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BERICHTE UND KLEINE MITTEILUNGEN

PATTERNS OF EXPECTED USE OF HAWAII'S REMOTE SUBDIVISIONS

With 1 Figure and 8 Tables

JEAN I. NISHIDA and LARRY K. STEPHENSON

The diffusion of remote subdivisions across rural landscapes in the United States is a common phenomenon today (PLATT, 1973; PARSONS, 1972). Such rural subdivisions, ranging in size from several to several thousand acres, have been variously characterized as recreational, second home, retirement, premature, unanchored, or speculative depending upon the particular setting and the means used to market them. Although often of design and layout similar to more traditional suburban subdivisions, remote rural subdivisions are, as the descriptive title indicates, actually rather remote from the main population centers, i. e., the major metropolitan areas in which the majority of owners of such subdivision lots reside.

Remote rural subdivisions have also been referred to as "subdivisions without homes" (PARSONS, 1972) due to the relatively low build-out rate as well as the apparent absence of buyers of lots with any intentions of establishing dwelling – seasonal or permanent – on their property (DICKINSON and JOHNSTON, 1973; JOHNSTON and HANSEN, 1974). In many cases, the low build-out rate is related to the relative lack of utilities and community facilities within the subdivisions. For example, piped water and electricity are either limited or nonexistent in many subdivisions, with costly installation charges for these services to be paid for by

the individual lot owner. Access to many of the lots in these subdivisions is by unpaved roads which may or may not be maintained regularly.

The purpose of this paper is to examine original expectations of buyers of remote rural subdivision lots in Puna, Hawaii and to assess shifts which have taken place between original and current intended uses.

The Puna area

The Puna area of the Island of Hawaii (Fig. 1) contains a relatively large number of such remote rural subdivisions with the characteristics noted above. Many of the 53 remote rural subdivisions in Puna were developed just prior to or immediately after Hawaiian statehood in the United States in 1959. The 50,227 parcels that collectively comprise these 53 subdivisions range in size from less than one fifth of an acre to 5 acres. These lots were, as of March 1975, owned by a total of 39,934 owners, 88 percent of whom reside outside the Island of Hawaii (STEPHENSON and NISHIDA, 1975).

Puna is located in the eastern portion of the Island of Hawaii and is situated on the slopes of Mauna Loa and Kilauea, both active volcanoes; elevation ranges

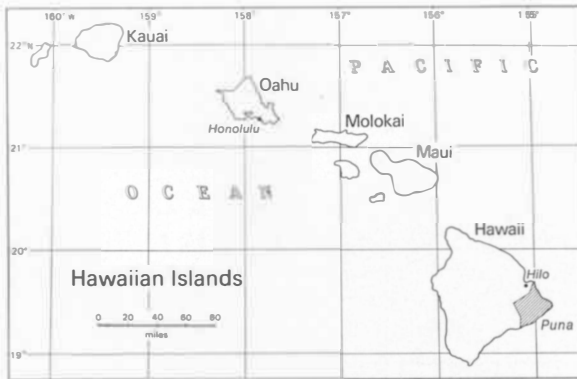


Figure 1: The Puna District of the Island of Hawaii

from sea level to approximately 4000 feet above sea level. The climate of Puna varies considerably, with elevation being a primary determinant. Precipitation from the moist air of the northeasterly trade winds is triggered by the orographic effect resulting from the gradually rising terrain. The overall effect of this precipitation regime is a relatively dry and sparsely vegetated shoreline blending into tropical rainforest in the higher elevations where rainfall may exceed 100 inches annually. Occasional heavy growth of trees, vines, ferns, and shrubs also occurs along certain coastal areas of Puna due to a more direct exposure to the prevailing winds.

Natural hazards abound in Puna. The rift zone of Kilauea and Mauna Loa volcanoes enters the area from the west and extends eastward to the coast; volcanic activity could occur along this rift zone at any time. An earthquake fault zone approaches Puna from the west and follows the coastal zone in an easterly direction with a fault swath averaging two miles in width. Earthquakes occurring along this fault zone could have considerable impact on structures built in the area. The Puna coast, portions of which have subsided over 3 feet in recent months, is also exposed to tsunamis and tidal waves along those sections where cliffs are not present to provide protection.

