

# Structural Features of an Enacted Community

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AN ENACTED COMMUNITY is a phrase of recent coinage. It has been applied to the project of establishing colonies in space. One might say such communities are "enacted" because there are no competing human societies (that we know of) in space. Even the "land" has to be created. An enacted community must be started from scratch, with nothing to build on, so to speak. Although acts of human will are involved these acts do not take place in a vacuum.

A cardinal principle of the free-standing communities we are familiar with is that of the division of labor through which the survival of the human population depends. Men and women do not live alone; the illusion of living alone may appear within short runs of time, periods often substantially shorter than the life span. Thus, human community is based on three sociobiological factors: (1) the length of the life span; (2) the propensity to live in geographically delimited social aggregates; and (3) the presence of a system of interdependencies among social units within this aggregate (or population) that defines a survival-oriented division of labor.

In addition to the above definition of the community from a sociological perspective, one can also distinguish between two ways in which communities arise: *created* and *enacted*. One may assert that by and large the enacted community—that is, one created, as it were, out of whole cloth—is a rarity. With regard to the form of a community one may even question (as König as put it), "*whether in sociology there is really a specific structural 'community' form.*"<sup>1</sup>

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1. Rene König, *The Community*, trans. Edward Kennedy (London: Routledge and Kegan Paul, 1968), p.3.

Amos Hawley noted in his classic text, *Human Ecology* (1950), that community may be defined from a spatial standpoint

as comprising that area the resident population of which is interrelated and integrated with reference to its daily requirements, whether contacts be direct or indirect. . . . Participation in a daily rhythm of collective life is the factor which distinguishes and gives unity to the population of a locality.<sup>2</sup>

Thus, in this usage, community may be approximated by village, town, or city boundaries but the underlying criterion for inclusion is the integration of the resident population. The basis of integration in the community as organization may be evident in the normative superstructure of the community but integration necessarily stems from the division of labor.<sup>3</sup> It is the division of labor that displays the patterns of social interdependence so critical for human survival.

The definition of community involves not just a spatial and social setting; one must also consider the matter of time. It is important to note that communities, *qua* organizations, have longevities that are unrelated to the length of human life. (Of course, they generally last longer than the human life span.) The definition of community must also take into account reproduction and the socialization of the young. In themselves, these two processes appear to require many years to work out their respective cycles. Viewed sociologically, a community is a kind of organization. We recognize that organizations develop forms and properties that are not evident in individual members; this is an insight due, in a fundamental sense, to the French sociologist, Emile Durkheim.<sup>4</sup>

As an aside, it is important to note that this sociological approach rests on some ideas about the biology of human life and about the ecology of living things. In the journal *Ethics* in the late 1940's David Aberle and others tried to elucidate the setting in which biology and society come together.<sup>5</sup> The Aberle article deals with the functional prerequisites of society. It builds upon the more general theories of Wallace and Darwin, and Herbert Spencer.<sup>6</sup> Aberle, et al., set forth, first, the essential *animal* nature of human life living in an emergent

2. Amos H. Hawley, *Human Ecology; A Study of Community Structure* (New York: Ronald Press, 1950), p.258.

3. See, for example, on community superstructure, Marvin Harris, *Cultural Materialism; The Struggle for a Science of Culture* (New York: Random House, 1979), pp.47 ff.

4. Emile Durkheim, *Suicide; a Study in Sociology*, ed. George Simpson, trans. John A. Spaulding and George Simpson (Glencoe, 111.: Free Press, 1951), p. 46.

