Chapter 1: Introduction

Cemeteries or graveyards hold a unique position in the cultural landscape of the United States. They serve functional and emotional purposes. From a functional perspective, cemeteries provide a venue for disposal of corpses. Other methods of corpse disposal are cave burial, exposure, aquatic disposal, cremation, cannibalism and secondary burial. Interment is the oldest known method of body disposal and is still the method most commonly used in the United States. From an emotional perspective, cemeteries provide a place where the living can communicate with or honor the dead. According to Warner (1959), graveyards contain suitable symbols which refer to and express man's hope of immortality, which aid in reducing anxiety about death. Therefore, graveyards have both spiritual and mystical overtones in American culture. Past studies of graveyards have focused primarily upon analysis of style and stylistic change of markers or gravestones, use of trees, shrubs and flowers, plot size and layout, fences and the spatial arrangement of these elements in the graveyard. Other studies have included cemeteries in a geographical analysis as a component of local land use patterns (Francaviglia, 1971). The development of Geographic Information Systems makes it possible to study the spatial distribution of graveyards and their associated attributes concurrently.

Geographic Information Systems (GIS) have emerged as the tools of choice in most spatial modeling and analysis applications in recent years. Common themes of GIS usage are the mapping and management of transportation systems, utility distribution, land usage and natural resources. Transportation systems particularly have been the subject of GIS analysis, stressing the multi-leveled nature of linkages between people and places (Taaffe and Gauthier, 1994). Geographic Information Systems analysis is conducive to the study of nearly any attribute or variable which has a spatial distribution. The ability to attach attribute data to spatial forms and then analyze and represent the outcome graphically is one of the principal strengths of using GIS. To a more limited degree, GIS have been utilized in some historical and even archeological research.

Study Objectives

The Bluestone Dam Project, completed in the early 1950's, displaced a few communities and cemeteries, terminated some transportation routes, established flood control, and diverted the use of some of the richest agricultural land in Summers County, West Virginia. The flood control the dam provided was certainly needed, but the particular site chosen for the dam disrupted some very old and historic communities and transportation routes. These particular features of the

Bluestone Reservation were the main reason this area was selected as the focus of the cemetery use and maintenance study.

Cemeteries are spatial focal points of multi-faceted socio-cultural practices. As built landscape features, cemeteries require initial site selection, construction and maintenance. Initial site selection is affected by factors such as economic status, land ownership, religious affiliation, kinship patterns, local elevation, rock substrate depth, land use patterns, transportation mode, burial practices and casket or vault construction materials. Construction and maintenance entail financial and energy expenditures as well as investment of materials in the cemetery space. Selection of construction materials, spatial cemetery layout and grave marker style reflect the socio-cultural environment (Francaviglia, 1971), ranging from economic status to specific ethnic mores, to more impersonal features such as population pressure. Family graveyard maintenance in rural areas is also associated with a kinship group's ties to the land. Continued upkeep of family cemeteries may be examined from the perspective of the presence or absence of financial or physical ties to the cemetery site by relatives of the persons interred at the site.

Since most modern cemetery construction materials and maintenance equipment units are too heavy to be transported to a cemetery other than via motor vehicles, the presence of adequate access roadways is essential to present-day cemetery usage and maintenance. The relationship between changes in transport modality, settlement and transportation network patterns, and cemetery siting, utilization and current cemetery maintenance condition patterns in the setting of the study area will be examined using historic research, data collected during field observations and GIS analysis.

Chapter 2: Transportation

The past location of transport routes often has a marked influence upon decisions affecting the placement of later routes (Black, 1993). For example, roads dating back to the pioneer era tended generally to follow American Indian trails (Figure 2.1). And subsequent state and county roads tend to generally follow the path of earlier roads.

Figure 2.1 Indian Trails and Forts in the Study Area [indian.gif, 168 K]

Significant changes have occurred in transportation modes during the 240-year period this thesis examines. The earliest pioneers usually traveled on foot or horse back. Sleds and pack saddles served as conveyance devices for the early Caucasian settlers. Wagons apparently were not common in this area until the pioneers became established settlers.

In the 1830's and 1840's various turnpikes were constructed, portions of which traversed the study area going between Red Sulphur Springs, the Mercer Saltworks, and Pack's Ferry at the mouth of the Bluestone River (Morton, 1916). By 1840 the Giles, Fayette and Kanawha Turnpike had been completed which transects most of the study area (Crozet, 1840).   The Giles, Fayette and Kanawha Turnpike went from Pearisburg through Peterstown, Red Sulphur Springs, Pack's Ferry, up Sand Knob, to Beckley and on to the Kanawha Turnpike, which was a major commercial transportation route of that time (Figure 2.2). Today, segments of this important early roadway still are in use as gravel and dirt roads, although other portions have been abandoned. In 1849, the Virginia Assembly appropriated money to build the Princeton and Red Sulphur Turnpike from Princeton through Athens, Pettrey, Hilltop, Lick Creek, crossing the New River at Shanklin's Ferry, then to Bozoo, and Ballard. At Ballard the new turnpike connected with the Giles, Fayette and Kanawha Turnpike and on to Red Sulphur Springs (Klingensmith, 1996). A portion of the Princeton and Red Sulphur Turnpike crossed the southern half of the study area.

Figure 2.2 1836 Map of Southwest Virginia [map1836.pdf, 8 M]

The old turnpikes generally went between centers of trade and population, what would have been considered urban areas in the historic era. The Mercer Salt Works was in the study area and Red Sulphur Springs was situated just outside the study area. Both enterprises significantly affected traffic through the study area in their respective heydays.

Commercial Traffic

The commercial development of the salt well is said to have begun in 1849 about twelve years before the Civil War. Jabez Anderson was the chief engineer at the works. The well was drilled by Mr. Charles Clark from Malden, West Virginia, where there was a well established salt industry at that time. The materials to construct the salt works were shipped in from Cincinnati, Ohio by wagon. After the salt works went into production in 1850, the ridges around it were eventually cleared of trees as they were used for fuel to fire the salt vats. The works were destroyed during the Civil War in 1862. Afterwards, they were rebuilt by William Crump and Mr. Clark and were operated until 1866, when the works ceased to be profitable due to a drop in the price of salt and scarcity of fuel to boil the salt vats (Sanders, 1992). Judge Miller states, "People secured salt from this 'furnace' for many miles, carrying it away in wagons, boats, old-fashioned bateaux, and on horseback. During the last years of the Civil War, salt sold for five dollars per bushel in Confederate money. People from the Green Sulphur neighborhood carried salt from this well on horseback, a distance of forty miles . . . after the war. . . . After the railway was built, it [the price of salt] suddenly dropped from nine dollars to two dollars fifty cents [per barrel] (Miller, 1908)."

The Red Sulphur Spring was a health resort attended by relatively wealthy patrons, seeking to find relief for existing ailments or to escape the increased risk of contagious disease found in many Southern cities during the summer. The spring has been used as a watering place since around 1800. The spring was not developed commercially until around 1833, when it was purchased by Dr. William Burke of Alabama and Richmond, Virginia. Dr. Burke built some splendid edifices, which competed with those at White Sulphur Springs at that time. Stages ran routes on the Red Sulphur Turnpike taking passengers to and from the resort. The Princeton portion of the Red Sulphur Turnpike went by the Mercer Salt Works to pick up freight and additional passengers. An idea of the slowness of travel during this era may be gained from the following letter written during the Civil War: "The first night I came to Dublin Depot. The next day we went to Pearisburg, the next day we went to Peterstown, the next day to Red Sulphur Springs; July 14, 1862. The distance from Dublin to Red Sulphur Springs is about thirty-eight miles. Patrons of the resort came from Europe, New York, South Carolina, Louisiana, Missouri, Maryland, Georgia, Ohio, Texas, Kentucky and Virginia. The hotel was used as a hospital during the Civil War. The resort went out of business around 1917 (Motley, 1973).

Development of the Current Road Network

One of the most knowledgeable authorities on the early road system in Summers County was Judge James H. Miller, who wrote the following in 1908:

> At the date of the formation of the county [1871] there were but few roads and highways, and those that did exist were unfinished and of poor grade. . . . The roads were built and kept up by public labor, the county being sparsely settled . . . what roads were built at the formation of the county were dug out of the hills by the hard labor of the pioneers, some of the hands having to travel ten miles from their homes and then perform a day's labor. . . . We frequently at this day [1908] hear violent complaints of the condition of our roads in the county - its broken, rocky and mountainous surface, the poverty and hardships under which the roads have been made . . . One misfortune has been in the unfortunate grades made in locating many of the public highways by unscientific engineering in the early days. . . . We doubt if there is a county in the State with a harder or more difficult territory over which to construct its public highways.

