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**Residential Subcentering and Urban Sprawl:** The Location of Higher-Density, Owner-Occupied Housing Around The Concord Line BART Stations

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# Residential Subcentering and Urban Sprawl:

The Location of Higher-Density,  
Owner-Occupied Housing Around  
The Concord Line BART Stations

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April 1977

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Dennis Dingemans is Assistant Professor, Department of Geography, University of California, Davis.

The research for this paper was conducted in part while the author was supported by several sources. During the Fall of 1976, he was on sabbatical leave from the Department of Geography, University of California, Davis. The Beatrix Farrand Research Fund supported his 1976 field work in Contra Costa County. A Faculty Research Grant from the University of California, Davis, supported aspects of the townhouse research.

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## INTRODUCTION

When the BART system was first designed for the San Francisco Bay region, one of its principal goals was to effect a restructuring of the suburbs to be served by the transit lines. The BART planners hoped that intense residential and commercial land uses would cluster in pedestrian-oriented districts around the stations. As a result of this subcentering, a more efficient, attractive, and nucleated suburban form was to emerge -- an ideal form that was to be an alternative to what many perceived as formless urban sprawl.

Now that the BART system is in operation, we can determine whether the residential location patterns are evolving in accordance with the desired new form. This paper examines the location pattern of one type of housing -- the suburban townhouse -- in the vicinity of the main suburban line through central Contra Costa County. The distribution of townhouses indicates that the desired result has not occurred. Few of the many new townhouses constructed since BART was planned have clustered near the stations, and access to BART does not appear to have been the dominant influence on the townhouse-location process. It is in fact "urban sprawl" rather than "residential subcentering" which best describes the existing townhouse pattern. More direct controls over the land-use assignment process would probably be necessary to stimulate residential subcentering along the BART line in the future.

## SUBCENTERING AND THE FORM OF THE METROPOLIS

The two basic BART planning documents -- the 1956 *Regional Rapid Transit* report and the 1962 *Composite Report* -- clearly stated that the building of a regional rail transportation system would change the future form of the metropolitan area.<sup>1</sup> With a region-wide rail rapid transit system, the San Francisco Bay Area was supposed to be able to maintain its healthy core areas while developing an orderly, efficient network of suburban subcenters. Without a rail transit system, the core areas were expected to decline and the suburbs fall victim to "disorganized urban sprawl with its destructive economic and social effects."<sup>2</sup> The plan statements referred often and ominously to the undesirable non-BART alternative:

The outward thrust of our urban area is characterized by scatter and dispersion of land development activities throughout the peripheries...[and] this uncoordinated process of land development imposes added costs on the home owner which could be avoided if land development were orderly and compact.<sup>3</sup>

The 1956 document contained the first regional land use plan ever prepared for the entire Bay Area, and that plan called for the evolution of a "hybrid urban form" with orderly and compact suburbs -- "something between the tightly nucleated clusters which form the typical metropolitan areas of the East Coast and the vast low-density sprawl of the West Coast's Los Angeles."<sup>4</sup>

The alternative metropolitan structure was not given any specific label equivalent to the pejorative "urban sprawl." However, the plans did speak repeatedly of a system of "subcenters," and Melvin Webber, who served as the senior regional planner for the 1954-1956 plan effort, has subsequently described the alternative to sprawl as "subcentering."<sup>5</sup> It is this term "subcentering" or "the subcentered metropolis" which will be used in this paper to summarize the BART plans' intended metropolitan form.

The means chosen to effect subcentering was the construction of the "higher-capacity inter-community travel arteries [that] are required to retard urban sprawl and to maintain an efficient organization of living and working areas."<sup>6</sup> Rapid transit was to combat sprawl by "stimulating greater development of clusters of businesses, industry, and homes."<sup>7</sup> In making this projection, the BART planners drew upon some well known models of past transit lines. The 19th century railroad commuter stations were known for land use concentrations around their stations, and the 20th century mass transit systems were known to have resulted in clustering of land uses around the stations.<sup>8</sup> By 1962 when the final BART plan was prepared prior to the crucial bond issue election, additional models could be cited: the new Toronto subway line, which opened in 1954, had attracted numerous high-rise buildings to its station areas.<sup>9</sup> The newly completed Stockholm regional rapid transit system was serving several compact new towns at the ends of the suburban lines.<sup>10</sup> The connection between suburban rapid transit and residential densities was indicated in the 1956 plan's summary of the historic processes: "when people were dependent upon public transportation, they chose to live in more densely developed neighborhoods, within walking distance of the transit lines."<sup>11</sup>

To achieve their suburban land use goals, the planning consultants selected a high speed rail system on the model of the New Haven and Long Island Railroads. Stations were to be widely spaced outside of the central district cores, and the lines were to reach to the farthest edges of urban development. Following approval of a \$792,000,000 bond issue in November 1962, the BART system was built with two main suburban lines reaching 20 miles east to a major terminus in Concord, and 25 miles south to a terminus in Fremont. The whole system was to evolve hierarchically, as

the plan projected "a pattern of relatively high densities adjacent to the important centers and a pattern of declining densities in the outlying suburban centers."<sup>12</sup>

Along the Concord Line, Walnut Creek and Concord were designated as future major subcenters, and all five Concord Line stations were expected to develop concentrations of higher-density housing within walking distance. Walnut Creek was to become a "district center," with a "scale of activity envisaged...that would approximate that now existing in Berkeley's central business district."<sup>13</sup> Concord was to become a "regional subcenter," with a "variety and intensity of activities comparable to those now existing in Oakland."<sup>14</sup> As those suburban centers developed, they were expected to "encourage high population densities to develop near their cores...[as] especially single and aged people seem to prefer garden cottages and apartment houses close in to business centers."<sup>15</sup> Since "the convenience of living within walking distance of work seems to be highly desired," the station areas seemed inevitably to become both residential and employment nodes.<sup>16</sup> In the Concord Line area, as elsewhere, the new nucleated suburban form was to generate patronage for BART, reduce dependence on the automobile, and produce the commercial density needed for attractive, efficient business districts.

BART planners were not alone in finding subcentering to be an attractive prospect. When the Association of Bay Area Governments (ABAG) adopted a regional plan in 1970, that plan specified "city-centered growth" as the desired suburban form. The possibility of allowing continuing urban sprawl was rejected by ABAG in its *Preliminary Regional Plan* in 1966; and, in subsequently recommending policies to stem urban sprawl, ABAG's regional planners embraced all of the basic land use concepts of the 1956 BART plan.<sup>17</sup>

The cities and the county government in the Concord Line corridor also, at first, willingly embraced their designated role. Walnut Creek and Concord, already the major commercial centers of Contra Costa County, adopted general plans which permitted concentrations of intense residential and commercial land use near the stations.<sup>18</sup> They did not want competing locations to claim any great share of these valuable land uses. The county's general plan also came to reflect the planned levels of intensity around each of the stations.<sup>19</sup>

These Bay Area plans, in their efforts to restructure contemporary suburbs, were expressing ideas that have had wide appeal among 20th century planners. The "Year 2000 Plan" adopted in 1964 by the Metropolitan Washington (D.C.) Council of Governments, is similar to the ABAG plans in its call for an end to urban sprawl and the substitution of compact and orderly suburban development. Many metropolitan regions in the United States subsequently adopted similar planning goals. The federal government too has made combating urban sprawl official policy in the "New Community Act of 1970" and in other programs.<sup>20</sup> The geographer Harold Brodsky has commented that it sometimes seems the federal government perceives that "the major American problem connected with metropolitan growth is sprawl rather than concentration of population in the inner city."<sup>21</sup> In dispersing federal funds for transportation planning, the Urban Mass Transit Authority considered "the reversal of sprawl" to be one of the substantial community benefits which earned high priority for funding proposals.<sup>22</sup>

Peter Hall has put these policies in perspective by writing persuasively about planners' preoccupations with combating urban sprawl. In his essay "The Urban Culture and the Suburban Culture," Hall argued that our contemporary American suburbs represent a new form of city -- a city

form which most urban planners do not understand and therefore reject on basically aesthetic grounds:

Indeed, a glance at any issue of the *Journal of the American Institute of Planners* would show that any decent professional American planner is committed, just as surely as his European counterpart, to the virtues of urbanity, rich urban centers, compact suburbs, green belts, and new town communities.... The greatest common fetish of planners, the world over [is] the search for higher suburban densities. These are advocated for all sorts of reasons: to save land, cut sprawl, shorten commuting times, reduce monotony, and increase urbanity.<sup>23</sup>

