"THE ORDERING OF TOWNS"* MASSACHUSETTS BAY COLONY 17th CENTURY LAND STRATEGY

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*Title from the "Winthrop Papers" published by the Massachusetts Historical Society. (Presentation: NEARA 2000 Fall meeting, Devens Inn and Conference Center, Devens, Mass.)

Governor John Winthrop sailed aboard the *Arbella* April 1630 along with some ten other ships. Numerous ships managed to stay together during the crossing, but others left at various

times, foundered or straggled into port on varying dates. The *Mary and John* apparently sailed before the *Arbella* and claimed senior ranking when all had arrived. The port of destination was Salem, Massachusetts while the *Mary and John* arrived at Nantasket Beach at Massachusetts Bay (Boston Harbor), and the group was known as the Dorchester Company. Each ship carried about 100 passengers formed in groups around their favored minister or leader.

Governor Winthrop's writings give us the sense that he had a vision of one central community, but we know that the groups had assumed a certain power and expected to have towns of their own with boundary lines demarking the land, requiring a reasoned mapping. Massachusetts Bay Colony

had been in the planning stage in England for some period of time well before the departure date. The investors and proprietors had organized a complete plan for the sailing operation including food, clothing, shelter and the beginnings of a governmental procedure. They also retained men in London to care for all the needs of the New Englanders.

They also went out of their way to purposely secure the services of a professional engineer, Thomas Graves, who provided a résumé stating his engineering skills as follow:

"I Thomas Graves, by my profession, skillful and experience in the discovery and finding out of iron mines, and also lead, copper, minerals and salt production. Also fortifications of all sorts, according to the nature of the place, in surveying of buildings, and of land, and in measuring of land, and in describing a country by map."

The organizers also considered the need for housing and assembled a senior crew of carpenters to erect accommodations for the settlers who would arrive all at one time. In addition, shipwrights were sent to build several ships for the colony's need for shipping, hoping to avoid the high cost of English shipping rates. All these men had assembled in Salem (1629), one year before the main contingent arrived.

Salem proved disappointing and the settlers quickly began to search for another site in the Boston Harbor area. Acting governor John Endicott, along with engineer Thomas Graves and the group of carpenters, went overland by foot, fording the Mystic River at Medford, then dropping south-

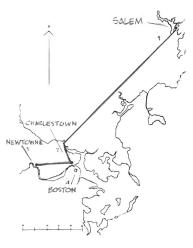


FIGURE 1. OVERLAND ROUTE, SALEM TO CHARLESTOWN

ward to Boston Harbor to a suitable site at what is known as Charlestown (FIGURE1). Charlestown was laid out by Thomas Graves, and the housing was well underway when it was discovered that their spring water was impregnated with salt water. This was of major concern.

As we recall, the early Dorchester group had set off to establish their own town, and another splinter group from the Charlestown settlement broke away to establish their own settlement. This new group moved four miles up the Charles River to a major turn in the river at the area next to the present Mount Auburn Hospital and the Buckingham Brown & Nichols School at an area called Saltonstall or Gerrys Landing. This settlement was made up of 40 families under the

leadership of Sir Richard Saltonstall, and it became known as the "Saltonstall Plantation". Sir Richard returned to England while his sons remained, and the name was later changed by the general court to "Watertown".

It is important to note that there were a handful of men and their families already settled at various locations in Boston Harbor. These were men from the earlier colonization attempt of Robert Gorges, but these men did not return to England when the venture failed. (See: NEARA Journal, Vol. XXXI, No. 2, Winter 1997, "New England 17th Century Land Strategy", H. Morse Payne). William Blackstone of this earlier Gorges group took up residence on Shawmut Peninsula, later named the City of Boston. He offered that there was pure spring water and land available at his site, so the band at Charlestown began to dismantle their housing and relocate in Boston.

This time another question arose, and great concern was expressed that this site was too exposed to the Atlantic Ocean and possible attack by enemy ships. Immediately two separate committees were formed to explore the surrounding wilderness once more for another site. One party ventured north up the Mystic River, while the other went west along the Charles River as far as the falls at Watertown.