A Department of Highways Map of Summers County revised in 1942, shows the first significant improvement in road surfaces in the study area. Two primary state highways traverse the study area, one with a bituminous and graded surface, the other merely a graded surface. Two highways going through Hinton were paved, but no roads in the study area were paved at this date. Five road segments in the study area were metal surfaced roads. The river roads were graded and drained. The rest of the roads had unimproved surfaces (State Road Commission of West Virginia, 1942). It was not until the late 1940's, 1950's and into the early 1960's that substantial improvements were made to the rural county roads (Keller, 1997).

Water Transportation

An alternate mode of transport was by bateaux on the New River. After the Civil War, and particularly after the completion of the railroad through Summers County in 1872, bateaux traffic on the New River increased (Lady, 1983). Farmers upriver from Hinton brought their surplus produce to the New River and it was floated down the river to Hinton where it was sold. The Corps of Engineers made navigational improvements on the New River from 1877 through 1883 (Lady, 1983). One channel through the New River in the study area was locally called the "Steamboat Chute" and zigzagged from one side of the river to the other from above the mouth of the Bluestone down to Hinton (Honaker, 1997). After the channel improvements were made in the river, loggers began floating thousands of log "rafts" downstream to the railroads at Hinton, contributing to the only known substantial economic boom in Summers County. By 1912, the railroad network was fully developed throughout the Summers County region, and transport of goods on the New River gradually diminished.

While the New, Bluestone and Greenbrier Rivers were used for transport of product up and down stream, they were also crossed by horse or motor traffic on ferries or forded (where water depth permitted) as an integral part of the road network (Figure 2.3). The following ferries existed in the study area at one point of time or another: Pack's Ferry, Lower Pack's Ferry, Hite's Ferry, Shanklin's Ferry, Buck Smith's Ferry, Warford and J. E. Harvey's Ferry above Crump's Bottom (Miller, 1908). In 1940, the New River flooded 40 feet or more above normal river level and washed all the ferries away (Scott and Gaber, 1986). The ferries in the study area were not replaced since construction was due to begin on the Bluestone Dam and many river farms had already been purchased by the Federal Government. Today the New River can be crossed by automobile at Glen Lyn about four miles upstream from the southern tip of the study area or crossed at Hinton, which is about one-half mile downstream from the Bluestone Dam which marks the northern boundary of the study area, the distance between the bridges being thirty miles. This disruption of the local transportation routes may have had a negative effect on communities near the borders of the Bluestone Reservation, although it must be noted there has been a national trend toward the demise of small rural communities. As the river routes dead-ended with the construction of the Bluestone Dam and Lake and the abandonment of the ferries, the old county and state roads in the Bluestone Reservation were either covered by water or abandoned, except to provide egress to camp grounds and boat access to the river for sportspersons.

Figure 2.3 1925 Roads and Communities in the Study Area [defunct.gif, 161 K]

In addition to the bateaux and ferry traffic on the New River, nearly every family which owned property near the river had a small water craft which was used for fishing, trapping and personal transport up and down and across the river. Of course, while the river farms were inhabited, these small water craft were kept near the river ready for use. The river bottoms were busy places with people coming and going, working their fields, taking produce to sell, or going to church or other community activities. A traveler could nearly always obtain personal transport across the river if he/she were in a hurry and could not take the time to go to a ferry and wait to cross the river. They could simply call to someone on one side of the river or the other and that person would usually stop what they were doing and take the traveler across. Unlike today, when it is rare to see another person along the river except at the camp grounds or marinas, people were commonly encountered along the river. Since the rivers were readily traversable before the construction of the Bluestone Dam, they did not divide communities as occurs currently. People freely visited friends and relatives on both sides of the rivers and even attended church routinely when a night river crossing was involved (Cottle, 1991). Today, the rivers are still navigable by small water craft, but the small boats are not routinely kept near the river. A trailer or other vehicle is necessary to transport the craft to the river and take it away at the end of the visit. While the navigability of the rivers has not changed in small water craft, the availability of the craft is more disjointed and dependent upon individual transport and economic resources.

Rail Transport

In 1872, the railroad was completed (Figure 2.4) through Summers County (Miller, 1908). This, of course, changed the local transportation network and economy significantly. Prior to 1870, economic life was based upon traditional activities such as farming and selling excess livestock or produce. After the coming of the railroad in 1872, timbering operations in Summers County escalated. As a result of improved transportation lines provided by the railroads, the local economy boomed. By 1903, nine passenger trains left the station in Hinton daily! And the railroad provided both local and long-distance passenger service. The passenger rail service was so consistent and frequent that the mail was carried by rail, instead of by truck as is the present practice. Currently, since the curtailment of federal financial support for Amtrak passenger trains, there are three passenger trains per week serving Hinton.

Figure 2.4 1876 Map of Portion of Southwestern Virginia and Southern West Virginia
[map1876.pdf, 4 M]

Automobile Transport

In contrast to rail transport, in 1906 travel by public highway was much slower and public transport lines ran less frequently. The daily Hack Line (horse and carriage) between Hinton and Princeton left at 7 a.m. and arrived at its destination in Princeton, 30 miles away, at 5 p.m. Today the trip takes about thirty-five to forty minutes by automobile (Worsham, 1986).

On July 26, 1906, the first locally owned automobile, a White Steamer, made its appearance in Hinton (Hinton Daily News, 1906). Automobiles became common in Summers County in the 1920's (Honaker, 1997). By 1924, nearly every family in the Forest Hill community, which partially lies in the study area, had a car (Cottle, 1924). Until the early 1930's, horses were still commonly used to pull wagons and sleds for various local deliveries, such as ice for household use (Keller, 1997). In the 1920's, roads in Summers County were still largely unimproved dirt roads except for a cement-based road from Bellepoint up New River to just past where the Bluestone Dam is now and a section of road near Wiggins. The roads in the study area during the early 1900's were, according to contemporary accounts, still dirt roads (Keller, 1997; Honaker, 1997; and Lowe, 1993)

Transportation and Cemetery Siting

The interactions between transportation technology, settlement patterns and burial preparation practices have an effect upon historical cemetery site selection. Improved transportation networks have an effect upon settlement patterns, travel distance and employment patterns. In the pioneer era, quick burial was often a necessity either out of concern for safety during the Native American raiding season, or because there was no available method of preserving the deceased's body for observation of prolonged death and burial rites. As mentioned in chapter 1, use of modern burial materials, such as concrete vaults, would entail enormous effort in the age before modern transport equipment was used. Also, before embalming became a common practice, time placed limits upon the distance a body could be transported for burial to avoid decomposition. As transportation over greater distances became quicker, distance a body was transported prior to burial also tended to become greater.

For example, the distance bodies were transported for burial in the Saunders Cemetery (5) averaged 1031 feet [numbers in parentheses after cemetery names are identification numbers, used because some cemeteries share a common name, but are different cemeteries]. Six of eight burials in this graveyard took place in the 1860's, before good roads were developed in the area. One of the remaining two burials took place in the 1880's and the last burial in the 1980's. All of the burials in this cemetery belonged to a common kinship group who resided within 1500 feet of the cemetery site (Figure 2.5). On the other hand, in the Huffman Cemetery (129) many of the 265 persons buried there resided in Hinton, a distance of about nine miles. Once again, the persons buried there tended to belong to an extended kinship group. The earlier burials in the Huffman Cemetery (129) lived in the immediate vicinity, a radius of about one mile from the cemetery. Persons more recently buried there tended to live in Bellepoint or Hinton, eight or nine miles distant, and were transported to the Huffman Cemetery (129) for burial with their relatives. These examples demonstrate the effect of the interaction between ease of transportation, access to burial preparation services and shifts in settlement patterns of kinship groups.