Hall sees these prejudices against low density suburbs as being rooted in our aesthetic revulsion against a city which lacks the traditional compact form of our European urban heritage. As Hall points out, Lewis Mumford perhaps best summarized this research for a traditional urban form:

A modern city, no less than a medieval town, must have a definite size, form, boundary. It [must not] be a mere sprawl of houses along an indeterminate avenue that moved toward infinity and ended suddenly in a swamp.<sup>24</sup>

Not all arguments for planning to combat sprawl are based merely upon aesthetics. In his recent work, *Centers for the Urban Environment*, Victor Gruen has argued that the development of multifunctional suburban nodes would give our suburbs "urban crystalization points."<sup>25</sup> Gruen, who already has been a major force behind the addition of planned regional shopping centers to our suburban environments, pleads in this work for the economic efficiency of bringing even more service, commercial, and residential land uses together at a few regional suburban nodes. Geographers especially have not been blind to the efficiencies attainable through suburban agglomeration, and several recent studies have called attention to the possibility of planning for a system of suburban CBD-like clusters. Gerald Manners has argued that seeking "a more clustered form of suburban office growth" should be a top priority before additional public transportation expenditures are made.<sup>26</sup> Truman Heartshorne has discussed the advantage of large-scale industrial and office parks for their communications and

transportation efficiencies.<sup>27</sup> Peter Muller's summary monograph on American suburbs, *The Outer City*, reviews the surprising extent to which "super-regional malls" and "suburban minicities" already exist.<sup>28</sup>

In order to stimulate these kinds of multifunctional suburban subcenters BART-type rail transit systems are being seriously considered in several metropolitan areas of the United States. For example, Atlanta, Miami, and Washington, D.C. already have high degrees of commitment to high-speed rail transit in their suburbs. The Philadelphia suburbs in New Jersey are considering whether to expand their Lindenwold Line service into three lines. In all of these cases the success of the transit lines -- and the wisdom of substantial public investment in these lines -- will partly depend on the extent to which subcentering occurs in conjunction with the building of suburban stations.<sup>29</sup>

Before public moneys are committed to additional BART-type systems, it would seem wise to first review the results of our experience with BART. The extent of suburban subcentering around BART stations has not yet been systematically examined. The BART Impact Program has not yet begun its "land use and urban development study," and completion of that element is at least two years away.<sup>30</sup> However, unstructured observation methods employed so far have been sufficient to convince at least one careful observer that "there is little evidence to corroborate these forecasts and hopes [for subcentering]."<sup>31</sup> Studies of the Lindenwold Line in the New Jersey suburbs -- the only other completed new suburban line with characteristics similar to BART's -- have reported that so far there is little evidence of subcentering there either.<sup>32</sup> In contrast to the cautious pessimism of these few scholarly reports, a substantial public relations and pro-rail transit literature has arisen, and much of it boldly claims that BART has had a great impact on suburban land development.<sup>33</sup> A portion

of the more serious literature also seems to concur with these latter arguments, and there are many who would argue that rail rapid transit's impact on suburban subcentering should be accepted as fact.<sup>34</sup> The rest of this essay is devoted to reviewing a part of the evidence now available on residential subcentering around the Concord BART line.

#### THE DISTRIBUTION OF TOWNHOUSES IN THE CONCORD LINE BART CORRIDOR

Townhouses are defined for this study as single-family houses that are attached to more than one other house, and are capable of being owner occupied. If BART has been stimulating subcentering of higher-density housing as planned, then we would expect a clustering of these higher-density townhouses near stations and subcenters. If no pattern of residential clustering is discernable now -- 20 years after the BART plans were first announced and 15 years after BART was approved -- then we can question whether the expectations of a more orderly suburban form were correct.

Several reasons led to the decision to focus this study on the location of townhouses, to the exclusion of other forms of higher-density housing. First, information on the location of townhouses was available, whereas comprehensive data on the location of apartments or detached houses was not. The author had compiled the history of townhouse construction through 1974 for a previous non-BART related research effort, and with some additional research this was brought up-to-date as of December 1976.<sup>35</sup> Second, townhouses may be, in fact, the best possible indicator of BART-related residential patterns; since 1962, when no townhouses existed at all in the region, 14,000 new townhouses were added to the housing stock. Because apartments existed in substantial numbers before BART was approved, the effects of BART on the apartment location pattern are more difficult to isolate. Third, whereas single family detached homes were not expected

to cluster near the subcenters, it was expected that higher density housing would be able to bid for the most costly locations near the stations where the good accessibility would lead to high land values. Townhouses have been built at a net residential density of between 8 and 16 units to the acre, and this range represents a substantially higher density than for detached houses. The apartments that have been built in the BART corridor seldom exceed 25 units to the acre, but do have a somewhat higher average density than townhouses.

The study area consists of the 65 contiguous census tracts in central Contra Costa County that cover the suburban section of the county. The study area is a logical region to define as the BART corridor land use impact zone because terrain barriers such as undeveloped steep slopes or water bodies separate the zone from the rest of the metropolitan area (Figure 1). Land use here was primarily agricultural until 1945 when rapid industrial growth along the Bay shore and improved automobile tunnels through the Berkeley Hills began to expose the region to rapid post-war suburban residential development. The population of this fast-growing region was 391,850 in 1975, an increase of 400 percent since 1950 and 170 percent since 1960.

The location of each of the 14,229 townhouses in the 80 townhouse developments approved for construction as of December 1976 was determined by a review of the city and county building permit records (Figure 1). Ninety-five percent of those units approved for construction have already been built, and most are not occupied. Visual inspection of the mapped distribution reveals that townhouses are obviously not confined to the immediate vicinity of the BART stations or the two designated subcenters. There is no cluster of townhouses near the Concord station, and the greatest single apparent cluster is closer to the Pleasant Hill station than to the

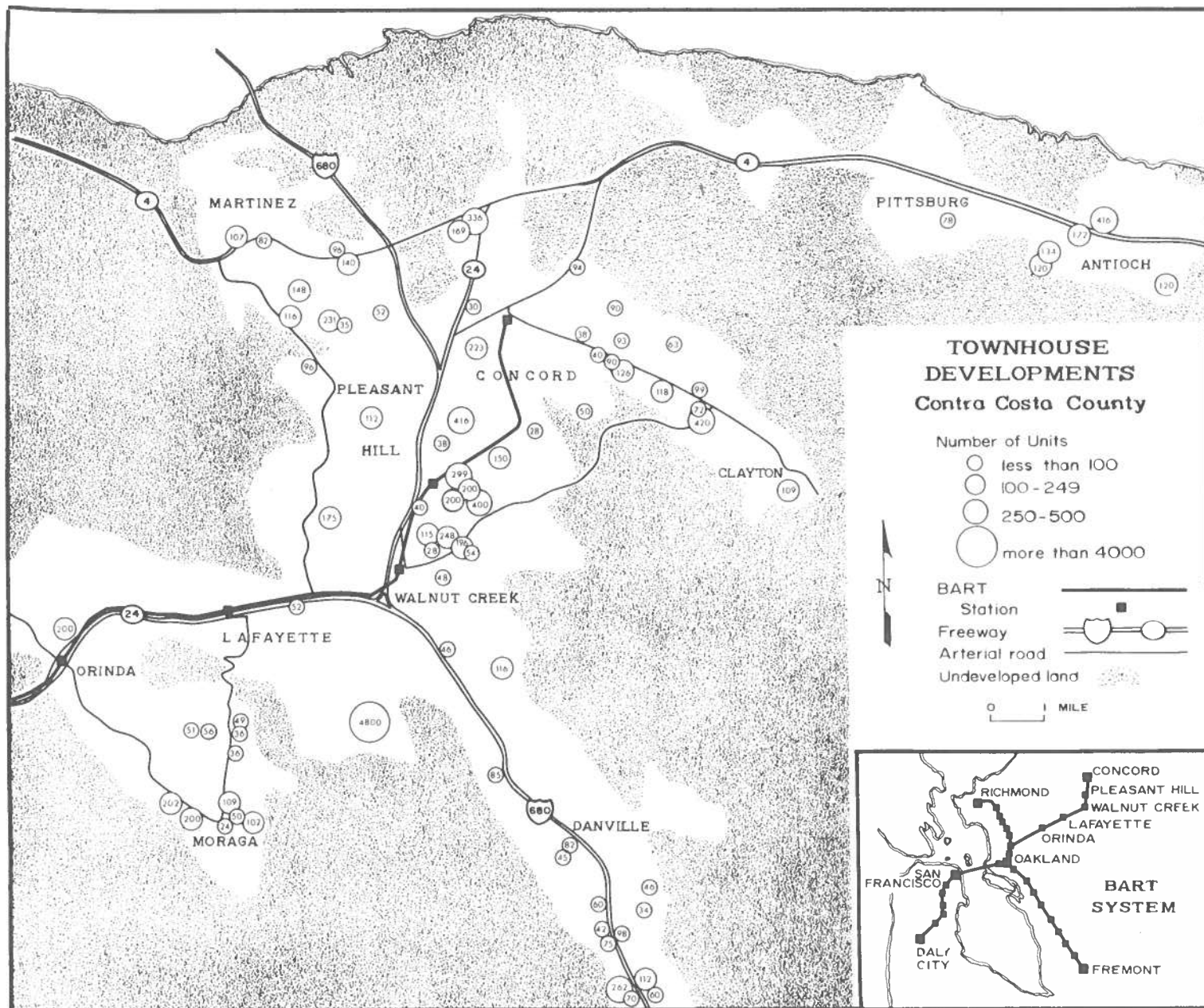


FIGURE 1  
TOWNHOUSE DEVELOPMENTS

Walnut Creek station. The townhouse developments have been so dispersed that 35 of the 65 census tracts gained at least some townhouses, and 87 percent of the 40 tracts receiving substantial amounts of any new residential construction in this time period received new townhouses.<sup>36</sup>

