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Macrosystem Simulation for Community Research and Problem Solving[1]

A Progress Report

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A community action simulation model is presented as a promising means for inquiring into factors affecting community problem solving and as a tool for helping those engaged in social action efforts to develop more realistic strategies and tactics. The model is based on the concept of a community macrosystem consisting of several autonomous but interrelated systems implicated in a common area of concern. The simulation model places emphasis on three social/psychological variables (trust, power, and social distance) which are assumed to be important determinants of the nature of community action strategies that are selected and of their effectiveness. The article describes the components and operation of the simulation and briefly presents preliminary findings from its use with seven client systems.

The community presents an array of complexities for any individual or action group seeking to solve a social problem or work successfully toward needed change. It appears to be useful to break down the community into *macrosystems* consisting of various subcomponents, some of which are large, complex systems in their own right (e.g., the system of public education), others of which are small and relatively undifferentiated primary groups (e.g., the average nuclear family). Each of the many and varied component systems of the community are related to others according to the extent to which they share common concerns, are functionally interdependent, and are in conflicting or competing positions

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with respect to action objectives or scarce resources. Any single macrosystem consists of several autonomous but interrelated component systems implicated in a common area of concern for which no single component system is responsible (e.g., mental retardation, juvenile delinquency).

MULTIFUNCTIONALITY

Unlike single institutions or formal organizations, macrosystems are multifunctional in nature. They do not exist in order to achieve a single purpose or integrated set of objectives. A macrosystem does not produce a single commodity; neither is it organized to ensure any set of agreed-upon outputs.

Because of its multifunctional nature, no macrosystem is organized as a single entity, just as the community itself is not a rationally managed array of interrelated macrosystemic subcomponents. There is no single manager of the community even though there are individuals who occupy a position known as *city manager.* City managers are at the pinnacle of only one set of interrelated agencies of government within their communities. There are other equally powerful and important systems, each with its pyramid of power on top of which are one or more persons who are at the pinnacle of influence within their sphere of concern.

Add to the mix the multiplicity of neighborhood and other territorial subdivisions (many of which constitute highly differentiated entities), membership organizations, special interest groups, coordinating bodies of various kinds — not to mention a fluctuating array of ad hoc temporary groupings of people with a cause to promote or someone else's cause to oppose. Such a system of systems defies rational management.

REDUCTIONISM

The reductionist tendency in the human sciences is well known. It consists of the temptation to reduce the complexity of ill-understood phenomena by describing or analyzing them in terms of smaller, more manageable, and better understood components. The reductionist tendency leads students of human behavior to search for explanation of that behavior in the physiology of the organism. It led the early students of small group behavior to analyze group dynamics as if they were extensions of individual psychodynamics and to speak of such mythic entities as *the group mind.* Subsequently, it led students of organizational behavior to analyze complex institutions as if they were assortments of interrelated small groups or working teams. The reductionist tendency has long been at work in the field of community organization. Even the term *organization* implies that ways exist to structure, correlate and manage the complexities

of macrosystems along the lines of single systems. Many modern political reforms have involved attempts to apply rational management principles to the multiple complexities of power and clashing values in the community. Similarly, within the applied behavioral sciences there are a growing number of attempts to adapt techniques used successfully for internal organizational development in order to help with social issues and community tensions.

The reductionist tendency is not totally dysfunctional. It represents a useful effort to adapt that which is known to the understanding and management of that which is not. The group mind is a useful myth, for example. It points toward the common individual dynamics which individuals bring to bear on group interaction. The individual mind is, to a large extent, forged out of the individual organism's interactions within the single most important face-to-face group — the family. Complex social organizations are, in fact, most often created out of face-to-face working or planning groups; once formed, they include a variety of face-to-face groups which are essential to productivity, problem solving, and morale. In turn, it is the rare small group which is not dependent in some fashion on one or more enveloping institutions for its very existence.

