

## AN INTEGRATED SYSTEMS AND EMERGENT NORM APPROACH TO MASS EMERGENCIES\*

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### INTRODUCTION

A distinguishing feature of contemporary disaster research is the nature of its inquiry. Over the past 20 years or so it is possible to trace a transition from journalistic to descriptive studies of mass emergencies (Drabek, 1970: 335; Mileti, et al., 1975a: 1–3). More recently a second transition has been spawned in the direction of analytic studies (Barton, 1969; Drabek, 1969; Dynes, 1970; Haas and Drabek, 1970; Perry, et al., 1974; Mileti, et al., 1975b; Gillespie, et al., 1976). Considering the special problems of disaster research (Killian, 1956; Cisin and Clark, 1962; Drabek, 1970), it is clear that the difficulty of conceptualizing analyses is a major factor in the shortage of analytic research. Given the extreme dynamics of disasters, most of the standard “models” used in social science provide only limited or inappropriate conceptual frameworks [1]. Yet Kuhn (1962: 77–90) suggests that cumulative research will not emerge with-

out some theory or model upon which to operate. The researcher without a model apparently can only describe (Brodbeck, 1959: 375–376), and without a conceptual scheme even description is no simple affair.

It is our purpose here to integrate a broad conceptual scheme – general systems theory – with an emergent norm conception of mass emergencies. The emergent norm approach, developed by Turner (1964: 389–392) as an alternative to the early contagion and convergence theories of collective behavior, emphasizes the parameters and processes by which a new or special norm comes to be established as the basis for collective behavior. The occasions for collective behavior are recognized as varying in their intensity, uniformity, and complexity. Situations where there are no established rules or directives, for example, promote the emergence of a new norm. Somewhat more complex and also more relevant to mass emergencies are situations where it is necessary to modify or replace an existing norm. Most natural disaster situations fall within this range of complexity. The most

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intense and complex situations facilitating an emergent norm are those such as riots, wildcat strikes, or violent outbursts where the existing social order must be overturned and opposed in order to implement intended action. While the specific conditions and processes will vary in these situations, the common denominator proposed in the emergent norm approach – recognition of a legitimating norm – helps us to specify system level outputs in a way that general systems theory by itself is unable to do. Thus, following a brief overview of the limitations to descriptive studies, a sketch of general systems theory and a discussion of its potential to the field of mass emergencies, we discuss the possibility of integrating the systems and emergent norm approaches.

#### LIMITATIONS TO DESCRIPTION

The goal in describing an event is to provide an understanding of what is happening (Becker, 1970: 189–192). A logical method of accomplishing this task is to divide the event into time sequences and describe the action in each sequence. This approach defines the research problem and permits a logical presentation and description of the events. Sequential description represents the method of much past and some current disaster research (Mileti, et al., 1975a).

Description of this type is a necessary first step in the development of research leading to theory, but it is only the first step. The sequences have been generally translated into a more sociological jargon called “stages”. But the number of stages varies drastically between researchers; Fritz (1961: 351) presents four stages of disaster; Form and Nostow (1958: 13–14) mention three; Chapman (1962: 7) lists seven; and Dynes (1970: 67–68) argues that eight represents the appropriate number of stages to distinguish. An important factor in the variable views of stages is the different kinds of agents responsible for the emergency (Mileti, 1975: 6). Disasters resulting from different agents are described as having different

numbers of recognizable stages. It would be inappropriate, for example, to describe behavior in the period of “threat” for an earthquake where there had been no prior warning to the population. The complexity of this issue is reflected in Mileti’s (1975: 7–9) discussion of seven dimensions differentiating different kinds of disasters.

Mass emergencies are dynamic and change is more pervasive than can be adequately expressed by a stage model. But most of the work in this field is organized almost entirely around a series of stages and is primarily devoted to a description of what individuals and some organizations are doing during these time intervals. There are, however, numerous other dimensions upon which one may conceptualize observations, and some of these provide greater latitude in describing dynamic situations (Barton, 1969: 171–184; Dynes, 1970: 207–208). Moreover, a combination of these increases our ability to explain behavioral responses. The most impressive work on disaster classification and conceptualization thus far has been that of Barton (1969), who worked out a typology of disasters by cross-classifying four variables: (1) scope of impact; (2) speed of onset; (3) duration of impact; and (4) social preparedness. In contrast to the studies based upon a time sequence of stages, Barton’s work permits us to more efficiently deal with large quantities of data precipitated by a variety of agents. But the major significance of Barton’s work is that it moved disaster research from a descriptive basis to a larger theoretical context. That is, disasters become one type of collective stress situation and, hence, their connection to other sociological phenomena becomes apparent.