The average distance from townhouse developments to transit stations is 4-1/2 miles -- measured using the quickest and most direct street route. (Table 1). Since there are 23 developments within two miles of a station -- 10 of them within just one mile -- the presence of these 23 developments with their 3,734 townhouses might be interpreted as some indication of clustering (Table 2). Conversely, the presence of 25 developments with 2,635 townhouses beyond a five-mile radius might be interpreted as an indication of continuing urban sprawl.

Since such a small share of the new townhouses are adjacent to the stations, the fact that less than 10 percent of the Concord line riders walk to BART should not be surprising (Table 3). Most Concord line riders drive automobiles to the stations, and a majority of them (76 percent) take only 10 minutes or less to reach the station<sup>37</sup> (Table 4). The average townhouse resident who lives 4-1/2 miles from a station would take at least 10 minutes to get to the station by automobile -- a time that is greater than the median for all users of BART in this region. Only 1,373 townhouses are within a 15-minute, one-mile walk. Clearly, the townhouses in this region are not contributing to a strong pedestrian orientation in the residential districts around the stations, and townhouse residents may even live further from stations, on average, than residents of all other forms of housing. In the years since BART opened for service, new townhouse developments have not been located any closer to stations, on the average, than they were before BART opened -- indicating that the townhouse

TABLE 1  
DISTANCE FROM TOWNHOUSE DEVELOPMENTS TO BART STATIONS

| Distance (miles)           | Number of Developments |
|----------------------------|------------------------|
| 0 - 1                      | 10                     |
| 1 - 2                      | 13                     |
| 2 - 3                      | 9                      |
| 3 - 4                      | 11                     |
| 4 - 5                      | 11                     |
| 5 - 6                      | 7                      |
| 6 - 7                      | 5                      |
| 7 - 8                      | 2                      |
| 8 - 9                      | 3                      |
| 9 - 10                     | 1                      |
| 10 - 11                    | 1                      |
| 11 - 12                    | 0                      |
| 12 - 13                    | 3                      |
| 13 - 14                    | 2                      |
| 14 - 15                    | 2                      |
| TOTAL DEVELOPMENTS         | 80                     |
| MEDIAN DISTANCE TO STATION | 3.8 miles              |
| MEAN DISTANCE TO STATION   | 4.5 miles              |

Source: Computation of fastest street-access route between the center of the development and the closest BART station -- figures measured by the author using a current Contra Costa County street map.

TABLE 2

## DISTRIBUTION OF TOWNHOUSES BY DISTANCE FROM THE NEAREST CONCORD LINE STATION

| Station                                                          | Total  | Distance from each Station (in miles) |        |         |         |          |
|------------------------------------------------------------------|--------|---------------------------------------|--------|---------|---------|----------|
|                                                                  |        | 0-.5                                  | .6-1.0 | 1.1-2.0 | 2.1-5.0 | 5.0-14.5 |
| ORINDA                                                           |        |                                       |        |         |         |          |
| Number of Developments                                           | 6      | 0                                     | 1      | 0       | 4       | 1        |
| Number of Units                                                  | 780    | 0                                     | 200    | 0       | 535     | 45       |
| LAFAYETTE                                                        |        |                                       |        |         |         |          |
| Number of Developments                                           | 8      | 0                                     | 0      | 1       | 6       | 1        |
| Number of Units                                                  | 557    | 0                                     | 0      | 52      | 403     | 102      |
| WALNUT CREEK                                                     |        |                                       |        |         |         |          |
| Number of Developments                                           | 22     | 0                                     | 2      | 5       | 3       | 12       |
| Number of Units                                                  | 6,692  | 0                                     | 143    | 592     | 5,001   | 956      |
| PLEASANT HILL                                                    |        |                                       |        |         |         |          |
| Number of Developments                                           | 13     | 1                                     | 4      | 3       | 4       | 1        |
| Number of Units                                                  | 2,135  | 200                                   | 577    | 966     | 276     | 116      |
| CONCORD                                                          |        |                                       |        |         |         |          |
| Number of Developments                                           | 31     | 0                                     | 2      | 4       | 15      | 10       |
| Number of Units                                                  | 4,065  | 0                                     | 253    | 356     | 2,040   | 1,416    |
| ALL CONCORD LINE STATIONS                                        |        |                                       |        |         |         |          |
| Number of Developments                                           | 80     | 1                                     | 9      | 13      | 32      | 25       |
| Number of Units                                                  | 14,229 | 200                                   | 1,173  | 1,966   | 8,255   | 2,635    |
| Percentage of Total Units                                        |        | 1.4                                   | 8.3    | 13.3    | 58.4    | 18.6     |
| (Percentage of Total Units,<br>Excluding Rossmoor Leisure World) |        |                                       |        |         |         |          |
|                                                                  |        | (2.0)                                 | (13.0) | (20.0)  | (37.0)  | (28.0)   |

Source: Computation of fastest street-access route between the center of the development and the closest BART station -- figures measured by the author using a current Contra Costa street map.

TABLE 3  
ACCESS TO BART BY MODE FOR CONCORD LINE USERS

| Travel Mode Used<br>to Reach Station                             | Percent of All<br>Line Users | Percent of Concord<br>Station Users Only |
|------------------------------------------------------------------|------------------------------|------------------------------------------|
| Automobile<br>(Includes car<br>pool users and<br>drop-offs)      | 73%                          | 73%                                      |
| Pedestrian                                                       | 10                           | 6                                        |
| Bus                                                              | 7                            | 11                                       |
| Other<br>(Includes bicycles,<br>motorcycles, and<br>unspecified) | 10                           | 10                                       |
| TOTAL                                                            | 100%                         | 100%                                     |

Source: May 1976 survey data collected by BART and MTC. There were 11,257 riders polled, 4,032 during off-peak hours and 7,225 during morning-peak hours. Riders were questioned while waiting at the station platform. The questions asked were "How did you get to the station today?" and "How long did it take you?"

TABLE 4  
ACCESS TO BART BY MODE AND TIME TAKEN FOR CONCORD LINE USERS

| Time Spent Reaching<br>Station from Origin | Access Mode (Percent) |                 |      |       | Percent of<br>All Line<br>Users | Percent of<br>Concord Station<br>Users Only |
|--------------------------------------------|-----------------------|-----------------|------|-------|---------------------------------|---------------------------------------------|
|                                            | Auto-<br>mobile       | Pedes-<br>trian | Bus  | Other |                                 |                                             |
| 2 Minutes or Less                          | 6%                    | 10%             | 4%   | 63%   | 11%                             | 11%                                         |
| 2 to 5 Minutes                             | 36                    | 32              | 20   | 11    | 32                              | 29                                          |
| 5 to 10 Minutes                            | 35                    | 30              | 32   | 15    | 33                              | 28                                          |
| 10 to 15 Minutes                           | 14                    | 20              | 21   | 7     | 14                              | 16                                          |
| More than 15<br>Minutes                    | 9                     | 8               | 23   | 4     | 10                              | 16                                          |
| TOTAL                                      | 100%                  | 100%            | 100% | 100%  | 100%                            | 100%                                        |

Source: Same as Table 3.

location process has not shifted in recent years to take advantage of proximity to BART (Table 5).

