

Community Structure and Collaborative Consumption

A Routine Activity Approach

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More than a quarter of a century has passed since Hawley (1950) first presented his human ecological theory of community structure, a theory emphasizing the structure of sustenance activities. Yet we know of no effort to apply that theory to consumption even though it is clearly a human sustenance activity. We believe that Hawley's framework offers much more than an opportunity to translate old theories into new terms, since it also provides a means of thinking about consumer activities as they related to one another and to other activities in social life.

This paper is concerned specifically with *acts of collaborative consumption*, namely, those events in which one or more persons consume economic goods or services in the process of engaging in joint activities with one or more others.¹ For example, drinking beer with friends, eating meals with relatives, driving to visit someone or using a washing machine for family laundry are acts of collaborative consumption. Thus our present concern goes beyond the discrete preferences and resources of individual consumers. Rather, we take these considerations as given and proceed to examine how the structure of daily activities creates the circumstances in which collaborative consumption occurs, hence al-

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lowing people to translate personal inclinations into action. Thus, we treat collaborative consumption as a routine activity feeding upon other routine activities.

A SELECTIVE REVIEW OF HAWLEY'S THEORY

Hawley defined human ecology in terms of the interdependence among people, other species, and the physical environment, especially as people seek to gain sustenance from their environment. He employed spatial data only as a means toward the more important end of understanding how this interdependence is reflected in patterns of settlement and geographic distributions of activities.

For Hawley, technology and organization are important in assisting a population in adapting to its environment. At least two principles of organization related to this adaptation. Symbiosis denotes the mutual dependence among organisms characterized by functional differences, while commensalism refers to relationships among organisms based upon their functional similarity (Hawley, 1950: 37-39).² Both fundamental organizing principles of human life are based upon the tasks which people perform jointly in the process of gaining sustenance. This need not involve survival itself but can also encompass ordinary activities such as school, work, and leisure as people directly or indirectly pursue their needs and wants.

Community—a very important concept in Hawley's ecology—is the structure of relationships through which a localized population provides its daily requirements (p. 180). Hawley viewed a community as an organization of niches or functional roles (pp. 44-45), based upon both symbiotic and commensalistic relationships as they occur over space and time. Although spatial patterns were important for understanding community structure, Hawley (p. 289) also identified and discussed three important temporal components of community structure: (1) rhythm—the regular periodicity with which events occur, as with the rhythm of alcoholic beverage consumption or the rhythms of commuting into the central city; (2) tempo—the number of events per unit of time, such as the number of meals consumed per week or the number of supermarket visits per month; (3) timing—the coordination among different activities which are interdependent, such as the timing of a family's joint vacations or long distance phone calls. We believe that timing is an especially important concept for understanding collaborative consumption, since cooperative routine activities require temporal

coordination extending beyond the rhythms and tempos of any one individual. In the next section, we consider how Hawley's concepts can contribute further understanding of collaborative consumption.

SOME IDEAS FOR APPLYING HAWLEY'S FRAMEWORK TO COLLABORATIVE CONSUMPTION

The central contention of this paper is that collaborative consumption involves more than individual allocation of resources as an expression of personal inclinations. Consumer behavior reflects not only such individual expressions but also the efforts by people to engage in joint activities with others. Thus, consumption can be treated as a set of sustenance activities associated with other sustenance activities, such as social and sexual contact, food and shelter, family life and leisure, as well as travel to and from places in which such activities occur. Since consumption fulfills human needs and wants, it can best be analyzed within the context of the circumstances in which it occurs.

Many business and marketing personnel have long recognized this point, especially with respect to their own products. The successful business entrepreneur probably knows those routine activity patterns which relate to the goods or services he hopes to sell. Whether through superior insight or repeated tinkering, he learns how to carve a niche for his goods and services within the larger system of routine activities. While some academic theorists of consumer behavior may regard such facts as trivial, we believe that these details of everyday life are systematically organized and that this organization is theoretically important for understanding lifestyles, as for selling products. We contend that the structure of community sustenance activities affects the spatio-temporal concurrence of families, peers and strangers in everyday life, generating the circumstances under which particular consumer activities occur.