Similarly, within macrosystems both face-to-face groups and structured organizations are essential component entities. No attempt to understand fully or to change a macrosystem will succeed without including a clear grasp of the social groups and organizations most directly involved with respect to the problem or area of concern. By the same token, however, it is proposed that *no such attempt can succeed if it is restricted to a reductionist analysis of the component groups and institutions alone.*

COMMUNITY ACTION SYSTEMS

A promising way to organize macrosystem analysis was suggested in the early 1920's by community sociologist Eduard Lindemann (1921), who developed a model for understanding and assessing progress of community action. The present concept of *community action system* owes much to Lindemann's early work. It represents a valuable way to apply systems analysis to community intervention or inquiry. Lindemann's model brought together in one conceptual framework the following ingredients: (1) one or more concerned individuals; (2) an area of possible social concern, often with a suggested course of action in order to "solve" the program (e.g., fluoridation of public water supplies to solve the problem of dental caries); (3) an initial clustering of a face-to-face problem-solving group; (4) the gradual evolution of linkages with other groups and organizations implicated in the same area of social concern; (5) a process of social influence attempts, often involving interorganizational or intergroup dynamics having to do with cooperation, coalition, or conflict; (6) a focus of decision

making within some part of the macrosystem; and (7) the location of responsibility for organizing, managing, and monitoring a solution or course of action once it has been agreed to.[3] A sequence of community action can be usefully viewed as *the operation over time of a macrosystem consisting of an interrelated set of components joined together by an area of common social concern.*

Components of the Action System

Certain of the components in a community action system are joined together in common cause; others are interrelated within the system for just the opposite purpose of seeking to block them. Still others have more than casual interest in the area of concern and will influence the outcome without being counted as either supporters or opponents. They will include interested third parties, experts turned to for consultation and advice, those who will be involved in the final decision, and members of various actual or potential publics who have some stake in the outcome. Bystanding publics are usually essential to a community action system. Their tacit consent helps to maintain the operation of the action system. Often the proponents and opponents of an action plan spend considerable time and energy trying to influence various publics. The degree of public apathy or interest affects the timing and intensity of action, while public opinion, once it takes shape, often influences its final outcome (Leys, 1952).

Decision Making

Decision making is a focal process for most community action. *Ultimately the die must be cast* in some fashion for or against the action plan, whether by referendum, vote of a public body, official administrative action, vote of a governing board or committee, concensus within a coalition of groups, or some other means. Therefore, the community action system is organized in whole or part around attempts to organize and influence whatever decision-making process is involved.

Communications Media

Finally, there are the communications media, the several means whereby individuals and groups within the macrosystem send and receive messages, exert influence on one another, and seek the interest and support of relevant publics.

[3] The foregoing way of describing components of a community action system does not use Lindemann's language. To his original idea it adds certain emphases (e.g., from the relatively new field of intergroup dynamics) which were not available to him.

Press, radio, television, leaflets, posters, mass demonstrations, and other means of communication and influence are essential to a community action system.

Summary

In summary, the basic components of any community action system are considered to include: (1) an action group; (2) other groups implicated in the action system as either allies, opponents, or significant neutrals; (3) a decision-making process, usually comprising a set of individuals acting as decision makers; (4) relevant publics having an actual or potential stake in the outcome; and (5) the communications media.

PROJECTION AND PARANOIA IN COMMUNITY ACTION

A baffling and sometimes tragic aspect of community action systems is the inability of those involved to communicate adequately with one another, especially across partisan lines, to understand each other's perceptions and interpretations, and thus to engage in a reality-oriented problem-solving process. The community action system often becomes the occasion for gross misperceptions. Potential supporters are often overlooked or viewed as opponents. Those who do not respond with immediate enthusiasm to an action plan are dismissed as misguided, rejected as blockers, or cast in the enemy's camp. The deeply held beliefs or concerns of opponents are mistrusted, misunderstood, or dismissed as trivial. Their motivations are held to be malevolent. In short, a community action system readily becomes the occasion for mutual suspicions and hostilities that to the clinical observer often appear to be hardly short of organized projection and paranoia; it does so, in part, because of the very complexities inherent in a macrosystem.

Groups caught up in the pressure of community action are rarely fully aware of the complexities involved or in touch with their own distortions of the situation. Attempts to point out complexities are sometimes rejected — often correctly so — as disguised attempts to slow down or block the action effort altogether. Even when action groups do become aware of possible distortions, the means are lacking in many cases to conduct a realistic appraisal of the complex action system.