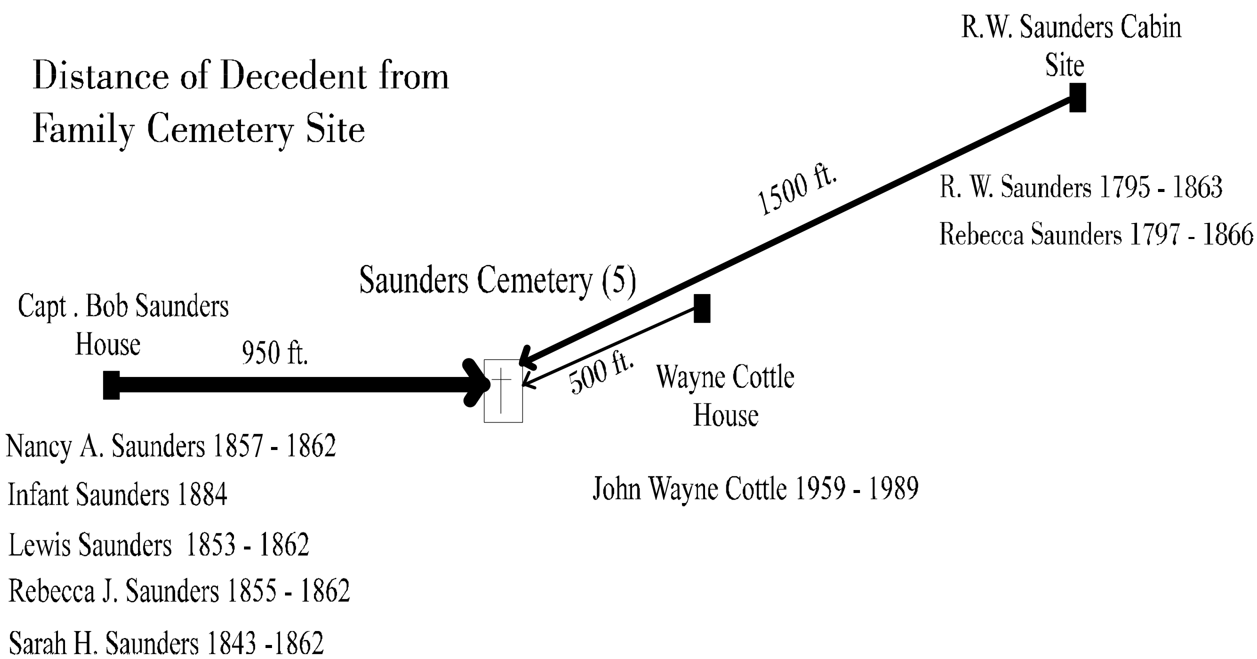

Figure 2.5 Distance of Decedent from Family Cemetery Site (cgm, 3 K)

Chapter 3: Settlement Patterns

The earliest attempted Caucasian settlement of the study area was on Crump's Bottom around 1755 by Andrew Culbertson at the mouth of Joshua's Run. During the 1760's, Native American raids through the area drove the Caucasian settlers temporarily back to more densely populated, safer sections of the frontier. Armed conflicts also occurred between the settlers and Native Americans during the 1770's and early 1780's in the study area. The blockhouses, forts and fortified cabins in the study area were part of the western chain of defense maintained by the Americans during the Revolutionary War.

By 1772, Thomas Farley had settled on the western end of the river bottom claimed by the Culbertsons. Some other early settlers were: James Cales on Wolf Creek Mountain, William Bradshaw (1758) on Bradshaw's Run, William Brown (1789) on Bradshaw's Run, William and Steel Lafferty (1774) at the mouth of Indian Creek, Thomas Wyatt (1793) on Little Wolf Creek, Alexander Hutchison (1790) near Bradshaw's Run, Robert Lilly and Josiah Meador (1802) at the mouth of Little Bluestone, Daniel Cook on Tom's Run, Matthew and Francis Farley (1786) on New River, Francis Farley (1792) on Buffalo Run and (1785) on New River, Hugh Caperton on New River, the Packs on New River from the mouth of Bluestone River to the mouth of Greenbrier River, James Barton (1838) on Barton's Ridge, Zadock Lowe (1797) on Bradshaw's Run, John Neely (1822) on the River Ridge in Pipestem District, James Ellison (1792) on New River, James Houchins (1824) on War Ridge in Pipestem, William Keaton (1824) on Pipestem Knob, Henry McDaniel (1810) at Pipestem on New River, and Thomas Walker (1814) on the west side of New River (Sims, 1952). The earliest settlers selected land near the rivers and streams and Indian trails. And, in consideration of the difficulty of transportation during the early settlement era, the cemeteries utilized at that time could not be far from the settlement sites.

Population of Summers County

The first federal census for Summers County West Virginia was taken in 1880, after the county was formed in 1871. The 1880 census reveals that 89% of the total population in Summers County engaged in occupations related to agriculture; 11% of the populace were employed in jobs outside of agriculture (Marsh, 1989). The railroad and lumber industries were the second and third most common sources of employment at that time. It is interesting to note that nine bateau operators were residing in Summers County in 1880. The boats were used to move farm produce (raised on farms in the study area) down the New River to Hinton, which was the urban center of the county during that era.

Summers County in 1990 had 3.6% of its population employed in agriculture, 6.8% in manufacturing, 21.4% in wholesale and retail trade, 3.3% in finance, insurance and real estate, 8.7% in health services, and 4.5% in public administration. The unemployment rate for Summers County in 1990 was 13.6% of a total work force of 4,568 persons. The number of farms in Summers County had decreased by 46 between 1982 and 1987 (U. S. Bureau of the Census, 1994). The dramatic change in employment demographics between 1880 and 1990 implies equally significant alterations in movements of the populace across the land and their interactions with the built and natural landscape.

The average population densities per square mile for Summers County have ranged from 25 persons per square mile up to 57 persons per square mile (Table 3.1 and Figure 3.1). Summers County has a low population density relative to most other counties in West Virginia, which has an average population density of 75 persons per square mile. The average population density for the United States in 1994 was 72.1. Table 3.2 gives examples of some high and low American population densities in 1994. The state of West Virginia ranks thirty-fifth in population density in the United States and Summers County ranks thirty-second out of fifty-five counties in West Virginia in population density. The population density of Summers County is not extremely low (.1 people per square mile) but is in the lowest quartile of county population densities in the United States (U.S. Census Bureau, 1994). This means that, relative to areas of high population density such as New York City, land in Summers County is not at a premium and is more likely to be used as a cemetery.

Communities and Post Offices

Another indicator of transportation quality and settlement patterns is reflected in the formation or abandonment of communities and the opening or closure of post offices. A general idea of settlement pattern can be gained from looking at community site patterns during different time frames. For example, according to the Carey and Lea Map of Virginia in 1822, the only communities near the study area were those of Red Sulphur Springs (which was simply named ‘Sulpher Spring’) and Peterstown (Carey and Lea, 1822). There were no significant communities in the study area at that time, although it is known that permanent settlers were in the study area. Some type of road or trail that roughly approximates the path of the Giles, Fayette and Kanawha Turnpike is present on this map, although this earlier route follows the New River more closely than did the later turnpike route.

Table 3.1 Summers County West Virginia Population 1880 - 1990 (U.S. Census Bureau, 1880-1990).

Year of Census	Population	Population Density Per Square Mile
1880	9033	25
1890	13117	36
1900	16265	45
1910	18420	51
1920	19092	53
1930	20468	57
1940	20409	57
1950	18119	50
1960	14720	41
1970	13425	37
1980	15875	44
1990	14204	39

Table 3.2 Examples of 1994 High and Low Population Densities in the United States (U.S. Census Bureau, 1994)

Place	People/sq. mi.	Place	People/sq. mi.
New York, NY	52432	Lake & Peninsula, AK	.1
Kings, NY	32428	North Slope, AK	.1
Bronx, NY	28443	Loving, TX	.2
San Francisco, CA	15609	Harding, NM	.5

Figure 3.1 Population Density, Summers County, West Virginia (cgm, 2 K)

In 1836, there still were no communities in the study area, although Peterstown and Red Sulphur Springs are still shown near its boundaries. The Giles, Fayette and Kanawha Turnpike shows up clearly crossing the New and Bluestone Rivers near the mouth of the Bluestone River and proceeding toward Glade Creek in Raleigh County, West Virginia (Young, 1836). Community development in the study area is summarized in Table 3.3. The total number of communities in the study area are: 1876 - 4; 1925 - 19; 1942 - 16; 1953 - 12; 1995 - 7.

The community development and abandonment pattern in the study area follows the general population trend of Summers County. According to this community pattern, the settlement pattern of the study area seems to have been a scattered rural population prior to road improvements (the turnpikes of the 1830's -1850's), river channel improvements (1870's - 1880's) and the arrival of the railroad in Summers County (1870's). After transportation improvements were made, the population in the study area tended to form small clusters (communities or villages) at nodes in the transportation network. Hinton is the only place in Summers County that could be said to be an urban area and it lies outside the study area. The communities in the study area were small, ranging from about a half a dozen households up to thirty to fifty households (White, 1925). It would be expected that the cemetery siting patterns would reflect these local changes in population densities in the study area as well as local changes in ease of transport.

Table 3.4 and Figure 3.2 summarize post office establishment and closure in the study area.

Figure 3.2 Post Office Openings and Closures in Study Area [po.cgm, 5 K]

Table 3.3 Community development summary of study area.

1876	*1925*	*1942*	*1953*	*1995*
Mercer Salt Works	*Mercer Salt Works*			
Crumps Bottom	*Crumps Bottom*	*Crumps Bottom*		
Indian Mills	*Indian Mills*	*Indian Mills*	*Indian Mills*	*Indian Mills*
Pack s Ferry	*Pack s Ferry*			
	Lovern	*Lovern*	*Lovern*	
	Neponset	*Neponset*	*Neponset*	
	Mandeville	*Mandeville*	*Mandeville*	*Mandeville*
	Lick Creek	*Lick Creek*	*Lick Creek*	*Lick Creek*
	Tophet	*Tophet*	*Tophet*	
	Carew		*Carew*	
	Pipestem	*Pipestem*	*Pipestem*	*Pipestem*
	Farley	*Farley*	*Farley*	
	True	*True*		*True*
	Lilly	*Lilly*		
	Bertha	*Bertha*	*Bertha*	
	Warford	*Warford*		
	Junta	*Junta*		
	Seminole	*Seminole*	*Seminole*	*Seminole*
	Buck	*Buck*	*Buck*	*Buck*

Table 3.4 Post Office Openings and Closures in the Study Area (Summers County Historical Society, 1984).