Along their return trip they passed the Saltonstall Plantation and continued on until they noticed a small rise of the land on the north side of the river. After exploring this latest site, which elicited a good reaction, they returned to Shawmut to join the others. It was agreed that this would make an ideal location for the settlement. Plans were made for this new site, called Newtowne, later named Cambridge, where Harvard Square now exists.

The Boston settlement was to be abandoned and Newtowne was to be the central town known as the capital of the Bay Colony. But a year later, Boston still had not been abandoned. Instead the occupants continued to build more housing, and the governor settled in Boston on Shawmut Peninsula. The governance of the Colony was shared by both towns, alternating back and forth for some five years before Boston finally became the principal town of the Bay Colony.

We now recognize that some 1,000 colonists

arrived in 1630. This was only the beginning of a massive movement out of England called "The Great Migration", bringing approximately 20,000 passengers over the next 10 years until the English Civil War in 1641.

This set in motion a land management study, required all at once in 1631, for five or six towns. Clusters of housing in Charlestown, Cambridge and Boston had already been created, but this did not encompass all the other land that would be needed for cattle, pasture land, individual farm land, wood lots and so forth.

These demands were on the agenda of the general court as this court would be responsible for the creation of all towns and their boundary lines. This put great pressure on the court and errors were made.

They wrote to the proprietors back in London asking questions related to town planning and received a rather lengthy treatise of an elementary sort that set in motion the basic planning strategy. It is assumed that engineer Thomas Graves helped to develop the basic design, as his contract was for three years' duration. This work from London is now in possession of the Massachusetts Historical Society which published it among the "Winthrop Papers" and titled the work "The Ordering of Towns" (FIGURE 2).

The basic planning strategy suggested by the assistants in London is based on three principles:

1. The town will be 6 miles square, 3 miles in each

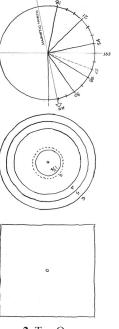


FIGURE 2. THE ORDERING OF TOWNS, FROM "WINTHROP PAPERS"

direction from the meetinghouse at the very center point. (The meetinghouse in Newtowne was located at the corner of Mount Auburn Street and Dunster Street, the south west corner, today, the site of "J. Press" men's clothing shop).

2. "The ordering of towns" is based on concentric rings:

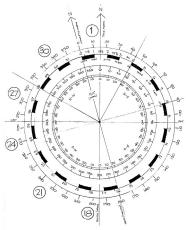
- a. town center to $1\frac{1}{2}$ miles—the town center houses and common fields.
- b. 2 to 4 miles—common lands with no houses beyond.
- c. 4 miles-great estates.
- d. 5 miles-common land.
- e. 6 miles—the periphery. (The houses were huddled about the meetinghouse, based on a square grid of 64 lots. The distance into the wilderness was to be 6 miles from the meetinghouse, but this distance was later extended to 8 miles).

3. The sub-division of land was based on 32 *points* of a circular magnetic compass (a form of measurement used by mariners with each point equaling 11¹/₄ degrees (FIGURE 3)), and with each

point represented by a line radiating out from the meetinghouse at the center.

The system of surveying land was well established in England. The following dates are related to significant dates in surveying history:

1555—Surveying triangulation was established. 1581—Magnetic compass needle utilized in surveying. 1606—Galileo invented the pro-



invented the pro- FIGURE 3. "32" POINT MAGNETIC COMPASS. portional compass.

1608—Dutch scientist invents the telescope. 1625—"Surveyors Manual" published (FIGURE 4).

Practically every man in the colony was capable of working with a compass and served on road surveying teams and fence viewing duty.

