of ^{137}Cs from each land use type. Cesium-137 is expressed in millicuries (mCi) in this budget.

RESULTS AND DISCUSSION

The concentration of ^{137}Cs in soils varied among land use types (Table 1). The concentration of ^{137}Cs was highest in the marsh community where concentrations up to $256 \text{ nCi}/\text{m}^2$ was measured. This is a deposition area of soil particles eroded from the upland. Concentrations of ^{137}Cs were lowest in the alfalfa and corn fields where erosion had occurred, removing some soil and its associated ^{137}Cs .

The highest concentration of ^{137}Cs by weight was $7.7 \text{ pCi}/\text{g}$ measured in a sample from the upper 5 cm in the marsh. A number of samples had concentrations of ^{137}Cs below detection limits of $0.05 \text{ pCi}/\text{g}$. These samples were considered to have zero concentration of ^{137}Cs in the analysis. These samples were always at the lower depths of the profile.

The vertical distribution of ^{137}Cs in the soil profiles under the upland oak-maple forest exhibited a pattern similar to that found in other studies (Gersper, 1970; Ritchie, *et al.*, 1972), with concentrations of ^{137}Cs highest in the upper 5 cm; however, a greater depth of penetration of ^{137}Cs was found in these oak-maple soils. Still, 75 percent of the ^{137}Cs in the forest soil profile was in the upper 10 cm. The total amount of ^{137}Cs in the forest profiles agreed with the concentration of fallout radionuclides measured at Green Bay, Wisconsin (Hardy, 1975). The concentration of ^{137}Cs per unit area under the oak-maple forest is used in this study as an indication of the total input of ^{137}Cs fallout deposited on the watershed.

The vertical distribution of ^{137}Cs in the soils under the pasture showed the same pattern as under the forest cover. This vertical distribution pattern would indicate that the pastures have been stable for many years. These pastures showed no visible signs of overgrazing or soil erosion. However, their slightly lower concentration of ^{137}Cs was probably caused by erosion and grazing loss.

The vertical distribution of ^{137}Cs in the soil profiles under the corn and alfalfa differed from that under the oak-maple forest and the pasture. In these cultivated soils, ^{137}Cs was uniformly distributed within the upper 25 cm of the soil profile. This layer represents the plow layer mechanically mixed by tillage operations. Other studies (Cline and Rickard, 1972; Ritchie and McHenry, 1973b) on the distribution of ^{137}Cs in cultivated and disturbed soils have shown similar vertical distributions.

The total amount of ^{137}Cs (nCi/m^2) in the soil under the corn and alfalfa was less than that measured under the forest sites, indicating that ^{137}Cs is being lost from these areas. Studies have shown that the loss of ^{137}Cs for an area in a watershed can be related to the amount of erosion (Ritchie, *et al.*, 1974). Some ^{137}Cs has moved from these cultivated fields and some has been redistributed within the fields as shown in other studies (McHenry, *et al.*, 1978; Mitchell, *et al.*, 1980).

Some of the ^{137}Cs moved from the original deposition site and was deposited within the marshy area surrounding White Clay Lake. The marsh averaged 1.5 times more ^{137}Cs than the oak-maple forest and 1.6 times more than the pasture. This indicated that the marsh was filtering soil particles and ^{137}Cs from the water passing through and was acting as a sink or trap for some of the ^{137}Cs moving from the cultivated areas within the watershed.

The depth of maximum concentration of ^{137}Cs in a sediment deposition profile can be related to the ^{137}Cs deposited in 1964 when the amount of atmospheric radioactive fallout was maximum (Ritchie, *et al.*, 1973c; Pennington, 1974; Robbins and Edgington, 1975; Ritchie, *et al.*, 1975; McHenry, *et al.*, 1978). Using this concept and studying the individual marsh site profiles, the amount of sediment accumulation in the marsh since 1964 has ranged from 2.5 to 22.5 cm in the

seven marsh sample sites. The average deposition was 11.5 cm from 1964 to 1975, indicating that the marsh was an active filter for trapping the erosional particles as well as the attached ^{137}Cs lost from upland.

Highest concentration of ^{137}Cs was always in the upper 5 cm of the sediment profile samples collected from the delta of Brunner Creek in White Clay Lake, which indicates little deposition of recently eroded soil in this area of White Clay Lake. This also indicates that the marsh area was acting as an effective filter, removing some of the particulate matter and ^{137}Cs from the water moving in Brunner Creek before it entered White Clay Lake. Other nonpoint source pollutants attached to soil particles may have similar movement patterns.

A budget calculated to summarize the distribution and movement of ^{137}Cs in the watershed (Table 2) showed that 91 percent of the input fallout ^{137}Cs remained within the watershed. Only 10 percent of the ^{137}Cs input had moved from the area where it was originally deposited. The calculated loss of ^{137}Cs per unit area was greatest for the cultivated land.

The ^{137}Cs movement was assumed to have been associated with the finer soil and organic particles contained in runoff water from the watershed. Some of the ^{137}Cs movement could have been in solution, but this amount would have been small (Tamura, 1964). Seven percent of the ^{137}Cs that

TABLE 2. Watershed budget for ^{137}Cs calculated for Brunner Creek watershed.

Cover	Area (ha)	Ca-137 nCi/m^2	Input*	Existing levels**	Loss or gain	Loss or gain/ha
				mCi		mCi/ha
Forest	84.6	123.6	104.6	104.6	0.0	0.0
Pasture	15.2	115.2	18.8	17.5	- 1.3	- 0.09
Cultivated	420.1	109.1	519.2	458.3	- 60.9	- 0.14
Marsh	6.9	184.0	8.5	12.7	+ 4.2	+ 0.61
Totals	526.8	531.9***	651.1	593.1	- 58.0	- 0.11

* Atmospheric input of ^{137}Cs .

** Measured ^{137}Cs concentrated under each land use type times area of each type.

*** Weighted total based on area in each cover type.

moved from the watershed was deposited in the marshy area around the lake.

Fifty-eight mCi of ^{137}Cs was not accounted for in the ^{137}Cs budget. There are at least three possible explanations. Some of this ^{137}Cs could be accounted for in the milk that was produced by the cows feeding on forage and grain grown in the watershed. Milk is the only product that is removed in major amounts from the watershed. It is estimated, based on ^{137}Cs concentration in Chicago milk (Hardy, 1975), that less than 1 mCi of ^{137}Cs was removed from the watershed in the milk. Some ^{137}Cs may have also been removed by the selling of the older cows; however, this would also be a very small amount of ^{137}Cs .

Some of the ^{137}Cs probably moved through the marsh into White Clay Lake and was deposited in the deeper part of the lake or moved through the lake and downstream. Our data indicated that very little, if any, of this material was deposited in the delta area of Brunner Creek in White Clay Lake. Additional sampling would be necessary to determine deposition in the deeper part of the lake. This pattern of deposition was expected since any particles moving out of the marsh would be small, light-weight soil or organic particles that would not be readily deposited, but could be deposited in deeper parts of the lake or would remain suspended and pass through the system. It is difficult to estimate how much ^{137}Cs would move from the watershed and pass through the lake attached to fine soil and organic particles.