5. David F. Aberle, et al., "The Functional Prerequisites of a Society," *Ethics* 60 (January, 1950): 100-111.

6. Cynthia Eagle Russett, *Darwin in America; The Intellectual Response, 1865-1912* (San Francisco: W.H. Freeman, 1976); Herbert Spencer, *The Factors of Organic Evolution*,

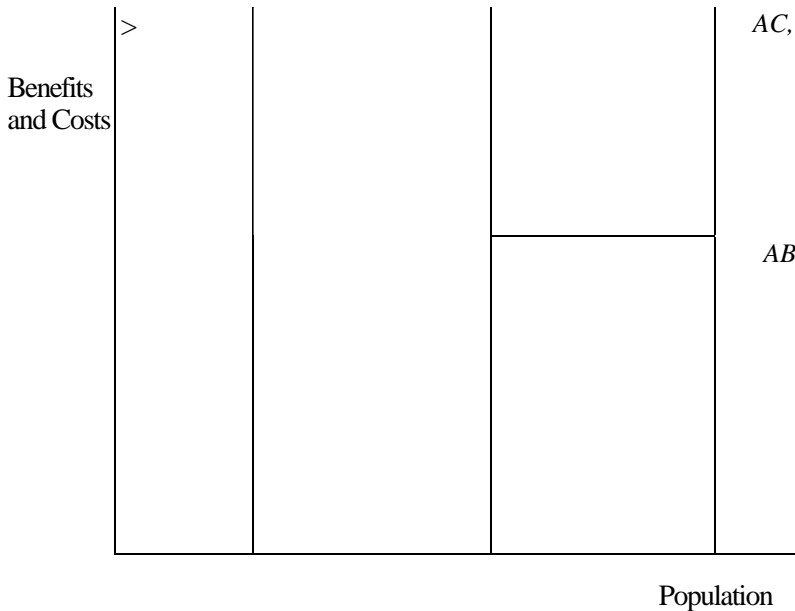
local ecological system, and secondly that the human body with its bipedal and erect form and opposable thumb presents a *capacity* for socialization that is the fundamental element which separates other social species from man himself. From generation to generation, human beings could adapt—in an almost Lamarckian sense,

The biology of adaptation for survival in mankind has worked through both phylogenetic and ontogenetic paths, as noted by Hawley. Community life appears common to all species; yet the composition, scale, and complexity of community development have tended to be influenced enormously by the evolution of *cultural* features, with technology as perhaps the most readily identifiable.

1. *What is the Optimum Population for a Particular Community?*

An economist trying to deal with the problem of determining the ideal size for community population might choose to weigh various benefits against costs. His or her analysis might take on the pattern exhibited in Figure i.<sup>7</sup>

FIGURE i Community Population plotted against cost and Benefits



reprinted with additions from the nineteenth century (New York: D. Appleton and Company, 1887).

7. Harry W. Richardson, *The Economics of Urban Size* (Hants, England: D.C. Heath, 1973), p. 11.

In Figure i, the average cost curve,  $AC$ , begins (on the left) in a declining mode with increases (moving to the right) in population. In contrast, the average benefits curve,  $AB$  begins to rise immediately with population increases. As the population grows, costs level off and then begin to rise, while, in contrast, increases in benefits slow, level off, and then decline. However, the portion of the graph of immediate interest to us is on the left where costs are declining and benefits are rising. At point D, we discover the location of the population minimum: populations smaller than  $p_1$  will tend to disappear for want of profit in their mutual enterprise;  $p_2$  is the optimum population, because the value of benefits subtracting out costs is at a maximum. And, finally, at point J with population size  $p_3$ , the curve again passes beyond a stable condition because average costs exceed average benefits.

Clearly, where a population is less than the minimum,  $p_1$ , the community is not viable on economic grounds, regardless of other considerations. Yet, these other considerations may be of substantial importance. For example, it may be that our calculations have placed too little emphasis on changes over time. Using recent census data on economic activity, income, and enterprise, one could overlook evidence of instability (1) over the year ("seasonally"); (2) over a short-run business cycle; and (3) over a long-run cycle (Kondratieff waves of perhaps fifteen to twenty years, or those of Easterlin).<sup>8</sup> It cannot be asserted with certainty that the economic test of size is adequate. Social and demographic factors appear to come into play over time. The economy may signal surplus, yet there remain questions of whether the reproductive system of the community about which we know very little is responsive to such changes in conditions. Studies of social and psychological factors affecting fertility, dating back to the 1930's, have thrown little light on intercommunity variability in fertility or upon patterns of population replacement and growth.