The magnetic compass was the principal device used for land surveying. While at sea the true north alignment was observed in the night sky utilizing the polar star. There is a difference (variation) between magnetic north and true

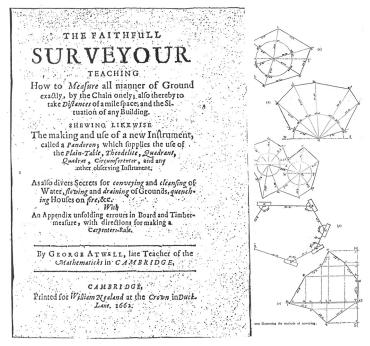


FIGURE 4. "SURVEYORS MANUAL", 1662. DIAGRAMS ILLUSTRATING METHODS OF SURVEYING

north of approximately 10° over a 200 year period. The magnetic polar region is located in northern Canada, above Hudson Bay in the islands area about 1,000 miles southwest of the North Pole.

The surveyors for the Bay Colony employed a system of three points for each division of land radiating out from meetinghouse center point. This system utilized points: 18, 21, 24, 27, 30 and point one. All the lines were set at 3 point intervals except for Watertown which was based on 4 points, creating a great deal of confusion and problems for Cambridge, Watertown's abutting neighbor which ended up with only two points.

The writer had first observed this circular pie-shaped form as a system employed for the sub-division of land on Cape Cod. The Plymouth Colony utilized this method in 1639 when the first three towns were established for Sandwich, Barnstable and Yarmouth, some 9 years after the Cambridge land division system occurred (FIGURE 5). (See: Cape Cod Genealogical Society Bulletin, "Cape Cod Land Strategy", December 1994, p. 183. H. Morse Payne).

The Cape Cod system utilized two points (not three) with a center point in the middle of Cape Cod Bay, and

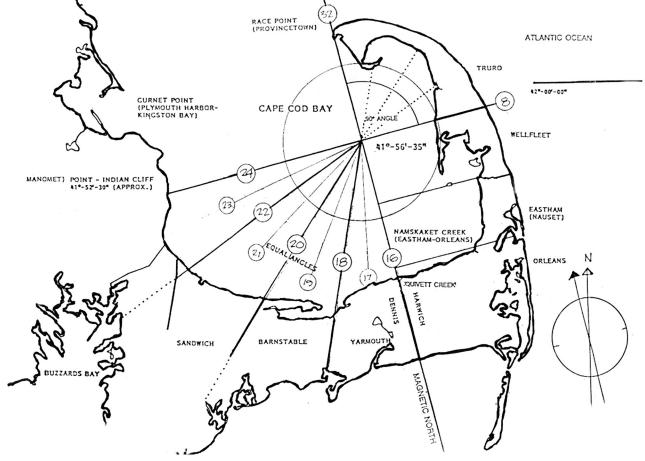


FIGURE 5. MAP, CAPE COD LAND STRATEGY.

each two point division was exactly the same angle as the abutting town. This was discovered in 1980 and has been well received and accepted as a contribution to Cape Cod history, but this made the writer wonder if such a circular form existed elsewhere?

The Cambridge land sub-division was not at all obvious to detect. In the "Bay Colony Records" there were scattered entries related to boundary lines but there was no over-all description of any such system. The best source has been U.S. Geological Survey Maps. The writer assembled a large wall map composed of numerous map segments stretching from eight feet high to over ten feet wide, covering an area over 30 miles west from Boston's waterfront to Worcester County, north and south from Blue Hill to the Old Colony line, and north to Wilmington and Reading.

In time it became apparent that some town lines seemed to be related to some sort of order occurring along sections of short or long runs of stone walls, including certain distinct points and historic markers. This indicates that a logical survey system might exist.

Each distinct point has been visited throughout the system and G.P.S. has been employed at all locations and compared with the U.S. Geological Survey Maps to confirm the exact location and observe firsthand any marker or lengths of stone walls.

The following notations provide a sample of the lines, points, historic notations and markers that were used in this study:

1. The plaque on the east wall of J. Press men's shop in Harvard Square at the junction of Mount Auburn Street and Dunster Street, which was the site of the first meetinghouse.

2. The "Station Tree", the original surveyors' point for the south line of Watertown, now the line between the towns of Natick and Weston, on Winter Street near the Rivers Country Day School.

3. Various walls in short running segments concealed under brush and trees, such as the boundary line between the "Five Fields Community" on the Lexington/Waltham line off Concord Avenue in Lexington.

