

VAS newsletter...

#57
January 1988

A PUBLICATION OF THE
VERMONT ARCHAEOLOGICAL SOCIETY, INC.

Sharon Murray, Editor

Predictive Settlement Location Model for Prehistoric Cultural Groups in Vermont

Douglas S. Frink

At last, a new issue of the VAS Newsletter finds its way to your doorstep-- a pleasant surprise, I hope. This edition arrives packaged in the most humble apologies of editors, past and present, for the long hiatus in publication. All that may be said in our behalf is that, as a volunteer effort, the newsletter has suffered the demands of job and family, and the limitations of a seven day week. Excuses aside, we vow to do better. No more lengthy waits for the next issue. No more rumors that we are out of print. No more surprises. The spring issue is in the works, and a special edition is being planned for summer anniversary celebrations.

It is important to remember, though, that the Vermont Archaeology Society is in all aspects a volunteer organization. In this its twentieth anniversary year, it may be time for many of us to rededicate ourselves to archaeology in Vermont, and to the organization which endeavors to promote the importance of Vermont's past in light of present growth and development. We need your continued support and participation, and welcome your ideas, insights, comments and contributions.

Society Activities

* VAS member and writer Kevin Dann of Huntington has embarked on an exciting project of preparing a biography of ethnographer Gordon Day. Day's contribution to our understanding of Vermont prehistory is achieved through his research on the history and culture of the western Abenaki. Dann is especially interested in illuminating the methods and personality behind Day's research. Dann asked the VAS to sponsor his project to facilitate funding. A contribution from the Cecil Howard Charitable Trust in Woodstock was received recently. Dann will share the results of his research with VAS members in Newsletter articles and by presentations at meetings.

* In the spring of 1987, the VAS joined with

Settlement location models are used by archaeologists to predict where sites are likely to be encountered. These models are either implicitly or explicitly generated from information about known settlement locations or human behavior. Implicitly generated models are generally untestable hypotheses containing various factors which influence settlement locations.

Most settlement models are a variation of what is generally referred to as a gravitational model (Haggett, Cliff and Frey 1977). In its simplest form a gravitational model predicts the ideal location for the subjects of the study, given a set of fixed variables which are to be used by the subject. Although there exists an infinite number of possible locations relating the subject to the variables, the gravitational model delineates the balance point between the variables. This balance point, or gravitational center, will be located closer to those variables most commonly used by the subject and furthest away from those least commonly used.

This relationship between the subject and the variables points out one of the underlying assumptions behind most gravitational models for human populations: The assumption that the subject's attraction to the variables is based on the "principle of least effort" (Zipf 1949). In other words, the subject will locate so as to minimize the effort required to obtain the most often required variables.

In addition to the apparent attractive forces between the subject and certain variables, repulsive forces may also form a part in the gravitational model. The presence of certain repulsive variables would be indicated by the subject's apparent avoidance of the ideal gravitational center.

The use of settlement locational models is becoming common practice in American archaeology. However, to date only two explicitly generated models have been developed for Vermont. The first model was developed by the Consulting Archaeology Program at the

1→ Predictive Settlement Model

University of Vermont (UVM) for the archaeological survey of the proposed Chittenden Circumferential Highway (CCCH) (Thomas and Doherty 1985). As described in this study:

In this instance, the model is specifically directed towards predicting the probability of locating residential sites, whether they be short-term hunting camps or large base camps. Locating special activity sites, such as quarries, burial grounds or sacred spots, would require a different modeling approach. ... The model uses four weighted criteria--landform (e.g. riverine flood plains, rolling uplands, lake plains, and outwash plains), proximity to water, slope and aspect--to evaluate limited segments of proposed (highway) alignments. ... A composite weight is used to rank a portion of alignment as to the probability of its containing prehistoric sites. The ranking scheme ranges from high through moderate, moderate-low, low and very low.