#### BART AND THE TOWNHOUSE LOCATION PROCESS

During the years that BART was available or at least imminent, developers frequently mentioned BART to prospective townhouse buyers. "Conveniently located just minutes from BART" is a phrase that appeared in countless advertisements since 1969, regardless of whether the townhouses being offered for sale were one mile or 15 miles from a station. In contrast to this willingness to take advantage of BART's general presence in the county, the dispersed location pattern for townhouses suggests that BART was not the only location factor. If we are to place the locational impact of the BART line in its proper perspective, we need to know the factors that were important in the decisions to construct and site townhouses in Contra Costa County.

The history of townhouse construction can be divided into three stages during which certain conditions influenced the location-decision process. We can trace each stage in the transformation of Contra Costa County from a low-density to a diversified residential district.<sup>38</sup> A similar evolution has marked numerous other suburban regions. Even though the presence of a rapid transit line during part of this evolution was highly unusual, the major economic, political, and social forces shaping Contra Costa County's suburban landscape are not unique. Political and social factors were important at every stage in the evolution, and they probably outweighed the importance of transportation and accessibility factors. Above all, it was the attitude of builders and buyers toward access to "a suburban environment" -- not pedestrian access to BART -- which was most important in determining the evolving location pattern.

TABLE 5

## NUMBER OF TOWNHOUSE DEVELOPMENTS AND DISTANCE FROM STATIONS BY YEAR

| Year Development Initiated* | Number of Developments | Number of Units | Mean Distance to BART Station (miles) |
|-----------------------------|------------------------|-----------------|---------------------------------------|
| 1962                        | 2                      | 82              | 2.7                                   |
| 1963                        | 2                      | 4,860**         | 9.1                                   |
| 1964                        | 2                      | 240             | 2.2                                   |
| 1965                        | 0                      |                 |                                       |
| 1966                        | 0                      |                 |                                       |
| 1967                        | 0                      |                 |                                       |
| 1968                        | 1                      | 196             | 1.4                                   |
| 1969                        | 2                      | 920             | 7.2                                   |
| 1970                        | 12                     | 1,821           | 5.2                                   |
| 1971                        | 18                     | 2,303           | 5.0                                   |
| 1972                        | 22                     | 1,753           | 4.7                                   |
| 1973                        | 8                      | 853             | 2.2                                   |
| 1974                        | 5                      | 703             | 4.7                                   |
| 1975                        | 1                      | 96              | 4.5                                   |
| 1976                        | 5                      | 402             | 4.5                                   |
| TOTAL                       | 80                     | 14,229          | 4.5                                   |

Source: Contra Costa County subdivision plat map records.

\* All of the townhouse housing units built or approved for construction are included in the total units listed for the year when building permits were first approved.

\*\* The 1963 figures include all 4,800 Rossmoor Leisure World units built between 1963 and 1976.

Before the first townhouses were constructed in 1962, single-family detached houses comprised 95 percent of all new homes constructed in the study area. Central Contra Costa County's population soared as the region's orchards and fields were replaced by housing subdivisions.<sup>39</sup> The pattern of subdivisions was by no means "city-centered growth" in the sense of spreading outward from the six existing agricultural service towns in the area. Residents of these new homes were driving long distances to employment centers in the metropolitan core or in the industrial belt along the county's northern shoreline. Builders were free to select locations far from the existing towns because the wide availability of agricultural irrigation water and other utilities made linkages to city utilities systems unnecessary. Remoteness from preexisting city subdivisions, in fact, constituted a great part of the appeal of these homes, many of them built with the orchard trees still standing.

The construction of higher-density housing of all kinds during this period was minimal until after 1960 when the county shared in a suburban apartment boom that had national dimensions. These early garden apartments were limited to certain kinds of locations only. In the minds of the builders, planners, and governmental officials responsible for regulating apartment location, apartments were to be treated differently from free-standing homes. It was only the generally less-desirable locations that were made available. Existing town centers were deemed suitable sites for apartments; and during this time much land near the centers of Walnut Creek, Concord, Martinez, Antioch, and Lafayette was zoned for apartments. It was assumed that older residential areas would "filter down" and follow a transition cycle to higher densities -- a transition cycle similar to that believed inevitable for all cities.<sup>40</sup> In Walnut Creek, for example, when

rezoning for higher-density in 1953, planners argued that some balance needed to be struck between "city-like" densities at the core and "the feeling of country living" in the surrounding new neighborhoods.<sup>41</sup> Prophecies such as these were self-fulfilling, and by 1965, after a boom in apartment construction, there were 5,000 new apartment units located in the designated central locations.<sup>42</sup> Apartments located in this area did conform to a city-centered pattern, although the presence of rail rapid transit was unimportant to the locational rationale.

Apartments were at that time perceived also as suitable "buffers" to separate commercial areas from lower-density residential uses. Apartments were consequently permitted, then built, near most community shopping centers. Accepted practice also permitted apartments to occupy the strip-commercial zones along major arterial streets. Heavy traffic along the streets made the sites less desired for detached homes and child-rearing, and apartments and commercial activities were allowed to bid for these less-desirable building sites. The resulting location pattern for apartments in the Concord area illustrates these location principles (Figure 2). Apartments can be seen to be concentrated in areas zoned for them in the 1950s and early 1960s -- near the old city core, near shopping centers, and along the main strip commercial streets.

Despite these location restrictions, most planners and government decision-makers were favorably disposed toward apartments during this time. Planning documents of this era speak eloquently of the needs of the aged or the transient who were not suited for large detached houses. But the perceived need for segregation of higher-density housing from single-family home areas took precedence. When the county planning staff did try to zone sections of lower-density and upper-income Orinda, Lafayette, and

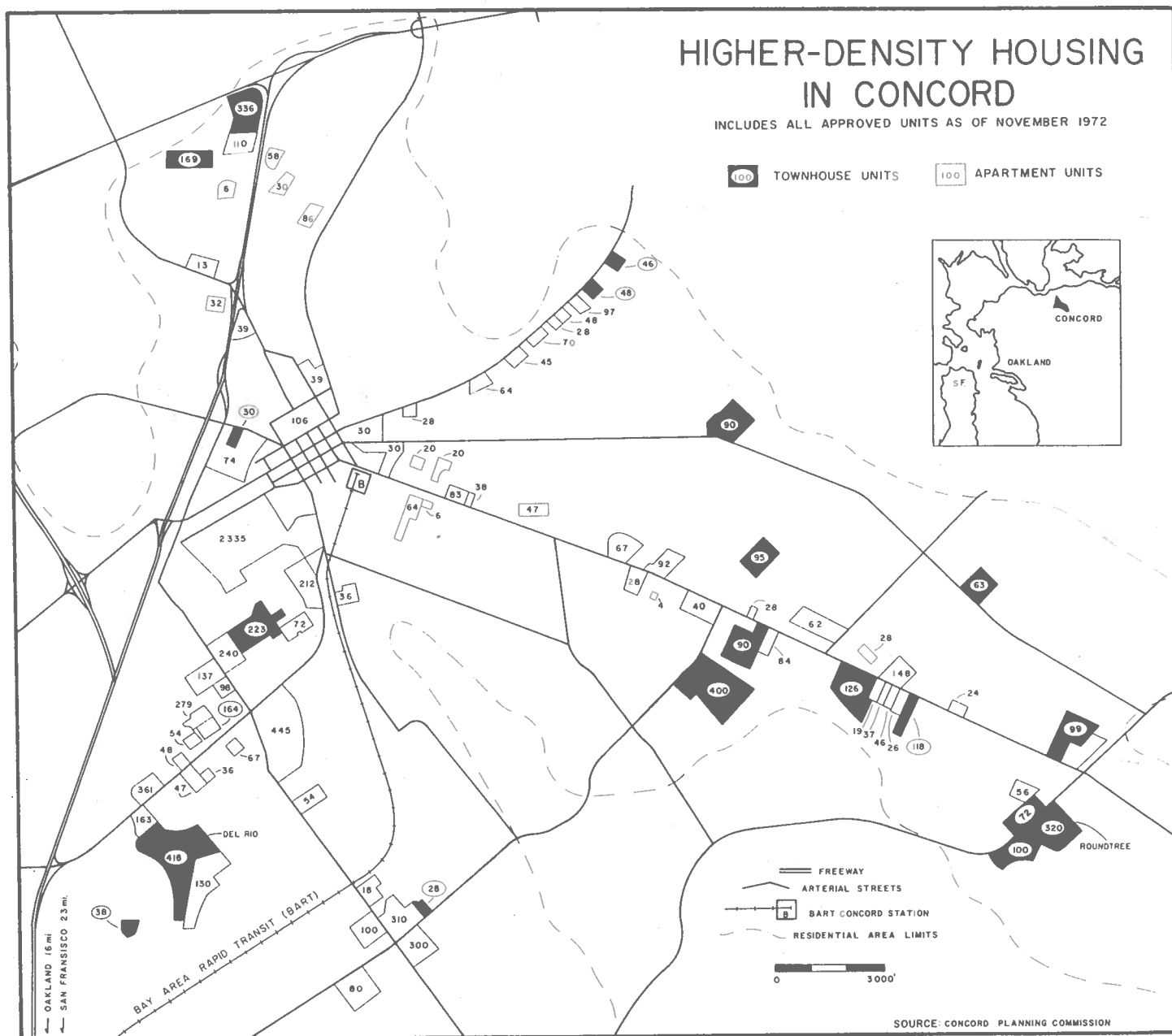


FIGURE 2  
HIGHER-DENSITY HOUSING IN CONCORD

Moraga for apartments, existing residents acted to protect their neighborhoods from the visual and social intrusions represented by apartments. The Orinda Association prevented extensive rezoning for apartments in the 1950s, and, in the subsequent years, the cities of Lafayette and Moraga were incorporated largely to fight the intrusion of higher-density housing into open land or areas zoned previously for detached homes. Apartment houses were thus not permitted to take on a sprawling location pattern.