4. Blue Hill, the highest point in the Boston Region, eleven miles south of Harvard Square, which played a major role in surveying the boundary lines in the earliest period of Boston History. The true north line from the summit of Blue Hill runs through the eastern side of Newtowne.

5. "The Ordering of Towns", published by the Massachusetts Historical Society, an important document related to town planning in the colonial era.



FIGURE 6. MAP, REGION: BOSTON TO CONNECTICUT RIVER

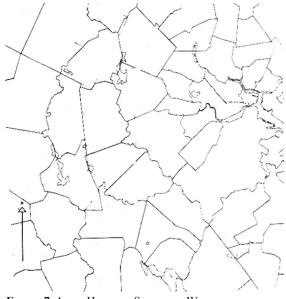


FIGURE 7. AREA, HARVARD SQUARE TO WORCESTER

6. "The Massachusetts Bay Colony Records", a major source consisting of numerous volumes and containing significant court decisions relative to town boundary lines.

The fact that this system was not obvious becomes apparent when one views a map of our existing towns in the regional area (FIGURE 6). Also, another larger scale map of the area west of Boston to Worcester county reveals no obvious system (FIGURE 7). It was not until the discovery of the center point at the meetinghouse at Newtowne, together with the various walls of existing town lines (including points of intersection), that it became apparent that some sort of circular system existed. This took 20 years of research and field inspection to discover how the system worked.

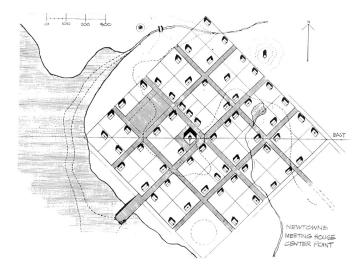


FIGURE 8. NEWTOWNE (CAMBRIDGE) TOWN DESIGN ---CENTER POINT.

Newtowne was designed by Thomas Graves within the time period of his three year contract with the Bay Colony. The town community has been described, streets named, and individual family names identified on specific lots, including the Meetinghouse, the Governor, Lieutenant Governor, the Tavern, etc. This was conceived as a square grid consisting of 64 lots, while four lots in the south east corner were set aside for a fortification at the river which apparently was never constructed (FIGURE 8).

As described, the beginning point of the system was set at the Meetinghouse. All lines were to radiate from the center to specific locations at the eight mile periphery utilizing the points of the magnetic compass. The following notation is from the Bay Colony records:

"Agreed, that Newtowne bounds shall run 8 myles into the country, from their Meetinghouse."

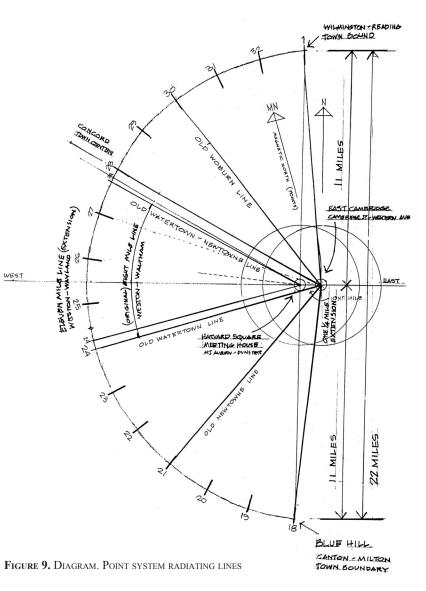
This form must have had an agreeable appearance, with radiating lines continued eight miles into the wilderness making an ideal design. Of course, the surveyors could not produce a circular form in the land, so they connected the ends of the eight mile lines with straight lines as connectors, producing a unique pie shape or fan shape form (FIGURE 9).