Most of the unaccounted for 58 mCi of ^{137}Cs probably remains in the watershed in locations that were not sampled or could be accounted for by sampling errors and variations. Statistical analyses indicated little significant difference between the ^{137}Cs concentrations in the different land use types. Areas not sampled would include forests located in lowland areas near the stream channel that would act as a buffer to the stream removing some of the radioactive material before it

entered the stream. Cesium-137, in addition to being deposited in the marsh, is probably also deposited in these riparian vegetation areas and in the grass areas of the edge of the fields. Two samples, taken from fence rows at the edge of cultivated fields, had an average ^{137}Cs concentration of 156 nCi/m². Also, a small pond on Brunner Creek, which was not sampled, would have also trapped some of the sediment and ^{137}Cs . These areas could be deposition sites for much of the unaccounted for 58 mCi of ^{137}Cs .

This study showed that some of the ^{137}Cs has been redistributed in the Brunner Creek watershed. However, most ^{137}Cs remained near the site of the deposition from fallout. The marsh has acted as a filter to remove some particulates and ^{137}Cs from the runoff water before it entered White Clay Lake. Most of the ^{137}Cs which did move seems to be related to the erosion process within the watershed.

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WISCONSIN'S GREATEST HEAT WAVE

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Abstract

Record making cold and very snowy winters in recent years have overshadowed memory of the intense and extended heat waves during the Dust Bowl Years, 1930-1936. Many temperature records established in 1934 and 1936 still stand unequalled; during one period lasting eight days in July, 1936, almost the entire state experienced afternoon readings of 100°F or higher. On July 13, 1936 Wisconsin's highest official reading, 114°, was recorded at Wisconsin Dells, and the entire state averaged 106° for the maximum value.

INTRODUCTION

The middle of a severe winter in Wisconsin is apt to conjure up two visions—one expensive and the other requiring patience alone. The expensive vision is Hawaii, Florida, or Southern California; the vision requiring patience is the conviction that in six months a considerably longer day (ca. 15 hours) and a noon sun much higher above the south horizon (ca. 70°) will guarantee that below zero temperatures and snowfall are virtually impossible.

Recent winters have been extraordinary: 1976-7, 1977-8, and 1978-9 each made records in terms of average monthly temperatures, the number of below zero days, the number of consecutive days without an above freezing reading, total snowfall, or combinations thereof. As recently as January, 1982, temperatures averaged nearly two standard deviations below normal in most parts of the state, and Milwaukee first equaled (−25°F) and then established a new all-time minimum temperature (−26°). Winters in recent decades have not been much more pleasant: representing two different winters, January 1963 and December 1963 each had an extraordinary number of

below zero days, and on January 30, 1951 Madison established its coldest-ever reading, −37°.

Wisconsin has an invigorating quality of marked seasonality; summers generally average 50° warmer than winters in sharp contrast to Hawaii, Florida, and Southern California where the difference is closer to 5°, 25°, and 15° respectively. Extremes in summer in Wisconsin are likely to have even more disastrous impact on the economy than in winter as the Dust Bowl Years demonstrate.

DUST BOWL YEARS AND HEAT

Digging through the record books one must go back nearly half a century to the early 1930's to find temperatures as spectacularly above normal as winters recently have been below normal. The Dust Bowl Years 1930-1936 were remarkable for the number of heat records established. Wisconsin's two largest cities, for example, one along the moderating shoreline of Lake Michigan and the other well inland, established many daily record maximum temperatures from April through September 1930-1936; most of these records still stand unsurpassed by ensuing summers (Table 1). It is clear that two months contributed the largest number of heat records, June and July. Of the 75 records established in these

¹ This paper was written while on leave, Jan. 1-May 15, 1982, as Visiting Honorary Fellow, Dept. of Geography, UW-Madison.

TABLE 1. Daily Heat Records Established 1930-1936 and Still Standing.

	Madison	Milwaukee
April	1	1
May	7	6
June	9	12
July	13	14
August	3	2
September	3	4

Source: Unpublished data, National Weather Service, Madison and Milwaukee.

TABLE 2. Official Climatological Stations: July 7-14, 1936.

Date	Total	Number with 100° or higher	Statewide average
July 7	40	34	102°
8	40	35	101°
9	40	30	101°
10	40	29	101°
11	40	33	103°
12	39	34	104°
13	39	36	106°
14	39	29	104°

Source: *Climatological Data for the United States*, 1936.

two cities during the period considered, 15 were in the month of July, 1936.

That month is worth examining more closely because of eight consecutive days from the 7th through the 14th; these days are likely to live in climatological infamy. The *average* daily maximum temperature in Wisconsin during that period, based upon data from 39-40 official climatological stations, was 103°, and each day during the period averaged at least 101° (Table 2).

Most outstanding was July 13, 1936. On this date Wisconsin's highest official reading, 114°, occurred at Wisconsin Dells; 36 of 39 official climatological stations reported 100° or higher, and the state wide *average* high was 106°. Distribution of the afternoon maximum temperatures on July 13 is shown on Figure 1; added to the data for the 39 reporting official climatological stations is data for 20 cooperative stations from the archives in the State Climatologist's Office. It

is interesting to note that only immediately adjacent to Lake Michigan were maximum reading below 100°: Kewaunee 92°, Sheboygan 98°, Milwaukee 95°, and Racine 99°.

On the next day when slightly cooler air started to move into northern Wisconsin, Madison climaxed its heat wave with an all-time high 107° and the Milwaukee Airport—now General Mitchell Field and the official weather station only since 1940—recorded 106°. The official reading from Milwaukee on that day was taken at the Federal Building on East Wisconsin Avenue very near the lake: 98°.

Earlier in the heat wave on July 8 nearly as many official climatological stations recorded 100° or higher, but a larger area scattered in the north and central parts of the state, was short of the century mark than was the case on July 13. Big St. Germain, Brule Island, Marshfield, Medford, and P. K. Reservoir were in this "cooler" category (96°-98°); however, on that day the entire Lake Michigan shoreline was hot: Kewaunee 104°, Sheboygan 103°, Milwaukee 101°, Racine 100°.

Data for the average maximum and minimum temperatures during the July 7-14 period are mapped on Figure 2. Only 5 stations did not average maxima of at least 100°: Superior 94°, Antigo 99°, Leona 97°, Kewaunee 97°; and Milwaukee 99°. Highest was a sizzling 108° at Eau Claire.

Examination of the "average low" readings demonstrates that minimum temperatures were also high during the heat wave; in some cases the average low temperature exceeded the normal daily mean temperature expected at that time of year: Antigo, Green Bay, Manitowoc, River Falls, Sheboygan, and Milwaukee are examples.

In addition to the 114° reading at Wisconsin Dells, which still stands as Wisconsin's hottest official reading, Madison and Milwaukee established unsurpassed records during this period (Table 3).