Post Office	Established	Closed	Mail forwarded to
Bertha	1908	1932	Warford
Buck	1884	1939	Bellepoint
Carew	1905	1913	Mercer Salt Works
Crumps Bottom	1849	1948	
Indian Mills	1874	1968	Forest Hill
Junta	1902	1936	Indian Mills
Lick Creek	1910	1955	Pipestem
Mandeville	1901	1946	
Mercer Salt Works	1851	1914	
Neponset	1890	1940	Bozoo
Pack s Ferry	1840	1924	Bellepoint
Pipestem	1870	still active	
True	1889	still active	
Warford	1886	1947	Hinton
Tophet	1889	1948	
Lilly	1892	1935	True

Chapter 4: Cemeteries

Cemeteries once established, due to their practically inviolate legal status (Sloane, 1991), usually remain relatively resistant to land use change. As a result of this static land usage property, cemeteries can provide a window into the past and an avenue for reconstructing historical landscapes (Meyer, 1989). Physical evidence exists in the cemeteries examined for this study that indicate that over time, in response to economic and transportation system changes, burial customs changed correspondingly. For example, as transportation networks improved and more people began traveling away from home to pursue their livelihoods, funeral and burial preparations ceased to be performed by family members or neighbors and were performed, instead, by paid professionals. Also, as transportation technology and economic conditions improved, the grave site materials tended to change from lighter, less durable materials (wooden caskets, wooden or field stone grave markers) to heavier, more durable materials (concrete burial vaults and marble gravestones). Grave marker style and size also tended to become larger as transportation within the study area improved, as well as transportation improvements into and out of the study area.

There is also evidence that cemetery site selection, historically, was influenced by settlement pattern, local terrain attributes, transportation system quality and mode, cultural beliefs and economic constraints. Cemetery site selection is often rooted in regional social and cultural customs. The availability of land, types of social cohesion within communities, distance from settlement centers (cities, towns or villages), quality of transportation routes, ethnic makeup of the immediate community, and available modes of transport all have some influence upon customs related to the handling of the dead and burial practices.

It is important to note that the dead are generally treated differently in America than in many other parts of the world where land is at a premium. In more densely populated areas, temporary interment and cremation are more common. If interment occurs, its duration is typically one to one and one half years with removal of the skeleton to a mass bone depository, allowing the burial space to be reused. In France and northern Germany the cemeteries tend to be located in accordance with the main settlement pattern, not in an isolated position on the highest elevation in local relief as is commonly found in rural West Virginia. In rural America, the dead are more likely to be interred in what is viewed as a permanent burial site; although it must be remarked that the cremation rate is currently increasing among this portion of the American population. In New England and western Pennsylvania, the preferred type of cemetery site has been the hilltop (Hannon, 1989). In addition to hilltop sites, New England cemeteries are likely to be in a churchyard or village (Kull, 1975). In urban America, the dead are likely to be cremated or interred in a high-rise mausoleum, which makes more efficient use of extremely valuable land surface than does traditional interment (Weekend Edition, 1997).

Various social scientists have developed graveyard or cemetery classifications, one of the most comprehensive being that of Sloane (Table 4.1).

A more defined cemetery subclass is that of the "Upland South Folk Cemetery Complex." This subclass is characterized by hilltop location, scraped ground, mounded graves, east-west grave orientation, creative decorations expressing the art of 'making do,' preferred species of vegetation, and the use of grave shelters (Jeane, 1989).

In Central Appalachia, family cemeteries are usually located on a hill, mountain top, or a point of land higher than the immediate surroundings. Selections of sites for family cemeteries often seem related to specific topographic features of the family's available property. Burial on a higher elevation prevented water from seeping into the graves, placed the deceased closer to heaven and provided a better view for visitors to the cemetery. Mounding of the graves was also thought to prevent water from entering the grave and the top soil was removed in some cemeteries to discourage growth of vegetation. In the era before gasoline-powered engines or lawn equipment, scraping of the top soil made cemetery maintenance easier.

It is also interesting to note, that as the technology for cemetery maintenance moved from a hand-tool, labor-intensive mode to gasoline engine powered upkeep equipment, gravemarker style tended to move from a upright gravemarker style to a flush-with-the-ground style marker in the commercial memorial park (Hannon, 1989).

Historically, the earliest Appalachian pioneers often chose to leave graves unmarked due to a fear that Native Americans would disinter and desecrate the bodies of the deceased. Wooden grave markers or field stones were often used after permanent settlement was established. Inscriptions on field stones from this period are rare. This could be due to two factors: (1) no inscriptions were put on the field stones, perhaps because the pioneer could not read or write; and (2) inscriptions were put on the field stone markers, but have since worn off the stone's surface due to weather effects.

In Central Appalachia, before transportation infrastructure improvements and extensive industrialization occurred, people tended to live in extended families. A person growing up during this early era was not likely to pass through childhood without personally witnessing the deaths of several family members. Death commonly occurred in the home with relatives, friends and family members attending and the deceased was prepared for burial by the family and/or neighbors. The deceased remained in the home until interment, which also was performed by family and friends. From one view point, Appalachian mountain culture during this era practically revolved around death (Crissman, 1994).

Table 4.1 Cemetery classification table (Sloane, 1991)

Name	Period	Design	Location	Grave Marker Style	Grave Marker Material	Primary Distinction
Frontier	17th -20th century	None	Site of Death	Simple or no marker	wood, stone	Isolated; no design
Domestic or Family Graveyard	17th - 20th century	Geometric	Farm field	Some icono-graphic markers, if any	wood, stone	Small, family owned; functional design
Church-yard	17th - 20th century	Geometric or formal garden	Next to church	Artistic, icono-graphic markers, if any	wood, stone, slate	Religious ownership, functional design
Potters Field	17th - 20th century	Geometric	City borders	Plain, if any	wood, stone	Public ownership
Town/City Cemetery	17th - 20th century	Formal garden	City borders	3-D markers, sculptures	stone, marble	Family or govern-ment owned
Rural Cemetery	1831 - 1870	Natural garden	Suburb	3-D markers, sculptures	marble, granite	Private ownership
Lawn-Park Cemetery	1855 - 1920s	Pastoral, park-like	Suburb	3-D markers, close to ground	granite, stone, bronze	Entrepren-eurial, mausoleum
Memorial Park	1917 - present	Pastoral, suburban	Suburb	Flush to ground	bronze, marble, granite	Entrepren-eurial, suburban

As industrialization and transportation improvements encroached upon Central Appalachia, deaths of adult males increasingly tended to occur away from home and preparation of the dead and their burial became commercial enterprises. As the separation between the familial handling of their dead became more pronounced, interment farther away from the home in a perpetual-care, easy-access cemetery also became more common. Also, families tended to bring in professionals (physicians) to tend their sick and dying, creating an additional social distance between the healthy living and the sick and dying. Interestingly, during this period of industrialization and ready transportation, family cemeteries began to be used less often and to suffer from some maintenance negligence (Jackson and Vergara, 1989). This decrease in personal involvement in relatives' deaths seems to correspond with a decrease in use of family cemeteries and their maintenance.

Early Burials in the Study Area

The earliest recorded deaths in the study area were those of three Native Americans killed at the Mouth of Indian Creek by Capt. Audley Paul and his militia unit in 1763. It is not stated for certain that their bodies were buried.

The earliest recorded death of a Caucasian in the study area was that of a person named Shockley, killed by Native Americans on the hill bearing his name in the Pipestem District in 1774. An unnamed woman was killed by Native Americans on Crump's (then Culbertson's) Bottom at approximately the same time (Johnston, 1906). Steel Lafferty was killed by Native Americans and buried near the mouth of Indian Creek in 1780 (Morton, 1908).

The following is a description of a death and burial which took place in 1823, a few decades after permanent settlement had taken place:

> In 1823, Daniel Cook died from an injury he got from a fall. He was climbing, his hand slipped and he fell with his stomach across the fence, receiving internal injuries; and resulting in death a few days later. His funeral took place at this home on the south bank of the New River, Summers County, WV. The remains were taken about a mile up the river in a boat to the cemetery, which was on the opposite side of the river. The funeral procession walked to the ferry about forty rods from the house, just below the falls. The transportation took considerable time, as the procession was about a mile long. As they proceeded to the North bank of the river, the remains of Daniel Cook floated in a boat on the broad, silvery surface of New River to his last resting place. He was lowered into the vault in the presence of his bereaved family and a large circle of friends (Cook, 1883).

