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Self-Organization, Complex Adaptive Systems, and Metropolitan Governance ¹

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Abstract

As metropolitan areas continue to evolve they become more complex. New patterns of governance can be identified and appear to provide important adaptive measures to social concerns that arise from and characterize metropolitan complexity. Drawing upon complex adaptive systems literature, particularly the concept of self-organization, this paper examines one form of organizational adaptation that has recently made a more significant appearance on the metropolitan scene: sub-regional collaboration. While relatively new, sub-regional associations have made significant strides in coordinating a wide variety of local entities in order to achieve remarkable collective outcomes. It is argued here that such outcomes are more than simple calculations of rational strategies of individual actions achieved through collaboration; they represent a new form of collective action that is based on how the region as a whole benefits and where regional identity is a beacon of light that energizes collective action. Such association represents an adaptive element that is representative of behavior in complex systems in general, and complex metropolitan environments in particular.

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Introduction: Emergent Metropolitan Governance

It is now commonly understood in the public administration literature that many of our social problems have outpaced our traditional institutions. H. George Frederickson (1999) has referred to this condition as the “disarticulated state” where social problems—such as crime, storm water management, community health, waste disposal, transportation, housing and others—are not reconcilable solely within geographic and jurisdictional boundaries that are the basis of our institutional responses. These problems ignore such boundaries and call upon collaborative responses from various governments.

Bound by revenue constraints, jurisdictional mandates and authority, bureaucratic mind-sets, and community parochialism, what has emerged in evolving metropolitan life is a mismatch between the problems and concerns of maintaining quality of life and the will or capacity or authority of political institutions to respond. As a result of these structural barriers, new forms of social organizational networks are evolving that create collective action that can and do address commonly held concerns.

In some of our metropolitan areas, urban sprawl has led to geographically linked communities where there used to be separation. What has emerged is a growing sense that local community welfare can no longer solely be viewed in isolation (if it ever could) but that local welfare is now linked to the welfare of communities nearby, and in some cases, linked to very distant proximities (Rosenau 2003). Among communities, new governments are formed, special districts are developed, new partnerships are derived and as human interaction increases with each new actor addition, new avenues of interaction become possible. In short, the metropolitan area has become full of innovative collective urges that form partnerships and relationships that address newly recognized needs, including needs that cannot be addressed by current jurisdictional authorities. The combinations of these new interactions have made the metropolitan arena complex. Indeed, local traditional local governmental jurisdictions participate in this new collaborations and involvement means to share power and to assist facilitation of solutions with other parties that hold various interests in the outcome of the collaboration (Agranoff 2003). This alone means that regional collaborations have a very different

orientation and operation than observed in traditional intergovernmental arrangements and is useful to explore how governments and others participate in these interactions.

Rational theory that is applied to understanding how institutions behave in complex environments is one candidate that may provide useful explanation for the evolution of newly formed collectives. From this perspective, governmental units act on rational impulses and form partnerships and collaboratives that have identifiable costs and benefits and where public officials can argue in monetary terms the benefits associated with cross-jurisdictional activities. The vision of this approach, if acted upon, leads to metropolitan region characterized by numerous local agencies each seeking self-interest through maximizing benefits and reducing costs, and joining in collectives when mutual joint benefits are derived. Mutual aid agreements among fire and police agencies are examples of such strategies.

The central thesis of this paper is that not all local agency activities and collectives can be explained entirely through the theory of rationality: public leadership is also seeking various forms of human arrangements that are not solely captured by rationality considerations, but by a new paradigm of conjunctive activities—constructing collective action among disparate entities that seek commonly held values—compelled by the complex nature of the metropolitan environment. These conjunctive activities call upon visions of local environments conceived well beyond that of local communities, visions that embrace a understanding of communities based on a larger whole or a larger region of recognized interdependence and responsibility. In previous research conducted by this author and colleagues it was discovered that an emergent trend in administrative connections was apparent and that this phenomena was based not only on rational strategies, but an understanding among public administrators that their success within their own jurisdictions was determined in some part to a larger understanding of connection with those communities that surround their community (Meek, Schildt, Witt, 2003). These public leaders are working within a new paradigm that operates in tandem with rational concerns, and it is useful to establish more characteristics of this paradigm as it evolves.