Most of the land used for remote subdivisions in Puna had previously been non-productive. The geologic base of the area is volcanic, with parts of it covered by lava flows of fairly recent origin, e. g., 1858, 1955, and 1960. At least one subdivision consists of lots bulldozed from a 1955 lava flow. Thus, the Puna area, while part of the tropical island state of Hawaii, is also an environmentally precarious area.

Lot acquisition

The majority of lots in the Puna subdivisions were acquired by their current owners in one of two ways. The first centers around the tourist who visits Hawaii and is exposed to the unique cultural and physical environment of the area. During his stay the average visitor can be (and usually is) lured with the opportunity to own land in this tropical island state. Many

hotels, for example, have real estate sales offices on their premises. If a person decides to purchase land he must specify where he wants to buy and justify (at least to himself) why he wishes to buy. The where question is in many instances dealt with by the real estate salesmen and the particular subdivisions or area they are touting; and, they may assist the potential buyer in justifying such a purchase. After purchasing a parcel and returning to his home area, a buyer will most likely periodically evaluate both his purchase and his intended use of the site. Possible outcomes of such an evaluation can be either a desire to change the purchase, i. e., to sell the parcel, or to change the intended use of the site, i. e., change the attitude toward the site. During this entire process, the land owner may or may not have actually viewed the parcel he purchased.

The second means of acquiring land in the remote subdivisions of Hawaii differs from the first in that the prospective buyer is exposed to the possibility of owning land on the Island of Hawaii through a marketing and sales campaign focused on his home area, a sales strategy which generally precludes a potential buyer from personally inspecting the land prior to purchase. Lots purchased in this manner are subject to the same periodic evaluation procedure as noted above. The majority of persons who purchase lots in this manner reside in the major metropolitan centers. In addition, lots may also be acquired directly from other individual lot owners.

Methodology

Four subdivisions were selected for study based on size of the subdivision and number and types of utilities available. The first of the two smaller subdivisions was Cymbidium Acres, a 177 lot development located near Hawaii Volcanoes National Park; it was initially developed in 1968. A portion of this subdivision has access to electricity; water is by individual catchment only. Waawaa, the second smaller subdivision, has 178 parcels located along the Puna coast, parcels which were originally offered for sale in 1958. There is no electricity available at Waawaa, and water is by individual catchment only. The two larger subdivisions were Nanawale Estates and Orchid Isle Estates. The former, a 4275 parcel development located near the community of Pahoa, was initially established in 1967. Between 50 and 75 percent of the lots in Nanawale Estates have access to electricity, while a smaller proportion located along the primary access road also have access to piped water. Orchid Isle Estates, developed in 1961, is a 893 lot unit located adjacent to a major highway near the community of Glenwood. It has no electricity currently available, and water is by individual catchment only. Access to almost all the lots in these four subdivisions is by unpaved cinder roads.

Systematic random samples (with varying sampling ratios for the different subdivisions) of owners of lots in these four subdivisions were drawn from the State of Hawaii property tax records. The lot owners selected were mailed a short questionnaire. A total of 407 questionnaires were distributed, of which 238 (58.5 per-

Table 1: Original and Current Intended Use of Lots, Percent

Subdivision	Original Intended Use				Current Intended Use			
	Vacation or Second Home	Retirement Home	Investment	Other*	Vacation or Second Home	Retirement Home	Investment	Other
Cymbidium Acres	20.5%	30.8%	53.8%	2.6%	15.4%	33.3%	56.4%	2.6%
Waawaa	10.0	37.5	72.5	7.5	15.0	30.0	70.0	7.5
Nanawale Estates	8.6	32.6	68.2	4.7	5.5	17.1	79.8	7.5
Orchid Isle Estates	23.4	33.3	56.7	6.7	23.4	23.3	53.3	10.0
Average	12.6	33.2	68.1	4.6	10.9	22.7	71.0	5.9

Source: Calculated by authors.

* The category 'other' encompasses a variety of intended uses; the principal use, however, appears to be that of primary residential dwelling.

cent) were returned. The lot owners who responded were assumed to be representative of all lot owners in these four subdivisions; and, they were further assumed to be generally representative of all owners of lots of Hawaii's remote subdivisions.

It was hypothesized that: 1) there would be a shift from a variety of initial intended uses to the view of the lot as a purely speculative investment; 2) the smaller subdivisions and those with more amenities would reflect a greater diversity of use types; and 3) those persons who had not viewed their lot prior to purchase or who have yet to view their lot will be least satisfied with their lot, irregardless of intended use.