## 2. *Impact of External Relations on the Community*

An intriguing issue in contemplating the structure of the community arises in the trade relations. We may think of societies as a system of communities which, in turn, exhibit some elements of autonomy and independence, yet whose ability to survive the narrowness of the environmental offerings at any one location is made possible through trade.<sup>9</sup> History clearly suggests that trade is as fundamental as plant

8. James Shuman and David Rosenau, *The Kondratieff Wave* (New York: World Publishing, 1972); and Richard A. Easterlin, *Population, Labor Force, and Long Swings in Economic Growth* (New York: National Bureau of Economic Research, 1968).

9. Harlan W. Gilmore, *Transportation and the Growth of Cities* (Glencoe, Ill.: Free Press, 1953).

and animal husbandry in sustaining sedentary societies. In describing how an enacted community works, we are brought face to face with the problem of the nature of intercommunity relations.<sup>10</sup> Work on intercommunity relations is often directed to economic interrelationships, such as city specialization in the national economy, migration as related to economic opportunity, and the size distribution of communities in relation to urban location theory.

Given all this modern economic and social knowledge, nations today could create communities much as the European states established colonies during the last four or five centuries—not as independent entities but as settlements enacted and established to serve the purposes of the sponsoring society. The levels of autonomy and independence levels in such an enacted community may fall below our expectations. But many such settlements have become successful. The establishment of trade centers in the Far East, of European trade centers in Africa, and of colonies in the Americas did succeed in various ways. Still one may ask what serves to distinguish the various scientific stations on the Antarctic ice cap from cities "back home"? Size considerations must play some role, as implied in the optimum size theory of the population of cities. Another ingredient is an appropriate distribution of the two sexes with respect to age.

But what else? Here the work by Aberle and others, noted above, is useful as a means of thinking about the necessary ingredients of society/community. Reasserting a position held from Karl Marx in the nineteenth century to anthropologist Marvin Harris, in the twentieth, the Aberle group noted the requirements that set societies and communities apart from other social forms. The individual clusters of people which we call communities or societies must express themselves through biological reproduction, socialization of children, and other basic processes. A mere work crew (also a cluster of people) does not perpetuate itself in this fashion. As for families (even as sponsors of fertility), corporations, and other divisions or groupings of people within the communities, these do not have the qualities or processes posited by the Aberle group, processes that define survival. So it is that societies have certain basic qualities that enable them to stand alone as "communities."

### 3. *Functional Composition of the Community*

Edward Ullman, among others, has explored the relationship between the size of a city and the fraction of productive activity devoted to trade

10. Otis Dudley Duncan, et al., *Metropolis and Region* (Baltimore: Johns Hopkins University Press, 1960).

or export.<sup>11</sup> The procedures for establishing the minimum workforce for a given set of industrial classifications calls for adding the percentage shares of the workforce in each industrial category found in the city having the smallest reported percentage. The sum of these percentages is then used as an initial estimate of the percent of the total workforce that, at a minimum, must be engaged in internal or community support activity. In 1950, for example, Ullman found that metropolitan areas with a population of one million or more had some 57 percent of their workforce engaged in internal support work: about 1.3 workers *Are* engaged in the maintenance work for the community for every worker engaged in export-oriented activity. This ratio suggests that all cities have industrial specializations, but the support systems even in cities otherwise quite different from one another must be similar.

Using data from the 1940 and 1950 census of the United States, Ullman and Dacy showed that the proportion of workers in support industries rose with city size, from a low of about 33 percent to a high of 50 percent in metropolitan areas up to 800,000 population. They reasoned that this increase was due to rising levels of independence of the communities; as communities came to support a wider and more varied number of specializations, they were able to become increasingly independent. By sheer extrapolation of the least squares relationship between size and percent in support activity, the authors posited that a rise to over 80 percent occurs for a nation the size of the United States. For world population they estimated a value of 95 percent. Although these extrapolations are rather undefined and unjustifiable, they do indicate a relationship found in empirical fact, that is, the amount of a nation's foreign trade is a function of the size of that nation; and in actuality, the value given above for the United States accords reasonably well with independent estimates of the amount of American foreign trade. The bearing of this line of study on the nature of the enacted community is, in part, one of conjecture about the *composition* of activities, and in part about the relationship of *size of population* to that composition. Is it possible, by evaluating the nature of trade patterns relative to levels of accessibility that exist among communities, that we may find that accessibility is a determinant of the size and composition of the community, as we consider a settlement 250,000 miles out in space? That location is, after all, vast and seemingly inaccessible—1.34 seconds, for example, is the time