Daniel Cook's home stood near Bullfalls at the mouth of Tom's Run (Cook, 1883). He was probably buried in the Buffalo Cemetery, which was relocated before construction of the Bluestone Dam to the Indian Mills Cemetery.

Chapter 5: Methodology

Study Area

The study area lies in the southern portion of Summers County, West Virginia (Figure 5.1). The northern boundary of the study area runs on an east-west line with the Bluestone Dam, the northeast side of the study area runs parallel to the New River at a distance of three miles to the county line and down to the southern tip, the northwest side of the study area runs parallel to the Bluestone River at a distance of one mile to the county border and down the county line to the southern tip of the county. The study area has an irregular pentagon shape. Twenty-one miles of the New River and eleven miles of the Bluestone River serpentine through the study area. The area contains approximately one hundred eleven square miles or two hundred ninety square kilometers.

Figure 5.1 Study Area in Summers County, West Virginia [wv.cgm, 16 K]

The terrain is basically irregular or rugged with the lowest elevation being 1410 feet or 430 meters (the level of Bluestone Lake) and the highest elevation being 2904 feet or 885 meters on a peak on Wolf Creek Mountain. The underlying rock base of the study area is predominantly sandstone and shale, with some sedimentary rock with high fossil content being found in Pipestem District. The study area contains numerous mountains, ridges, hollows and valleys. The highest mountain is Wolf Creek Mountain, followed by Pipestem Knob, Tallery Mountain, Bearwallow Mountain and Zion Mountain. Some salient hollows are Four-Mile Hollow, Buffalo Hollow, Frank Meadow Hollow, Fink Hollow, Tony Hollow and Graham Hollow. The valleys are locally known as bottoms with the names Gatliff's or Barker's Bottom, Crump's Bottom (formerly known as Culbertson's or Reid's Bottom) and Caperton's Bottom. Some of the widely known ridges in the study area are River Ridge, Anderson Ridge, Saltwell Ridge, Pilot Ridge, Barton's Ridge and Cave Ridge (Figure 5.2). There are numerous creeks in the study area.

Figure 5.2 Cemeteries in the Bluestone Reservation Area [studarea.gif, 220 K]

Data Collection

Data collection consisted of two phases, field observation of the local roads and cemeteries in the study area and attribute data research through personal interviews with local residents, public records research in Summers County census records, maps drawn at various dates, death, will and deed books, Bluestone Dam Project Corps of Engineers documents, and historical research in regional and local history publications.

U.S.G.S. topographic quadrangles of the study area were used to identify locations of some cemeteries and interviews with knowledgeable local people were used to gain directions to and identification of other cemeteries. The 1953 Corps of Engineers "Bluestone Reservoir Project Cemetery Relocation Index Map" and Bluestone Lake Real Estate Maps were used to locate cemeteries above the high water line in the Bluestone Reservation area.

The field observations of the study area cemeteries collected data on: number of graves in the cemetery, earliest known burial, most recent known burial, an inventory of all inscribed grave markers, number of uninscribed graves markers and type, estimate of unmarked graves, presence or absence of a fence and its state of repair if present, condition of gravemarker setup, and condition of ground maintenance. Some general observations were made about the type of vegetation in the cemeteries, specifically, whether periwinkle was present as a ground cover and presence or absence of flowers or shrubs not native to the area.

Database Generation

The location of each cemetery was recorded using the Universal Transverse Mercator (UTM) projection on U.S.G.S. topographic quadrangles using 1927 datum. The study area is located in UTM zone 17 with position measured in meters.

Elevation data for each cemetery in the study area was obtained through use of Digital Elevation Models (DEMs) for the quadrangles of Hinton, Lerona, Forest Hill, Flat Top, Pipestem, and Peterstown, West Virginia. The DEM for Talcott was not available, so the elevation contour lines from the Talcott United States Geological Survey Topographic Map were digitized on a table digitizer, converted from feet to meters, the sample point distance adjusted to match the other DEMs in GRID in ARC/INFO and later merged with the other study area DEMs in ARC/INFO.

The 1995 West Virginia Department of Highways map of Summers County, West Virginia was used as the base map from which to digitize the roadways, rivers, streams, county boundaries in the study area, Bluestone Reservation boundaries, and cemetery locations. While cemeteries actually occupy area or volume on the earth's surface, they are conceptualized as points in this thesis due to their relatively small size in comparison with the larger areas through which people travel in order to access them. The cemetery access routes or roads are conceptualized as a network or series of vectors. The 1995 roadways were digitized using numeric codes to represent roadway types. The numeric road type codes ranged from 8, representing highways, down to 2, representing an impassable road. The 1925 Summers County West Virginia map by I. C. White was used as the base map from which to digitize the 1925 roadways (White, 1925). The 1925 map contained only two road types: concrete-surface and plain roads. Since only the plain road type occurred in the study area, no codes were used in digitizing the roads from this map.

The field observations of cemetery condition and accessibility were initially grouped as condition and access ratings. Grave stone type was the category used to record presence, absence and type of grave marker. Fence was used to record the presence, absence or type of fence. Grave stone setup was used to record the condition of the grave marker installation; in short, whether the stones were level, upright, broken or fallen off their bases. The ground category was used to rate the condition of the land surface in the cemetery, in other words, whether the cemetery had been kept clear of undesirable vegetation and showed evidence of care or maintenance. The four rating categories were then summed for each cemetery to arrive at a composite cemetery condition score. Each score was then divided by the maximum possible condition score to convert it to a percentage. After further consideration, it was decided that the grave stone type category reflected the economic status of the persons buried in the cemetery instead of reflecting how well the cemetery was maintained. Some grave markers made from native stone were as neatly set up as some elaborate commercial marble or granite grave markers, the marble and granite grave markers being beyond the economic means of some families. The attribute of primary interest was the evidence of the amount of maintenance dedicated to the cemeteries, so grave stone type was dropped from the cemetery condition rating score. The composite cemetery condition score was recalculated according to the following formula: Fence + Ground + Gs_setup = Compcond; as were the percentage scores. Photographic examples of maintained or abandoned cemeteries can be seen in Figures 5.3, 5.4, and 5.5. The percentage scores were then used to classify each cemetery as being maintained or abandoned (Figure 5.6).

Figure 5.3 Example of abandoned cemetery in study area [jbarton.pdf, 5.4 M]

Figure 5.4 Example of moderately maintained cemetery in study area [jafarley.pdf, 511 K]

Figure 5.5 Example of maintained cemetery in study area [yancey.pdf, 450 K]

Figure 5.6 Cemetery condition and access roads [condit.gif, 222 K]

The access rating was divided into four categories: distance to the 1995 roadways, access road type, slope of the walking distance from the nearest access road to the cemetery, and roughness or smoothness of the walking distance from the nearest access road to the cemetery. The four rating categories were then calculated for each cemetery to get a composite cemetery access score according to the following formula: (Rdrate + Surface) - Sloprate - Disrate = Compacc. Each compacc score was then divided by the maximum possible accessibility score to convert it to a percentage.

In addition to cemetery condition and accessibility information, data were collected on the number of graves in the cemetery, the earliest known burial, and the most recent known burial. The earliest known burial (ekb) and the most recent known burial (mrkb) were used to calculate three time attributes of each of the cemeteries: age (1997 - ekb), longevity (mrkb-ekb), and time span since last burial (diff: 1997 - mrkb). In order to obtain a truer picture of the historical cemetery site and utilization patterns, the cemeteries which were relocated in preparation for construction of the Bluestone Dam were added to the cemetery list. The data for the original cemetery locations and burial records were taken from the detailed Corps of Engineers records of the cemetery relocations.

GIS Analysis

Since most of the physical data being considered in this thesis were points and lines with associated attributes, ARC\INFO was selected as the GIS analysis tool. Also, since seven DEM's were merged together as part of the GIS analysis, ARC/INFO was chosen since it has the capacity to handle large amounts of spatial data.

Coverages were built in ARC/INFO from the digitized data for each of the following layers: rivers, 1995 highways, county boundaries, 1925 highways, streams, Bluestone Reservation boundaries, and cemeteries.

The 1925 roadway data set had to be reprojected in ARC/INFO in order to be comparable to the 1995 data set. This adjustment was necessary due to a difference in mapping projection and datum used in the 1925 and 1995 maps. The PROJECTION macro had to be run twice, once to adjust for the projection difference and once for the datum difference.

Lattice files were built from the DEMs and from the digitized elevation contour lines from the Talcott quadrangle. These elevation lattice files were merged in preparation for slope analysis of the walking distance from the nearest access road to the cemetery. The NEAR function was used to measure the distance from each cemetery to the nearest 1995 road, 1925 road and stream. The slope of the walking distance from the nearest road to the cemetery was calculated and categorized into four slope categories. The combination of distance from topographic features and elevation data for the cemeteries derived from the GIS analysis provided the spatial information necessary to examine differences in cemetery site selection and utilization patterns.