To reiterate, as the descriptive data on disaster began to accumulate, the need for standardization of both definitions and classification schemes became very apparent. The stage approach was quite functional in making manifest these needs but, by themselves, stages are not the solution. The need to develop a more

comprehensive model has not been met, however. As Mileti, et al. (1975a: 147) points out, “. . . a clear conceptualization of a theoretical paradigm of what a disaster is, what disaster phenomena are, and how disasters differ has yet to be developed.” While one may identify some early system’s influence (Form and Nostow, 1958), the trend has been slow taking hold. It is our thesis that by adopting a system’s perspective, the disaster researcher can not only describe and classify disasters more effectively, but can also move toward a more analytic approach. The system’s framework provides the constructs and concepts necessary to eventually evolve models for the prediction of individual, group, and organizational behaviors.

### GENERAL SYSTEMS THEORY

General systems theory is an interdisciplinary approach which emerged in the years just after World War II (Von Bertalanffy, 1968: 11–14). Consequently, both systems theory and the systematic study of mass emergencies are relatively new. In considering the application of a systems approach to mass emergencies, the question of whether there is more than one framework and, if so, which should be used, must be answered. Buckley (1967: 37–40) points out that it is possible to identify at least three social systems perspectives currently used in social science: (1) equilibrium, (2) homeostatic and (3) process frameworks. Buckley distinguishes the three frameworks as follows (see Fig. 1a):

The equilibrium model, strictly speaking, is applicable to types of systems which, in moving to an equilibrium point, typically lose organization, and then tend to hold that minimum level with relatively narrow conditions of disturbance. Homeostatic models apply to systems tending to maintain a given, relatively high, level of organization against ever-present tendencies to reduce it. The process, or complex adaptive system, model applies to systems characterized by the elaboration or evolution of organization; as we shall see, they thrive on, in fact depend on, ‘disturbances’ and ‘variety’ in the environment (1967: 40).

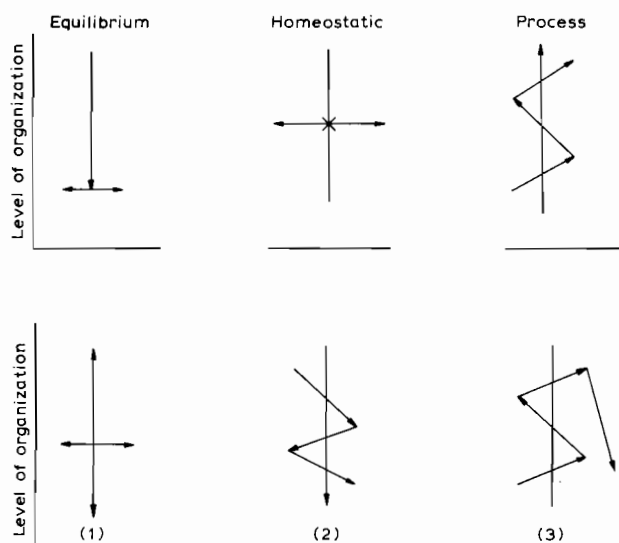


Fig. 1a. System Frameworks (adapted from Buckley, 1967, p. 40).

These distinctions involve three assumptions: (1) equilibrium models, if they change at all, decline in their level of organization; (2) homeostatic models maintain an unchanging level of organization; and (3) process models involve only the growth and not decline of organization. The problem here seems to be that the first two models represent static situations (which seem to be at variance with the definition of a system), and the most promising, the process model, implies that the only direction the system may move is toward higher levels of organization. Of course any time one tries to combine different schemes into a more simplified classification, some rigidity is likely to manifest itself in the scheme. But the rigidity resulting from Buckley’s distinctions is greater in degree than is necessary or desirable.