11. See, for example, Edward L. Ullman and Michael Dacy, "The Minimum Requirements Approach to the Urban Economic Base." *Papers and Proceedings of the Regional Science Association* 6 (1960): 175-194.

lapse for radio transmission.<sup>12</sup> We know, for example, that accessibility among social units plays an important role in the character of interaction observed between (among) the units. Indeed, the market values placed on land varies according to accessibility. As some wag put it, in commenting upon real estate valuation in the United States, there are three determinants: location, location, and location! An exaggeration no doubt, but one that draws our attention to a matter of exceeding importance. The question before us is: What are the next stages in an investigation of the role played by accessibility in determining the features of human communities, and, in particular, the features of enacted ones?

We can make a beginning by citing known instances in which empirical analysis has provided evidence on this point. An illustration of such instances is found in the deconcentration of routine office functions of large firms previously located in the central area of large metropolitan communities. In New York City, low-skilled and poorly paid—often female—labor living in the metropolitan areas had depended upon public mass transit to get to work. Users of this labor pool found it advantageous to locate in areas convenient to bus, trolley, and subway lines converging from the outlying parts of the metropolis and bringing in members of the required labor pool. As the requirements for such labor were eliminated by automation, large firms found that they could make great savings in the cost of space and in the hidden costs of urban congestion by moving to the suburbs.<sup>13</sup>

#### 4. *Space Settlement and the Enacted Community*

The work of Barry Turner has made it clear that there is a way in which building disasters can be predicted.<sup>14</sup> Clearly the physical plans of an enacted community will have social causes (like the nature of the building industry) and social consequences. Building failure (catastrophic fire, roof collapsing and the like) is not unusual. But a planned community seeks to avoid physical as well as social failure. So also the enacted community.

At the root of the parallel drawn above is the need to specify in advance and in detail how the design, construction, and occupancy of

12. Holbrow and Johnson, *Space Settlements*, p. 27.

13. Edgar M. Hoover and Raymond Vernon, *Anatomy of a Metropolis: The Changing Distribution of People and Jobs within the New York Metropolitan Region* (Cambridge, Mass.: Harvard University Press, 1959), pp. 27 ff.

14. Barry Turner, "The Use of Fuzzy Logic for the Social Prediction of Building Failures," paper presented to the 6th EGOS Colloquium, Florence, Italy, November, 1983.

sociophysical systems will occur. Obviously, such specification is in sharp contrast to the conditions underlying the crevice community whose development is "natural," whose history informs its present condition, and whose disasters tend to emerge from pre-existing unreconstructed elements in a poorly recollected chain of fortuitous events.

The planned community in the sense of a "new" town (of which many examples are available in Britain and in the United States) makes formidable demands in planning the detailed physical and social circumstances of a future community. But the most extreme demand on human imagination and insight is the conceptualization of a human community built in free space, at an earth-moon-sun libration point, some 250,000 miles from the face of the earth, where the possibility of including reliable, low-technology (but extensively understood) methods and materials is minimal.

On December 13, 1983, an article in the *New York Times* announced tentative plans of the American government to go ahead with building an extraterrestrial space station, a step representing an additional commitment of the United States government to the exploration of space.<sup>15</sup> As of late 1984, that commitment continues, but the initial concept of a space station has been left quite vague, no doubt in anticipation of critics arguing that the scheme lacks clear justification on either national defense or other grounds. Yet a proposal to build a free space system with a crew ranging from eight to 300 (depending upon which speculative picture one considers) placed "several hundred miles" above the earth's surface has received a go-ahead signal.