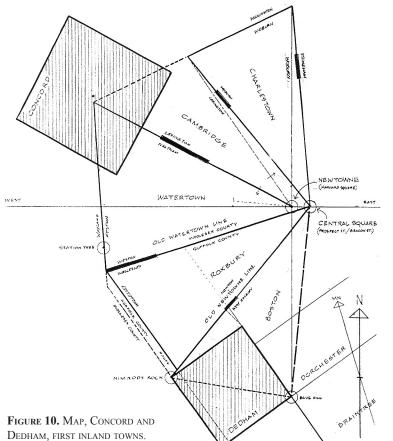
This system had five divisions assigned to the following original towns: Charlestown, Cambridge, Watertown, Roxbury and Boston. It is important to note that all town boundary lines were established under the general court, which must have been pleased by such a remarkable design, yet no overall description or drawing of the original design has been found.

A large group of families arrived in Cambridge in 1633 with their minister Rev. Thomas Hooker. The surveying system had been accepted by the court and the lines were set in place, but the group "find the town too narrow" and "lack of sufficient land". They found all the best sites had been taken, and they had no access to the marsh grass for their cattle.

This group was so provoked that they demanded lands of their own or threatened to leave the Bay Colony. This was of great concern to the Governor and the General Court, and they worked diligently to assemble an adequate amount of land.

Cambridge was the town that suffered the most, with one point less land as compared to the other four towns, resulting in a loss of one-third of their expected allotment.



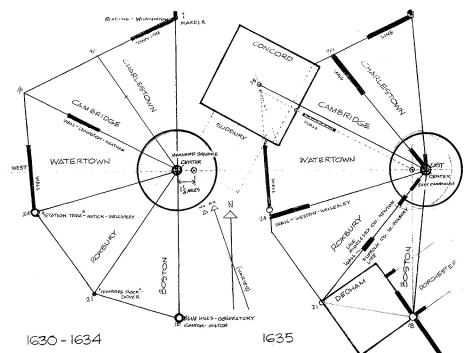


To help solve the problem, the court jumped over the Charles River to an undeveloped area in today's Newton, Allston, Brighton areas, including Roxbury's Muddy River sector from Huntington Avenue to Jamaica Pond. The group was still not satisfied, and with their leader, Rev. Hooker, they left, walking overland to the Connecticut River to establish a new town of their own called Hartford.

The migration surge from Cambridge continued and it became obvious that the originally designed eight mile limit needed to be extended. On July 3, 1635 the General Court created two new towns: Concord in the north sector and Dedham in the south toward Blue Hill (FIGURE 10). Again we see another error, related to the siting of Concord. The General Court positioned a portion of the new town over the town of Watertown. Of course Watertown complained. To appease Watertown, the court assembled a four-mile square of land on the southwest line of Concord. This additional land was the first stage in the creation of the new town of Sudbury.

Because of the lack of land for Cambridge, the General Court advanced a new proposal to move the original center point from the Harvard Square Meetinghouse eastward 11/4 miles into East Cambridge. The writer spent considerable time trying to find the location of this new point located in the most densely populated area of the city boxed in by Cambridge, Windsor, Lincoln and Columbia Streets. This tract forms an urban square city lot (FIGURE 11), with three-decker wood housing throughout the whole area. Through this lot ran a portion of an early road called Webster Avenue but that segment running through the lot has been removed, yet the road continues on both ends of the lot aligned directly on magnetic north. This point is directly east of the Harvard Square location, on the line of equinox sighted both true east and west (FIGURE 12).

The question arose, how did they select this particular spot in such a dense urban setting? A study of the original shore line of Boston Harbor in the colonial period revealed that this whole tract of land was the result of a tremendous landfill operation including



ing of Concord. The General Court FIGURE 11. MAP, "CENTER POINT", RELOCATED TO EAST CAMBRIDGE.

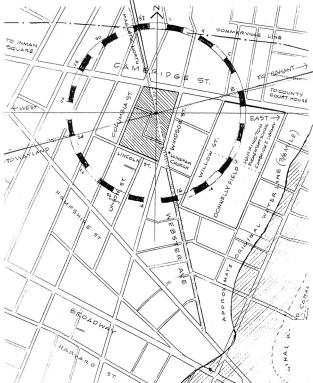


FIGURE 12. EAST CAMBRIDGE, "CENTER POINT" CITY LOT.