Warren’s (1963: 136–145) review of the systems literature indicates some important oversights in Buckley’s classification [2]. Buckley uses the term “equilibrium” to designate a static, minimum level condition; but, as Warren (1963: 144) notes, “a system is in equilibrium, a dynamic state, when it is able to react to a change in such a way as to minimize that change’s impact on the relations

of the units in the system.” Thus the concept of “equilibrium” need not imply a minimum level or a lack of change. Figure 1b (1) extends Buckley’s equilibrium framework to include both change and varying levels of equilibrium. The different connotations attached to the concept of equilibrium illustrate the vagueness of this term (Haas and Drabek, 1973: 53) and its resistance to operationalization (Gillespie, 1972: 243). Moreover, it seems unlikely, given the empirical literature on organizations (Haas and Drabek, 1973: 265–300), that one can identify separate perspectives in which organizational change is always unidirectional or in which change simply doesn’t occur. Drawing upon, for example, the organization-environment literature (Mileti and Gillespie, 1976), we can identify cases such as that represented by Fig. 1b (2), where the encounters between environment and organization lead to successive adaptations to decreasing levels of organizational complexity; Messinger’s (1955) study of the Townsend organization provides an excellent illustration. On the other hand, we also find cases like that depicted in Fig. 1b (3), where the encounters between environment and organization lead in the beginning to increased organizational complexity, but at some point the organization collapses as was the fate of the Freie Gemeinde organization studied by Demerath and Thiessen (1966). These cases are at variance with each of Buckley’s frameworks. It would thus seem that Buckley’s scheme requires further elaboration. The most plausible of these frameworks is the process scheme, but it will be necessary to do away with the unidirectional growth assumption.

#### SYSTEMS THEORY AND MASS EMERGENCY

Barton’s discussion (1969: 125–150) of the emergency social system makes use of the equilibrium concept and, at first glance, one may erroneously condemn it as another static model. Keeping in mind the problems of early

researchers in applying nondynamic models to a dynamic phenomenon, it is apparent that similar to Warren’s perspective, researchers of mass emergencies do not see the concept of equilibrium in a static sense. Barton’s approach is a “process” framework, the operation of which may be conceptualized as follows: the predisaster system operates smoothly, a sudden change in inputs (a disaster) requires the shifting into operation of units not normally operative (a temporary maintenance function), which results in the reactivation of previously functioning units (and the simultaneous retirement of units temporarily activated), with the system returning to an equilibrium state. The final state of the system, however, is not a return to the state which existed before the disaster, but simply a different equilibrium. This is similar in some respect to the “strain-stress” perspective advanced by Haas and Drabek (1973: 238–239).

An important advantage of the systems approach to disaster is the ease with which the investigator is able to move from one unit of analysis to another (i.e., group – individual – community – city – state – nation) and still effectively use the system as a scheme for analysis. Of course, as mentioned above, the transition from one unit to another is a problem which system theorists have not yet sufficiently resolved. In extending their initial “system stress” formulation (Haas and Drabek, 1970; 1973) these researchers and their colleagues suggest that, “. . . we must differentiate varied stress levels and recognize that within a single event, different subsystems may be experiencing very divergent levels of stress. Comparing all [units] as if the stress levels were similar is ultimately not informative (Mileti et al., 1975a: 148).” Nevertheless, we may take a macro- or micro-view and not be forced to change models or theoretical orientations. It is also possible to begin to note variations in “system response” to particular inputs.

Barton’s four variable classification scheme (1969: 40–47), noted above, represents various

input variables, the combination of which results in different system reactions. For example, the WWII German bombing attacks on London (gradual onset, total scope of impact, short duration of impact, and high social preparedness) would result in a different system reaction and hence different relationships between units in the emergency social system than the 1955 Beecher tornado (sudden onset, segmental scope of impact, short duration of impact, and low social preparedness). The key observation to be made here is that, with the adoption of a system model, we need not be forced to recognize only variations in individual and organizational response to disaster; we can also classify and catalogue such reactions for further study.

Barton presents a view of "the emergency social system", describing the behavior of individuals, groups, and formal organizations in the face of a sudden change in the inputs to a social system. To facilitate further examination of Barton's system, it is useful to select one type of disaster and examine it. The system to be dealt with here entails a reaction to a sudden onset, short impact duration, segmental, low social preparedness disaster. The relationship between the emergency social system and the larger social system is crucial for system stability: the output of the emergency social system equals the auxiliary inputs of the larger system.