Hawley's approach is useful because acts of collaborative consumption are events located in space and time. Since such events usually require the spatio-temporal concurrence of collaborators, they reflect the symbiotic interdependencies of the population and must be analyzed in terms of human coordination as well as human competition. The term "market segment" can perhaps be broadened to consider "market niche," since goods and services must not only attract a segment of the population as buyers but also must carve their niche within the larger system of activities, including the activities of persons not directly purchasing these goods and services. The term "lifestyle" can also be recast

within this framework as the "activity patterns of people in space and time" rather than mere attitudes or sentiments of individuals or cultural groups.

Thus a routine activity approach to collaborative consumption will concern linkages among activities in general and consumption activities in particular, as these activities are distributed over space and time. This suggests that researchers need to learn not only who consumes what, but also where they consume it, under what circumstances, with whom, prior or subsequent to which other activities. Because acts of collaborative consumption require the use of resources produced by other activities, as well as the cooperation among persons, these activities cannot exist autonomously but rather must feed upon other activities. Thus their analysis must consider the spatio-temporal structure of community activities which concentrate or disperse people in space and time or otherwise structure and coordinate their activities. In particular, household structure and the structure of work and school obligations play a role in the organization of collaborative consumption. For example, dining or drinking away from home are more likely to attract working women or persons living alone than couples with intact marriages or nonworking wives. Social processes tend to bring similar or dissimilar people together at different times of day and night and therefore affect the probability that people will jointly engage in consumption activities with one another. Insofar as joint activities involve consumption of goods and services, the spatio-temporal structure of community activities will have an important impact upon the extent of collaborative consumption. More precisely, by affecting the timing of collaborative activities, community structure tends to generate circumstances under which particular types of collaborative consumption occur. We further expect that historical trends and cycles in the timing of other activities will alter patterns of consumer activities. Thus a routine activity approach to consumer behavior must pay special attention to those changes in social structure which alter the basic activities of everyday life and therefore affect the timing of activities likely to generate collaborative consumption.

For example, in the United States today, it is fairly common for a nuclear family to have members dispersed over numerous households—grown children away at college, current spouses living separately, aged persons or married children having their own homes, and so forth. Between 1960 and 1970, the proportion of the population living as primary individuals increased 34%, while the proportion consisting of female college students increased by 118% (USBC, 1975: tables 51 and

180; see also Kobrin, 1973). Families dispersed over more households tend to consume more durables and more resources in travel and communications. In addition, this separation reduces the constraints upon timing among certain family members by freeing one schedule from another. On the other hand, members of nonfamily households probably depend upon more social life outside the home, hence employ more public facilities and engaged in greater consumption of alcohol or prepared food. Of particular importance is that many of these primary individuals are female, due partly to an increased divorce rate and partly the increase in female college enrollments. This provides greater opportunity for men and women to socialize in settings unguarded by parents and other relatives, with concomitant changes in their consumption of food, drink, drugs, and birth control products. Stated more generally, recent American society (especially since 1960) has experienced a declining tempo of family activities within households and an intensification of the tempo of nonfamily and non-household activities. This shift in the spatio-temporal structure of activities appears to have altered the structure of collaborative consumption.

A related social trend is a 26% decline in the proportion of the population consisting of children 5-years-old and younger (USBC, 1975: table 3). This frees many women, especially young women, to engaged in certain types of activities (e.g., travel and social life) which may have further implications for material consumption.

Consistent with the changes which we have already cited, one observes during this same period some major trends in leisure patterns. For example, state and national park visits per capita increased by 71.7% (USBC, 1975: tables 346, 351). Such activities not only reflect changes in work and school schedules but also influence other types of consumption. The purchase of recreational vehicles, gasoline, large automobiles, and camping gear may reflect in large part these changing activity patterns. Hence consumer decisions do not necessarily compete with one another for allocations of resources when, in many cases, particular decisions feed upon one another. The decision to purchase a separate home or to go camping leads to other purchases which in turn may encourage still more purchases.

We lack suitable data for modeling fully how consumption carves its niche within other routine activities, but the next section presents some survey data which illustrate a few of the points we have been making.