Intended uses of subdivisions lots

The intended use of the lots associated with initial purchase varied slightly among the four subdivisions though the general pattern is readily apparent: the majority of people purchased lots primarily for investment purposes, while approximately one-third purchased them for eventual use as a site for a retirement home (Table 1). This finding supports that of Johnston and Hansen (1974) who found that an average of 45 percent of the lot owners of seven northern California subdivisions initially purchased lots primarily for investment reasons, the single greatest reason noted for such a purchase. The desire for a vacation or second home as the initial impetus for purchase of a lot in a Puna subdivision varies considerably among the four subdivisions studied, ranging from over 20 percent to less than 10 percent. Those who initially purchased lots for other than the above mentioned categories were relatively few.

A comparison of initial reasons for purchasing lots with the current intended use of those same lots reveals an aggregate shift away from retirement homes and a marked increase in the other category (Table 1). With the exception of Orchid Isle Estates, the use of the lots for investment purposes remained relatively constant.

The explicit shift of intended uses of the lots can be partially assessed by noting the proportion of lot owners in the respective subdivisions whose current intended use corresponds with initial intent (Table 2), a shift which is somewhat masked by the aggregate data in Table 1. The shift away from retirement home use is again evident; and, a fairly high proportion of original investors remained investors/speculators. In three of the four subdivisions, those who bought lots for 'other' reasons initially retained that same view for the current intended use of the lot. The change in intended use for those who initially purchased lots for vacation or second homes varied considerably among the four subdivisions.

Table 2: Percent Whose Present Intended Use Remains the Same as Original Intended Use

Original Intended Use	Subdivisions				Average
	Cymbidium Acres	Waawaa	Nanawale Estates	Orchid Isle Estates	
Vacation or Second Home	62.5%	100.0%	36.4%	50.0%	51.8%
Retirement Home	66.7	60.0	35.7	60.0	48.1
Investment	85.0	85.2	85.1	68.2	83.8
Other*)	100.0	100.0	75.0	100.0	90.9

Source: Calculated by authors

*) The category 'other' encompasses a variety of intended uses; the principal use, however, appears to be that of primary residential dwelling.

Table 3: Shifts in Intended Use: Percent of Those That Shifted Intended Use, All Subdivisions

Original Intended Use	From Current Intended Use			To	
	Vaca- tion or Second Home	Retire- ment Home	Invest- ment	Other	Total
Vacation or Second Home	0.0%	26.1%	60.9%	13.0%	100.0%
Retirement Home	12.0	0.0	76.0	12.0	100.0
Investment	31.8	52.3	0.0	15.9	100.0
Other*)	12.5	25.0	62.5	0.0	100.0

Source: Calculated by authors

*) The category 'other' encompasses a variety of intended uses; the principal use, however, appears to be that of primary dwelling.

When the actual shifts from original intention to current intention are traced from one use type to another (Table 3), it can be noted that there is a significant shift from the other respective uses to that of investment, with the largest single shift coming from original intentions of a retirement home. Interestingly, those who changed their original view from investment to another use were most likely to now view their lot as a possible retirement site. With the exception of those who initially intended their lots to be investments, relatively few owners were moved to reevaluate their land holdings as sites for vacation or second homes.

Subdivision type and use

In comparing two of the smaller subdivisions, Cymbidium Acres with partial utilities and Waawaa without utilities, there was a significantly higher proportion of people purchasing lots solely for investment purposes in the subdivisions with fewest utilities, a trend still evident in light of the lot owners' current intended use (Table 1). The decrease in the proportion of people who intend to use their lot for retirement purposes can perhaps be attributed to a lack of utilities.

In comparing the two larger subdivisions, Nanawale Estates with partial utilities and Orchid Isle Estates without utilities, there is a higher concentration of investment use in the subdivision with the greatest extent of utilities. Interestingly, there is a significantly greater proportion of people intending to build or live in the subdivision with the fewest utilities available. Thus, the hypothesis that the smaller subdivisions and those with more utilities would have a greater diversity of use types is not supported.

