950

A MANUAL FOR CONDUCTING

THE

PLAN E COUNT

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October 1993

This document was compiled through the period of the proportional representation count of ballots for municipal elections in 1977 and 1979 in Cambridge, Massachusetts.

PLAN E COUNT--CAMBRIDGE MUNICIPAL ELECTION

The count of the municipal ballots begins the morning following the city's election day. The count is held in the gymnasium of the Longfellow elementary school in Cambridge, where there is space for observers from the press and public as well as for the ballot counters.

FIRST DAY

The room is set up by Wards (a table and three pigeonhole receptacles for each of the eleven), so that the informal distribution of number one votes may occur. Council ballots from all 42 precincts will be distributed as to the number one votes, precinct by precinct, consecutively the 1's through all 4's in all eleven Wards. Before this can occur, however, ballots taken directly from the 1st precincts' ballot boxes must be separated by color at these Ward tables, each staffed by 7 or so workers, in order that only City Council ballots remain on the tables. (Council, School Committee, Referenda ballots are separate ballots of different colors.) The School Committee and Referenda ballots (if there is one) are given to the "runners" to be made secure; the referenda ballots are placed in fibreboard boxes resealed and clearly marked as to Ward and Precinct, while the School Committee ballots are locked in their respective ballot boxes. (These are stored away until another day.)

The Council ballots are opened flat, and stacked in piles to be read by each of four or so seated workers. They read aloud the candidates' name for the #1 vote on each ballot and hand the ballot to any of three or so standing workers who feed the ballot into candidates' pigeonholes.

Each Ward table, staffed with approximately 7 workers, has both a designated table leader, and a table recorder. The first day distribution accomplishes the informal tally of #1 votes for City Council (the Council count is required to be completed first, C.43 Sec.114). After the first precincts in all eleven Wards are distributed in candidates' pigeonholes, candidate precinct (c p) envelopes with the candidates' name are placed alongside his/her ballots in the pigeonhole. (See Exhibit 1)

The table leader distributes to her table workers each candidate's pile of ballots to be counted in tens. After these are recounted, the workers record on the c p envelope the candidate's total number (in the line marked "No. of Ballots"), and Ward and Precinct in the line items so marked. The ballots are placed within the envelopes and returned to the candidates' pigeonholes until all envelopes have been filled and marked. The table leader then calls out totals from the envelopes to the table recorder who writes these numbers on the tally sheet. (See Exhibit 2) With all numbers recorded, the tally sheet is handed to the runner who carries it to the auditor's table for recording there.

The auditor adds up the precinct figures and checks to see if their total vote agrees with the total vote on the precinct ballot box, taken from each box as it was delivered to the central counting location on election night after the close of the polls.

Once the auditor has recorded the numbers onto the master sheets, the tally sheets are returned to the ward tables. The Director of the Count requests that the ballots in their c p envelopes be placed into paper "laundry bags" which are marked by precinct, sealed with masking tape, with the tally sheets taped to them and which are carried to the center of the floor to be stored in secure metal cabinets. (First precincts go on the top shelf, second precincts on next lower shelf, etc.) Precincts 1 and 2 are counted in this fashion before lunch and Precincts 3 and 4 across the City are completed through the afternoon.

This is the activity of the first day of the Count. The Director of the Count, in the afternoon of the first day, schedules workers to be paired (in between official duties) to candidates' tables for the second and third day of the count when the #1 vote distribution will be made official through recheck for quality and numerical stamping. Sharp workers are assigned to strong candidates where the ballots will be numerous, and slow workers are assigned to candidates expected to run poorly where the workload is light.

Three or four good workers are assigned to an "advance table" located in the middle of the floor where the candidate's envelope is directed who is expected to get the heaviest vote in the precinct coming up next for checking and stamping. The advance table will be discussed in detail below.

At the end of the first day the Director of the Count dismisses the workers, asks them to report at 8:30 the next morning and tells them to expect to be reassigned then, inasmuch as the room will have a different layout. For the second and third days of the count, the pigeonholes are removed, the tables are lined up end to end under the lights, around the perimeter of the room, and all candidates' names are hung alphabetically to denote where the #1 choices will be made official by workers stamping the candidates ballots. After the last candidate's name, "Invalid" is also hung and ballots for whom no discernable intention is found are also made official. The first step in determining quota (the number of votes required to be declared elected) is to know the number of <u>valid</u> ballots cast. From the total number of cast ballots, subtract the total invalid number; those remaining are valid ballots.