Significance of the 1930's in terms of *frequency* of drought years is demonstrated

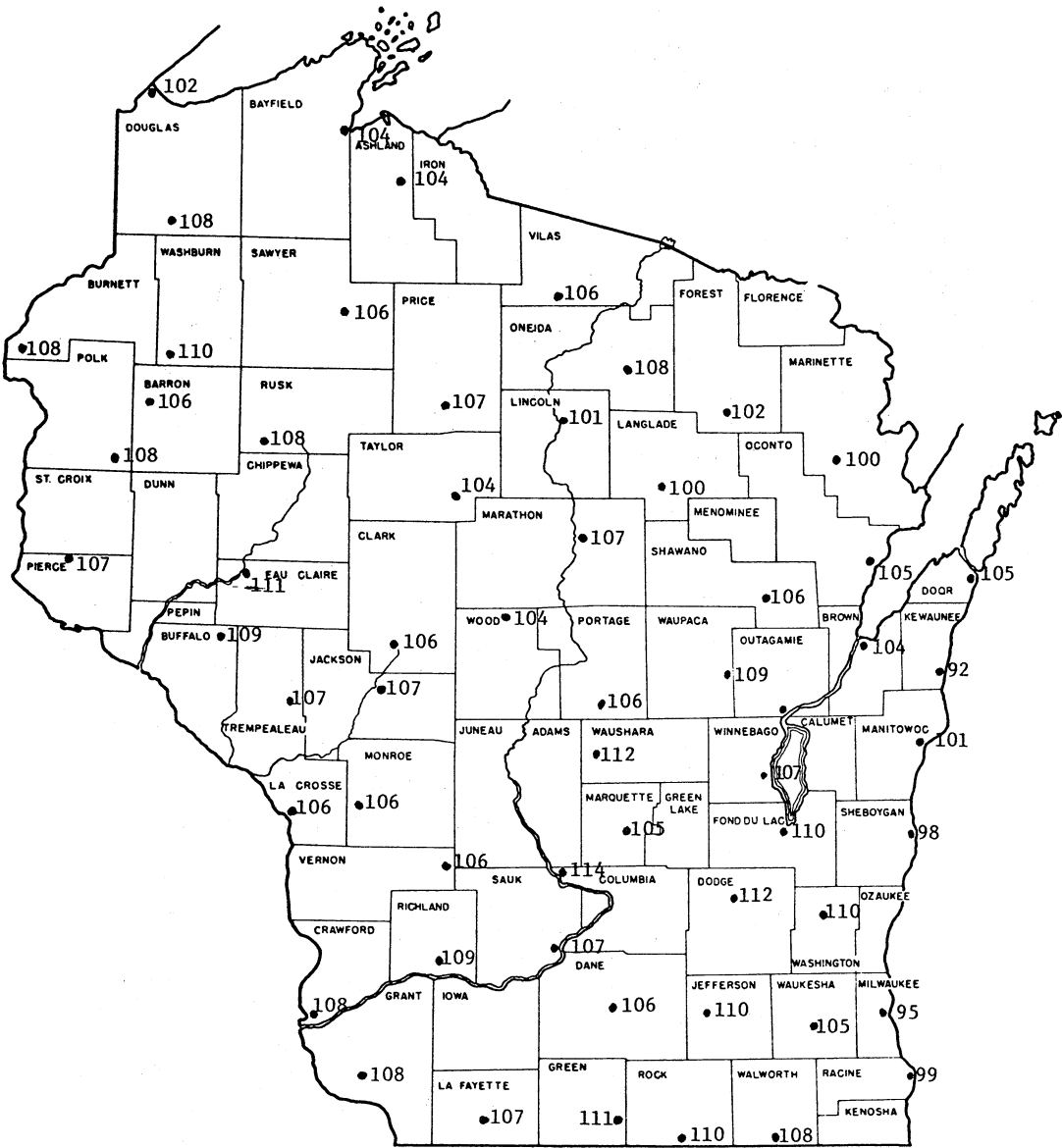


Fig. 1. Maximum Temperatures, July 13, 1936. Official and cooperative stations.

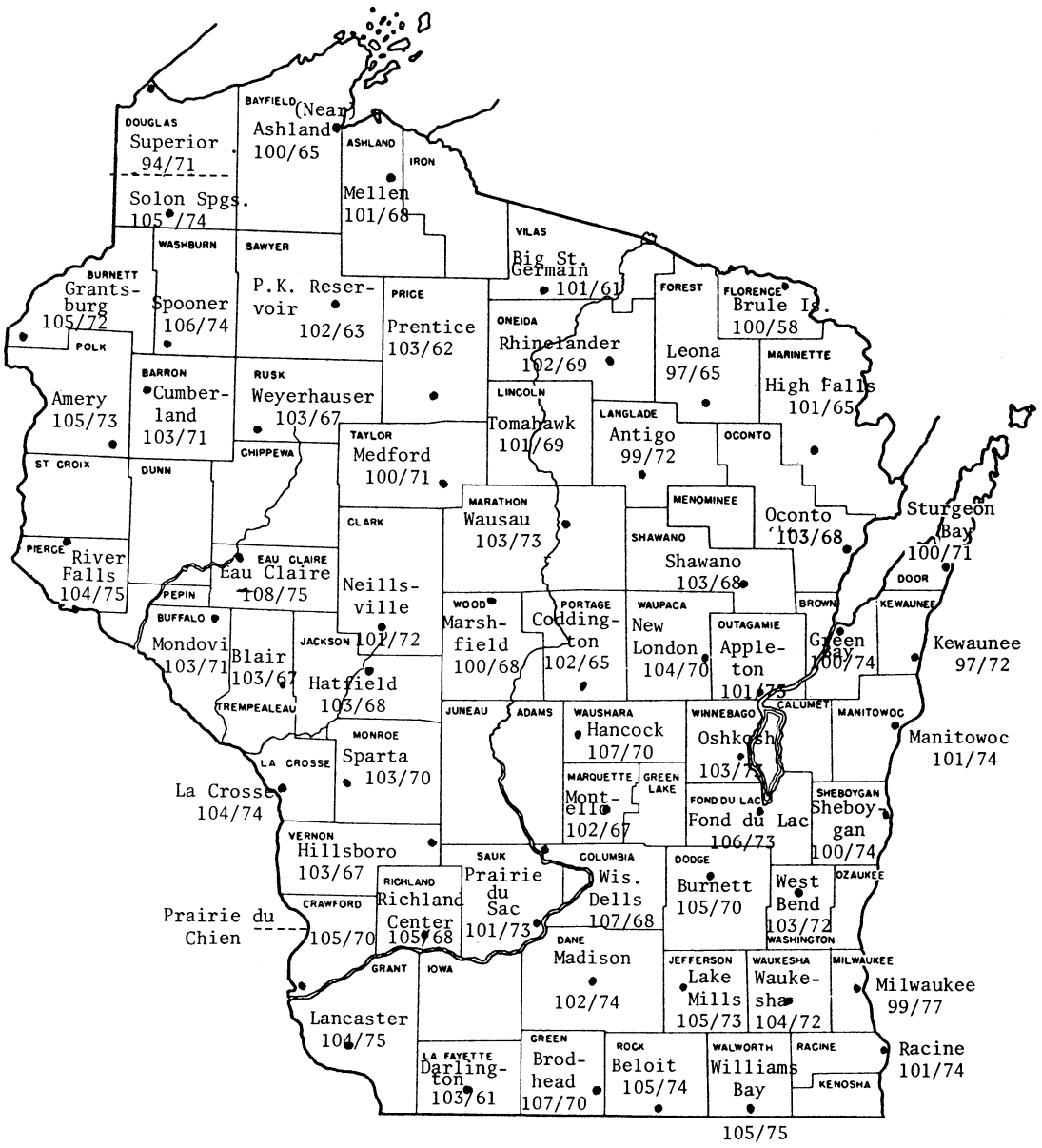


Fig. 2. Average Maximum/Minimum Temperatures, July 7-14, 1936. Official and cooperative stations.