THE COMMUNITY ACTION SIMULATION (CAS)

It has been evident for some time that the need exists for ways of enabling individuals and groups engaged in social action efforts within macrosystems to

develop more realistic bases upon which to fashion strategies and tactics. Various approaches have been devised in recent years. Beginning in 1960, NTL Institute for Applied Behavioral Science[4] adapted laboratory training and group dynamics methods for use with community leaders in one- and two-week residential workshops. To the usual small group experiences and skill training in intergroup behavior were added both theoretical and experiential components having to do with systems analysis, complex problem solving, the nature of conflict, and approaches to community action. A variety of training approaches were used, including simulated community designs, analysis of real community problems brought by participants, and enactment in simple games and simulations of problems of community conflict and power.

Uses of Simulation

The practice of certain skills under conditions approximating, but not identical with, real life operating conditions is recognized in many fields as an effective means of building competence. Well-known examples are the use of link trainers with pilots for simulation of instrument flight conditions, conducting first aid drills with make-believe patients, and the extensive investment in simulation training of astronauts to familiarize them with the operation of their flight capsules in as near to real life conditions as possible.

The use of mathematically derived games to represent those characteristics of social behavior that lend themselves to quantification was greatly stimulated by Von Neumann and others in the 1940s (Von Neumann & Morgenstern, 1944). Perhaps the most widely used game in current social psychological research and training is the so-called Prisoners' Dilemma (Luce & Raiffa, 1957), in which participants receive rewards or punishments according to whether conditions of mutual trust or suspicion are established. In recent years highly complicated games and computer-based simulations have been evolved for the study of such diverse aspects of community behavior as land use and voting (e.g., Duke, 1964; McPhee, Fergusin, & Smith, 1972). A simple game for the study of community influence patterns and values has been invented by Hall Sprague and colleagues at the Western Behavioral Sciences Institute. In the international field, Guetzkow has been a pioneer in devising a paradigmatic game of international negotiations and maneuverings which permits the study of certain intricacies within that complex field not otherwise easily investigated or learned.[5]

[4] Formerly known as the National Training Laboratories and associated with group dynamics and sensitivity training, NTL is a nonprofit national organization which seeks to apply techniques from the behavioral sciences for purposes of social improvement in groups, organizations, and communities.

[5] For useful reviews of the uses of simulation and gaming for educational and decision-making purposes, the reader is referred to Guetzkow, Kotler, and Schultz (1972) and Boocock and Schild (1968).

In almost every instance, simulations reflect, but do not fully reproduce, real life. To be successful they must have face validity —that is, they must appear to embody certain essential characteristics of the situation they are supposed to depict. In practice, a fine line exists between simplifying real life to the point where the simulation lacks face validity, on the one hand, and making the simulation so complex in an effort to reproduce reality that it no longer serves the practical purpose of highlighting essential aspects of the real world, on the other hand.

The problem is made more difficult by the fact that simulations generally abstract out the characteristics of many specific instances of a class of real life processes. Prisoners' Dilemma represents the general category of interpersonal or intergroup interactions involving the possibility both of win–win and lose–lose outcomes. Sprague's SITTE game represents the general category of community influence situations in which the power of several special interests groups either can be combined in various ways for the general good or can cancel one another out. In these, as well as in most other games or simulations, it is not possible to check the validity of the specific simulation run against what happens in the real world under comparable circumstances.

In 1967 I began the development of an approach to community action simulation that might serve as a useful vehicle for both training and research while, at the same time, being tied to specific problems of social change in the community. From the beginning certain considerations were given high priority:

1. The simulation should lend itself to some degree of quantification, yet it should not fully rest on the success of such quantification because of the impossibility at present of developing verifiable, quantified relationships among the multiple variables involved in complex community situations.
2. The simulation should be complex enough to reflect a real life situation realistically, yet it should not be so complex as to make it impossible to follow and understand the interplay of simultaneous events.
3. Approaches to recording and retrieval of information should be used so that important variables would be observed and analyzed.
4. The simulation should be close enough to real life so that it would appear valid in the eyes of participants, yet it should not be so detailed a reproduction as to make it impossible for human role players to assimilate its main features and learn from their experience.