**ACTIVITY PATTERNS AND TEN CONSUMER TRAITS
IN A CHICAGO SUBURBAN SAMPLE, 1974**

During May and June of 1974, 730 Chicago suburban households were interviewed by telephone. All suburban households in the Chicago SMSA (excluding McHenry County) were divided into two strata on the basis of median family income reported in the 1970 United States Census. The twenty highest income suburbs composed the first stratum and the remaining suburbs the second, with telephone numbers taken from a systematic sample of three suburban street-address directories.³ The higher status suburbs were oversampled by a ratio of 4.6, after which these respondents constituted one-third of the total sample.

We selected the subpopulation of all married respondents living with their spouse. For these 604 couples, 145 wives were employed full-time and 90 wives were employed part-time, indicating that less than one-half of the wives were labor-force participants.

Ten diverse consumption activities were taken from the questionnaire and treated as separate dependent variables. The first four are dummy variables measuring presence or absence of certain household durable goods: central air-conditioning, a clothes dryer, a dishwasher, and an automatic garage-door opener. The fifth variable represented the home-owning respondent estimate of house value on a seven-point scale.⁴

The sixth dependent variable measured the number of cars owned by the family. A dichotomous scale, 0-1, was created with 0 representing the ownership of one car, and 1, the ownership of 2 or more cars. The dichotomous scale was formed because (for our purposes) the important lifestyle distinction is multiple versus single car ownership. The seventh dependent variable (called car worth) adjusted the value of the car when new by its rate of depreciation, based upon respondent information about make, model, and year of the main family car. List prices when new were coded (from \$2,575 to \$10,000) then depreciated by an uncompounded 11% per year of service. Our resulting rough estimates of car worth ranged from \$0 to \$9,550, in 1974 dollars. A summary index of car accessories was formed by granting one point each for having air-conditioning, a vinyl top, and power windows in the main family car.

Party-giving constituted another consumption variable, measuring the frequency of family entertaining for five or more people. The four point scale included giving a party once a year (1), every month (2), every few weeks (3), or once a week (4). This scale proved effective in pretests of the survey. Travel, the tenth variable, was measured by the extent of the respondent's traveling experiences. Respondents were

TABLE 1
Canonical Analysis of Ten Collaborative Consumption
Traits, Chicago Suburban Sample, 1974

INDEPENDENT VARIABLES	First Canonical Correlate	Second Canonical Correlate	Arithmetic Mean	Standard Deviation
Total Family Income	.767	-.010	4,076	1,549
Mean Education of Husband & Wife	.315	.185	13.108	2.259
Age of Respondent	.290	-.437	-44,477	13.702
Number of Children, 6-17	-.028	.718	- 0.931	1.257
Number of Children, 0-5	.040	.233	- 0.335	0.624
Husband's Occupation Prestige	.074	-.105	-54,434	23.257
Wife Working	.006	.105	0.389	0.488
DEPENDENT VARIABLES				
House Value	.507	.018	4,475	1,487
Travel	.363	-.495	2,004	1,763
Dishwasher	.157	.465	0.456	0.499
Number of Cars	.128	.312	0.639	0.481
Clothes Dryer	.044	.527	0.854	0.354
Car Worth	.092	.213	\$3718.	\$1802.
Central Air Conditioning	.012	-.244	0.359	0.480
Automatic Garage Door Opener	.074	-.237	0.205	0.404
Number of Car Accessories	.054	-.285	1.374	1.043
Party Giving	.105	.073	1.985	0.761
CANONICAL CORRELATION				
Chi-Square	377.221	111.737		
Degrees of Freedom	79	70		

asked if they had been to any of the following places: Hawaii, Florida, California, the Caribbean, Mexico, Central or South America, Europe, Asia or Africa, and Israel or the Middle East. A point was received for each place visited.