TABLE 3. All-Time Record Highs for the Calendar Day.

Date	Madison	Milwaukee
July 7, 1936	102°	98°
8	100°	101°
9	98°	101°
10	—	100°
11	100°	100*
12	104°	—
13	106°	95°
14	107°	98°

* The only time Milwaukee has ever had 4 consecutive 100° readings.

Source: Unpublished data, National Weather Service, Madison and Milwaukee.

in a climatology/vegetation analysis (Borchert, 1950); between the advent of record keeping and 1950 nine years were classified as major drought years: 1889, 1890, 1906, 1910, 1917, 1930, 1931, 1934, and 1936. That four of the nine were in the Dust Bowl Years, and more particularly, that the grand finale of drought *and* heat should occur in the last named year is no coincidence. Borchert clearly demonstrated the close relationship of major drought years with maximum positive departure of temperature. An updated study suggests that drought is probably more common in Wisconsin than the prosperous agriculture and colorful vegetation might lead the casual observer to believe (Mitchell, 1979).

Immediately prior to the period examined in this analysis, two separate high pressure systems moved from north of Lake Superior southeastward toward Georgia and then recurved westward to a position over Tennessee; there they reinforced the western arm of the Bermuda High to provide a steady source of very warm and extremely dry weather for the Middle West. This subtropical high was centered farther west than normal insuring the tropical continental air from the Great American Desert rather than tropical maritime air from the Gulf of Mexico would dominate the interior lowland (Monthly Weather Review, 1936).

UNIQUENESS OF THIS PERIOD/CONCLUSIONS

There have been other very hot spells of weather in Wisconsin, but none as long nor as intense as the July 7-14, 1936 period, although *individual* days have approached the character of these eight days in 1936. On June 1, 1934, for example, 24 out of the 42 official reporting stations registered 100° or higher; and on July 23, 1934, 28 of the 41 official reporting stations recorded 100° or higher. Reference to the standard for defining meteorological events, the prestigious *Glossary of Meteorology*, discloses that a heat wave is “a period of abnormally and uncomfortably hot and unusually humid weather. To be a ‘heat wave’ such a period should last at least one day, but conventionally it lasts from several days to several weeks . . . a spell of three or more days on each of which the maximum shade temperature reaches or exceeds 90°F.” There is no doubt that early July, 1936 saw Wisconsin’s greatest heat wave.

ACKNOWLEDGMENT

The cooperative spirit of the State Climatologist’s Office, and its Director, Val L. Mitchell, in particular, is deeply appreciated. Citizens are encouraged to direct inquiries or visit their office; a wealth of data is available about all parts of this state.

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WISCONSIN'S COLDEST FIVE WEEKS

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Abstract

The problem of the calendar month as a time standard to measure winter weather is addressed. Although January 1912 was Wisconsin's coldest calendar month on record, -2.5°F , the period January 19-February 22, 1936 averaged -3.5° statewide. Average daily minimum temperatures in the state were below zero during this 35 day period, dropping to -25° on seven days, and reached a bottom value of -29.1° on February 16. Distribution and timing of Zero Days are briefly analyzed; finally, the surface Arctic air mass outbreaks are correlated with the several periods of most intense cold.

INTRODUCTION

Three winters in the late 1970s will long be reference points for the citizens of Wisconsin in terms of severe cold, prolonged periods with temperatures below freezing, and depth of snow. However, none of the calendar months during those Arctic-like winters equalled the month of January 1912 when the state wide average temperature was -2.5° ; in fact there was no 31 day period of time during the winters of the late 1970s equivalent to the average temperature of January 1912, but there was a *longer* period of time, during the winter of 1935-1936, when statewide temperatures were even lower than they had been in 1912. Since the 1936 cold wave occupied parts of two months, no single month had the statistical credit for the coldest-ever calendar month. "There was a period of severe cold, wind, and snow lasting from about January 18 to February 22 (1936). The temperature average for this period was the lowest on record for so long a period" (*Climatological Data*, 1936).

Comparison of January 1912 with the

cold wave of January-February 1936 reveals the following: the entire state averaged -2.5° in January 1912, and -3.5° for the thirty-five consecutive days straddling two calendar months in 1936. Superior in the far north averaged -6.0° 1912, and -12.9° in 1936 (Unpublished Climatological Data); Milwaukee averaged 5.6° in 1912, and only 2.5° in 1936; and Madison had 1.2° in 1912 and -2.5° in 1936.

The analysis which follows defines the duration of the cold wave as that period of time during which the daily minimum temperature of the entire state averaged below zero—starting January 19 and terminating with February 22, 1936. (Table 1.)

THE COLD WAVE ANALYZED

Analysis of this data (Figure 1) reveals that within this time frame of thirty-five days there were distinct sub-periods: general deterioration of minimum temperatures from the 19th of January through the 24th, with the 5 days from the 22nd through the 26th averaging a frigid -25.1° ; brief milder period followed, climaxing with -5.0° on the 29th; progressively colder temperatures developed after the 29th through February 2nd when the average again fell below -20° ; a brief two day milder period was followed abruptly by intense cold, when,

¹ This paper was written while on leave Jan. 1-May 15, 1982, as Visiting Honorary Fellow, Dept. of Geography, UW-Madison. Prof. Villmow died following surgery for brain tumor in September, 1982.

TABLE 1. Average Daily Minimum Temperature in Wisconsin, January 19–February 22, 1936

January 19	– 9.2°	February 1	– 17.0°
20	– 11.2	2	– 20.4
21	– 12.3	3	– 1.7
22	– 25.4	4	– 8.4
23	– 26.8	5	– 25.3
24	– 28.3	6	– 25.6
25	– 24.5	7	– 18.0
26	– 20.4	8	– 3.1
27	– 10.8	9	– 13.6
29	– 5.0	10	– 6.9
30	– 12.3	11	– 12.5
31	– 13.5	12	– 6.4
		13	– 0.6
		14	– 8.5
		15	– 17.7
		16	– 29.1
		17	– 15.1
		18	– 23.3
		19	– 17.1
		20	– 21.9
		21	– 19.9
		22	– 22.0
Average		– 15.6°	

Source: *Climatological Data for the United States by Sections, Wisconsin*. 1936.