The first stage of townhouse construction, 1962-1970, was a period of experimentation, with the new townhouses being seen as an alternative to the garden-apartment form of higher-density housing. Nine townhouse developments were started, and they attracted a great deal of enthusiastic praise from builders and planners in the county who perceived them as a welcome addition to the suburban housing stock (Table 5). To facilitate townhouse construction -- even in zones previously reserved for detached homes -- "Planned Unit Development" (PUD) ordinances were passed by all Contra Costa city and county governments.<sup>43</sup> The earliest such ordinance, adopted by the county in 1963, reveals the high hopes many had for townhouse construction:

whereas the application of conventional regulations may create a monotonous and stultified neighborhood...this Planned Unit District is intended to allow diversification in the relationships of various uses, buildings, structures, lot sizes, and open space.<sup>44</sup>

This willingness to have alternative forms of owner occupied housing built in the suburbs coincided with a nationwide effort to promote diversified suburban housing. Builders organizations, such as the National Association of Home Builders (NAHB) and the Urban Land Institute (ULI), coordinated and led this effort by publishing and distributing literature that praised all forms of townhouses.<sup>45</sup> The federal government's FHA joined

in this campaign by authoring literature praising townhouses and by adopting procedures encouraging builders to experiment with alternatives to the single family house in suburban neighborhoods.<sup>46</sup> Architects, intellectuals, and social critics contributed to a chorus of criticisms directed at "conventional suburbia," calling instead for a more varied housing choice in suburban neighborhoods. These pressures to innovate and densify were felt especially intensely by the Contra Costa County builders and planners, because they were in the hinterland of the nation's most active NAHB chapter -- the Associated Homebuilders of the Greater East Bay. When a local builder, Joe Duffel, built the first two townhouse developments in 1962, he did so in response to insistent prodding from the local NAHB chapter.<sup>47</sup>

In their locations, most of the first nine townhouse developments were similar to the apartments built before them. Seven of the nine were on arterial streets or on downtown sites that had been zoned for apartments. Only two, both part of new town-scale projects like the Rossmoor Leisure World, were built on open agricultural land in sites that would otherwise have gone to detached homes.

Their design indicated that they were perceived as complementary rather than an alternative to the single family detached house. Every one of the nine developments was designed for families and individuals without children. Six of the nine specifically forbade occupancy by households with children. Not one of them provided children's play areas or equipment among the numerous open space and recreation features. Developers and designers then were seemingly convinced that any middle-class family with children would prefer to live in a detached house. Indeed, anyone desiring to reside in Contra Costa County at this time would have been able to

purchase a new detached house somewhere in the county for the same price as a townhouse. In price, design, and location, townhouses were not bringing suburban homeownership to families who could not otherwise afford it.

Townhouses did provide a better form of apartment house for those who did not want to take care of a house. In all of the nine, the homeowners were not required (or permitted) to maintain the lawns and open spaces; a mandatory-membership homeowners association (HOA) did all exterior maintenance on each townhouse. No homeowner was required to mow the front lawn or even was permitted to install a screen door on his front entrance without HOA permission. For those who desired this luxury, townhouses were a better form of apartment -- better because the residents got the financial advantages and the security of home ownership. Townhouses further improved upon rental apartments of the time in that all homes were single-family structures and all developments contained elaborately landscaped grounds with swimming pools and clubhouses. Advertisements for townhouses at this time stressed this great contrast between the responsibilities of ordinary home ownership and the luxury of the "carefree lifestyle" in a townhouse "garden apartment home": "Come to Del Rio. The Home of the garden homes. Where you will find the good life: A leisurely style of living. Free of Maintenance. Free of Care."<sup>48</sup> Typical of the townhouses aimed at the retirement market, one of Rossmoor's imitations in 1964 advertised its townhouses as "A new concept in suburban living...cluster homes in a resort-like community setting...adult country club living at its very best."<sup>49</sup> With townhouses conceived of as a form of luxury, low-maintenance housing, it is not surprising that their price effected no savings over comparably-sized detached homes.

In the second stage of townhouse construction, 1970-1973, there was a classic real estate boom in townhouses. Sixty new developments were initiated containing over 6,700 townhouse units, even outnumbering new detached houses permitted during this period. A number of coinciding factors, of which BART was only one, explain the boom. For this brief time, builders, governmental agencies, lenders, and the buying public all were favoring townhouse construction. The land use regulating agencies were still favorably disposed toward more higher-density housing, and the zoning and planning procedures were now established. By now the numerous small builders who had always dominated residential construction here had gained a familiarity with the new townhouse product, and many were eager to try their hand at building them. A strong demand for townhouses peaked in this period, owing to the rising numbers of childless households. These conditions coincided in time with plentiful mortgage money. Interest rates were low, and the national economy was in good condition. More new homes were constructed in the United States during those four years than in any other similar period in history. Contra Costa County was not the only region of the Bay Area to participate at a high level in the townhouse boom. There were 200 similar developments initiated in the other four most populous Bay Area suburban counties.<sup>50</sup>

Important design and locational innovations became accepted in the townhouses of this era, innovations that contributed to the later demise of townhouse construction. Many townhouses were built in locations adjacent to detached houses, the county taking the lead by zoning much open agricultural land for townhouse PUDs. The cities followed suit, permitting about half of the new townhouse developments to be built on land previously designated for detached houses. With their new locational freedom,

townhouses were constructed in 30 of the 40 census tracts experiencing residential construction at this time. For the first time it was possible to purchase less-expensive land and to build townhouses far from arterial streets and commercial districts.

The design changes effected during this period began to make some townhouses a more acceptable alternative to detached houses. Twenty of the sixty developments were specifically designed for the lower-to-moderate-income market. While the lowest-cost detached homes available in the blue-collar northern suburbs were priced lower than the cheapest townhouses, the low-cost townhouses did permit their purchasers to live in middle-class sections of the area at a cost lower than that of detached houses on the same sites. Developers proudly asserted that their low-cost townhouses constituted "a private-enterprise 'operation breakthrough'" that could be contrasted to George Romney's abortive effort by that title.<sup>51</sup> One builder, who happened to be a past director of the NAHB, declared that his townhouses were "the only way we can provide people with first rate homes in a rich environment, at prices they can afford."<sup>52</sup> Joe Duffel, the original townhouse developer, began four new developments totalling 700 townhouses during this period, reasoning that townhouses were the only way he could provide "quality low maintenance homes within the price range of the average family."<sup>53</sup> There was some self-delusion in these claims, because the only way cost savings were affected was by building small (800-1100 square foot) homes with little private open space and with a net density of 16 units per acre. Further, every one of the lower-cost townhouses was located in an inferior apartment-type location (if in a middle-class area) or in a blue collar area.

When developers did get townhouse zoning on prime open land, they invariably built more expensive townhouses. At the same time, the design of these became substantially more like their detached neighbors. Whereas none of the townhouses built before 1970 provided a private garage, every one of the 40 higher-cost townhouses of this period did so. The net residential density for these townhouses dropped to only 10 units per acre, compared to 16 units per acre in the pre-1970 or lower-cost townhouses. Exterior maintenance remained in the hands of an HOA in 58 of the 60 new townhouses, but in two developments the homeowners were given the right and responsibility for maintaining their yards and house exteriors. Larger private patios or yards were provided in the homes of this period.