Data Analysis

Spearman's correlation coefficient is a nonparametric statistic and therefore inherently practical when comparing datasets with normal or nonnormal distributions (Rodriguez, 1996). The Spearman correlation coefficient was utilized to check correlation between cemetery condition and accessibility ratings, the hypothesis being that ease of access would be positively correlated with good cemetery condition.

The cemeteries were grouped into clusters based upon the three time variables: age, longevity and time span since last burial. The number of time variable clusters was selected in order to parallel historic transportation and population change periods as closely as possible. The geophysical attributes associated with the time-based cemetery groups were then examined. The results of this analysis are discussed in Chapter 6.

Chapter 6: Results and Summary

Cemetery Condition and Accessibility

The Spearman correlation coefficient for the relationship between cemetery condition and accessibility in the study area was 0.6974. This correlation is not sufficient to indicate that there is a statistically significant positive relationship between cemetery accessibility and condition. However, the correlation is greater than could be expected by chance. The lack of strong correlation probably indicates that the relationship between cemetery accessibility and cemetery condition involves more than simple physical ease of access to the cemetery (Figure 5.6). This is consistent with previous research that links cemetery attributes to socio-cultural ties. Regional or local socio-cultural relationship patterns are probably influenced by topography, especially when it possesses features which inhibit transportation or other crucial infrastructure linkages.

Since there is not a simple explanation for the maintenance and continued use of some cemeteries and the abandonment of other cemeteries, additional insight into the relationship of people to land viewed through the window of cemeteries will be examined next. First, a look at some basic numeric summary cemetery attribute data can be gained from consulting Table 6.1.

Table 6.1 Descriptive Summary of Key Cemetery Attributes

Variable	Mean	Std. Dev.	Minimum	Maximum	Label
No_grave	32	58	1	426	Number of graves
Diff	47	39	0	160	Time since last burial
Long	57	43	0	165	Longevity of cemetery
Age	104	35	4	197	Age of cemetery
Di25tord	155	135	2	615	Distance to 1925 road
Di95tord	229	243	10	1227	Distance to 1995 road
Elevm	643	120	436	832	Elevation in meters
Ekb	1892	35	1800	1993	Earliest known burial
Mrkb	1950	39	1837	1997	Most recent known burial

One question of interest is that of cemetery site selection and how this relates to settlement patterns and transportation networks and modality. In order to examine this issue, the age time variable was clustered into five clusters using the k-means algorithm. The first cluster includes cemeteries sited between 1800 and 1849; the second cluster covers cemeteries sited between 1850 and 1880; the third cluster includes cemeteries sited between 1881 and 1908; the fourth cluster covers cemeteries sited between 1909 and 1953; and the fifth cluster includes cemeteries sited in 1954 to the present (Figure 6.1). This clustering provided the most siting information detail without unnecessary cluster iterations which added no additional meaningful information. It also approximates the population demographics derived from the census data.

Figure 6.1   Cemetery site by time strata [oldcem.gif, 206 K]

The first cluster could be said to represent the early permanent settlement period. In Chapter 2, it was noted that transportation was predominantly on foot, horse or ox drawn sled, or by pack animal. There was also some water transport during this period since Pack's Ferry seems to have been established by 1812 (Morton, 1916). The following fifteen cemeteries listed by name and ID number are members of this cluster: Low Gap 12, Josiah Meador 20, Huffman 129, Jeremiah I. Meadows 134, Brown 136, Rocky Mt. 264, Jordon Noble 522, Haynes R3, Unnamed R5, Buffalo R8, Unnamed R11, Caperton R14, Walker R15, Halstead R20 and Lilly R23. The cemeteries with "R" in front of the ID number were relocated in preparation for construction of the Bluestone Dam, but are included here since their original site is of interest. The average elevation of these cemeteries is 530 meters (Table 6.1). All of the cemeteries except Low Gap 12, Jeremiah I. Meadows 134, Huffman 129 and Rocky Mt 264 were located on river or stream bottoms on slight rises of land immediately adjacent to the stream plane. The Low Gap 12 cemetery is located at a low gap in Wolf Creek Mountain which probably was a crossing point for traffic from the New River Valley to Little Wolf Creek Valley. It is known that during the Revolutionary War Indian scouts crossed from the New River area over to Little Wolf Creek near Low Gap while on patrol (Keller, 1997). Also, the immediate river and creek bottoms were settled in the late 1700's. So, it is not surprising to find a cemetery at this spot; which by the way, has a delightful view of the New River Valley. The Jeremiah I. Meadows 134, Huffman 129 and Rocky Mt. 264 cemeteries are on locally prominent points of land near upland farms which were settled in the early 1800's. The rest of the cemeteries in this cluster were in the river and creek bottoms near the various Indian trails and pioneer roads, settlement of the rich bottom lands being attempted in the 1750's by the early Caucasian settlers. The bottom land siting of the remaining eleven cemeteries in this cluster contradicts the findings of Chrisman who studied Appalachian cemeteries in southwest Virginia in the Abington area spanning the same time period, where he found the hilltop cemetery site was found to be preferred. In possible explanation, it can be observed that the terrain in the study area in Summers County, West Virginia is more irregular

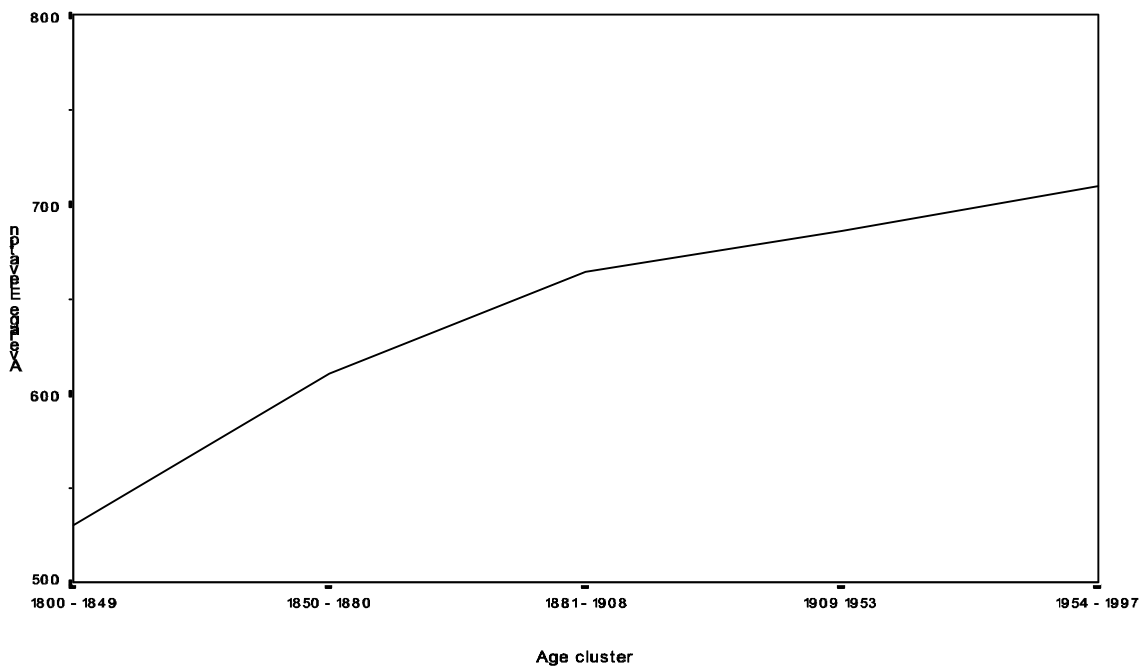

Figure 6.2 Average cemetery site elevation by age cluster (cgm, 2 K)

overall than the terrain in the Abington, Virginia area; albeit this surface irregularity cannot really be measured or modeled accurately using GIS analysis tools with current elevation data base resolutions. This finding illustrates the influence extreme terrain features exert upon socio-cultural behaviors, such as settlement site selection and cemetery siting.

In support of Chrisman's findings of hilltop cemetery site preference, the remaining four cemetery age clusters demonstrate an increasing tendency toward hill or mountain top cemetery siting. The second age cluster beginning with 1850 through 1880 had an average elevation of 611 meters; the third cluster an average elevation of 664 meters; the fourth cluster an average elevation of 686 meters; and the fifth cluster had an average elevation of 710 meters (Figure 6.2). It is probable that as the quality or ease of transportation increased in the study area, the average distance of transport of the deceased to a cemetery tended to increase as well. For example, Daniel Cook's body was transported a mile on the New River in 1823 for burial. Persons who did not have ready access to ease of bulk transport in water vessels were carried much shorter distances on land to a burial site. For instance, at the Saunders 5 cemetery on Wolf Creek Mountain, the maximum distance a body was transported for burial was 1200 feet in 1863 (Rogers, 1976), the minimum distance was 1000 feet in 1862 (Summers County, West Virginia Historical Society, 1996). These examples indicate that the overall physical effort required to transport and inter a corpse has an influence upon burial site selection. Also, the practice of embalming, which became widely used in the early 1900's in this area, tended to extend the period of time between death and burial, which implies the possibility of transporting the deceased greater distances for burial or other disposition. Currently, it is not uncommon for bodies to be shipped out of state for burial or other disposal practices.