A Paradigm for Custom-Made Simulation

A fifth requirement remained unmet for some time. That was the desire to validate the simulation against the kind of real life situation for which it was supposed to stand. Finally, an approach was devised which, so far as is known,

had not been used before. It involved the development of a consistent, meaningful framework within which unique but comparable custom-made stimulations could be designed in collaboration with actual client groups engaged in programs of macrosystem change.

As it finally emerged, the approach known as the *Community Action Simulation* (CAS) involves the reproduction of a relatively few simply observed and measured dimensions, all of which are built into the individually designed simulation. In addition, there is ample opportunity for the free flow of a number of additional factors idiosyncratic to the particular situation. The CAS seeks to simplify real life complexities by restricting the field of focus to those individuals and groups directly implicated in a specific action sequence over a limited time period. All those involved in the simulation became participant observers whose reports are used in the retrospective analysis of what takes place. Furthermore — and possibly the most unique aspect of CAS — a real community action group is involved in the construction and enactment of its own problem. Finally, the CAS makes it possible to use field observation following one or more runs of the simulation to determine whether and how realistically the CAS represented essential characteristics of the real world.

The CAS enables a client action group to try out more than one approach to achieving its objectives in a laboratory setting. It condenses about 18 months' real time into a day's run of the simulation. It provides the client group with feedback from other participants who serve as members of other groups, public representatives, decision makers, and media.

Key Variables of the CAS

The CAS pays particular attention to three social/psychological variables believed to play an important part in determining the nature of community action strategies and the adequacy with which they are used. The three variables are trust, power, and social distance.

Trust. Trust refers to the extent to which one group feels that another group's motives are beneficent, its stated intentions are its real ones, and its agreements or commitments will be honored. Within the CAS, the nature and extent of interaction among groups is affected by ratings of trust made on a scale of 0 to 9. (E.g., if no trust exists, restricted communication is allowed in terms of both nature and amount of contact.)

Power. For the purposes of CAS, power is defined as the ability of a group to realize its will in a communal action despite resistance from others participating in the situation. In the real community there are many sources of power. The ability to influence may rest on monetary and other resources, on specialized knowledge or skill, on the ability of a group to assess and make good use of its resources, the nature of the issue and the degree to which a group is

considered by others to be relevant to the issue, and other factors. Power also tends to be comparative, that is, it must be assessed in relation to the actual or perceived power of other groups. Finally, power rests to some extent on the readiness of others to be influenced.

The measurement of power poses major difficulties since objective measures of "real power" – whatever that may be – simply do not exist. Ratings by groups of their own power may differ markedly from the power which others ascribe to them. It is logical to suppose that groups who understand the sources and extent of their own power in ways that match others' assessments are apt to be in a better position to use power effectively than are groups whose perceptions of their own power are markedly discrepant from others' perceptions of it. Casual observation suggests that groups in community action situations are prone to serious strategic and tactical mistakes when they grossly under- or overestimate their own power potential as measured by other groups' estimates.

In the CAS the formula by which power points are assigned each group is not made known; neither is any group told the number of power points it possesses. As in real life, groups are left to operate as best they can on the basis of their own judgments about their ability to influence. Power points for each group vary during play; they fluctuate according to the nature of its tactics in relation to other groups.

Social Distance. Social distance refers to the ease with which groups in a community action situation can be in touch with one another. In real life opportunities for direct contact between groups vary according to such factors as socioeconomic status of group members, location of leaders' and members' residences, extent of membership in overlapping social groups, and political and social values. Many emotionally laden community change efforts involve badly impaired communications between antagonistic groups having a high degree of social distance from each other.

In the CAS each group possesses the same number of contact points at the beginning of each round of play. Ratings of social distance between groups are used to determine how many contact points a group must use if it makes contact with any other group. Since each group has only a limited number of contact points at the beginning of each period of interaction, groups must consider carefully the relative cost of attempting to have access to other groups. The expenditure of contact points is believed to be analogous to the relative degree of effort, time, energy, and even money a group must spend in order to contact another group, depending on the degree of social distance between the two groups.

Conditions Variables. Trust, power, and social distance are considered to be conditions variables, by which is meant that they tend to establish the conditions for interactions among the groups in a community action system. It is presumed that the interaction between two groups having a high degree of mutual trust will differ in both amount and quality from that which can be expected

between two groups whose mutual trust level is low. Similarly, groups with equal power vis-à-vis one another will use different strategies from groups perceiving a markedly unequal power relationship between them. Those groups that are socially close will interact more often and with greater openness of communication — all other factors being equal — than will groups that are socially very distant.