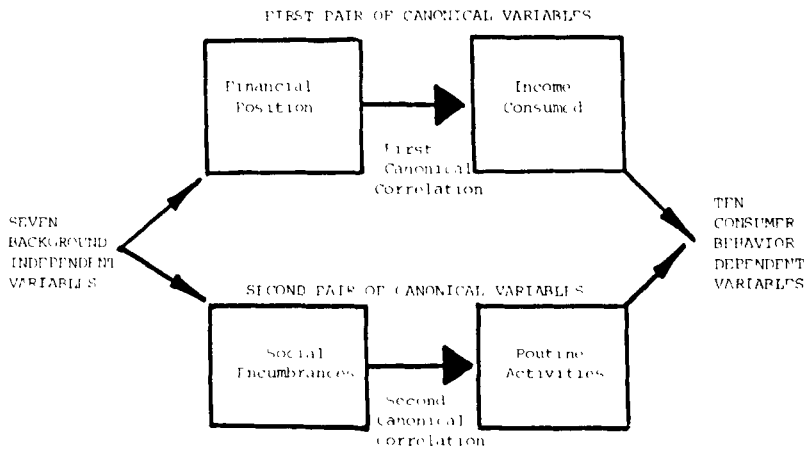
Independent variables for this analysis include total family income in seven \$5,000 intervals from \$5,000 or under to \$30,000 or over. Education was scored by taking the mean of the husband's and wife's years of educational attainment. Age of the respondent was recorded in years by subtracting reported birth year from 1974, while number of children living at home was counted for children ages 5 and under and ages 6-17 separately. Husband's occupational prestige was coded on the Duncan SEI scale. Wives working full- or part-time received a 1, with those not working scored zero.

Table 1 presents in columns 3 and 4 the means and standard deviations for the dependent variables. The average home-owning respondent estimated house worth at approximately \$45,000. Most of the respondents owned a clothes dryer but few had an automatic garage-door opener. The mean worth of the main family car was \$3,718 and more than one-half of the sample owned more than one car. Few people gave parties often or had traveled to more than two of the sites included in the travel index.

Correlations among the 17 variables, computed on a pair-wise basis, are reported in the Appendix. This correlation matrix was analyzed with a canonical model. Canonical analysis was developed by Hotelling (1936) as a means of decomposing the structure of relations between *two* sets of continuous variables into their additive components. The method identifies pairs of linear combinations for each set of original variables which maximize the correlation between each pair of linear combinations (i.e., pair of canonical variables) while leaving each pair independent of every other pair. The structure of the canonical model can be understood by looking ahead to Figure 1, which shows two pairs of canonical variables, hence four unmeasured variables, intervening in the "causal model" between the independent and dependent variables. The first pair allows the measured independent variables to affect financial position (unmeasured), which affects the luxury component of consumption (unmeasured) which affects the consumer behaviors reflected in the ten measured dependent variables. The second pair of canonical variables indicates a second "route" whereby background variables affect consumption by influencing "social encumbrances" and then the routine activity component of consumption, both unmeasured. This second route manifests itself in the second canonical correlation, while the first route is reflected in the first canonical correlation.

Table 1 presents in columns 1 and 2 estimates of canonical coefficients for first and second correlates, as depicted in Figure 1. Family income, education, and age of respondent appear to be, in that order, the key variables affecting financial position. Financial position has a major impact on the luxury component of consumption, reflected in the first canonical correlation of .72. Luxury consumption mainly affects the value of the house and travel experience, but secondarily the possession of a dishwasher and multiple cars.

The second canonical correlation apparently links family and life cycle traits to consumption activities. Younger couples with more children score high on social encumbrances, while older ones with fewer children have fewer encumbrances. The second canonical correlation .387, indicates that these encumbrances affect the routine activity of consumers. Perhaps the greatest contrast in these data is between "unencumbered couples" who spend their money taking trips to interesting places versus "encumbered couples" who tend to spend their extra money on clothes dryers and dishwashers, multiple cars and more expensive (presumably larger) cars, probably to ease their family chores. It is especially interesting that the second set of relationships better explains the selection of certain durables than the first.



NOTE Unmeasured variables are boxed

Figure 1: A Simplified Diagram of the Canonical Model to be Estimated for 604 Chicago Suburban Couples

RECOMMENDATIONS

We suspect that the utility of the routine activity approach to consumer behavior will vary directly with the detail of the data to which it is applied. Improved measurement of the spatio-temporal activities of consumers and their collaborators could, in the future, result in more successful modeling of material consumption than currently found either in the literature or in this paper. For example, more details on housing might allow its decomposition into routine activity and luxury components. We especially recommend the combination in one data set of time allocation information for different household members and information about their various consumer choices. We also hope these choices can themselves be linked to each other and to activity patterns in future consumer research. We urge that consumer researchers in the future consider systematically how goods and services are consumed within the specific circumstances of everyday life and how consumption trends and cycles reflect trends and cycles in routine activity patterns.