Satisfaction with lots

A clear majority of the purchasers of lots in the subdivisions surveyed did not visit or view their lot prior to purchasing it (Table 4); and, approximately one-fourth of the remote subdivision lot owners have yet to visit and view their purchase. Despite this predominately 'sight unseen' mode of the purchase of land, the vast majority of lot owners surveyed indicated satisfaction with their holdings (Table 5). Those owners who indicated their current intended use of their lots as vacation or second homes appeared to be universally satisfied with their lots, all of which had been visited either prior to or after purchase. There is a high degree of satisfaction among lot owners intending to build retirement homes, though not all such owners have yet visited and viewed their purchase. Interestingly, the persons who purchased their lots for investment purposes – the largest single intended use group – were among the relatively least satisfied with their lots, although the degree of dissatisfaction was not great.

Table 4: Lot Visitation Patterns

Subdivision	Percent Visited Lot		
	Prior to Purchase	After Purchase	Not Yet
Cymbidium Acres	59.0%	23.1%	17.9%
Waawaa	25.0	50.0	25.0
Nanawale Estates	24.8	39.5	34.1
Orchid Isle Estates	20.0	53.3	26.1
Average	30.1	40.7	29.2

Source: Calculated by authors

Table 5: Percent of Lot Owners Currently Satisfied with Their Parcel, by Current Intended Use

Subdivision	Current Intended Use			
	Vacation or Second Home	Retire- ment Home	Invest- ment	Other*)
Cymbidium Acres	100.0%	92.3%	95.5%	100.0%
Waawaa	100.0	100.0	84.0	100.0
Nanawale Estates	100.0	86.4	82.0	75.0
Orchid Isle Estates	100.0	100.0	83.3	71.4
Average	100.0	91.6	85.2	82.6

Source: Calculated by authors

*) The category 'other' encompasses a variety of intended uses; the principal use, however, appears to be that of primary residential dwelling.

When the dichotomized variable 'satisfaction' is cross-tabulated with time of visit to lot (Table 6), it can be seen that, in aggregate, those least satisfied with their lots those who have not yet visited their lots. This finding, however, can only be construed as weak evidence for the hypothesis regarding satisfaction with lots, for the converse of the data cited above indicates that over 84 percent of these lot owners who have yet to visit their lot are satisfied with their purchase.

The finding of a very high degree of satisfaction among Hawaii's remote subdivision lot owners is interesting when juxtaposed with the proportion which had considered or attempted to sell their lot at some prior time (Table 7). There is, however, a general inverse relationship between these two variables, for the lot owners of Cymbidium Acres appear to be most satisfied with their lots and they have made the least effort to dispose of their holdings, while the owners of Nanawale Estates lots seem least satisfied, an attitude backed up by a relatively high effort to sell their lots (Table 7).

The current intended use group which had the highest overall attempted sales rate was the one interested in lots as a speculative investment (Table 8). Considering the nature of this intended use, the attempts to sell can perhaps be construed as a rational economic response, especially when the various natural hazards of the area are considered.

Table 6: Satisfaction Related to Time of Visit to Lot

Satisfied	Percent Visited Lot		
	Prior to Purchase	After Purchase	Not Yet
Yes	90.3%	91.3%	84.4%
No	9.7	8.7	15.6

Source: Calculated by authors

Table 7: Relationship Between Satisfaction With Lot and Consideration of or Attempts to Sell

Subdivision	Percent Currently Satisfied	Percent Who Considered or Attempted to Sell
Cymbidium Acres	94.9%	17.9%
Waawaa	90.0	42.5
Nanawale	81.4	41.1
Orchid Isle Estates	86.7	30.0
Average	89.1	36.8

Source: Calculated by authors

Table 8: Percent of Lot Owners Who Considered Selling or Attempted to Sell Their Parcel, by Current Intended Use

Subdivision	Current Intended Use			
	Vacation or Second Home	Retire-ment Home	Invest-ment	Other*)
Cymbidium Acres	0.0%	0.0%	31.8%	0.0%
Waawaa	33.3	25.0	52.0	33.3
Nanawale Estates	42.8	19.0	43.2	66.6
Orchid Isle Estates	42.8	0.0	25.0	33.3
Average	40.0	13.2	41.5	46.2

Source: Calculated by authors

*) The category 'other' encompasses a variety of intended uses; the principal use, however, appears to be that of primary residential dwelling.