To do so, this paper links the concepts of self-organization and complex adaptation systems to emerging metropolitan forms of governance that are representative of actions to overcome the problems related to the “disarticulated state” in local government specifically in metropolitan areas that are characterized by population growth that create various social problems that are not easily attended to within jurisdictional boundaries and where citizens begin to place enormous demands on existing jurisdictions and institutions.

This paper begins with a review of the key concepts related to self-organization and complex adaptive systems as elaborated in the social science literature related to complex systems. The key concepts are applied to a case study of self-organized example of regional collective action in a complex metropolitan context. Through documentary analysis and interviews, these concepts are addressed as representative of self-organized solutions to complex problems and include attitudes of those involved as to how such adaptation is evolving and influencing those who participate in the collective. Finally, conclusions are drawn as to how these indicators of self-organization and adaptation are indeed representative of newly formed responses to complex urban conditions.

Self-Organizing Patterns and Complex Adaptive Systems

Of most interest to metropolitan environments, complexity theory offers insight into self-organizing patterns as adaptive strategies to complex conditions. Accordingly, “complex adaptive systems” have properties where new forms of alignments among components are possible (thus reaching non-linear equilibrium) and where changes in alignment have indeterminate effects. According to Pherigo, et al. (1999), complex adaptive systems: (1) contain a larger number of diverse, interactive components free to act, interact, and align into various relationships; (2) depend as much on macrolevels of interaction as in individual microlevels of actions of remain viable; and (3) exhibit changes in patterns of behavior when the conditions action change. The key feature of complex adaptive systems, as one example of self-organizing systems, is that they *learn* to adapt to environmental conditions. According to McMillan, the key features of “living” complex adaptive systems are:

- They learn to adapt to changes in circumstances;

- There is no central controlling feature in the system;
- There are many levels of organization in the system (ranging from individual to various collectives of individuals);
- They are constantly reconsidering and reorganizing themselves as they gain experience;
- They are pattern seekers that learn from their experiences; and
- They anticipate the future; and
- Are always changing, an adaptive system is able to take advantage and learn from what the world around it is able to tell it. (MacMillian 2004 30-32).

The implications of complexity theory--as illustrated in the work on systems that are characterized by self organizing patterns and contain features of complex adaptive systems—is that our metropolitan environments, if viewed as complex systems, contain examples of newly formed self-organized entities that seek to learn from their experiences and adapt to their environment (Koenig and Yearly 2004). For our purposes in this paper, we are seeking how newly self-organized entities are influencing collective partners and how they act in their environments.

Metropolitan Environments as Complex Systems

In the Los Angeles metropolitan region, from which several of these new forms of governance evolved, there are 17.7 million people and 187 cities and 6 counties (SCAG 2004). In a 2000 report by the Southern California Association of Governments (SCAG 2000), population growth rates in the next 25 years are expected to be 40%. Employment growth (43%) and household growth (42%) are also expected to be as dramatic (see Table 3). With such dramatic growth, all infrastructure systems will be under great strain.

Table 1 Los Angeles Region Population Growth Forecasts (in millions)

	1997	2010	2020	2025	% Change 1997 to 2025
Population	16.1	19.1	21.3	22.6	40%
Employment	7.0	8.8	9.6	10.0	43%
Households	5.2	6.1	6.9	7.4	42%

Source: Regional Transportation Plan Update, December 2000, SCAG (p. 6).