The second model was developed for the USDA, Soil Conservation Service for the Lower Missisquoi River Watersheds (Frink 1987a, 1987b). This model demarcates probable settlement locations within these areas as follows:

All gently sloped, well to moderately drained land, within 200 feet of any surface water has a high potential for containing prehistoric sites. This high potential may be enhanced by having a south to southwest aspect, but is not significantly diminished by other orientations. Steeply sloped land and poorly drained areas (except for river banks and lake shores now submerged as a result of post-glacial isostatic rebound), regardless of the proximity to surface water, have a low potential for containing prehistoric settlement sites. Variability in the accuracy of this model will be evident in each landform, resulting from population pressures and the season of use. A possible exception to this settlement model may exist for Paleo-Indian period sites, which may demonstrate a stronger attraction for land near the edges of the former Champlain Sea, regardless of soil drainage characteristics.

These two settlement location models are very compatible, differing only in the degree of focus. The CCCH model stratifies the study area into potential environmental exploitation zones: these are determined by generalized landforms such as riverine floodplains,

rolling uplands, lake plains, and outwash plains. The SCS watershed model builds on the CCCH model's stratification of the study area according to generalized landforms, but then stratifies each landform according to soil drainage characteristics: well drained, moderately drained, and poorly drained. The other environmental factors used in these two models, proximity to water, slope, and aspect, are the same.

Both of these models have proven to be reasonably accurate for predicting prehistoric settlement locations. However, since both models were generated from data only in western Vermont it cannot be assumed that these models can be applied throughout the state. Before this assumption can be made, these models will need to be tested or evaluated from data obtained from central and eastern areas of the state.

References:

Frink, D. 1987a
Archaeological Resource Management Plan of the Lower Lake Champlain Watershed. Report #4. Copy on file: Vermont Division for Historic Preservation.

----- 1987b
Archaeological Resource Management Plan of the Lower Missisquoi River Watershed. Report #5. Copy on file: Vermont Division for Historic Preservation.

Haggett, P., A. Cliff, and A. Frey 1977
Locational Models. John Wiley and Sons, New York.

Thomas, P., and P. Doherty 1985
Archaeological Reconnaissance Survey for the Chittenden County Circumferential Highway Vol. I. Report #52, Department of Anthropology, University of Vermont, Burlington.

Zipf, G. 1949
Human behavior and the principle of least effort. Cambridge, Mass. (2.21, 2.2.2, 4.3.1).

1→ Society Activities

the state Division for Historic Preservation in an attempt to gain funding for archeological work at the Highgate Falls Archeological District on the Missisquoi River in Highgate. The extensive proposal, prepared by State Archeologist Giovanna Peebles, with assistance from her staff and VAS members, included eight one week field schools open to the public, five evening lectures, six Sunday afternoon workshops, guided site tours, and a slide show. The grant application was submitted to the Vermont Council on the Humanities, which was unable to fund the project. The VAS Board continues to look for funds for this and similar programs from other sources.

* The VAS awarded a grant to Michael Heckenberger to make slides from the Boucher excavation and its textile remains. Heckenberger recently provided VAS with 179 slides which will be stored in an appropriate archive.

* Although the VAS/DHP proposal for public archeology in Highgate was not funded, the VAS and the Division were able to assist James Petersen's field work in Highgate this summer with funding obtained from the Cecil Howard Charitable Trust. Funds were used to pay lab assistants and to obtain Carbon-14 dates.

* The VAS joined with the Department of Anthropology at UVM to sponsor a slide lecture on Alaskan archeology by Peter Mills on December 1.

Board Appointments

Due to various resignations, expirations and woeful record-keeping, the VAS Board found itself short of members and unsure of term dates. This situation has been rectified, and the following people are now members of the VAS Board of Trustees.

With terms expiring in 1988:

Vic Rolando
Louise Basa
Fred Cowan
Richard Ward

With terms expiring in 1989:

Joe Popecki
Scott Dillon
Dee Brightstar
William Murphy

With terms expiring in 1990:

Sandy Partridge
Cindy Cook
Sharon Murray
Prudence Doherty

At the December Board meeting, Prudence Doherty was chosen to be President for the coming year. Vic Rolando will continue to serve as Vice-President, and Joe Popecki will continue as Treasurer. Bill Murphy was elected Secretary.

If any members would like to serve on the Board, please drop a note to the Nominating Committee.