Cambridgeport, Central Square and East Cambridge. The study also revealed that the original shoreline ran within three-eighths of a mile from the Webster Avenue site. Thus, they had set the point as far as they could, for the water line was the limit (FIGURE 13).

The following assembly of maps is a sequential study of the historical development related to the settlement of towns west of Harvard Square (numbered in sequence) (FIGURE 14):

1. The basic framework begins at the fixed "point" in Harvard Square. The center, at the Meetinghouse, is the convergence point of the radiating pie-shaped sectors at the southwest corner of Mount Auburn and Dunster Streets. The true north line passed through the east portion of the original square town grid, on line with the summit of Blue Hill eleven miles south of the site. At the summit of Blue Hill is located the original boundary line for the towns of Canton and Milton and the original Indian town of Ponkapog. (Shown in this diagram is Watertown, one of the first towns established).

2. The complete image of the fan-shaped form is apparent with lines radiating from the Meetinghouse for 8 miles. Shown is Watertown's advancement to Cambridge and Charlestown on the north, and south of Watertown is Roxbury and Boston. 3. Concord and Dedham, two of the first inland towns, are registered in the Bay Colony records of the court dated July 3, 1635. Note that both of these new towns align to the fan shaped form.

4. It was expected that the next towns would be located abutting the 8 mile line as were Concord and Dedham but, instead, Lancaster jumped much further outside the fan shaped form by some 30 miles. Yet it was noticed that the surveyors created a right angle of the east line of Lancaster which is established by the new "point" in East Cambridge. Concord received an additional grant abutting Concord's western line called Concord Village, now the existing town of Acton. Also shown, is the town of Sudbury, 4 miles square abutting the south line of Concord which was granted to Watertown for the error in placing the original Concord bounds over Watertown land.

5. Groton appears, first as an 8 mile square abutting the north of Lancaster. Further south is the town of Medfield including land west of the Charles River. Its north line is



FIGURE 13. MAP, BOSTON HARBOR, SHORE LINE, E. CAMBRIDGE SITE

plotted directly east to the summit of Blue Hill. Rev. John Elliot had pleaded the case for the Indians for the establishment of Indian towns, and set the first Indian town at Natick in 1651, just west of Watertown. Still another Indian town was created south of Dedham known as Ponkapog sited to the top of Blue Hill.

6. Seven Indian towns were created under the guidance of Rev. John Elliot. Six of these towns are shown. Each town was sited in a corridor of unclaimed land just west and south of the original fan shaped form. These towns consisted of: Natick, Ponkapog (Canton), Nashoba (Littleton and Acton), Cocoganganset (Marlborough), Magunko (Ashland), and Hassanamest (Grafton). The seventh town, sited at Lowell on the Merrimack River, is not shown. Natick, Nashoba, Cocoganganset, Magunko and Hassanamesit fall under a completely separate system, on a magnetic north line commencing in Little Compton, Rhode Island. This line continues north to Joe English Hill in New Boston, New Hampshire. This is the original west line of the colonization attempt by Robert Gorges in 1624. This line passes through Crow Island in the Assabet River in Stow, Mass.

7. The Indian towns existed for approximately 20 years, and finally were lost and abandoned and absorbed into the fabric of the adjacent towns as a result of King Philip's War of 1675. Another example of town making is the use of the leftover spaces between established towns. These spaces are called "Gores"—as in the odd pieces of fabric in fashion design, —like triangular segments.

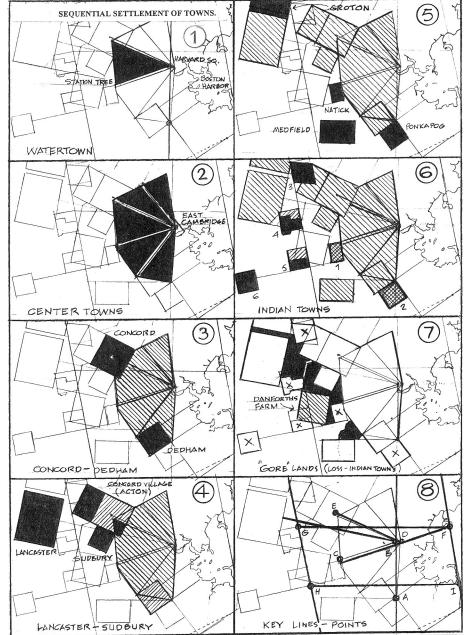


FIGURE 14. MAP, SEQUENTIAL SETTLEMENT OF TOWNS.