A point of concern for disaster researchers becomes the units, and the relationships between these units, of the emergency social system. Barton (1969: 131) identifies five "units" which operate in the functioning of the systems:

#### **(1) Rate of Nonadaptive Behavior**

This unit refers to behavior which does not contribute to family role performance, an organizational role performance, or to the performance of a community role. In disaster situations there is generally a very low rate of

nonadaptive behavior. Numerous studies, for example, document a low rate of panic in disaster (Quarantelli, 1954; Fritz and Marks, 1954; Fritz, 1961; Martin, 1964; Dynes, 1970; Form and Nostow, 1958; Drabek, 1968).

#### **(2) Rate and Quality of Organizational Member Role Performance**

Reference is here made to performance tasks by members of formal organizations, including voluntary associations. In general, Haas and Drabek (1973: 253) hypothesize that, "as organizational stress increases, changes in organizational performance structure will occur" (cf. Drabek and Haas, 1969; Haas and Drabek, 1970; Spiegel, 1957; Dynes, 1966; Brouillette and Quarantelli, 1971).

#### **(3) Rate and Quality of Family Role Performance**

This unit deals with the tendency of individuals to perform roles related to the family before engaging in other role behavior. Killian's (1952) study of role conflict concludes that, other things being equal, an individual performs his family role before engaging in other behavior (see also Form and Nostow, 1958: 66; Fritz, 1961: 675; Fritz and Williams, 1957; Moore et al., 1963; Drabek, 1968; Dynes, 1970; Quarantelli and Dynes, 1972: 68; Mileti et al., 1975a: 69-70).

#### **(4) Rate and Quality of Community-Member Role Performance**

This unit may be thought of in reference to the "altruistic" community, the tendency of community members to "help other community members" (Barton, 1969: 233). Altruism, affection, cooperation, and group solidarity have been frequently observed following disasters (Martin, 1964; Kutak, 1938; Menninger, 1952: 129; Taylor et al., 1970; Mileti et al., 1975a: 65).

**(5) Mass Convergence**

This represents the tendency of people not affected by the impact of the disaster to converge upon the scene for a variety of reasons, for example, to see the damage, to help, to look for relatives, and so on (Fritz and Mathewson, 1957: 29; Fritz, 1961: 678; Wallace, 1957; Dynes, 1970: 207–208; Mileti et al., 1975a: 86).

The framework as presented represents only a crude outline. Barton subdivides each unit into various component parts, but an evaluation of these components is not necessary for our purpose. Barton derived these units from the literature on disaster; the hypothesized relationships between the units (shown in Fig. 2) were also derived from the literature. It is reasonable, then, to treat the system framework and related hypotheses as “given” and explore their implications for a different theoretical work; namely, the emergent norm approach.

**IMPLICATIONS OF A SYSTEMS MODEL FOR THE EMERGENT NORM APPROACH**

The emergent norm approach (Turner, 1964) suggests two questions which may be posed regarding the hypothesized relationships between system units: (1) while there is an implied negative relationship between the informal mass assault and the effectiveness of for-

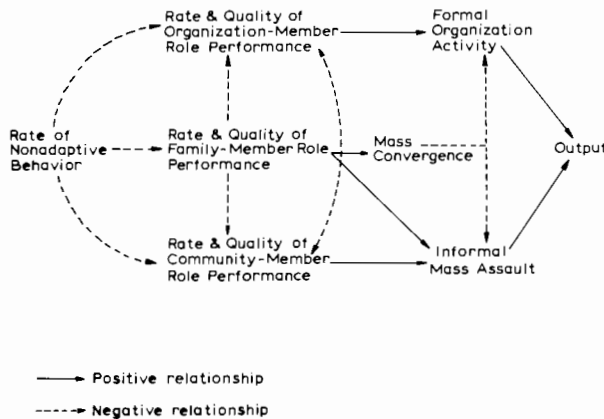


Fig. 2. The Emergency Social System (Barton, 1969, p. 227).

mal organization activity, is it not possible that this relationship be positive? (2) Does the mass convergence necessarily have a negative effect upon the effectiveness of the informal mass assault? To answer these questions requires a brief prelude of the central tenants of the emergent norm approach.

The emergent norm approach holds that people operate on a set of norms which permit and guide both individual and organizational behavior. If something happens to make the normative structure inappropriate or partially inoperative, people will define a new and hence emergent structure, altering their behavior accordingly. The scheme indicates an established structure, the destruction of this structure, and then the emergence of a different structure (see Fig. 3a). This framework corresponds to the disaster research findings, with the disaster representing the “crisis” in Fig. 3a. The only necessary modification is the need to include established organizational activity.