PLAN E--SECOND DAY

At the beginning of the second day, the Director of the Count announces that the "custodian of the laundry bags" will open the precinct bag of the precinct ranked first in the random selection of precincts (the draw to establish the rank order of precincts is held prior to Election day.) The custodian of the laundry bags re-arranges the bags at the start of the second day so that the order from top to bottom in the metal cabinet follows the precinct order established by the random selection. The opening of all 42 precinct bags will follow in this order. When the laundry bag is opened, the c p envelopes are carried to the respective candidate's table by the runners. Shortly the next precinct's bag will be opened to remove the strongest candidate's envelope for checking by the advance table as to quality and number to verify "no. of ballots" marked on the c p envelope. Hence the largest number of ballots for any one candidate from the next-to-be-called precinct will be ready for stamping when the precinct's other c p envelopes are distributed. (This serves to expedite the progress of the count.) Inspection for quality and number confirms or adjusts the number previously noted on the c p envelopes. If all ballots have been properly assigned and counted, the workers will stamp and number them. One worker stamps the candidate's name while the other worker simultaneously stamps the ballot with the numbering machine.

If there were 25 ballots noted on the c p envelope but only 24 ballots are inside, the correct tally is noted next to the crossed wrong tally. This notation can be made only by a Commissioner. If a ballot was misread for a candidate on the first day of the count, e.g. at Walter Sullivan's table a ballot is discovered to belong to David Sullivan, this ballot must be transferred to the David Sullivan table. If this discovery is made at the advance table, the notation is made by a Commissioner, just as it is at the candidate's table. The transfer procedure will be discussed below, but the c p envelope for Walter Sullivan will show a -1 along side "No. of Ballots Transferred" while David Sullivan's c p envelope will show a +1 at that line item. Both c p envelopes will show a different sum of ballots at line item "NET TOTAL" than appeared at the line item, "No. of Ballots." When all transfers have been made and all discrepancies remedied, messengers from the official "result-keeper's" table go down the aisle obtaining a tally on the "Transfer Sheet" (Exhibit 3) of the number of ballots being found at each of the candidate's tables. If this sum does not coincide with the sum of ballots cast in the precinct, the count must stop until the missing ballot(s) is/are accounted for.

Transfer Procedure

In the event that a ballot has been wrongly credited to a candidate, workers at the candidate's table who have discovered the error send the ballot in a white transfer envelope (Exhibit 4) which they notate, via runner, to the official result keeper. Should the error be discovered at the advance table the workers will place the wrongly credited ballot in a white transfer envelope which they notate and place on top of the c p envelope for delivery to candidates' table. The candidates' table will signal the Commissioner to make the adjustments on the c p envelope. The runner then will dispatch the white transfer envelope to the official result keeper. On the face of the envelope, there are spaces to indicate from whom the ballot is coming and to whom it is to be transferred. The official result keeper makes the final decision as to the ballot's proper reading, at which time it is sent, in accordance with his/her decision to the proper candidate's table in a brown transfer envelope (Exhibit 5). The transfers are noted on the c p envelope as described previously. Both white and brown envelopes are retained as records of the count. No ballot is transported outside an envelope. After the transfer procedure is completed, workers will be permitted, on cue from the Director of the Count, to stamp their ballots.

Stamping

The ballot is stamped with the candidate's name on the "blank" side of the ballot, that is, the side without the candidates' names. The stamp is placed as high on that side as possible, so as to be able to accommodate subsequent names beneath it. Stamping allows the course of the ballot to be traced through the entire count. For example, it is possible that one ballot in 1975 went from Sullivan to Solano to Davin to Wylie to Ackerman, and each name would be stamped on the back of the ballot.

Numbering

In addition to stamping the candidate's name on the back of the ballot (a rubber stamp is used), a number is stamped alongside the name. This both identifies the ballot for tracing purposes and tells the sequence in which it was counted and distributed. The numbering worker has a self-sequencing numbering machine, and the first ballot taken from the first precinct (of random selection) for a candidate is numbered 1. When all of a candidate's ballots from the precinct have been stamped, the last number stamped should agree with the informal number that the counters on the first day had written on the c p envelope, as is, or as corrected, or as a new "Net Total" reflecting transfers.