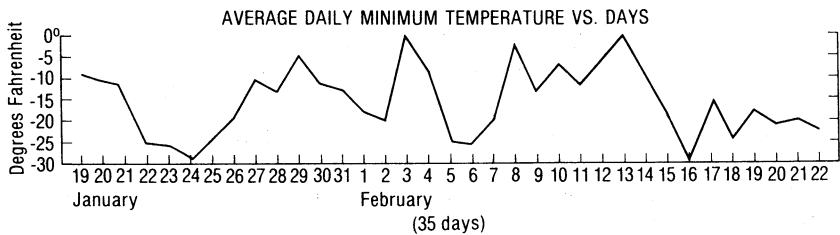
from the 5th through the 7th, the average minimum was -22.9° ; alternating periods of cold and milder weather occurred during the 8th through the 14th, followed by the longest period of intense cold from February 15 through the 22nd; -20.6° was the average state minimum during these eight days, and the coldest night of the entire 35 days

saw an average of -29.1° on February 16th.

If the distribution of average minimum temperatures throughout the state is examined, a range of 20° is noted (Figure 2). The 20° range is represented at its end points by Grantsburg (-25°), Burnett County and P.K. Reservoir (-25°), Sawyer County, both in northwestern Wisconsin on the one hand, and Milwaukee -5°), Milwaukee County and Racine (-5°), Racine County on the other. Note that even as far south as Hillsboro, Vernon County, the *average* minimum temperature for 35 consecutive days was -20° ! The state wide average of -15.6° essentially divides the area down the middle between a western portion with values below -15° and an eastern portion with values above -15° .

The number of Zero Days, i.e., days on which the *maximum* temperature did not exceed 0° , is also mapped as the denominator on Figure 1. This term was extensively used by David Ludlum in his classic *History of American Weather* (Ludlum, 1966, 1968).

Zero Days are more erratically distributed than the average minimum temperature. The absolute range here is 12, from a maximum of 15 at Downing, Dunn County to a minimum of 3 at Racine, Racine County. However, Burnett, Dodge County in the southeast had 11, but Solon Springs, Douglas County in the northwest had only 6. In compiling the data it was noted that the Zero Days



Time range: January 19–February 22, 1936
Temperature range: 0° F to -30° F

Fig. 1. Average Daily Minimum by Calendar Days.

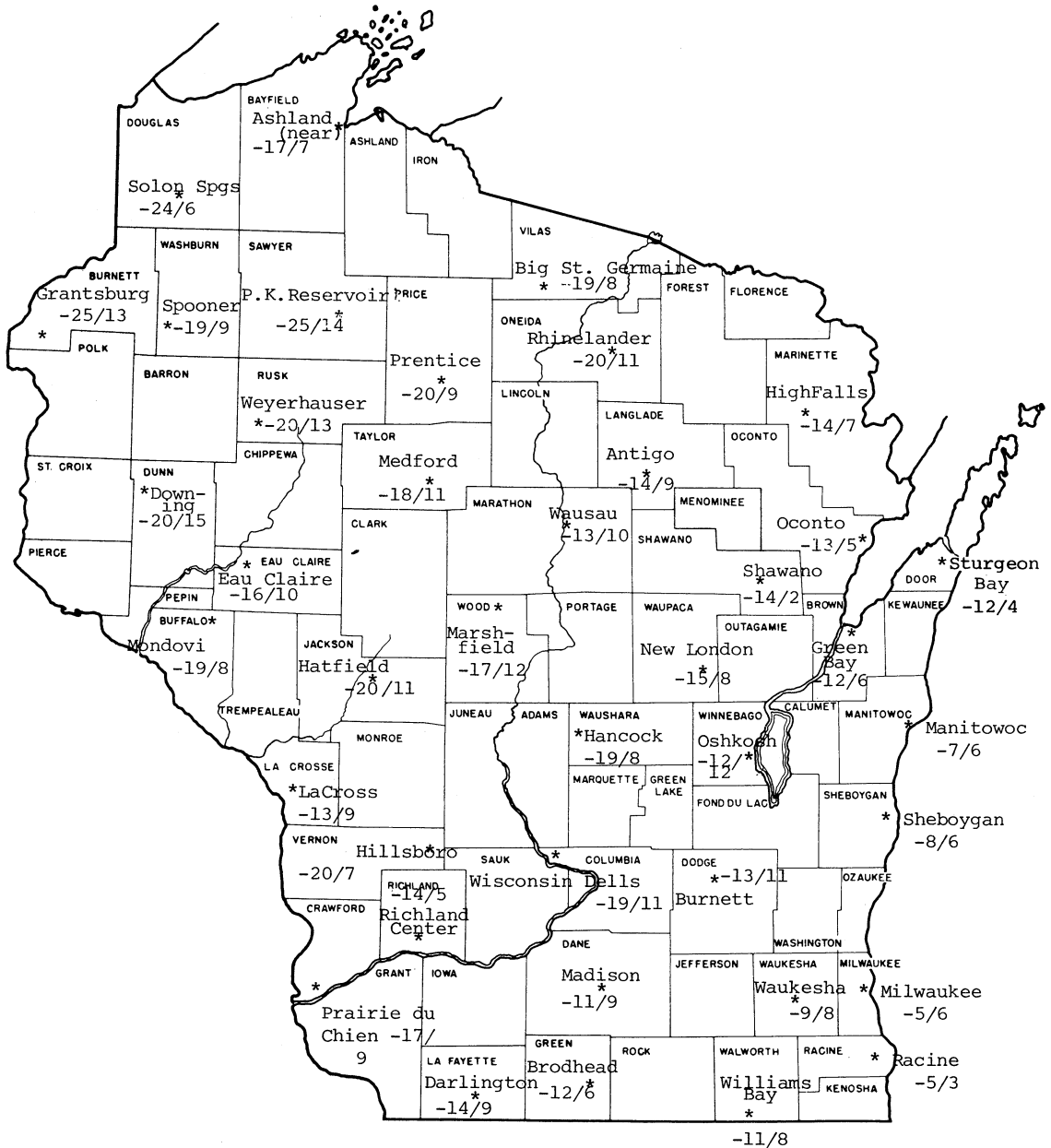


TABLE 2. Zero Days

Number of Official Stations Reporting Maximum Temperatures Zero or Below: Total Stations—40			
Janaury 19, 1936	0	February 1, 1936	13
20	6	2	0
21	3	3	0
22	18	4	2
23	36	5	31
24	37	6	23
25	14	7	1
26	25	8	0
27	1	9	7
28	0	10	0
29	0	11	1
30	1	12	7
31	3	13	0
		14	0
		15	30
		16	22
		17	27
		18	29
		19	1
		20	0
		21	0
		22	0

Source: *Climatological Date for the United States by Sections, Wisconsin. 1936.*

generally occurred in sequence during three periods: (a) January 22-26, (b) February 5-6, and (c) February 15-18; in fact, nearly 90% of the state wide total were on these eleven days (Table 2). As an extreme example of prolonged frigidity, Downing, Dunn County had nearly seven consecutive 24-hour periods *without* an above zero reading!