Another item of interest is the relationship between geophysical features and the cemetery time variable, longevity, or the time span a cemetery has been used. The cemeteries were sorted into five clusters based upon the longevity time variable. The cemeteries which have been in use the longest tend to have a greater number of graves in them. Additionally, the cemeteries which were in use the shorter span of time tended to be less well kept. The cemeteries in use the longest periods of time were an average of twenty-five meters from both the 1995 and 1925 roads. Whereas, the cemeteries in use the shortest time period were an average of 175 meters from the 1925 roads and 285 meters from the 1995 roads. This finding illuminates in further detail the relationship between proximity to a road and continued upkeep and use of a cemetery.

The third cemetery time variable used in this study is time span since last burial (diff). The question of interest is, once again, are there differences in geophysical cemetery attributes between the different clusters of time spans since the last burial among the cemeteries in the study area? The cemeteries were grouped into five clusters based upon the "diff" time variable. The cluster of cemeteries which have been out of use the longest length of time tended to not be kept up well (compcond = .58), had a lower average number of burials in them (no_graves = 7), and had an average elevation of 518 meters. The cluster of cemeteries which are still in use, on the other hand, tended to be kept up (compcond = 2.51), had a larger average number of burials (no_graves = 63), and had an average elevation of 719 meters. What is especially interesting is that the cemeteries out of use the longest time span were an average of 132 meters from the nearest access road, while the cemeteries still in use are an average of 132.5 meters from the nearest access road. This indicates that there are other variables not examined in this study which have a measurable impact upon cemetery upkeep and usage.

One additional example implies attributes which may be worthy of future study. The Pleasant Farley 307 and James Allen Farley 306 cemeteries lie on benches on Bearwallow Mountain across the Bluestone Gorge across the Bluestone from the Canyon Rim Center in Pipestem State Park. They are accessible by hiking, horseback riding and four-wheel-drive vehicle. The nearest "good" access road is a distance of about one-half mile from the cemeteries. If a simple linear relationship existed between cemetery accessibility and upkeep, it would be predicted that the cemeteries would not be maintained, but would be falling into abandoned condition. Contrary to this prediction, the Pleasant Farley (307) Cemetery is especially well kept. Living members of the kinship group buried in this cemetery live at the top of Bearwallow Mountain, about one-half mile distant. They haul their maintenance equipment down the mountain side in a four-wheel-drive vehicle regularly to maintain the cemetery, which is still in use subsequent to the family's taking the park service to court to reestablish their right to bury their deceased relatives at this site. This example clearly illustrates the impact a family's ties to the land has upon cemetery use and upkeep.

Summary

Cemeteries are an expression of culture and social ties. In this study, some identification of how cemetery site selection reflects cultural response to terrain, transportation and settlement networks is presented. The development of culture in the southern West Virginia mountains was influenced by the culture the settlers brought into the region as well as changes which occurred in the local culture. These cultural changes developed in response to the rugged terrain and the relative isolation induced by the early difficulty of travel. There is evidence that as transport and settlement networks change, the overall pattern of cemetery upkeep and continued usage reflects these changes. Maintenance or abandonment of family cemeteries in rural southern West Virginia is related to associated families' "ties to the land" being maintained or broken.

The prevalence of family cemeteries in rural southern West Virginia is partially explained by the low population density and relatively low land prices. Since cemeteries, due to their special land use status provide a window to the past, a detailed analysis of spatial patterns of cemetery maintenance, size, grave marker type and style, and time span usage patterns can be done to obtain a viewpoint of local or regional cultural development. Using time clustering of cemetery data in GIS analysis, it could be observed that interments in older cemeteries tended to be transported shorter distances. Further inquiry into this observation revealed that prior to the development of modern road networks in the study area, travel and transportation were more time consuming and physically difficult. Poor quality of the early road network in the study area resulted in a tendency for family cemeteries to be located near family residences. Cemeteries provide a measurable, concrete focal point of research through which the more abstract concept of culture can be examined.

The GIS analysis tools were invaluable in developing and analyzing geophysical data and the spatial patterns of associated cemetery attribute data. For example, by using GIS analysis tools, measurements could be made easily of distance between a cemetery and the nearest access road. In addition, the quality of the access road and slope of the walking distance to the cemetery could be coded into the GIS data to arrive at an accessibility rating. Without the availability of the GIS analysis tools, this important aspect of this research project would have been very difficult, if not practically impossible, to complete. There is a positive relationship between ease of accessibility and level of cemetery maintenance. This relationship is not a simple one, however; the existence or absence of family ties to the land can result in a relatively inaccessible cemetery being maintained or a relatively accessible cemetery being abandoned.

Another interesting finding of this study is the tendency for the older cemeteries to be located near stream bottoms. Cemeteries sited more recently tended to be located at progressively higher elevations. Cemetery siting patterns in the study area reflected settlement patterns. Where sufficient historical documentation can be found, GIS analysis can be a most effective tool in historical research as well as, of course, current research.

Suggestions for Further Study

The data from this study suggest that the relationship among topography, accessibility, settlement patterns, cemetery siting, upkeep and continued usage is not a simple, but rather a complex relationship. This study suggests that there is a geophysical aspect to culture which can be explored using GIS analysis tools.

On an anthropological level, an issue of further study might be kinship group settlement, settlement pattern change and burial patterns. The examples relating family ties to the land remaining intact and continued maintenance of family cemeteries seem worthy of further study. Also, on a broader scale, the relationship between population density and body disposal customs should provide a rich field of analysis. For example, it could be predicted that after population density increases beyond a certain level, family cemeteries would not be the predominant interment format.

There is some suggestion that the existence and spatial patterns of established communities is related to the spatial patterns of cemetery sites. The relatively transient existence of some of the communities in the study area, the lack of development of a local commerce or community center, probably is related to the same factors which resulted in the numerous, small family cemeteries in the study area. This facet of study relating settlement, transportation, and commerce patterns to cemetery type and siting patterns should be a fruitful area of examination.

Cemeteries can be analyzed at different scales, ranging from analysis of a particular cemetery's layout, grave arrangement and orientation, and grave marker type and style to a regional or national analysis of cemetery type and siting patterns. Cemeteries, because of their relatively protected status and because they reflect the culture of the families of their inhabitants in so many ways, are productive and fascinating research focal points.

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Appendix A: Cemetery Data

ID	NAME	NO_GRAVE	EKB	MRKB	ELEVM	COMPCOND	COMPACC
2	J S Meadows	3	1917	1932	510.54	1.67	0.75
5	Saunders	9	1862	1989	670.56	2.67	0.63
6	Barton	106	1862	1996	635.508	1.67	0.75
7	Mann	2	1895	1900	466.344	1.67	0.75
10	Shanklins Ferry	18	1885	1916	441.96	1.00	0.50
12	Low Gap	154	1838	1993	725.424	2.00	0.75
13	Keaton	75	1894	1995	786.384	2.33	0.75
16	Lane	13	1918	1962	670.56	1.00	0.38
19	Wm. Lilly	21	1865	1943	493.776	0.83	0.25
20	Josiah Meador	30	1845	1947	466.344	1.00	0.50
42	Neely	48	1882	1993	786.384	2.83	0.75
52	Ett Willey	12	1915	1965	792.48	2.33	0.75
69	Lucas	30	1902	1993	707.136	2.33	0.25
70	Doc Tickle	11	1921	1980	743.712	2.00	0.63
71	Toll Ellison	5	1921	1964	734.568	1.50	0.63
72	Trivett	4	1942	1968	694.944	0.67	0.50
73	Edwards	18	1898	1962	740.664	2.83	0.63
74	W.R. Farmer	8	1917	1947	746.76	1.00	0.50
90	Saunders (2)	15	1880	1995	743.712	2.33	0.63
92	C G Meador	1	1939	1939	545.592	1.50	0.25
93	Taylor/Skagg	13	1867	1911	829.056	1.67	0.63
117	Indian Mills	426	1831	1996	501.396	2.67	0.75
118	Wiseman	8	1900	1923	728.472	2.17	0.75
119	Howard	6	1884	1917	548.64	1.17	0.25
120	Hill	36	1897	1990	807.72	2.83	0.75
129	Huffman	265	1842	1995	592.836	2.83	0.75
134	Jere. I Meador	53	1843	1912	685.8	1.17	0.63
136	Brown(3)	6	1832	1879	481.584	0.67	0.63
141	Green Roles	2	1864	1913	576.072	1.67	0.63
143	Thompson Chapel	33	1919	1979	597.408	1.50	0.63
144	Neely/Wood	43	1862	1988	708.66	2.33	0.75
145	Brown's Chapel	65	1897	1991	563.88	3.00	0.75