Numbering Errors

Occasionally the numbering machines will malfunction and a number will be stamped twice, or a number skipped, etc. revealed by the difference in the number on the last ballot stamped and the "Net Total" on the c p envelope. Should this occur, the workers call a Commissioner who corrects the error by hand and initials the change.

Candidates' Metal Bins

Once the transfers are finished, a candidate's table will have all the candidate's first choice ballots lying face down on the table, with the highest number, corresponding to the informal count tally or new NET TOTAL, on top. The auditor's helpers (2 young and able workers) will go up and down the aisle of candidate's tables starting at opposite ends and record the numbers. On a transfer sheet one will record the number of the last stamped ballot; the other, on a transfer sheet, will record the "Net Total Number" for the 1st count, but in all subsequent counts, the "Total Number" from the top right of the c p envelope, making certain it is the proper last precinct. These ballots are then placed in the candidate's metal bin, containers which have two columns of ballot width for storing ballots and are located immediately behind the pair of workers. The first count ballots are placed at the bottom of one of the columns, number 1 ballot on the bottom, the highest number on top. After all 42 precincts have been put through this process (takes two full days) a strip of cardboard is placed over the ballots in the metal bin and the official first count is completed.

Candidate's Running Count

At the end of the first count, a record is made of the candidate's total on a printed form ("Bin Form" Exhibit 6) taped to the top of the bin or next to the candidate's workers' table surface. This allows a running total to be kept for each candidate at the end of each count.

Storing the Candidate Precinct (c p) Envelope, etc.

The c p envelope is a record of the count and is preserved in a small wooden box kept on top of the candidate's metal bin.
Likewise are the brown transfer envelopes received from the official result keeper. The c p envelope will have all line items filled in at the end of the first count, the lower right line item "No." being filled in with "1" (for first count), the line item "Forward" with a 0 and the line item "Total" with the highest stamped number. (These last two line items will provide the cumulative totals.)

The Advance Table

The amount of time needed to inspect for quality, verify for "No. of Ballots", and stamp the ballots (the second and third day's activity) for each precinct is determined by how long it takes to do this for the candidate receiving the largest vote in each precinct.
Hence the operation of an advance table staffed by 3 or 4 of the best workers.

While the candidates' tables are working on the first count of the precincts from the random draw, che advance table works on the highest vote-getter in the second precinct of the random draw. Similarly, when the candidates' tables get to the second randomly drawn precinct, the advance table works on the top vote-getter in the third randomly drawn precinct, and so on through all 42 precincts.

The top vote-getter will vary from precinct to precinct, e.g. Vellucci in precincts in Ward 1, Clinton in Ward 5, Danehy in Ward 11, etc.

The advance table counts, inspects for quality, makes out envelopes for transfers, but does <u>not</u> fill out the c p envelope. They also do not stamp or number ballots. That is done at the candidate's table at the appropriate time. The candidate's table task is reduced to clerical stamping and numbering where their man is that precinct's top vote-getter. The advance table has processed their ballots and reduced waiting time for all workers to begin work on the next precinct.

DISTRIBUTING SURPLUS--PLAN E THIRD DAY

After all first choice (#1's) have been stamped, numbered, (made official as it were) and stored in their respective candidates' bins, a determination can be made as to whether anyone has been elected on the basis of #1's alone. (The unofficial determination is made much earlier, of course, but it can only become official when quota is determined and a candidate is declared to have attained it.)

QUOTA

"Quota" is defined in the statute, c 54A, sec.9(c), as the smallest number of votes which any candidate must receive in order to be assured of election without more candidates being elected than there are offices to be filled. Quota is determined by dividing the number of valid ballots cast in the election by one more than the number of offices to be filled (disregarding any fraction) and then adding 1 to the quotient. To make use of 1975 figures, which we will do extensively in this section, 27,387 valid ballots were cast for city council:

Quota was therefore 2739 votes required for election to the council.

$$\frac{\text{\# valid ballots}}{\text{\# offices + 1}} + 1 = \frac{27{,}387}{9 + 1} + 1 = 2738^{*} + 1 = 2739$$

*Truncate, do not round off the fraction.