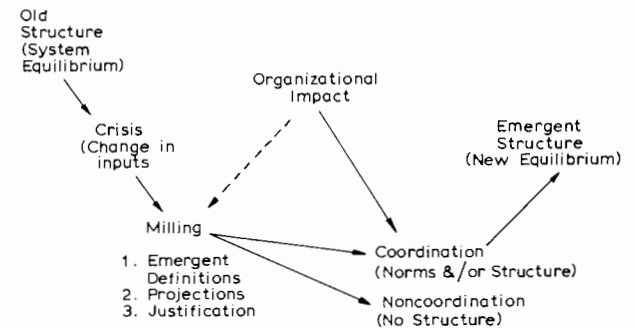
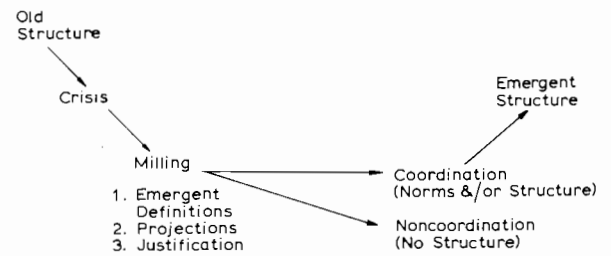


Fig. 3a. Emergent Norm Approach.

Fig. 3b. Emergent Norm Outline Taking into Account Outside Organizational Activity.

By introducing established organization activity, as shown in Fig. 3b, we achieve an explicit linkage between the emergent norm approach and Barton's system framework; the implication of this linkage will be discussed below. The impact of established organizations would be principally felt at the point of coordination as this is one of their major functions and they have a system of procedures which defines the situation (Haas and Drabek, 1973: 166). One could argue also that some influence would be felt at the milling stage in the case of an emergency operation organization which maintained members to organize search and rescue operations.

The most interesting point is the lag in time between impact and the appearance of representatives of established organizations upon the scene (Raker et al., 1956). The longer the time lag, the more time the residents and people who were in the area at the time of impact would have to organize, and thus they might be seen by the established organizational representatives as competing operations in search and rescue. Dacy and Kunreuther (1969: 94) and Dynes (1970: 179) have noted that many organizations will confront surpluses of volunteers who, while highly motivated to help, cannot be easily integrated into the organizational task structure. Similarly, Demerath and Wallace (1957) indicate that organizations can be hampered by excessive "assistance".

These developments, of course, may be quite limited due to the lack of equipment on the part of the victims, and because of the inevitability of the appearance of established organizations; but the beginning of relief, search, rescue, and medical operations could no doubt be established. In this light, we may reconsider Barton's hypothesized negative relationship between the Formal Organizational Activity and the Informal Mass Assault. Since the operations provided by numerous organizations would be started according to the emergent norm hypothesis before the organization reaches the scene, it is possible to hypothesize

that much of the success of established organizations depends upon how well they can integrate their personnel into the ongoing operations of the victims. This implies a positive relationship between the units. That is, the effectiveness of the established organizations would be enhanced by the local citizens' knowledge of the environment, early preparation, additional personpower, and so on.

Some support for a positive relationship between established organizations and informal units, assuming certain response patterns, may be drawn from Form and Nostow's work on the Beecher tornado. In the development of police evacuation units, Form and Nostow (1958: 141) indicate that "by the time the emergency headquarters were established approximately three quarters of the dead and injured had been removed by civilian volunteers." More generally, Form and Nostow (1958: 112) indicate that "... organizations that arrived on the scene soon after the impact ... were successful to the degree to which they fitted themselves into the rescue pattern already established by the local groups." Studies by Clifford (1956) and Warheit (1968) reached a similar conclusion. The point is that people were in the field and already operating services before any established organization members arrived at the scene. Also, any activity on the part of citizens must be integrated into organizational structures (Brouillette, 1971: 178-180). The speed with which this is accomplished and hence the speed with which each organization reaches its maximum output may depend upon how skillfully the organizational representatives in beginning their work can avoid conflict with emergent groups. The established organizations must integrate, adopt, or abolish the emergent structures in order to reach organizational goals. In short, failure to integrate such units will retard their own effectiveness. Rather than representing a resource through which the established organization could increase its effectiveness, such informal groups too often remain viewed as "part of the problem."