In turn, it is assumed that the nature of the actual interactions between groups has an effect on the conditions variables. For this reason, ratings of trust, power, and social distance in the CAS are made at the beginning of each round. In this way the effects of previous rounds' interactions will be reflected in the trust, power, and contact points assigned each group.

Design of the CAS

The CAS involves both organized groups and representatives of relevant publics.

Action Group. The action group serves as the focal point. The simulation concerns a sequence of community interactions involving the action group's attempts to achieve a specific objective. Action group members usually are played by members of a client group for whom the simulation has been devised, although for purposes of learning other participants occasionally substitute as action group members.

Other groups and public representatives in the CAS are played by simulators familiar with a range of community situations, flexible enough to assume roles which are not theirs in real life, and able to contribute personal observations and introspections during critique and analysis periods following each action sequence. For purposes of learning, client group members also may participate in other groups or as public representatives.

Public Representatives. When relevant to the enactment, individual simulators take the role of public representatives, typical members of the community who may be affected by the situation but are not involved at the outset in any organized group. To begin with, at least, they are "bystanders" to what is going on. In a simulation involving the attempt of a community mental health center to form a community coalition to work on the problem of drug abuse, public representatives included an adolescent drug user, a suburban parent, an ex-addict, and a non-drug-user senior high school student.

Public representatives are permitted to move freely in the simulated community, to sit in on discussions, attend meetings, and observe interactions within or between groups unless specifically forbidden to do so by one or more of the parties involved. As action proceeds, however, a public representative may give

up the bystander role and either join an existing group or attempt to form another.

Action and Critique Periods. Thirty-minute action periods are followed by critique sessions during which participants, no longer in role, are debriefed. Questionnaire data are processed immediately after each action period and fed back to participants during critique sessions. The information is of two types: (1) ratings reflecting intergroup trust, perceived power, and social distance; (2) outcome ratings having to do with the extent to which participants believe group goals are being achieved and how satisfied they are with "the general state of the simulated community."

Guidelines. It is recognized that no simulated macrosystem is able to represent an actual situation accurately or completely. As noted earlier, any simulation represents a kind of abstraction from and simplification of real life. During action periods participants in the CAS are asked to suspend judgment about how well the enactment reflects real world conditions. Instead they are instructed to treat the simulated community as "real" in its own right. During critique sessions, however, comparisons with life outside are encouraged because they help all participants and especially the client group sharpen their understandings and improve their problem-solving approaches.

Each action period, involving 30 minutes' elapsed time, represents about six months of real time. Time must be deliberately condensed. Therefore, simulators are instructed to eliminate all polite conversation and other social conventions or rituals. They assume that all such social niceties have been observed and try to get down to the business at hand without delay. Long speeches and irrelevant comments are not encouraged. Following initial briefing of participants, a usual day's run of the CAS extends through three action periods, each followed by a critique session. A final wrap-up meeting is held at the end of the day for general discussion of the experience, identification of major learnings, and consideration of how learnings can be applied to real life situations and community action efforts.

Minimal role briefings are used. Participants are asked to enact roles as realistically as they know how within their own understanding of what is expected of such people in real life. They are instructed to remain open to influence during the simulation insofar as they believe the actual role incumbents would be; they are expected to respond spontaneously to the kinds of influence attempts they experience from others. They also are asked to improvise and use their imaginations freely within the specific constraints of CAS ground rules.

Within those constraints, groups are free to develop their own strategies and tactics. They can form coalitions, present proposals for community consideration, call public meetings, stage protests and demonstrations — in short, use whatever approaches seem appropriate. They are instructed to "behave in

whatever ways you believe are required for you to function effectively under the circumstances of the community situation being simulated."

Communications and Decision Making. As already noted, the basic components of a community action system include, in addition to the several groups and publics, the communications media and a decision-making process.

Media

In the CAS one or more participants take on the media role, which is a composite of all manner of mass communication. Media may attempt to communicate with the simulated community at large by means of verbal announcements, posters and "newspapers" printed on newsprint pads or chalk boards.