NOTES

1. Collaborative consumption may or may not involve direct physical contact between collaborators. When collaborators are in the same place at the same time, we suggest calling this "direct-contact collaboration." When collaborators are in different places but consume at the same time, we call this "system-hookup collaboration," as when two

persons speak on the telephone or several persons are hooked into the same public utility which they consume at the same time. If persons cooperatively consume a good or service at different times and places, this may be referred to as "segregated collaboration." An example of this is when a wife prepares sandwiches for her own and her husband's lunch, to be consumed at different times and places. In this paper, our main focus is direct-contact collaborative consumption and (to a lesser degree) system-hookup collaborative consumption. We also note variations in degrees of collaboration in consumption. For example, the readership of a newspaper cooperates almost not at all, while those celebrating a wedding may form an elaborate division of labor.

2. Commensalism is neglected in this paper, but needs more attention in the future. Competition for public facilities, including consumption reflected in system-hookups, can provide topics of future research.

3. Including Barrington Hills, Deerfield, Flossmoor, Glencoe, Glenview, Highland Park, Hinsdale, Kenilworth, Lake Bluff, Lake Forest, Lincolnshire, Lincolnwood, North Brook, Northfield, Oak Brook, Olympia Fields, River Forest, Western Woods, Wilmette, and Winnetka.

4. Under \$15,000; \$15,000-\$20,000; by \$10,000 increments to \$60,000, \$60,000 or over. Home-owning couples totaled 481.

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APPENDIX
Pairwise Correlations of 17 Variables, Chicago Suburban Sample, 1974

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
---	---	-.055	-.008	-.172	-.120	.028	.035	-.027	.001	.021	-.035	-.065	.081	.084	.033	-.007	-.022
591	---	---	.546	-.005	.005	.067	.443	.198	.135	.277	.159	.351	.103	.186	.096	.175	.313
596	591	---	---	-.254	.131	.059	.467	.161	.196	.352	.124	.397	.156	.150	.091	.284	.328
594	591	594	---	---	-.503	-.139	-.021	.090	-.133	.012	.151	.010	-.085	.053	.155	-.043	.186
604	591	596	594	---	---	-.149	-.121	-.117	.127	-.065	-.071	-.041	-.039	-.171	-.149	-.018	-.130
604	591	596	594	604	---	---	.183	-.050	.173	.182	-.039	.064	.116	.118	.056	.025	-.088
528	528	528	528	528	528	528	---	.311	.194	.449	.274	.564	.277	.382	.330	.304	.445
604	591	596	594	594	604	604	528	---	.051	.267	.277	.364	.183	.254	.247	.152	.320
604	591	596	594	594	604	604	528	604	---	.198	.090	.179	.133	.083	.112	.242	.066
603	591	596	594	594	603	603	528	603	603	---	.234	.486	.200	.357	.270	.258	.335
603	596	596	594	594	603	603	528	603	603	603	---	.263	.071	.223	.258	.142	.304
481	481	481	481	481	481	481	481	481	481	481	481	---	.149	.309	.301	.262	.384
593	591	593	593	593	593	593	528	593	593	593	593	481	---	.166	.182	.145	.125
457	457	457	457	457	457	457	457	457	457	457	457	457	457	---	.552	.214	.270
594	591	594	594	594	594	594	594	594	594	594	594	481	481	457	---	.183	.232
604	591	596	594	594	604	604	528	604	604	603	603	481	593	457	594	---	.266
603	591	596	594	594	603	603	528	603	603	603	603	481	593	457	594	603	---

NOTE: Top triangle includes pairwise correlations; lower triangle Ns upon which they are based. 1 = Wife Working, 2 = Husband's Occ. Prestige, 3 = Mean Education, 4 = Age of Respondent, 5 = Children 0-5, 6 = Children 6-17, 7 = Income, 8 = Central Air, 9 = Clothes Dryer, 10 = Dishwasher, 11 = Automatic Garage Door, 12 = House Value, 13 = No. of Cars, 14 = Car Worth, 15 = Car Accessories, 16 = Party Givings, 17 = Travel.