Conclusions

In summary, it can be noted that the majority of persons initially purchased lots in Hawaii's remote subdivisions for investment purposes, and that over time there has been an increasing emphasis on considering the lot as strictly an investment. Those who initially purchased lots for reasons other than investment, after a period of time and of reconsideration, tend to now view their lot as an investment. Perhaps both the initial high proportion of persons buying for investment purposes and the increase of this intended use category can be traced to the means by which persons purchased such lots, for it was noted that the majority of owners purchased such lots – assumably with an intended use – without previously seeing them; and, a surprisingly high proportion of owners have yet to visit their subdivision lot.

In spite of this, the overwhelming majority of lot owners indicated that they are currently satisfied with their lot holdings. Perhaps this high level of satisfaction can be partially explained by linking the notion of the lot as investment with the history of increases in land values in Hawaii in general and remote subdivisions in particular. For example, the average value per square foot for a lot in Nanawale Estates increased from \$ 0. 0032 (U.S.) to \$ 0.2575 between 1960 and 1973, a substantial increase (Stephenson and Matsunami, 1976).

The physical, social, and economic impact of remote subdivisions in the County of Hawaii (i. e., the Island of Hawaii) is significant. Within the past few years, the increasing number of parcel owners from the mainland United States and other areas who have made Hawaii their permanent home has greatly influenced the demand for public services. In light of the

results of this study, however, it appears that the majority of parcel owners regard their lots as investments rather than as sites for vacation or second homes, places of retirement, or other uses. As such, the actual increase in residential use of remote subdivisions in Hawaii in the near future, when compared to potential use, can be expected to be both minimal and widely scattered.

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ZUR ÖKOLOGIE DER TROCKENTÄLER BHUTANS

MARCUS WÜRMLI

Mit 1 Abbildung

Observations on the ecology of climatically dry valleys in Bhutan.

Summary: The author refers about personal observations made during a 3 months expedition in Bhutan. The article is a supplement to two papers published by SCHWEINFURTH (1956, 1957). The valleys of Thimphu, Paro and Wangdiphodrang – Punakha are dry valleys (Abb. 1). A short description of the vegetation of the dry valleys is given. The sparse, dried up vegetation is anthropogenical. Originally the bottom and the slopes of the dry valleys were covered with a dry conifer forest mainly of *Pinus roxburghii*. The xerophilous vegetation of the dry valleys of Bhutan is similar to that of the alpine dry valleys (cf. BRAUN-BLANQUET 1961). The biologically important factors of the climatically dry valleys are discussed.

Im 10. Band (1956) dieser Zeitschrift hat U. SCHWEINFURTH eine Literaturübersicht über die klimatischen Trockentäler im Himalaya veröffentlicht. Im Jahre 1972 hatte ich das Glück, drei Monate in Bhutan weilen zu können (cf. BARONI URBANI, STEMMLER, WITTMER & WÜRMLI, 1973), in dem Land also, wo der Trockentalcharakter extrem ausgeprägt ist und wo

er in besonderem Kontrast zur allgemein hohen Feuchtigkeit steht. Die hier dargestellten Ergebnisse beruhen nur auf wenigen Beobachtungen, doch halte ich sie für mitteilenswert, da in naher Zukunft weitere Forschungstätigkeit in Bhutan wohl ausgeschlossen ist.

In der Abb. 1 ist die Ausdehnung der Trockentäler Westbhutans eingezeichnet. Das Tal des Wong-chu (topographische Nomenklatur weitgehend nach KARAN, 1967), in dem die Hauptstadt Thimphu liegt, ist ein Trockental. Der Trockentalcharakter beginnt beim Paß Semi-la und reicht im Norden ungefähr 8 km über Thimphu hinaus. Von diesem Tal zweigt bei „Confluence“ (ca. 20 km vor Thimphu) das Tal von Paro ab. Auch dieses ist von Confluence bis über das Kloster Taktsang hinaus ein Trockental. Die Täler von Paro und Thimphu liegen auf 2300–2400 m Höhe. Das Tal von Ha konnte ich nicht besuchen, vermute aber, daß es auch ein Trockental ist.

Das Tal des Mo-chu, von Wangdiphodrang bis Punakha (1400–1500 m), ist ein extremes Trockental. Wo die Grenze im Süden liegt, ist mir unbekannt. Die trockene unbewaldete Talsohle beginnt sicher 5 km vor Wandiphodrang. Auch das Tal des Phochu, der bei Wandiphodrang in den Mo-chu fließt, ist bis nach