SURPLUS

Any candidate who has received first choice votes in excess of quota is declared elected and votes he has received in excess of quota are termed his "surplus." In 1975, Walter Sullivan received 3,738 first choice ballots (#1's) and his quota was 2,739. Thus the Sullivan surplus was 999. Proportional representation allows a candidate to keep only a sufficient number of ballots to be elected, that is, quota, so the surplus ballots must be distributed to their second (or third, fourth, etc.) choice. If more than one candidate has surplus, the largest surplus is distributed first, then the next largest and so forth. Which ballots are distributed is determined by the procedure described below.

Pulling the Surplus Ballots

The Board adopted a regulation in 1973, pursuant to c.43, sec.115, and c.54A, sec.16(b), which uses the following method for pulling the surplus ballots: (the method was used by the City of Cincinnati in 1938, as set forth in their Code of Ordinances, Article IX.) Divide the total number of candidate's first choice ballots (#1's) by the number of the surplus and round off to the nearest integer. This integer will be the multiple of candidate's ballot numbers that are removed to go to second choices. To illustrate: Walter Sullivan received 999 ballots more than he needed to win office (his surplus). Thus, we must remove 999 ballots from his metal bin of the 3,738 ballots originally placed there.

Which 999 ballots ? Those which are numbered in multiples of 4 (3,738 total #1s divided by 999 surplus #1s equals 3.7 or 4, to the nearest whole number.) In other words we take every fourth ballot from Sullivan's pile: 4,8,12,16 etc. (This is where the random selection of precincts becomes important. It also shows the usefulness of numbering ballots.)

If we take every fourth ballot, we will end up with only 934 ballots removed from the Sullivan pile. This happens because we rounded off the fraction 3,738 - 999 to the nearest whole number. Where do we get the remaining 65 ballots to make up the 999 we have to pull ? We go through the surplus a second time and pull the next highest number, i.e., 5,9,13,17, etc. When we have pulled a total of 999 ballots from Sullivan's pile we stop. However, we are probably not finished with the Sullivan ballots yet, so we do not return them to the metal bin. The reason we may not be through is that some of the pulled ballots may be "exhausted." i.e., have no second choice on them, and these ballots must be returned to the Sullivan pile and ballots which do indicate a second choice are substituted for them. More about this process later.

Distributing the Surplus

The 999 ballots that have been pulled from Sullivan's #1 ballots are then distributed to their second choices. Three pairs of clerks do the distributing, using the racks of pigeonholes just as they did in the informal count of the first day. That is, one reads the ballot, the other places it in the appropriate pigeonhole.

Those ballots that have indicated no second choice, the "bullets", a 1 for Sullivan and no other number, are placed in the pigeonhole labeled "Exhausted." After all 999 ballots have been read and distributed into the proper pigeonhole, a count is made of the number of exhausted ballots. These ballots are then returned to the Sullivan pile and an equal number are removed from the pile to replace them--again to be sure that Sullivan only keeps enough to be elected. Which ballots are used as substitutes ? The ones in the same sequence that were used before, picking up where the sequence left off, e.g. 261,265,269,273, etc. These replacement ballots are read and distributed by the three pairs of clerks. If some of the replacement ballots turn out to be exhausted as well, they are replaced in turn, by continuing to progress through the sequence (309,313,317, etc.) until in all, 999 showing a valid second choice have been removed from the Sullivan pile and Sullivan is left exactly with quota. This allows <u>each one</u> of the Sullivan #1 ballots to contribute toward electing a candidate, 2,739 for Sullivan, 999 for second choice candidates.

If when dividing a candidate's #1's by the surplus number, a fraction is rounded off to the lower number, we would not get through the surplus on the first round of pulling from the surplus. For example, suppose the Sullivan #1s had totaled 3,441 and surplus was 999. The fraction would be 3.4 and the nearest integer would be 3. We would take every third ballot, i.e., 3,6,9, etc. If we went through the entire surplus, we would end up pulling 1,147 ballots, which is of course too many. Instead we stop at the 999th, distribute them according to their second choices, and continue pulling every third ballot after the 999th only to replace exhausted ballots. If we must go beyond 1,147 ballots to get 999 good ballots, then we use the method described above for the second run through the surplus: ballots 4,7,10,13,etc.