The second question relates to the effectiveness of the mass convergence relative to the informal mass assault (emergent groups). No doubt people entering the area, representing the mass convergence, initially provide a positive impetus to “mass efforts.” Personnel for manning the rescue parties and other operations of a mass structure have to be recruited from somewhere and the mass convergence provides a steady flow. At some point though, saturation is reached and the convergers begin to get in the way (Dacy and Kunreuther, 1969; Dynes, 1970; Demerath and Wallace, 1957). This situation is complicated by the fact that by the time saturation is reached, the established organizational personnel have arrived on the scene and are trying to “organize” operations. From this point on then, the mass convergence is dysfunctional for both established organizations and emergent groups. What exists, then, is an apparent interaction effect in that initially the mass convergence provides manpower, a positive relationship in terms of resources, but later they stand in the way of a rapid integration of informal emergent groups into the established organizations which is a negative relationship with respect to effective service delivery. The changes that have been proposed here are represented in Fig. 4. The preponderance of positive relationships between the informal mass assault unit and

other units of the emergency social system seems to emphasize the role of “emergent” mass behavior in the system’s output. Verification on these points is yet to come (Mileti et al., 1975a: 144–148). It will come when we are able to lift the disaster literature from its descriptive level to the more powerful analytic level.

Analytic studies are distinguished from descriptive studies in that they are framed in a design of logical proof (Gillespie et al., 1976: ii). We have shown the value of using analytical frameworks to guide research. But it has been also implied that such theory and research have a parallel use in guiding policy and administrative planning. Executing an effective response to disaster, for example, depends upon knowledge of how people, groups, and organizations behave prior to (when warned), during, and after mass emergencies. Information of this type can provide for advanced preparation and the discovery of improved ways to avoid bottlenecks in various attempts to gear up, provide relief, and return the stricken community to a stable condition. Redefining local citizens and groups as a resource instead of viewing them as part of the problem suggests a fundamental policy change and a host of possibilities for enhancing effectiveness. Policy and planning for mass emergencies has for too long been tied to short term, post hoc, experiential responses and adaptations (Fritz, 1961: 659; Parr, 1969: 26; Haas, 1970; Mileti et al., 1975). Predicting an early utility but also a point of diminishing returns in mass convergence permits advanced structural planning to optimize this resource. These suggestions, of course, simply crack the crust. But they are enough to indicate that by conceptualizing analytically what we know about responses to mass emergencies, we can push the practitioner into a new approach to disaster planning; a preplanned and proactive response to mass emergencies.

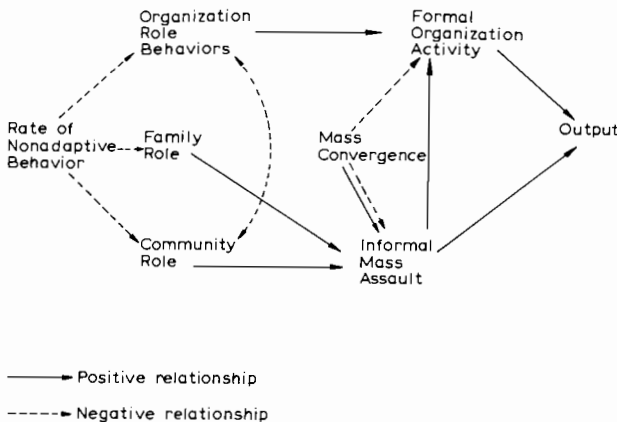


Fig. 4. Changes in Unit Relationships for Barton’s System Framework in View of Emergent Norm Considerations.

## NOTES

- 1 The "system stress" model advanced by Haas and Drabek (1970; 1973) represents a recent and noteworthy exception. But, as noted by Mileti et al., (1975a: 148) "... researchers using this orientation have yet to resolve many of the definitional and measurement issues . . . [and] it does not appear fruitful to assume that [a] community will experience equal levels of system stress . . .".
- 2 Warren compares the work of Homans (1950), Loomis (1960), and Parsons (1951) on various points relative to systems theory. The extraordinary accomplishment on Warren's part is that unlike many social scientists (who chose to focus on differences between theorists), he manages to highlight the numerous similarities between the approaches and in so doing doesn't leave one feeling that there is no hope for the future (in the sense that everything is so different that problems can't be resolved and research can't continue).

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