More IA Sites Added to State Inventory in 1987

Sixteen more sites were added to the State inventory, through field and research efforts of Vic Rolando. Included were 6 lime kiln sites in Plymouth, two in Swanton, and one each in Manchester, Mendon, and Pownal; two foundry sites in Highgate; and three forges in Ferrisburg.

The Plymouth lime kilns were located through the aid of the 1859 geological map of Plymouth, and parallel Route 100 on a generally north-south line. The kilns in Swanton are those that still partially stand at Fonda (Swanton Junction, at the end of Lime Kiln Road), and a few hundred feet southwest of the John's Bridge VT-FR-69 site. The John's Bridge lime kiln, according to historical account, is supposed to have been the earliest lime kiln in Swanton. The Mendon lime kiln is on the Beers 1871 map.

The forge sites at Ferrisburg are along Lewis and the Little Otter Creeks: the Fuller forge at North Ferrisburg, and the Doreen forge and the Monkton Iron Co. forge in the vicinity of the Monkton Road - Little Otter Creek bridge. The Fuller forge is about a quarter mile upstream of the bridge at North Ferrisburg, where surface evidence of the bloomery forge, in the form of a concentrated surface area of bloomery slag, was found. The forge is described in Rowland and Robinson's Along Three Rivers. The forge was built over by a woolen mill so that the stonework, including a neat stone arch, is of that later operation. At the Little Otter Creek, where Vergennes - Monkton Road crosses was a forge that operated about 1810, which eventually came into the hands of the Monkton Iron Company. It has been known that two forges existed along the creek in the vicinity. The second, Doreen forge, was found about 1000 feet upstream of the bridge after many hours sloughing nearly knee-deep up and down in the Little Otter. All three forges were found while on vacation from GE and camping at nearby Button Bay.

Other work during 1987 has been the on-going efforts toward attempts to locate a possible cupola furnace at English Mills (Woodstock) and lime kilns along Plank Road (New Haven); and an investigation of foundry-type materials that were found buried in someone's front lawn at the south end of Hog's Island (Swanton). Also, after annual inspections along the Black Creek since 1979, blast furnace slag was finally found in the vicinity of the circa 1798-1853 furnace sites at Sheldon, the first physical evidence of the furnaces (although they are well documented); and the area of probability for the location of the blast furnace along the Rock River at Highgate has been significantly narrowed, making more likely nomination of that site also for the National Register. Significant surface evidence was also found that further supports argument that a blast furnace operated along the Little Otter in northern New Haven. An inventory of Vermont foundries that cast stoves, including photographs of what stoves can be found, is being worked on.

Vic Rolando
Pittsfield, Mass

CAP Activities, 1986-87

The Consulting Archaeology Program at UVM, directed by Peter A. Thomas, undertook 56 projects during 1986-87. Thirty-one studies were conducted as a result of federal review, 18 studies fell under Act 250 state review, and seven were management studies.

Supervised by R. Scott Dillon, field work during July and August at the Bessette site brought to a close three field seasons of intensive excavation along a 3.5 mile stretch of the Missisquoi River within the Highgate Falls Prehistoric Archaeological District. An initial survey conducted in 1980 established the presence of 15 prehistoric sites on floodplains or alluvial terraces after sampling only 5.5% of the area. Intensive evaluations were undertaken at four sites in 1982. The district was determined eligible for the National Register in 1983. Research conducted in 1984, 1986 and 1987 has focused on problems related to Middle-early Late Woodland (ca. 1700-550 B.P.) and Early Archaic (pre-7730-7970 B.P.) components. Other time periods are virtually unrepresented even though detailed studies of the alluvial geomorphology by Robert Brackenridge (Geography Department, Dartmouth College) and Peter Thomas indicate that stable landforms existed during such periods. Logs (n=8) dating between 1375 and 8090 B.P. were recovered from slack bank deposits buried beneath a laterally migrating floodplain and anchor the geochronology.