Examples shown: Sudbury, expanding out of the 4 mile square into adjacent land created by newly formed towns. Another interesting example is the town of Stow and Stow Leg. Stow Leg was granted to the Nashoba Indians as a narrow passage for access to their "hunting lands" to the west of Lancaster and Groton to Worcester County. The "Leg" was six-tenths of a mile wide by 8 miles in length.

8. The dark lines shown are the most important survey lines, related to survey points, which demonstrates that there are several systems at work at the same time, but all are established on realistic lines and points that still exist.

Another line is the north-east border line of Dedham which passes through Blue Hill and continues southeast to the Colony Line, the division between the Massachusetts Bay Colony and Plymouth Colony intersecting with this line at a ninety degree angle. Later, the Old Colony Line direction was modified by changing the angle at Accord Pond at Hingham, and now travels southwestward to the famous Angle Tree Marker, the border line between North Attleboro and Plainville, MA (FIGURE 15).

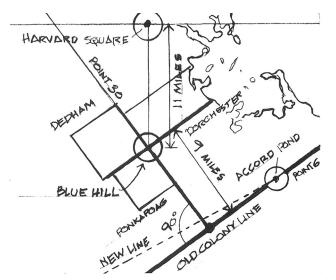


FIGURE 15. MAP, LINE: DEDHAM TO BLUE HILL TO OLD COUNTY LINE

It is important to notice that the two magnetic north lines spaced 30 miles apart are the remnants of the original Gorges Colony of 1624 that failed and was abandoned, but the original site of 10x30 miles was still utilized by surveyors of the Massachusetts Bay Colony.

The starting point for Gorges Colony was at Nahant, then ran true west 30 miles to Crow Island in the Assabet River in the town of Stow. The original boundary stone was relatively recently observed on Crow Island, but is now lost due to earth moving operations. The line turns southward on magnetic north for ten nautical miles to the town of Ashland, in the vicinity of Magunko, the Indian town. The line then turns true east to Great Hill in North Weymouth, the original site of the Gorges Colony Settlement, and continues east to an unmarked point in the town of Hingham. The line then turns northward through Nantasket Beach and Hull, returning to Nahant (FIGURE 16).

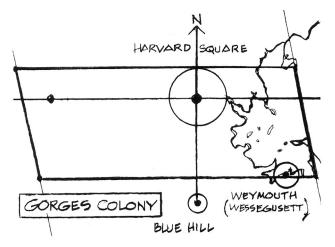


FIGURE 16. MAP, "GORGES COLONY" BOUNDARY LINE.

One of the most important lines is the one that passes over the summit of Blue Hill traveling true north 11 miles to the original Newtowne settlement at Harvard Square (FIGURE 17). This is the first town where the center point at the meetinghouse has lines set on points of the magnetic compass radiating out into the surrounding countryside, thus establishing the first five towns. Later, when the center point was moved to East Cambridge, the new towns were set at right angles: Concord "point 28" and Lancaster "point 24".

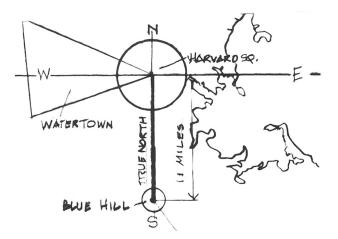


FIGURE 17. MAP, TRUE NORTH LINE, BLUE HILL TO HARVARD SQUARE.

The final stage was the fill-in area called Gorges, which covers a very large portion of Middlesex County saturated with towns including Stow, Sudbury, Dover, etc. Dover was established as a parish district of the mother town of Dedham, but utilized the natural boundary of the Charles River to the north line of Medfield, to the Dedham boundary.