In the third stage of townhouse construction, 1973-1976, the townhouse boom came to an abrupt end, in part due to the locational and design changes which were initiated in the 1970-1973 period. The main factor was a citizens "environmental revolt"; but also at this time developers had accumulated a large inventory of unsold townhouses, and townhouses were not appreciating in value as fast as detached houses were. A rising movement for suburban growth control and a sharp downturn in townhouse construction were trends that occurred nationwide and had little to do with the opening of the BART rapid transit line.

The citizens' environmental movement in Contra Costa County singled out townhouses for special opposition. As early as 1970, when the county approved a 200 townhouse PUD near the Orinda BART station, a group of Orinda homeowners filed a lawsuit to block the development. In May 1972, an organization was formed with the express purpose of coordinating the spreading opposition to higher-density housing -- the "Central County Residents for Density Control" (CCRDC). Founders of the CCRDC argued, to

apparently sympathetic ears, that "the escalating frequency of higher-density rezoning rapidly is converting the rural, suburban environment into a smog-ridden metropolis."<sup>54</sup> As the CCRDC swiftly gathered thousands of members into its organization, the budding environmental movement gained its first major victory over townhouse rezonings in Walnut Creek. In November 1972, the pro-growth members of the City Council were defeated and the environmentalist candidates won. The primary issue in that campaign was the proposed construction of more townhouses east of town on open ridgeland. The implications of that election for politicians and zoning board members all over the county were quickly perceived. It became difficult to obtain rezoning of prime residential land for townhouses. When the county went against the local residents' wishes in permitting five new townhouse developments south of Orinda in 1974, the residents there voted to incorporate as the new town of Moraga. As in all of the other suburbs, the new town's elected officials were now committed to retaining the community's "character" against the intrusion of more higher-density housing.

Even if the political atmosphere had not swung so dramatically against higher-density housing, builders may not have continued to construct townhouses at the 1970-1973 rate. Townhouses had seemed to answer many cost-related problems, but the reality of a limited townhouse utility became clear. Builders learned that the costs of townhouse construction were as high or higher than costs for detached houses, largely because of the need to provide extra soundproofing in walls between units.<sup>55</sup> The expected savings in land costs were nullified by the expense of providing luxurious landscaping and extensive common open space and recreation facilities in place of private yards. In only one case did the developer

strip away the expensive common areas and recreation facilities, and then the buying public recognized these townhouses as essentially row houses, no different from those in older inner-city neighborhoods. In the lower-income areas around Antioch and Pittsburg, home buyers overwhelmingly chose to buy small detached houses available for the same cost in the same areas. Builders of more expensive townhouses in other areas found that they were competing for a limited pool of potential buyers. Few townhouse purchasers were coming into the county from the rest of the Bay Area -- even in the townhouses closest to a BART station, the majority of the new purchasers were residents of the nearby neighborhoods. The modal townhouse purchase was by a household who had already raised a family in the county's post-war detached houses.

#### THE LACK OF INTENSIVE DEVELOPMENT AROUND THE BART STATIONS

Although the BART planning documents did not specify exactly what form "subcentering" would take, there was a strong implication that the land immediately around the stations would receive the most intense residential and commercial development.<sup>56</sup> Since only 10 developments, containing but 1,373 townhouses, lie within one mile of any station, it can be seen that station-oriented housing concentrations have not emerged. But even though the presence of BART did not prevent townhouse developments from exhibiting a sprawling pattern throughout the study area, some degree of subcentering has occurred. In the two decades since BART was first planned, Walnut Creek and Concord did retain and strengthen their positions as the county's leading concentrations of commercial and higher-density residential land use. The subcentering that has occurred in the county's two leading cities has not involved the immediate station areas, and four sets of reasons can be advanced to explain why not.

First, there are few available large vacant sites on flat land near the stations. BART planners sited stations near then-existing commercial and residential centers; a majority of the land within a one-mile radius of each of the five stations was thus already subdivided into small building lots. Townhouse developments in the study area contain on the average more than 10 acres, and townhouse developers seemed unwilling to build at a smaller scale or at a higher density in order to use the available station-area sites. So far, developers have shown little inclination to do the difficult work of assembling contiguous small parcels or redeveloping lower-density housing areas. To complicate this scarcity of parcels developable by conventional methods, the placement of several BART stations near freeways or near regional open space lands further reduces the pool of potential close-in sites. Only the Pleasant Hill station was surrounded by open sites of suitable size for conventional townhouse developments -- and it is around this station that the single greatest concentration of townhouses is emerging. A 20-square-block area southwest of the Concord station contained numerous open large building lots, and those sites were used for apartment construction between 1960 and 1976. There is evidence here to suggest that the availability of large unbuilt-on land parcels is a missing prerequisite for station area development.

A second reason for the lack of development immediately adjacent to the stations is the BART District's effort to provide close-in parking for "park-and-ride" use. BART has secured 60 acres of land and built 5,565 parking spaces adjacent to the five stations, and currently 70 percent of the Concord Line riders arrive daily by automobile (Table 6). Prospective developers would have to compete for these closest-in sites with the BART District, and the District is actively seeking to expand these

TABLE 6  
RIDERSHIP AND PARKING AVAILABLE BY STATION, CONCORD LINE

| Station       | Parking Spaces | Daily Ridership | Percentage of Concord Line's Ridership | Percentage of Total BART's Ridership |
|---------------|----------------|-----------------|----------------------------------------|--------------------------------------|
| ORINDA        | 939            | 1,688           | 12.0%                                  | 2.6%                                 |
| LAFAYETTE     | 982            | 1,930           | 13.8                                   | 3.0                                  |
| WALNUT CREEK  | 1,156          | 3,429           | 24.4                                   | 5.3                                  |
| PLEASANT HILL | 1,414          | 2,959           | 21.1                                   | 4.6                                  |
| CONCORD       | 1,074          | 4,021           | 28.7                                   | 6.3                                  |
| LINE TOTAL    | 5,565          | 14,027          | 100.0%                                 | 21.9%                                |

Source: BART staff, December 8, 1976. The daily ridership figure is the actual figure for November 17, 1976 -- a typical day. Normal system ridership is 128,000 -- 134,000 rides. Each of the station "rides" is measured as one "exit" through the turnstyle at that station.

parking lots. The depth of the present BART management's commitment to "park-and-ride" operations is indicated by their unwillingness to charge for parking at any of the suburban stations' share of the system's 19,000 parking spaces. Eventually, the air rights above the parking lots may become available for housing or commercial land use, but the present weak demand for that land is indicated by the fact that not a single multi-level garage or fee-parking facility has yet been built near the Concord line stations.

A third reason for the lack of the building activity near the stations is inactivity or opposition by agencies responsible for regulating land use around each station. At the Orinda station, land use is controlled by the Orinda Association in conjunction with the county. That Association has a thirty-year history of opposition to higher-density housing or region-serving commercial land uses. The city of Lafayette which controls that station area's land use, was incorporated in 1968 with the specific intent of ending the proliferation of higher-density housing in the downtown. That city's planning staff in 1972 briefly considered a proposed "BART Block" plan for high-rise commerce and residence around the station (with the Swedish new towns as their model), but strong citizen opposition put a swift end to that plan.<sup>57</sup> Both Lafayette and Orinda are now committed to preserving the "suburban character" of their neighborhoods against possible encroachment of "urban" higher-density land uses. Walnut Creek's government was active in the pursuit of higher-density land use, but only one ten-story high-rise building has been completed adjacent to the station, and now the weight of citizen opinion supports downzoning existing residential areas around the station. The Concord planners hoped to use a redevelopment agency to consolidate parcels near its BART station; but, there too, strong citizen opposition to any redevelopment agency actions surfaced after 1972; and

now it seems certain that no bold actions will soon be forthcoming from Concord.<sup>58</sup> Only the Pleasant Hill station area, under the jurisdiction of the county, is regulated by a governing agency still amenable to high-density development. The Pleasant Hill station area plan, still being finalized, contains policies to encourage consolidation of small parcels into blocks of land suitable for high-density commercial and residential development.<sup>59</sup>

A fourth reason for the low intensity of development near the stations is the willingness of Walnut Creek and Concord to permit new commercial development in alternate locations at some distance from their BART stations. The region's major new regional shopping centers, developed in 1968 and 1976, were located two miles west of the Concord BART station. The site chosen for Sun Valley, for example, had close connections to freeway exits and completely vacant land -- but poor connections to the BART line. Walnut Creek's downtown has continued to grow, adding a new department store and high-rise office building, but those too are more than a mile from the BART station on the other side of downtown Walnut Creek. Concord and Walnut Creek are apparently unwilling to force prospective office and retailing developers to use sites closely linked to BART. The opportunity to create multifunctional nodes near the BART stations was not seized, and now the region's major employment and office districts have been established elsewhere, although still within the designated subcenters.