During the past three years, CAP field teams headed by Scott Dillon, Geraldine Kockan Corbett Torrence, Doug Frink, Bill Matthews, and Laurie Kutner have been testing previously unsampled environments in the greater Burlington area. These include predominantly sandy outwash plains, older lake plains and the intervening hill country away from the Winooski River and Lake Champlain. Basic sampling approaches include the intensive walkover of 346 acres of plowed land with crew members spaced at 1.5 m intervals and the excavation of 4,365 test pits spaced at 8 m intervals within 101 sample areas. Eighty-seven prehistoric sites have been identified. Prehistoric activity in general has obviously been on a continuum, ranging from random losses of tools to the occupation of small residential bases. Time periods represented include Paleoindian, probably Early Archaic, Late Archaic and Middle-Late Woodland.

Other projects include 37 reconnaissance phase surveys in Rutland, Addison, Chittenden, Franklin, Washington, Orange, Caledonia and Windsor Counties; three management studies prepared by Marie Bourassa

for Army Corp of Engineers facilities at North Hartland, Townshend and Union Village; intensive research by Prudence Doherty and Jan Warren and subsequent testing at a sawmill-tannery-chair factory complex in Searsburg; and an NR evaluation for the tavern and surrounding four acres at Chimney Point, including Late Archaic-Late Woodland components, as well as late 18th-mid 19th century domestic deposits.

contributed by
P. A. Thomas

Educational Opportunities

Community College of Vermont

CCV is offering a number of courses this spring which may be of interest to VAS members, including the following:

Vermont Archaeology: Field Methods

Taught by VAS member Bill Murphy, this course introduces the general field of historical archaeology and offers students the opportunity to learn archaeological reconnaissance techniques and apply basic field methods for exploring early colonial sites in Vermont. (Middlebury, Mon. 6 - 8 p.m.).

Vermont Prehistory and Archaeology

Taught by VAS member Doug Frink, this course surveys Vermont's archaeological past from prehistorical times to the arrival of Europeans, examines current topics in archaeological theory and method, and takes a look at on-going work throughout the state. (St. Albans, Thur. 6 - 9:10 p.m.; S. Burlington, Mon. 6 - 9:10 p.m.).

Classes begin the week of February 8th. For more information, contact the nearest office of the Community College of Vermont, or call (802) 241-3535.

London Institute of Archaeology

Bill Murphy notes that, for members who might be planning a trip abroad this summer, the Institute of Archaeology of the University of London is offering 57 different courses related to archaeological and museum studies during its summer session. Anyone who desires more information on courses, costs, and dates should contact Bill at (802) 388-7577.

**NEXT ISSUE: Spring Meeting
News, Membership List,
1988 Dues Notice.**

CCV Field School: Eban Judd Site

This past year the Community College of Vermont offered a field school in historical archaeology. The site selected was that of the former shop of Eban Judd, a stone and marble cutter, and grandson of the founder of the original marble works in Middlebury during the early 1800s.

The shop building itself had been torn down and a garage was to be built on the site. A concrete floor had been poured in the mid 1930s on top of the shop's wooden floor, so all material recovered predated that period.

Eight one (1) meter pits were excavated, and the artifacts recovered ranged from a child's set of dishes to marble working tools. Many marble fragments were recovered in two adjoining pits, and a heavy layer of marble dust delineated a primary feature in the southwest corner of the site. Marble dust was also evident in other pits.

Judd was a bedridden invalid prior to his death in 1911 and, although his cause of death read "valvular heart disease," from the amount of marble dust present in his shop, it is safe to reason that silicosis was a contributing factor in his demise.

The owner of the property has delayed her construction project and, if there is enough interest, there will be another field school this spring.

contributed by
William Murphy

DHP Undertakes Needs Assessment

At the request of Congress and the National Conference of State Historic Preservation Officers, the Division for Historic Preservation is conducting a survey to assess Vermont's preservation needs. The results of this survey will be combined with similar surveys across the country to make a case that the Federal Government should consider funding for preservation work on buildings, structures, and archaeological sites. It has been six years since regular funding for this important work has been included in the Federal historic preservation appropriation.

The Division is requesting your help to estimate the need for preservation funding in Vermont by providing brief, general information about any potential project sites of which you are aware. This information should include site location and ownership, a brief description of the project, and a rough estimate of project cost. Both construction and nonconstruction (eg. planning, research or education) should be included. The more instances of need that can be documented, the better.