The computation of the vote/surplus ratio and the designation of ballots to be pulled is usually done by the auditor and a Commissioner. The Commissioner, using an Apple II e personal computer (made available by the Longfellow School) with the required program on the Commission's floppy disc, generates computer tapes listing the number sequence indicating the first selection of ballots, i.e., up to surplus only (tapes running in segments of 250 or 500 whatever the size determined) and then a supplementary tape, to take care of contingencies of exhausted ballots. Plan E workers are used to pull ballots from the pile in accordance with the numbers on the tape(s).

Stamping and Numbering the Surplus

To use our 1975 example again, once we have 999 non-exhausted ballots distributed into the pigeonholes of the continuing candidates (all except Walter Sullivan, who was declared elected on the first count), c p envelopes again are used to hold and transport the ballots to the candidates' tables after the ballots are counted in tens, and double-counted. The envelopes will have the candidates' name on them. Line item "No. of Ballots" and line item "No." will be filled in by the table recorder, the latter with the number of the count, which is 2 in this case. The candidates' tables check for quality and verify the number of ballots as against the number on the c p envelope. If a mistake has been made in assigning a ballot, the same transfer procedure is used as that on the second and third days: white transfer envelopes to the official result keeper, brown transfer envelopes back to the proper candidate's table, with the appropriate plus or minus notation on the c p envelope. As on the preceding days, when the official result keeper determines that the distribution to second choice candidates totals 999 the stamping begins. The candidate's name is stamped just below the first name (Sullivan, in the example) and the number of the ballot is stamped along side the name.

At the end of the distribution of surplus, each candidate's table will: (a) complete the following line items on the c p envelope; "No. of Ballots" (if a correction), "No. of Ballots Transferred", "Forward" (the last number stamped in the first count for that candidate), and "Total" (the running total), (b) fill out the "Bin Form" taped to the metal bin or other convenient location, (c) place a cardboard divider over the first count ballots in the metal bin (if not already done) and put the ballots from surplus distribution on top of them, highest stamped number on top, and (d) put the c p envelopes in the storage box on top of the metal bin.

Other Surpluses

Cambridge elections generally have only one candidate reaching quota on the first count, but it is possible that there would be more than one. In that case, all candidates with first count totals above quota are declared elected. The surpluses, however, are distributed largest first. Cinn. Code, Art.IX, Sec. 10(h). For example, if Sullivan had 1,000 surplus and Danehy had 200 surplus, Sullivan's surplus would be entirely distributed before Danehy's ballots were touched. Note that any surplus ballots pulled according to the above selected process that were cast for Sullivan #1, and Danehy #2, would go to the number 3 choice, since Danehy was already declared elected. If there were no #3 choice, it would be an "exhausted" ballot and would be returned to the Sullivan pile. Its replacement would be made in the same manner as was described earlier under Distributing the Surplus.

Stopping at Quota

Suppose Danehy was 50 ballots short of reaching quota on the first count. And suppose further that he would get at least 100 ballots when the Sullivan surplus was distributed. Since Danehy cannot be given more ballots than quota, the clerks must be careful to stop "feeding" his pigeonhole exactly at quota for him. This is managed by slowing down the distribution of ballots into candidate's pigeonholes as quota is approached, removing the Danehy ballots from his pigeonhole in small quantities and taking them directly to the candidate's table to be stamped even while the rest of the ballots are being distributed. This allows the newly distributed Danehy ballots to be inspected more carefully and an accurate count of his official total to be kept. When the candidate's table stamps the quota number on a Danehy ballot, Danehy is declared elected and no more ballots are distributed to him. If there is still a small pile of ballots on Danehy's table waiting to be stamped, or sitting in the pigeonhole, these are immediately distributed to their next choice after Danehy.