The National Academy of Science, an entity independent of government on the one hand, but feeding extensively on grants from that source, has, through its space science group, expressed the opinion that there is no immediate need for building a space station but that such a project might be called for in twenty years. Such a position may not at all be inconsistent with the Reagan Administration's advocacy of a space station in that the research and development work that would be required to initiate such a venture might just consume the intervening years (1984-2004).<sup>16</sup>

The point of reviewing these political developments regarding the move for a space station is to raise again the question about the distinction between a work crew on the one hand, and a community on the other. The distinction is one that has important time-dependent features. If it is assumed that communities *always* grow from work

15. *New York Times*, 13 December 1983.

16. *Ibid.*



crews or their equivalents (the British colony of Virginia, 1607-1624, is an example), then the idea of the enacted community may be mere fantasy. The belief that we are bringing about a rationally, consciously, enacted community in space may be sheer illusion. In establishing such colonies we may in fact be simply continuing our historical habit of growing by accretion.

The idea of the "intended community," as opposed to an enacted community, is an idea that cropped up in the literature dealing with communes in the 1960's.<sup>17</sup> "Intended community," or "intentional community," means the establishment of a population center for the perpetuation of a Utopian, religious, or an otherwise ideology-driven mode of living. It may be argued that such a conceptualization may be closer to the notion of an enacted community than the idea suggested in the space settlement. But one may question the extent to which space settlement work departs from ideology-based communal movements in spite of the scientific imagery enshrouding the hard science and engineering associated with the National Astronautics and Space Agency (NASA).

The 1975 NASA-sponsored design engineering project to plan a space colony combined the ingredients of high science with science fiction and secular humanism.<sup>18</sup> Whereas the determination of the acceleration velocities for the shipment of goods and the computation of angular momentums for alternative structure designs were important elements in the project, the works of George Gamow, Arthur Clarke, and other well-known science fiction writers were a significant part of the intellectual baggage in the effort. Significant attention was given to the democratization of the planning process, in the assurances of jointly agreed-upon space efforts among nations, and even a hard line to the effect that the colonization process would not be used as a means to escape the generally accepted thesis of a population crisis. Early in the project (summer 1975), a visitor to a "plenary session" of the planning team made a strong plea opposing a move into space until the problem, of population control had been resolved.<sup>19</sup> Even without such moral opposition, the NASA plan went into abeyance. NASA visionaries saw the establishment of the first actual colonies by year 2000. But as of 1984 the program is on hold. Still, the shuttle program, now so successful, was part of the original plan. And, with

17. Andrew Rigby, *Communes in Britain* (London: Routledge and Kegan Paul, 1974), p. 4.

18. Charles Holbrow and Richard Johnson, *Space Settlements* (Washington, D.C.: U.S. Government Printing Office, 1977), pp. 29-32, 171-196.

19. Comments madety Bernard Oliver, then Vice-President of Hewlett-Packard Corporation and sometime participant in the NASA Summer Fellowship Program.

renewed interest in a space station—another important element in the venture into space—the revival of the scheme may be underway.

On 6 August 1984, coincidentally the thirty-ninth anniversary of the bombing of Hiroshima, President Ronald Reagan sent to American news organizations a copy of an article he had written for *Popular Mechanics* magazine (September issue) advocating the continuation of the American plan to build a permanently manned space station and thus "conquer the frontier of space." The space station would be in orbit by the early 1990's. This \$8 billion project, said Reagan, would be "the next bold step" in space.<sup>20</sup>

It is clear that the citizens of the earth will not be able to "enact" colonies in space without considering problems of distance, organization, physical design, and a number of other matters not addressed in this paper. There can be no creative community, grown naturally, in an extraterrestrial environment. Moreover, it is unlikely that such forms of community organizations will be seen in space until a substantial elaboration on the work stations and associated work crews of today occurs. Of importance in these futuristic developments are the political and cultural issues associated with the sponsorship of enacted communities: ideology, belief, and vision. It is in these issues that the conceptual merger of the study of communes, as "intended" communities, and that of the fantastic settlements of the future may be found.

20. Associated Press story, 8 August 1984.