ID	NAME	NO_GRAVE	EKB	MRKB	ELEVM	COMPCOND	COMPACC
146	Lemon	1	1989	1989	682.752	3.00	0.75
148	Harper	10	1930	1981	755.904	2.97	0.75
153	Lark Lilly	18	1893	1981	685.8	2.40	0.63
157	Witch's Grave	1		0	688.848	0.33	0.50
158	Roles Chapel	175	1900	1996	678.4848	3.00	0.75
160	J. Giles	1	1863	1863	667.512	0.33	0.63
164	Turner	2	1988	1988	737.616	3.00	0.63
165	Mt Zion	190	1888	1995	729.6912	2.83	0.75
173	Rufus Clark	25	1886	1938	659.892	2.33	0.63
174	J. F. Barton	3	1908	1944	525.78	1.17	0.50
178	Spangler	48	1888	1995	731.52	1.73	0.50
179	Dickenson	18	1898	1927	490.728	1.00	0.25
180	Sandknob	52	1899	1995	746.76	2.93	0.75
185	L.M. Neely	105	1863	1990	536.448	2.83	0.75
193	Hartwell	16	1870	1984	806.196	2.33	0.70
206	Jim Thompson	4	1898	1928	512.064	1.50	0.63
216	Montgomery	27	1881	1975	734.568	2.83	0.75
222	Lee Meadows	15	1888	1911	609.6	0.50	
259	Levi A Neely	11	1884	1995	794.004	2.93	0.75
263	John Lemon	2	1910	1914	757.428	2.23	0.75
264	Rocky Mt	280	1847	1996	783.336	2.83	0.75
265	Martin (1)	4		0	594.36	0.67	0.63
266	Walker Slave	9	1853	1853	457.2	0.67	0.50
270	Pettrey	14	1922	1997	725.424	2.97	0.63
271	Drewry Farley	20	1930	1936	734.568	3.00	0.75
272	Tom Lilly	12	1950	1994	734.568	3.00	0.75
273	Everett Farley	57	1902	1995	792.48	3.00	0.75
274	Ryan	12	1881	1939	586.74	1.83	0.50
275	Til Walker	3	1910	1922	694.944	1.00	0.38
280	Ellison	248	1887	1989	734.568	2.90	0.63
285	Laurence	6	1895	1907	621.792	1.67	0.38
286	Rev Farley	33	1923	1994	813.816	2.50	0.75
287	John P Lilly	70	1888	1930	697.992	0.40	0.38
288	Noble	4	1897	1914	658.368	0.93	0.25
291	Everett Cook	50	1875	1985	710.184	2.50	0.63
296	Pauper	40		0	496.824	0.33	0.50
306	Allen Farley	5	1904	1945	684.276	1.67	0.63

ID	NAME	NO_GRAVE	EKB	MRKB	ELEVM	COMPCOND	COMPACC
307	Pleasant Farley	20	1916	1993	685.8	2.97	0.75
308	Lizzie Farley	1	1904	1904	829.056	1.67	0.75
309	Foley	3	1938	1938	832.104	2.67	0.63
310	Law	6	1938	1952	755.904	2.00	0.75
311	Henry Meador	16	1912	1912	707.136	1.00	0.63
312	Nichols	30	1889	1891	694.944	1.33	0.38
313	Sunnyfields	32	1924	1943	586.74	0.67	0.25
314	Buttermilk Neely	21	1851	1896	743.712	1.17	0.63
316	Tom Bolen	4	1920	1932	685.8	0.67	0.50
321	Shoot. Bob Lilly	31	1893	1987	807.72	2.33	0.63
324	Harvey/Canterberry	8	1913	1977	816.864	1.90	0.63
326	Hartwell/Cales	116	1861	1994	807.72	2.07	0.63
327	Ball	7	1951	1988	818.388	3.00	0.75
330	John Cooper	1	1934	1934	682.752	2.17	0.50
345	Yancey	12	1926	1993	716.28	2.60	0.75
347	Jahu Vest	41	1897	1994	708.66	2.83	0.63
348	Frank Farley	24	1892	1990	795.528	1.83	0.50
351	Houchins	50	1883	1994	771.144	2.67	0.63
357	Jubal Barton	9	1883	1899	684.276	1.00	0.25
358	Noah Pack	2	1993	1993	740.664	2.33	0.63
359	Roach	3	1914	1923	743.712	2.17	0.50
360	Jordon	7	1884	1963	737.616	2.33	0.63
361	Houchins/Winn	72	1875	1988	757.428	2.33	0.63
376	Lonza Lilly	4	1961	1977	694.944	3.00	0.75
392	St. Clair	20	1899	1996	696.468	2.50	0.63
397	Shumate	4	1877	1901	586.74	0.33	0.55
412	Jim Lilly	2	1922	1924	694.944	2.00	0.75
435	King Law	3	1889	1891	731.52	1.00	0.75
437	Reid	4		1904	469.392	0.33	0.55
438	James D Anderson	9	1899	1952	612.648	2.00	0.50
439	Anderson Ridge	19	1893	1973	647.7	2.00	0.50
444	Ball(2)	10	1879	1927	586.74	0.67	0.13
447	Brown Family	4	1863	1911	579.12	1.67	0.63
450	Nelson Farley	46	1851	1967	707.136	2.27	0.63
453	Pomp Eanes	2	1924	1924	524.256	0.33	0.50
454	Allen Farley	24	1911	1993	722.376	2.83	0.75
455	Joel Farley	12	1904	1928	720.852	2.33	0.25

ID	NAME	NO_GRAVE	EKB	MRKB	ELEVM	COMPCOND	COMPACC
456	Jordon Farley	3	1877	1895	774.192	0.33	0.38
458	Ratcliffe	15	1909	1993	722.376	3.00	0.75
461	Wood/Walker	100	1925	1981	614.172	1.50	0.63
471	Hiram Lilly	9	1903	1990	670.56	1.67	0.50
475	Wes Lilly	1		0	743.712	0.67	0.55
494	Thompson	10	1903	1987	707.136	2.50	0.63
498	Williams	7	1860	1895	682.752	1.07	0.50
502	Young	38	1859	1968	719.328	1.17	0.55
505	Afro-American	21		1924	661.416	0.83	
507	Hammond	7	1929	1943	708.66	0.67	0.25
509	Unnamed8	2		0	574.548	0.33	0.13
510	Unnamed9	4		0	609.6	0.00	0.25
511	Allen Clark	9	1902	1925	682.752	1.83	0.50
512	Unnamed10	9	1902	1905	576.072	0.73	0.38
520	Mobley	2	1979	1982	694.944	1.83	0.50
522	Jordon Noble	8	1831	1837	541.02	0.67	0.38
523	Hopkins	5	1887	1941	563.88	3.00	0.63
524	Cook	7	1901	1994	745.236	1.00	0.63
535	Wood	25	1920	1996	746.76	3.00	0.75
R1	Unnamed	1	1924	1924	442		0.00
R2	Flatfield	95	1876	1934	457		0.00
R3	Haynes	99	1834	1927	454		0.00
R4	Unnamed	2	1927	1941	460		0.00
R5	Unnamed	11	1819	1876	445		0.00
R6	Barker	23	1871	1932	445		0.00
R6A	Smith	3	1900	1941	436		0.00
R7	Bullfalls	27	1886	1945	451		0.00
R8	Buffalo	27	1823	1888	451		0.00
R9	Harmon	29	1877	1944	460		0.00
R10	Slave	21		0	454		0.00
R11	Unnamed	22	1826	1905	453		0.00
R12	Unnamed	4	1886	1890	457		0.00
R13	Caperton	36	1816	1899	450		0.00
R14	Walker	15	1831	1887	460		0.00
R15	Halstead	17	1862	1899	460		0.00
R20	Unnamed	4		0	450		0.00
R21	Tolliver Meador	27	1885	1934	442		0.00

ID	NAME	NO_GRAVE	EKB	MRKB	ELEVM	COMPCOND	COMPACC
R22	Lilly	149	1800	1943	460		0.00
R23	Unnamed	1		0	445		0.00
R24	Unnamed	6		0	451		0.00
R30	Peters-Anderson	17	1911	1937	475		0.00

Vita

Rebecca K. Cottle

Rebecca Cottle, a native of Summers County, attended Concord College and earned a B.A. in Psychology in May 1977. She earned a M.S. degree from Radford University in Industrial/Organizational Psychology in 1983. She worked as a supervisor at the Radford Army Ammunition Plant from 1980 to 1995. Rebecca enjoys the guitar, fishing, equestrian sports, studying history and genealogy. In 1994, she became a member of the Summers County Historical Society and served as the associate editor of the Summers County Historical Society 1996 Cemetery Book. She attended Virginia Tech for two years and completed a M.S. in Geography in May, 1997. She is working with the Department of Conservation and Recreation in Richmond, Virginia, on the Tributary Strategies Program. She plans to continue to work with GIS.