If you know of a project that you think

could be undertaken if financial assistance were available, please contact Ray Zirblis, Architectural Historian, DHP, at 828-3226. He will return your call on the Division's WATS line to discuss your project.

Please remember that this survey seeks to document the need for preservation funding, and is not an offer of funding. It is an effort to determine a level of funding that would be appropriate to ensure that our heritage of significant architectural, historic and archaeological resources is not lost. The information will be invaluable in illustrating the broad range of preservation needs in Vermont, and, when combined with data from other states, will hopefully provide a compelling case for the reinstatement of federal funding for preservation projects.

News from Our Neighbors

The Clinton County Historical Association has recently received a \$15,000 grant from the New York State Council on the Arts for an exhibition and catalogue about the Native American in the Champlain Valley.

The CCHA has hired Kay Olan, a teacher and Mohawk Indian, to research the history of the Native American in the general area of the Champlain Valley. Kay spent the summer months identifying collections and interviewing their owners on both sides of the lake. Kay will make a report of her findings by the end of the year. Another member of the project team is Ray Gonyea, an ethnology specialist at the New York State Museum in Albany. Ray will act as guest curator and is expected to be one of the speakers at a Champlain Valley History Symposium to be held in the fall of 1988. Dr. Richard Robbins of SUNY Plattsburgh's Anthropology Dept. has agreed to chair the symposium.

(from CCHA Newsletter)

New Hampshire archeology is entering a new age with the reorganization of its state program. The state's Division of Historical Resources has added three archeologists to its staff, and has also acquired a system to computerize the functions of the new archeology program.

The three new archeologists include Richard A. Boisvert, research archeologist in prehistory; Parker B. Potter, research archeologist for historic sites; and, Wesley R. Stinson, assistant archeologist. Boisvert is a native of Lebanon, New Hampshire, and first experienced archeology as a high school student along the banks of the Connecticut River. His specializations include geoarcheology and lithic technology. He has served as Assistant State Archeologist in Kentucky, as a staff archeologist for the SHPO in Kentucky, and as head of the review and compliance section of the Ohio State Preservation office.

→6

5→ News from Our Neighbors

Parker's training and experience has included projects in Virginia and Maryland. He is committed to making historic archeology meaningful to the public and to training students and avocational archeologists in site interpretation and collections analysis within a preservation context. Stinson has served as Project Manager/Archeologist for several major national consulting firms. His research interests include computer analysis, typological studies and the New England area.

(From "News from the State Archaeologist" in the N.H. Archeological Society Newsletter, Fall 1987.)

Above the Gravel Bar Book Notice

Rivers have figured significantly in the long history of man and nowhere is this significance more clear than in human history of Maine. Virtually all of her towns are located on waterfalls which have provided industrial power from pioneer times down to the present. Without rivers, Maine's vital lumber industry, and later its paper industry, would have been severely retarded, or perhaps never started. Historical records and living memory make the record of industrial man, the Europeans who arrived several hundred years

ago, well known and well understood.

Less well known, but of even greater significance to an almost vanished race was the ancient network of Indian canoe routes. The invention of the birch bark canoe thousands of years ago was a tremendous achievement. These light and portable craft, perfect for swift and shallow waters, made food procurement much easier and long distance trade and travel possible. The rivers and lakes, obstacles to those afoot, became important highways, and their banks home, to hundreds of generations of people—the ancestors of the modern Penobscots and Passamaquoddy tribes of Maine.

This book is meant to guide you back to the time when birch bark canoes were the "prime movers" and combines traditional historical research, archaeology, and the author's actual canoe travel experiences over Maine's beautiful rivers and lakes.

Above the Gravel Bar: the Indian Canoe Routes of Maine was written by David S. Cook, current president of The Maine Archeological Society, Inc. and a history teacher at Winthrop High School, Winthrop, Maine.

Above the Gravel Bar, including a map of Maine showing all canoe routes described in the text, is available from the author:

David S. Cook
Box 1300 Rt. 2
Winthrop, ME 04364

Vermont Archaeological Society, Inc.
Box 663
Burlington, VT 05402 0663

FIRST CLASS

TO