Weather map analysis makes clear *why* the cold was so persistent and so intense (*Monthly Weather Review*). In January four massive Arctic air masses plunged southeastward from northwestern Canada toward the Middle West.

I—The first began in the Yukon Territory on the 14th of January. This high was centered over Minnesota/North Dakota on the 18th with central pressure of 30.56", and on the 19th it was just north of Lake Superior at 30.40", thereby initiating the cold spell to Wisconsin.

II—A second massive Arctic air mass

moved more rapidly southeastward, lying along the western edge of Hudson Bay on the 22nd with central pressure of 30.54" and two days later was centered over Indiana maintaining a central pressure of 30.40"—this was the start of five consecutive days which averaged below -20° minimum over the state.

III—On the 24th and 25th a third high pressure area over northwestern Canada, central pressure 30.80", moved rapidly south to North Dakota on the 26th, and to Iowa on the 27th where its central pressure was still 30.78", and on to southern Illinois the next day remaining strong at 30.58".

IV—The last of the Arctic air masses of January moved out of Montana on the 27th with pressures of 30.78", southward to Nebraska the next day and then on to Texas on the 30th.

February saw a larger number of Arctic air mass outbreaks than January, but it should be recalled that only thirteen days of the cold wave were in January, and twenty-two were in February.

I—On the first of the month a high over South Dakota with central pressure of 30.46" moved southeast to a position over Iowa, then on to Wisconsin on the 2nd as temperatures plummeted to a state wide average of -20° .

II—On the 2nd, another Arctic air mass over northwestern Canada moved south to a position just north of Lake Superior where its pressure was a modest 30.32". Wisconsin was therefore in a position between two frigid air masses early in February as temperatures over the state averaged -25° on the 5th and 6th.

III—On the 10th of the month another northwest Canada air mass moved south toward Montana, thence east to Hudson Bay by the 12th as temperatures dipped to -12.5° .

IV, V—In rapid succession, two massive Arctic thrusts now followed—one over North Dakota on the 15th with central pressure of 30.50" moved east to Wisconsin,

and the second over Montana on the 17th, with pressures equal to III in January, 30.80", moved southeast maintaining its vigor as it moved toward Wisconsin. This combination plunged temperatures to the coldest of the entire period -29.1° on the 16th followed closely by four more days averaging about -20° .

VI—Finally, an Arctic high over Iowa on the 21st moved toward Michigan with central pressures of 30.42" providing the last frigid day to the state before surface and, undoubtedly, upper air patterns, changed abruptly, ending Wisconsin's most severe cold wave.

CONCLUSIONS

January and February 1936 were very cold months in Wisconsin: temperatures averaged from 2° to 7° below normal over the state in January, and 11° to 15° below normal in February. For most of the state February 1936 was the coldest February in history, but not as cold as January 1912. In

fact February 1936 averaged 2.8° state wide, 5.3° warmer than January 1912. When calendar month limits are ignored a period longer than a calendar month from January 19 through February 22, 1936 is discovered to be Wisconsin's coldest period.

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ACADEMIA AND THE SEARCH FOR PEACE

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History provides examples of how different academic communities responded, or failed to respond, to the grave problems and tensions in other times. Some aggravated, intentionally or not, the conflicts in their society. Others withdraw and left society to its fate. Still others helped in the search for solutions. America's research universities, with their tradition of involvement with society, have overwhelmingly followed this last pattern (Saxon 1981).

With respect to many problems, Saxon's points are well taken. However, America's great research universities have seemed hesitant in undertaking work directly related to the search for a just and stable peace. Only recently have many faculty become concerned with research in the area of international conflict and its resolution by non-violent means. There has been a trend toward professionalization of the peace movement. Several quarterly journals are now devoted to the field: the *Journal of Conflict Resolution* developed at the Center for Conflict Resolution at the University of Michigan, and the *Journal of Peace Research* from the International Peace Research Institute in Oslo. Some significant work on the problem of nuclear weapons proliferation has been done at Harvard's Center for Science and International Affairs (established in the mid-1970s). That Center publishes the *International Security* journal.

But the efforts are still fragmentary given the magnitude and the urgency of the task. "In an era when decisions taken by leaders of the Soviet Union or the United States can literally mean the death of hundreds of millions of Russians, Americans, and Europeans as well as additional deaths from secondary effects throughout the Northern Hemisphere, nuclear war is *the* problem with which we must cope successfully if we are to address any other" (John F. Kennedy School of Government Bulletin). We have courses in military science, why not in peace science?

There is no question that the issues are of the most critical importance; the very survival of human civilization may be at stake. So why has "peace research" not become more prominent in the agendas of America's great research universities? Several possible reasons are worth considering.

First, researchable questions are not easily formulated and the issues cut across traditional university disciplines and departments. However, many policy-oriented research institutes on university campuses already bring together professionals from a number of disciplines to cooperate in the study of major issues in public policy. The ability of the University of Wisconsin-Madison to organize its diverse resources for the study of public questions is well demonstrated by existing Centers and Institutes such as the Industrial Relations Research Institute, the Institute for Research on Poverty, the Institute for Environmental Studies, the Land Tenure Center, and others. The Wisconsin Seminar on Natural Resource Policies in Relation to Economic Development and International Cooperation held at Madison in 1977-78 is one good example of special short-term programs that draw on staff from many traditional departments. Participants included faculty and students from economics, engineering, agriculture, geophysics, and law, as well as professionals in complimentary fields from several Arab nations (Dorner and El-Shafie, 1980).

Second, there is perhaps still too little

recognition that we live in a world of growing interdependence among nations. Individual nations have worked out internal procedures (imperfect to be sure) for handling the interdependencies among peoples and groups *within* their jurisdictions. Although we now take it for granted, the idea of a "nation" with a "national government" was a major institutional innovation of an earlier time. Those rules for fostering mutually beneficial arrangements in national life took a long time to develop, and they continue to change and evolve. Today the nations of the world are groping for procedures by which the self-interested calculations of individual countries will take the interests of other countries into account. They are, in other words, searching for a set of mutually agreeable rules for institutionalizing the growing interdependence among nations. This is no simple quest, and it is one in which universities must play a major role.

Some of the insights developed by Wisconsin's great institutional economist John R. Commons may be relevant (Commons, 1957). Although Commons was concerned with institutions internal to a nation state, some of the procedural suggestions can be carried over to issues at the international level. Commons defined "institutions" as collective action in restraint, liberation, and expansion of individual action. This is what the world must seek in developing new institutions and new international procedures based on cooperation rather than confrontation among nations. Such new institutional arrangements will restrain and curtail certain acts of individual nations, but these very restraints, *if all are subject to them*, will serve to liberate and expand the opportunities of all nations.