#### CONCLUSIONS AND FINAL CONSIDERATIONS

The goal of suburban subcentering in nodes of high-intensity land use around rapid transit stations has not been embraced by enough of the decision-makers responsible for shaping suburban form. Whatever support

that concept may have is weaker than the forces that oppose a more urbanized suburban form. The citizens who already live in the suburbs have demonstrated a widespread desire to preserve what remains of their region's low-density, semi-rural character. Developers and purchasers of new townhouses in the region also indicated that they too value a suburban -- rather than an urban or subcenter -- setting for their townhouses. Opposition to higher-density housing became organized when a townhouse construction boom began to bring higher-density housing to all sections of the suburbs, not just to the older neighborhoods. Today it would be difficult to get approval for additional townhouses in any part of the county.

The general opposition to higher-density housing and region-serving commercial land uses near established low-density neighborhoods applies as well to the areas around the BART stations. Three of the five stations are so close to existing residential neighborhoods that future construction at those nodes will have to overcome strong objections. Even at the two stations where the most intense, close-in development was specified by the BART plan, there is strong opposition to the redevelopment tools necessary for assembling useably large parcels of land. As long as the public continues to reject high-density land uses, they will be effective in preventing nodal subcentering, even though local plans have in the past demonstrated some attraction to the concept.

Strong actions by a higher authority could overrule the opposition of local interests, but no regional agency is presently willing to act to implement the goals of subcentering. The BART District itself continues to emphasize BART's "park-and-ride" function, while the long-term goal of concentrating trip destinations within walking distance of the stations goes unimplemented. We might well conclude that, beyond the original plan, the

BART District and its backers were never deeply committed to the goal of changing the suburbs' sprawling form into a more nucleated and efficient pattern. The early BART plan appeals for reshaping the suburbs were never translated into explicit policies to do so.

Perhaps in the long run the stations will develop anyway as nodes of high-density land use. That this would happen without explicit policies might well have been believed by BART planners and managers. Proponents of this view still argue that "a rail transit system will lead to the construction of housing at the densities necessary to make the system cost effective."<sup>60</sup> Others are more pessimistic about the prospect of concentration eventually evolving around the stations without direct land use controls to complement the rapid transit planning. Bain, for one, has argued that:

In the modern era, when nearly every household has at least one car, rapid transit can no longer have the nucleating effects that it did when people needed to live within walking distance of transit.<sup>61</sup>

Hamer concurs, arguing that:

The impact of local rail transportation on the distribution of metropolitan growth was greatest when transportation access was a very scarce resource. Today, in development areas, incremental improvements in accessibility cannot be judged to have the same type of controlling influence exhibited in the past.<sup>62</sup>

Bourne has found that, even in a freeway-poor city like Toronto, "accessibility, then, has become an inferior good."<sup>63</sup>

Since BART is already in place in the San Francisco suburbs, the best policy may be one which takes the required strong steps to insure that nucleated development will occur around the stations in the future. One geographer has argued that "to make the system successful it would not be sufficient to rely on a central city concentration of work force alone: additional foci would have to emerge on the lines."<sup>64</sup> The American suburban

rapid transit lines differ in this aspect from others such as those in Europe where coordinated land use policies were an essential part of suburban rapid transit planning: "at an early date planning authorities stressed that only the concentration of apartment houses secures a population density high enough to maintain public transport."<sup>65</sup> Bain has summarized the implications of this perspective in his recent recommendations for the suburban BART-like sections of the Washington, D.C. rapid transit:

Steps should be taken to secure intensive, pedestrian oriented development around some rapid transit stations. This has always been held forth as one of the desirable consequences of rapid transit, but it clearly will not take place if we simply build the system and then let the real estate market take its course, with only such guidance as conventional planning and zoning provide.<sup>6</sup>

Some hope for the emergence of future concentrations of townhouses in subcenters may perhaps be derived from the emergence of such intense opposition to the dispersion of townhouses. Now that it is no longer easy to obtain permission to build townhouses or apartments in fringe area sites, the continuing demand for higher-density types of housing may lead to a return to the expensive sites closer to the stations. But while this may satisfy the need for BART patronage, there is little evidence to suggest that townhouse purchasers actually seek this improved public transportation access. Instead, townhouse buyers will probably continue to want most of all to have the same suburban settings that single family home buyers have preferred. Such low-density settings for townhouses were possible briefly in the last decade, but it seems unlikely that townhouses will soon be allowed again to sprawl into single family detached home areas.

## NOTES

<sup>1</sup>Parsons, Brinkerhoff, Hall, and MacDonald, *Regional Rapid Transit: A Report to the San Francisco Bay Area Rapid Transit Commission* (New York: Parsons, Brinkerhoff, Hall, and MacDonald, 1956). Parsons, Brinkerhoff, Tudor, Bechtel; Smith, Barney, and Company; Stone and Youngberg; and Van Beuren Stanbery; *The Composite Report, Bay Area Rapid Transit* (1962).

<sup>2</sup>Parsons et al., *The Composite Report*, p. 82.

<sup>3</sup>*Ibid.*, p. 83.

<sup>4</sup>Parsons et al., *Regional Rapid Transit*, p. 10.

<sup>5</sup>Melvin M. Webber, *The BART Experience -- What Have We Learned?* (Berkeley: University of California, Institute of Urban and Regional Development, Monograph No. 26, October 1976).

<sup>6</sup>Parsons et al., *The Composite Report*, p. 82.

<sup>7</sup>*Ibid.*

<sup>8</sup>James Leslie Davis, *The Elevated System and the Growth of Northern Chicago* (Evanston, Ill.: Northwestern University Studies in Geography, Number 10, 1965).

<sup>9</sup>Parsons et al., *Regional Rapid Transit*, p. 106. Parsons et al., *The Composite Report*, p. 82.

<sup>10</sup>Arthur B. Gallion and Simon Eisner, *The Urban Pattern: City Planning and Design* (New York: Van Nostrand, 1963), p. 347. Ann Louise Strong, *Planned Urban Environments* (Baltimore: The Johns Hopkins Press, 1971), pp. 37-61.

<sup>11</sup>Parsons et al., *Regional Rapid Transit*, p. 18.

<sup>12</sup>*Ibid.*, p. 20.

<sup>13</sup>*Ibid.*, p. 18.

<sup>14</sup>*Ibid.*

<sup>15</sup>Ibid., p. 20.

<sup>16</sup>Ibid.

<sup>17</sup>Association of Bay Area Governments, *Regional Plan 1970:1990* (Berkeley: 1970). Association of Bay Area Governments, *Preliminary Regional Plan* (Berkeley: 1966).

<sup>18</sup>City of Walnut Creek, *General Plan* (1954 and later revisions). City of Concord, *General Plan* (1959 and 1966).

<sup>19</sup>Contra Costa County, *Land Use and Circulation Plan* (Martinez, CA.: 1945 and 1963).

<sup>20</sup>Harold Brodsky, "Land Development and the Expanding City," *Annals of the Association of American Geographers* 63 (1973): 159-166, p.161.

<sup>21</sup>Ibid. See also: Fred Bosselman, "Alternatives to Urban Sprawl," *Research Report No. 15* (Washington, D.C.: National Commission on Urban Problems, 1968); Real Estate Research Corporation, *The Costs of Sprawl* (Washington, D.C.: Council on Environmental Quality, 1974).

<sup>22</sup>Andrew Marshall Hamer, *The Selling of Rail Rapid Transit* (Lexington, Mass.: Lexington Books, 1976) p. 250.

<sup>23</sup>Peter Hall, "The Urban Culture and the Suburban Culture," *Man in the City of the Future*, edited by Richard Eells and Clarence Walton (London: Collier-MacMillan Limited, 1968), pp. 99-147, p. 103, p. 120. See also two additional perspectives on the mythology of urban sprawl: Robert O. Harvey and W.A.V. Clark, "The Nature and Economics of Urban Sprawl," *Land Economics* 41 (1965): 1-9; J. Lessinger, "The Case for Scatteration: Some Reflections on the National Capital Region Plan for the Year 2000," *Journal of the American Institute of Planners* 28 (1962).

<sup>24</sup>Lewis Mumford, *The Culture of Cities* (New York: Harcourt Brace, 1966), p. 397.

<sup>25</sup>Victor Gruen, *Centers for the Urban Environment* (New York: Van Nostrand, 1973) p. ix.