Funnelling

Since we generally use three pairs of clerks to read and distribute the ballots, it is possible that the sequence will be disrupted because of the different speed with which each pair feeds into a candidate's pigeonhole. That is, no ballots are to be distributed to Danehy after he reaches quota, but he should only reach quota in the order the Sullivan ballots are counted out--the remainder should be distributed to the third choice. This would happen automatically if there were only 1 pair of clerks reading and distributing, but with three pairs the sequence may be destroyed. While Danehy won't be affected by a disruption of the sequence, it is possible that a continuing candidate might be. The way this problem is dealt with is that one person (usually a Commissioner) controls the flow of ballots to the three pairs of clerks. He has, for example, all the Sullivan surplus in front of him, but only gives stacks of twenty ballots to each of the readers. In this way, the sequence is less likely to be destroyed, although undoubtedly a few may turn up out of order. As a candidate approaches quota, the Commissioner slows down the feed to packets of five ballots. It is only at the very end that the sequence becomes important because once quota is reached, the very next ballot goes to the continuing candidate next in preference and, of course, the quota ballot may have a different next choice from the first ballot after quota or the second ballot after quota. It is thus important not to destroy the sequence of the ballots.

Despite the care at the reading-distributing level, the sequence is sometimes destroyed or even reversed by the clerks when the ballots are stamped at the candidates' tables, for the piles of ballots may be inspected starting with the highest Sullivan number on top, then wind up with the highest number on the bottom, then get turned over and stamped, putting the highest Sullivan number back on the bottom again. For example: first Sullivan surplus ballot to Danehy equals 4, last equals 3,604. Last Danehy ballot previously stamped i.e., Danehy's #1s, equals 1,400. The next stamp under Sullivan 4 should be Danehy 1,401. However, sometimes Sullivan 3,604 is stamped Danehy 1,401. This is wrong. Clerks at the candidates' tables should be properly instructed and consistently supervised to maintain the sequence in proper order or reverse order will occur randomly. It should be noted that this will make no difference to the candidate reaching quota, but it may have an effect on continuing candidates who are counted out or who may continue depending on how the remaining ballots are counted.

DISTRIBUTION OF NON-QUALIFIERS' BALLOTS

PLAN E FOURTH DAY

Ordinarily, in Cambridge, the second count is the distribution of the surplus ballots of the one candidate who has attained quota with first choice ballots. The third count then, is the distribution of the ballots of those who received fewer first choice votes than the number of signatures needed to be nominated (50).

It is, however, possible that more than one candidate will achieve quota on his/her first choices, so there would be one count for the distribution of each of the surpluses. The fourth count in this instance would be the distribution of ballots of the non-qualifiers.

No particular order is followed in counting out the non-qualifiers, although strictly speaking, a ballot may be lost to a continuing candidate depending on the order in which a winning candidate achieves quota, just as was discussed earlier with respect to distributing the surplus. Thus the count-out of all the non-qualifiers is considered one count, and all the ballots of all non-qualifiers are put together and read by the three pairs of clerks and distributed to the next choice indicated on the ballot, if any. These are placed in the candidates' pigeonholes (or in "Exhausted" if there are no further choices).

The ballots are counted in tens and recounted for each continuing candidate and are placed in the c p envelope to be carried to the candidates' tables. First, however, a check must be made of the sum of the continuing candidates' ballots as against the number of ballots which the non-qualifiers had previously accumulated in counts 1 and 2.

At the candidates' tables, the newly received ballots are inspected, stamped, and numbered, and placed in the candidates' metal bins, highest number on top.

A cardboard divider is used to separate ballots received from count 2 and those received in count 3, similarly, and for all succeeding counts. (This is for ease in doing a recount or locating a ballot, if necessary.) The number stamped on the last ballot is the candidate's total at the end of the third count. The running total is kept on the "Bin Form" taped to the metal bin. After each count is completed, and the ballots and envelopes are properly placed in the metal bins and wooden boxes, messengers from the official result-keeper's table go down the aisle to record the results on a "transfer sheet" - one records the last number stamped on the candidate's ballot, the other records the number from the c p envelope. In the event the clerks have made an error when assigning a ballot to a candidate, the system of transfer envelopes, described previously, is used to make adjustments.

ELIMINATION OF LOWEST CONTINUING CANDIDATE

After the non-qualifiers' ballots have been distributed (usually the third count), the PR count goes into its final stage, which is successive elimination of the candidate with the lowest vote total and the distribution of his/her ballots to the remaining ("continuing") candidates. This usually begins at the fourth count and repeats itself until all nine council positions have been filled.