We will return to interdependence later, but a third possible reason universities have not taken leadership in "peace research" may be the opinion expressed by some that war is part of human nature and that nothing much can be done about it: "We've always had wars and," some say, "we always will." However, just because wars have al-

ways existed is no reason to believe that they must continue to be fought. At least some military confrontations have clearly exhausted their potential for settling differences between nations. That potential has been destroyed by nuclear weapons.

We must distinguish between human conflict and the violent resolution of conflict. The first may indeed be inevitable, but it does not follow that the second is so. Non-violent ways to settle conflicts are put into practice every day and every where. Is it unreasonable to assume that future conflicts between nations cannot be resolved by means other than war? I have to believe that it is not unreasonable. We cannot escape the burden of nuclear armaments, and universities have a special responsibility in lifting that burden. Most scholars recognize that it is impossible to separate domestic issues from global issues of resource scarcities, trade and monetary instabilities, proliferating weapons of war, and the unrelieved poverty of a quarter of the world's people. Problems of food production and distribution, environmental protection, energy supplies, and a reasonable chance for all people to lead a decent life simply cannot be confined within national boundaries. But it is precisely with respect to these kinds of issues that new rules governing international relations must be developed in order to reduce the scope of conflicts and to settle them by non-violent methods.

A fourth reason why universities have not embraced the concept of "peace research" may be the many meanings associated with the word "peace." Boulding (1978) puts the case well:

On the positive side, peace signifies a condition of good management, orderly resolution of conflict, harmony associated with mature relationships, gentleness, and love. On the negative side, it is conceived as the absence of something—the absence of turmoil, tension, conflict, and war.

A negative evaluation of peace is reflected in certain connotations of words like pacify,

pacification, and appeasement. . . . On an even more negative set of values, peace is rated with death . . . the peace of mind that is a withdrawal from reality, the peace of catatonic trance have much in common with the peace of death. It is not surprising that we are suspicious of these negative forms of peace. The human race has often put a high value on struggle, strife, turmoil, excitement. We identify vigor with stress, with triumph. Our sports ritualize the value of striving in what I have called a ritual dialectic, in which winning is valued for its own sake. Perhaps the greatest enemy of peace is the perception that it is dull.

I would add that the term "peace" was given a doctrinal coloration by the manipulative use of the term by various Soviet-oriented movements, especially at the height of the cold war era.

The fifth and perhaps most important reason why more scholars have not committed themselves to peace research may well be a fear of being identified with the self-righteous moral posturing so frequently characteristic of "protest" movements. There is a major role for many of these movements. Dismaying as their rhetoric may be to researchers, marches and protests do force issues to the attention of both government and the general public. I suspect that no movement of this kind can get off the ground without leaders willing to dramatize a legitimate point of concern. While this is not to say that every popular movement is in the public interest, these movements can serve an important function. At the same time, this role is not necessarily suited to scholars who must retain a sense of proportion, see the issues in all their complexities, and provide a fair-minded perspective not only for themselves but for the public at large.

The problems with "peace research" provide some legitimate ground for concern: the questions are broad, researchable issues hard to formulate, empirical evidence difficult to assemble, and measurement and quantification often beyond reach. There is a natural, and perhaps inevitable, tendency to get lost on the abstract sea of high purpose when the

imagination is freed from the stabilizing influence of empirical evidence developed by well-focused inquiries. No one is immune to this tendency. The intricate political nature of many of the issues (often global in scope) and the impossibility of understanding in any fundamental sense the social, economic, cultural, and political conditions guiding other people's and other nations' lives suggest a course of caution and humility. But they most emphatically *do not* suggest a course of academic withdrawal—of choosing not to engage in research on the basic questions of peace and disarmament and conflict management.

As long as we think solely in terms of winning fights instead of managing conflict, our agenda can only lead to catastrophe. . . . We do not necessarily have to do away with fights altogether, but they must be highly limited and hedged with taboo. We do not have to pretend that hostility or even conflicts do not exist, but we must turn enemies into opponents. . . . (Boulding, 1981).

An acquiescent academic community has too long allowed the word "peace" largely to be appropriated by the far left and the utopians for their own purposes. This neglect has too often raised suspicions that "peace movements"—and by extension "peace research"—may be ploys of "enemies" who want to weaken Western resolve and promote unilateral disarmament in the name of "peace." The community of research scholars must reverse this neglect. A topic so important must not be stricken from research agendas simply because some who espouse peace have naive or hypocritical motives. A commitment to research does not involve prejudgments about the best ways to avoid or reduce conflicts and prevent wars. It is not a commitment to appeasement. These issues demand serious and unbiased scholarly investigation, because:

We can expect little from a 'peace' movement that challenges only American military programs and presents itself as an attack upon, rather than an expression of, Ameri-

can society. . . . Similarly we cannot expect much from those who cry the horror of nuclear war, but offer no feasible proposals for progress toward the legal and political processes that can replace it, or even a sensible perspective on what policies are most likely to prevent it. . . . Nor can we expect answers from those 'realists' who seek to apply traditional military and policy approaches to a radically changed world environment (Pickus, 1981).

Powerful nations were once fairly unrestrained in acting to achieve what they saw as their own interests. The weak had to depend on the goodwill and the self-imposed forbearance of the powerful; they had to rely on the strong to refrain voluntarily from using their power to its limit. For the weak, freedom of action was a privilege granted them by the more powerful. A half-century ago, transnational corporations, too, were more or less able to do what they wished ". . . introducing 'gunboat diplomacy' and 'market forces' and setting royalties. It took challenges—expropriations and other products of evolving 'national unity,' 'strong government,' and 'local experience and expertise'—before multinational operations became a matter of negotiation" (Kanel, 1978).

None of these expressions of power on the international scene have disappeared. In the past 30 years, however, there have been substantial changes in the exercise of such power. The nations of the world have become increasingly interdependent, and even the most powerful actors are often restrained in their acts and find it necessary to include in their calculation of self-interest the interests of other actors. No nation is immune to the adverse consequences of its own acts, and too narrow a view of self-interest in today's interdependent world can prove disastrous.

The problem, of course, is not with power *per se*. Any system needs power to drive it—physical, economic, political, and moral power. A more peaceful world will not arise from good intentions alone. The problem

with power is to prevent its abuses without destroying its necessary functions, and this is the role of new institutional rules and procedures. When these new rules are applied to all, they must serve not only to restrain but also to liberate and make more secure the rights and opportunities of the weak as well as the strong.

The obstacles to achieving new rules and procedures are, however, very great. The international system is not simply a larger version of the national one. There are no common and universally accepted procedures for defining the public interest for the world at large. There is no hierarchical structure of power and no sovereign authority at the world level. Authority at the international level is horizontal—distributed among equally sovereign (although not equally powerful) nations. Perhaps current relations among the world's sovereign states are at a point not unlike the pre-nation "estate stage" of 14th century England: "Contesting interest groups had no clear powerful sovereign center. The 'estate stage' exhibits contractual, not constitutional relations and 'peace' by exercise of forbearance" (Parsons, 1978).