<sup>26</sup>Gerald Manners, "The Office in Metropolis: An Opportunity for Shaping Metropolitan America," *Economic Geography* 72 (1974): 93-110, p. 107.

<sup>27</sup>Truman Hartshorn, "Industrial and Office Parks: A New Look for the City," *The Journal of Geography* 72 (1973): 33-45.

<sup>28</sup>Peter Muller, *The Outer City: Geographical Consequences of the Urbanization of the Suburbs* (Washington, D.C.: Association of American Geographers Resource Paper No. 75-2, 1976).

<sup>29</sup>Professor Jerry B. Schneider at the University of Washington is currently engaged in a major research project evaluating how transit investments are used in the implementation of multi-centered land use plans. His NSF sponsored research is entitled "Assessing the Role of Transit in the Implementation of Adopted Multi-Centered Land Use Plans." He is reviewing the many plans which call for "the development of several relatively large 'major diversified centers (MDC's)' in strategic locations within the metropolitan area" -- personal communication, February 9, 1977.

<sup>30</sup>This is the date cited by Joel Markowitz, planner for the Metropolitan Transportation Commission's "BART Impact Program" -- personal communication, February 10, 1977.

<sup>31</sup>Melvin M. Webber, *The BART Experience*, p. 15.

<sup>32</sup>Dennis Dingemans, "Rail Rapid Transit in the Suburbs: The Location of Townhouses in Philadelphia's Lindenwold Line Corridor," *Proceedings of the Association of American Geographers* 8 (1976): 85-89.

<sup>33</sup>Joe Asher, "If Transit Comes, Can A Real Estate Developer Be Far Behind?" *Railway Age* 171 (November 8, 1971): 32-34; G. Warren Heenan, "The Economic Effect of Rapid Transit on Real Estate Development," *Appraisal Journal* 36 (April 1968): 213-224.

<sup>34</sup>Nancy W. Sheldon and Robert Brandwein, *The Economic and Social Impact of Investments in Public Transit* (Lexington, Mass.: Lexington Books, 1973), pp. 41-47. For a critical review of the pro-rapid transit statements, see Hamer, *The Selling of Rail Rapid Transit*; also see Peter Marcuse, "Mass Transit for the Few," in *Society* 13 (September-October 1976): 43-51; see also Henry Bain, *New Directions for Metro: Lessons from the BART Experience* (Washington, D.C.: Center for Metropolitan Studies, 1976), pp. 20-21.

<sup>35</sup>The previous research is reported in: Dennis Dingemans, "The Townhouse in the Suburbs: A Study of Changing Urban Morphology and Social Space in American Suburbs, 1960-1974" (doctoral dissertation, University of California, Berkeley, 1975). The data on townhouse construction in Contra Costa County was updated through December 1976 by telephone interviews with the planning departments of the county and cities involved.

<sup>36</sup>*Ibid.*, Chapter Three.

<sup>37</sup>The low number of persons reaching BART stations by foot is in contrast to other transit systems where stations are expected to be within walking distance of many of their patrons. Bernard Marchand has recently

generalized that "a rule of thumb of transportation engineers in the United States assumes that a public transportation line attracts passengers from a longitudinal strip of at the most 600 meters on each side." Marchand's research in an upper income Paris suburb found that "the zone of attraction of the station is at least twice as large as the usual estimate." Bernard Marchand, "Planning Pedestrian Flows around a Subway Station: A French Case Study of the Time-Distance Decay Functions," *Geographical Analysis* 9 (1977): 42-50, p. 46, p. 47.

<sup>38</sup>Dingemans, "The Townhouse in the Suburbs," Chapter Three.

<sup>39</sup>Ibid., Chapter Three, Chapter Two.

<sup>40</sup>The classic statement of the land use transition process, as it is commonly understood, is in: Edgar Hoover and Raymond Vernon, *Anatomy of a Metropolis* (Garden City: Doubleday Anchor Books, 1962). A recent statement and affirmation of that transition cycle is in: David Birch, "Toward A Stage Theory of Urban Growth," *Journal of the American Institute of Planners* 37 (1977): 78-87.

<sup>41</sup>Harold Wise Associates, "A Preliminary General Plan for Walnut Creek" (Walnut Creek: 1953), p. 3.

<sup>42</sup>These figures were compiled and cited in: Dennis Neuzil, "Characteristics of Suburban Residential Trip Generation" (doctoral dissertation, University of California, Berkeley, 1965).

<sup>43</sup>The first PUD ordinance was passed by the county in 1963. Pleasant Hill adopted a similar one the same year. Martinez followed in 1965, Walnut Creek and Concord in 1968, and Antioch and Pittsburg in 1970.

<sup>44</sup>Contra Costa County Zoning Code, Section 8166, "Planned Development Districts."

<sup>45</sup>See the various issues of *Urban Land* (the Journal of the Urban Land Institute) between 1958 and 1964. See also the Urban Land Institute's series of *Technical Bulletins*, especially *New Approaches to Residential Land Development: A Study of Concepts and Innovations* (Washington, D.C.: U.L.I. Technical Bulletin No. 40, 1961). A Review of the role of the U.L.I. and the National Association of Homebuilders is presented in Roger Montgomery, "High Density, Low-Rise Housing and Changes in the American Housing Economy," in *The Form of Housing*, edited by Sam Davis (Van Nostrand, forthcoming).

<sup>46</sup>The FHA quickly accepted the idea of insuring condominiums when they were first discussed in 1960. The FHA also published several editions of *Planned Unit Development With a Homes Association* (Washington, D.C.: FHA Land Planning Bulletin Number 7, 1963).

<sup>47</sup>Dennis Dingemans, "The Townhouse in the Suburbs," Chapter Three. The Associated Homebuilders of the Greater Eastbay, under the direction of William T. Leonard, has been a major force urging local developers to build townhouses. Joe Duffel was one of those who attended a 1962 NAHB conference on condominiums.

<sup>48</sup>*Contra Costa Times*, November 29, 1969.

<sup>49</sup>*Ibid.*, October 22, 1964.

<sup>50</sup>Cited in *Northern California Real Estate Report* 24, No. 3 (1973): 3.

<sup>51</sup>Interview with Joe Duffel, July 2, 1973.

<sup>52</sup>*Contra Costa Times*, July 28, 1970.

<sup>53</sup>*Ibid.*, July 19, 1970.

<sup>54</sup>*Ibid.*, August 13, 1972.

<sup>55</sup>Interview with Joe Duffel, July 2, 1973.

<sup>56</sup>Neither the 1956 (Parsons et al., *Regional Rapid Transit*) nor the 1962 (Parsons et al., *The Composite Report*) plans give examples or details of the expected land use concentrations around the stations. These plans do clearly specify that commercial land use is to be expected near the stations (for example, pp. 75 and 76 of *The Composite Report*); the implication that residential clusters will appear as well is not so often given -- but p. 82 (*The Composite Report*) certainly intimates that the "clusters of businesses, industry, and homes" will all be near the stations. For a more detailed evocation of the character of suburban transit station clusters in a similar system, see Victor Gruen, *Centers for the Urban Environment*, pp. 240-244.

<sup>57</sup>The original "BART Block Plan" was prepared for Lafayette by the Hall and Goodhue planning firm and published in mimeograph in 1972.

<sup>58</sup>Interview with Ed Phillips, Concord Planning Department, May 1976.

<sup>59</sup>The county's "Plan for the Pleasant Hill BART Station Area" was still being discussed as of December 1976.

<sup>60</sup>Robert Schafer, *The Suburbanization of Multifamily Housing* (Lexington, Mass.: Lexington Books, 1974), p. 100. For a similar assertion, see Sheldon and Brandwein, *The Economic and Social Impact of Investments in Public Transit*, pp. 42 and 144.

<sup>61</sup>Bain, *New Directions for Metro*, p. 22.

<sup>62</sup>Hamer, *The Selling of Rail Rapid Transit*, p. 21.

<sup>63</sup>Larry Bourne, "Urban Structure and Land Use Decisions," *Annals of the Association of American Geographers* 66 (December 1976): 531-547, p. 546.

<sup>64</sup>Jean Vance, "Cities by San Francisco Bay," in *Contemporary Metropolitan America: Nineteenth Century Ports*, edited by John S. Adams (Cambridge: Ballinger, 1976) pp. 217-305, p. 258.

<sup>65</sup>E. Lichtenberger, "The Progress of the Apartment House at the Expense of the Single Family House in Continental Europe," *Proceedings of the International Geographical Union* 7 (1976): 289-293 p. 290.

<sup>66</sup>Bain, *New Directions for Metro*, p. 36.