Then there was the difficult situation relative to the original boundary of Watertown, which seemed to usurp at least one point of the compass, more than should have been expected. Thus Cambridge had less territory than the other pie shaped towns, but the General Court worked diligently to compensate Cambridge for this loss.

Now it becomes apparent that Cambridge did manage to accumulate considerable portions of land. First they jumped across the river to the south and expanded westward to the existing town of Newton. They then moved northward passing to the east side of Concord expanding through portions of Bedford and Billerica to the Merrimack River. Hence, Cambridge finally managed to assemble one of the largest packages of land in the Boston area in colonial times. Ironically, they also managed to get the original first site of Watertown, that portion near Mount Auburn Hospital, Buckingham Brown & Nichols School (including the site of Shady Hill School to the Mount Auburn Cemetery), and extending north to Fresh Pond.

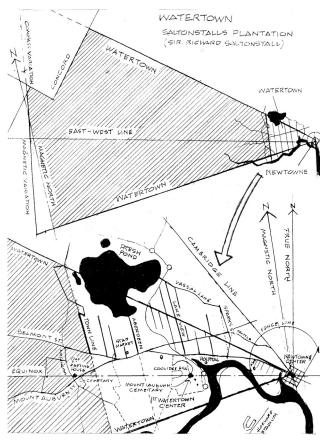
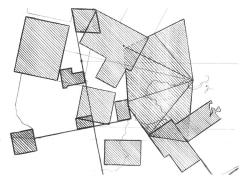


FIGURE 18. MAP, "SALTONSTALL PLANTATION" EXISTING STREET LINES (LOT LINES).

When we reflect on the history of Watertown, it is regretted that the Saltonstall Plantation is hardly remembered, and we have little knowledge of its design or plan. It has been observed that more than 24 streets exist parallel to one another and that segments extend across the land from Sparks Street to the Belmont town line (FIGURE 18).

These streets are all aligned on magnetic north while the area in Belmont and beyond has no such order. The fact that these streets are all parallel may indicate that this area is the site of the original Saltonstall Settlement extending back to Fresh Pond and these lines were apparently the original family lots.

Several lines and points are observed working off other completely different systems. This seems to give the impression of a chaotic landscape with lines running about with no rhyme or reason, but now we sense that there really are a number of other systems that overlap, and each unit or town plays off some precise point in the land. As observed, many original towns spawned offspring and each new town utilized its placement related to the mother town by a 90° angle. This can be observed in (FIGURE 19). These town lines are usually squares or rectangles abutting adjacent towns like "bundles" of towns all related to one another utilizing the same compass systems made up of the same points.



e FIGURE 19. BUNDLES OF TOWNS ALIGN TO VARIOUS e POINTS.

The fan shape or pie shape boundary system was very simple—as a matter of fact too simple—for just at the place you want to settle the majority of the population there is no land. The fact that the attractive pie shape form comes to a point at the Meetinghouse proves the tragedy of such a design, yet it is interesting to reflect on the plan for Cape Cod. Nine years after the Cambridge design the Plymouth Colony admitted three new towns: Sandwich, Barnstable and Yarmouth. They had knowledge of the dilemma in Cambridge, yet they employed the same compass arrangement. However, this time they set the point out in the middle of Cape Cod Bay, thereby providing generous portions of land while utilizing 2 points of the compass as compared with 3 points used in Cambridge (FIGURE 20).

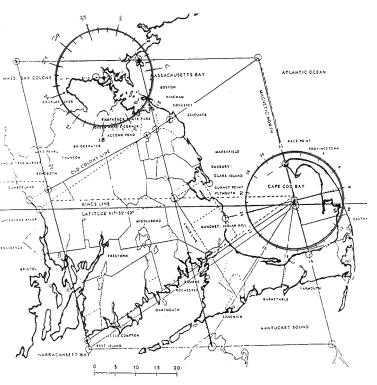


FIGURE 20. MAP, "CIRCULAR CENTERS", CAPE COD AND HARVARD SQUARE.

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(All in Massachusetts)

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