This non-hierarchical authority structure is unable to sustain agreements that might govern the behavior of nations in our increasingly interdependent world. Are nations ready to accept a "clear powerful sovereign center" at the international level? Not likely. True, there are more and more international agencies within the United Nations system. Those international bodies serve important functions—they can influence the global agenda, internationalize subjects formerly considered purely domestic matters, and provide a forum for debating alternative approaches. But so far, nations have been unwilling to invest these agencies with much policy-making or enforcement authority. The international system lacks the highly developed legal institutions of our familiar national systems (Bilder, 1980, p. 386).

Nevertheless, there are a variety of ways for working out bilateral and multilateral

agreements. The lack of an international police force doesn't mean that nations will deliberately break their commitments; many international agreements are strictly honored by nations out of self interest. Disputes between neighboring nations are not uncommon, yet for the most part borders are respected and common resources are shared by mutual agreements that meet the interests of all parties. A recent climate of hostility may have dimmed the public luster of agreements between the United States and the Soviet Union; the terms of Salt I have expired and those of Salt II have never come into effect; yet:

Except for the dismantling provisions, both Governments are respecting these terms. Even nonbinding norms can establish a *modus vivendi*. As with an unmarried couple sharing an apartment, it may be easier for both countries to live together than to enter into major commitments (Fisher, 1981).

SOME RESEARCH SUGGESTIONS IN SEARCH OF A MORE PEACEFUL WORLD

The current system is not without hope. Many incentives can be written into international agreements to encourage (if not assure) compliance. But scholarly research must help define alternatives and prospects. And there is no single discipline that covers all facets of these complicated problems. The study of peace and conflict resolution cannot be abstracted from other aspects of world affairs including economics, history, culture, development, psychology, and communications, as well as politics. All disciplines across the spectrum of sciences and humanities can and must contribute. What follows is a brief outline of several broad research categories.

1. Research focused directly on peaceful means of conflict resolution. In 1975 Galtung presented a typology of peace research with an emphasis on what appeared (at that time) to be important gaps in knowledge. These gaps range from disarmament processes in history and the structure of disarmament negotiations to

nonmilitary defense, the international implications of increasing scientific capability, and the role of positive sanctions in the international system (see also Weston *et. al.* 1978).

2. Research focused on international law and international mediation. University lawyers and labor economists have developed research and practical experience on mediating and settling disputes between management and labor. The application of these skills to the critical issues of international peace and disarmament (and especially nuclear arms reductions by the two super powers) is not nearly so well developed. There are good beginnings, yet much remains to be done (see Fisher 1978 and 1981; Bilder 1980 and 1981; Schachter 1976 and 1977).
3. Research focused on new international economic problems and relations. International monetary instabilities are directly related to the arms race. A Wall Street analyst contends that:

The U.S. banking establishment is concerned over the U.S. policy of deliberate confrontation with the Soviet Union. The escalation of the armaments race threatens to create worldwide chaos. . . . The economies of Russia and the U.S. are being ruined by the costs of the arms race. Surplus capital created for reinvestment is being eaten up by the demands of the arms race (Steel, 1981).

Military spending does not "cure" economic ills; in fact it worsens them both nationally and internationally. Greater military spending, inflation, and cutbacks in social programs all produce inequities, reduce living standards for large parts of the population, and tend to "heighten hostilities at home" (Kopkind, 1981, p. 227).

Discouragement at the 1980 annual meeting of the American Economics Association was read by one analyst as an international issue:

A growing number of leaders of the economics profession feel that their discipline in its present condition is of little use in solving the greatest danger

that now threatens humanity: the breakdown of the economic and social order on which the lives of more than four billion people depend (Silk, 1980).

4. Research focused on international aspects of environmental problems. The environment is a system that binds nations and peoples together in interdependent relationships made more binding because of technological developments in production, transport, and communication. Air pollution, degradation of international waters, weather modification, deforestation and desertification are global problems that can be attacked only by international negotiation, agreement, and action. There has been research in all these areas, but few attempts have been made to relate research results to the political process in international affairs.
5. Research focused on international issues of developing, pricing, conserving, and trading natural resources, including energy resources. Natural resources are invested with an inherent public interest because they are finite in quantity or require major public investments to maintain their renewability or quality. Differences in evaluation between buyers and sellers of resource commodities and the frequent divergence between national and international benefits and costs of resource use or exploitation give rise to disputes that have sometimes led to war. Again, research on these questions is common, but it should be specifically designed to provide insight into international negotiations on the issues so frequently threatening to world peace (Dorner and El-Shafie 1980, p. 26).
6. Research focused on the problems and the suffering of the 12 million refugees in the world (an estimate by the U.N. High Commissioner for Refugees). These are people who have fled their homes because of wars and conflicts, or the violation or threatened violation of fundamental human rights. Of the emergency food aid channeled through the UN/FAO World Food Programme in 1981, almost 75 percent went to support people in need as a result of man-made disasters—refugees,

displaced persons and others affected by civil disturbances. Many of these people became refugees because of the rivalry and competition between the two super powers in the Third World. Thus research must be directed at this rivalry. Research must provide new alternatives for negotiations and agreements that will reduce the fears, the insecurity and the neurosis which each of these powers now seems to feel and project.

7. Research focused on the non-military aspects of our national security: continued efforts better to understand other cultures and social systems (to be shared widely with the general population through educational programs). Cyrus Vance may well be right in suggesting that U.S. security depends more on helping Third World nations out of their poverty and despair than on billions spent on new weapons systems. This approach too requires continuing research to help shape U.S. policies so that such assistance can contribute to national security by promoting a just and stable peace and thereby greater stability in the world.

This brief list is certainly not an exhaustive account of the research (and classroom teaching) that deserve more attention from university scholars and students in the search for a less dangerous and a more peaceful world. We must rethink our research efforts in light of the evolving and increasing interdependence and interconnectedness of nations. The key issues of equity in international trade and other relations among the world's nations and peoples may not be definable outside the actual process of negotiation, but equity must very definitely be addressed.

These are not tasks for scholars of a single university nor for scholars of a single country. But I am interested in seeing that the University of Wisconsin-Madison undertake a major research effort on some of these issues. It is most fitting for this great university to make that effort to extend the Wisconsin Idea of public service to the global community.

The 1981 report of a Commission appointed by former President Carter has called for the establishment of a National Peace Academy. That report has gone to the President and the Congress. Legislation to establish a United States Academy of Peace and Conflict Resolution has been introduced in the House with 69 co-sponsors. A similar bill introduced in the Senate has 50 co-sponsors. The idea may or may not bear fruit under current budget constraints, but it shows that at least some policy makers are seeking help from academia on these pressing issues.

Many universities, including Wisconsin, have been accused by their students of involvement in the "war system." Whether or not those charges are valid, we do owe it to our students to develop the courses and the research work that will meet the vital concerns of arms control, interdependence, and a more peaceful world.

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