Media's task is to seek out information about events in the simulated community, to determine what information is worth publishing, and to develop editorial policies as deemed appropriate by the media representatives themselves. Media may seek to influence events; in turn, they are subject to whatever influences groups may wish to bring to bear on them. Media may use whatever means possible to set up news sources and ferret out information. They are given access to all meetings and other events unless specifically excluded by those responsible.

Application of the CAS

Client action groups have included two community mental health center outreach teams, an interagency drug abuse council, a coalition of Spanish-speaking groups seeking bilingual education in the public schools of their city, a community action agency, a school/community council, and a group ministry working on race relations in a suburban county. Though participants' postsimulation evaluations of the method have been highly favorable, it has not been possible to carry out detailed, systematic assessment of the actual effects of the CAS experiences on the participants, most especially on the subsequent problem-solving capabilities of the action group.

Already the CAS has highlighted certain essential differences between group, organizational, and macrosystem dynamics. It has become apparent, for example, that the individual/environment ecology of a macrosystem is qualitatively different from that of group or organization. In the small group individuals are in essentially a face-to-face contact situation; that is, any person can make visual and aural contact with all other persons in the group. In the organization the individual's relationship to others is largely defined by his or her role, task function, and position within the organization, all of which tend to locate the individual both physically and interactionally within the organization. By con-

trast, the fundamental interaction between individual and environment in the community — as reflected in the CAS — presents the person with the absolute necessity of making choices among alternative interactions. Furthermore, by selecting the option the individual automatically incurs the temporary or permanent loss of other alternatives, something which planners often call *opportunity costs.*

Furthermore, in the macrosystem the individual is required to move — from dwelling place, neighborhood area, or home base organization — in order to make contact with others outside his or her immediate setting. It has become apparent also that more opportunities for interaction are potentially available to the individual in the community than in either organization or group. At the same time, however, there are fewer clear expectations or definitions of how to behave so that participants often are confused about what to expect of themselves and others. Related to the foregoing, participants reported there is more often a feeling of risk for the individual during encounters within the community than within either group or organization.

The CAS has given additional credence to the supposition that competence in community action requires insights and skills at the macrosystem level in addition to those needed to be effective within groups and organizations. Some of those insights and skills involve the readiness of the individual to take personal risks outside the supportive framework of group or organization. Others involve the capacity to perceive and understand the intricacies of multiple interactions among groups and to rise above one's own limited perspective to perceive correctly the needs, aspirations, and intentions of other groups. Perhaps most of all, the CAS appears to be fulfilling the original hope that it would offer a means whereby community groups engaged in programs of social improvement might minimize tendencies towards macrosystem projection and paranoia discussed earlier. Participants have reported that the experience has made them aware of tendencies to misperceive and misinterpret the actions of other groups. They have ended up reexamining their assumptions and redesigning their overall strategies as well as their shorter range tactics. The CAS appears to have helped them in a realistic way to become more cognizant of the macrosystem factors involved in their social change attempts.

FUTURE DEVELOPMENTS

The strategy of devising a custom-made simulation for a specific client system makes it possible in the future to conduct regular follow-up contacts with action group clients — funds and staff resources permitting. Such contacts will make it possible to accomplish two objectives: (1) to determine the extent to which real community action systems unfold in ways similar to the dynamics

noted in the simulation laboratory, and (2) to determine whether community action groups in fact can apply strategies developed during the CAS and, if so, with what effects.

It should be possible after a series of such simulations and follow-ups to modify the basic CAS design in order to bring it more in line with real life macrosystem dynamics.

A high-priority objective is to collect a series of community action system cases, each including comparable data about trust, power, social distance, goal achievement, and the nature of community action systems and of the unique macrosystem dynamics which affect them.

By using current community action concerns with real client systems, the CAS makes it possible to integrate macrosystem research and action. The total separation of research and its utilization — questionable in most social contexts — is unsuitable in any study of community change dynamics. The CAS meets the requirement of engaging the very groups being studied in a collaborative process of inquiry, whereby research informs action and vice versa. Similar approaches have been used with considerable success by students of organizational behavior working with industrial and other client systems. The CAS offers the promise of becoming a powerful new laboratory tool with which to analyze macrosystem dynamics as well as to train individuals working on social change in the community.

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