Given these enormous population pressures, governmental institutions face related challenges of housing, transportation congestion, maintaining environmental quality, public safety, each of which places pressure on current resources and capacity. In response, public administrators are searching for solutions beyond their jurisdictions, and some are seeking solutions within their jurisdictions. The key feature to these new forms of governance is they represent both reducing social units of collective action (such as creating neighborhood councils) as well as increasing the scope of social units of action (such as creating regional collaborative). Both are occurring at the same time! What these have in common is the each is seeking solutions not defined by current jurisdictional boundaries.

Emerging Metropolitan Sub-regional Partnerships

With the occurrence of increased congestion conditions the result from population and related trends, there also appears to be an emergence of *sub-regional partnerships* that are forming in metropolitan regions. In the state of California, twenty (20) regional collaboratives have emerged over the last 10 years and these have now also formed a voluntary state-wide integrative network—the California Center for Regional Leadership (CCRL)—that is designed to share experiences and information among the collaboratives. These regional collaboratives (RCs) are located throughout the state and carry out various missions that call for collective action among local authorities and citizens. What the collaboratives have in common are that they are “dedicated to the development of a broad-based, long-term strategies for regional and stateside problem solving—*strategies that go beyond the limits of politics and special interests*. Through active engagement of stakeholders, the groups bring an all-important civic engagement to public/private partnering” (California Regional Network 2003, p. 5, italics added). Each of the collaboratives take on unique organizational forms depending on the issue and context of the region, some integrate various counties, some integrate multiple local jurisdictions. As they indicate in their own report, “forms follow function.” (p. 9). RC’s provide various functions, including convening and facilitating public discussion,

advance consensus building, support and conduct research, provide ideas for policy development, support planning related to education and workforce investment and provide an interface for economic development and programming among private and public agencies.

Case Study: San Gabriel Valley Economic Partnership (SGVEP)

As mentioned above, there are several examples in the Los Angeles where region of local regional associations that include civic leaders as members from city, business, commercial, health, public service and non-profit agencies. One example is the regional collaborative called the San Gabriel Valley Economic Partnership (SGVEP). This partnership is a coalition of public and private sectors working to sustain and grow the economic base of the Valley. Their goal is to attract more businesses, provide more jobs and create a "business-friendly" region (Chang 2005). Among the many products and services provided by the Partnership are: business retention, expansion, and attraction; holding regional workshops on various topics; and designing and implementing marketing campaigns to increase the profile of the Valley. Along with the SGVEP, which is an informal and voluntary network, there is also the more formal regional association of local 31 local governments that formed in 1994, called the San Gabriel Council of Government (SGCOG). The San Gabriel COG was formed to link governmental concerns related to transportation planning while the SGVEP is emerged as a regional informal network to enhance the identity of the region. Both regional associations are examples of newly formed partnerships designed to influence state government for funds and national government for trade concessions. In the case of the San Gabriel COG, they have been effective in directing more state funds for issuance of park bonds in their region (Luke, 2001). Both associations have worked together on many occasions to influence state and national decisions on transportation and other funding decisions that affect the region (Hubler and Meek 2005).

What follows in this paper is a more detailed focus on the San Gabriel Valley Economic Partnership and how the goals and activities of the partnership in its short fifteen-year history reflect the self-organizing behavior of adaptive systems within a complex metropolitan environment. After reviewing the key components of the

partnership as an organization, the paper reviews its most recent list of activities and focus of attention. The paper then draws upon the work of McMillan (2004) in her characterization of self-organizing behavior and links the work of the partnership to these self-organizing components. By drawing attention to these links, the point is made that the SGVEP is truly representative of a new kind of organizational experiment in metropolitan life and one that provides meaning well beyond simplified self-interest that in addition also embraces and understanding of what it means to live not only in a neighborhood, but what it means to belong to and have connection with a region.

The Region

The region of the San Gabriel Valley is located just east of the city of Los Angeles, has 900 square miles and includes 2 million people, or one-fifth of the population of Los Angeles County. The region includes 750,00 jobs (one fifth of the jobs in the county) where approximately 65% of the jobs are located in the region which the population lives. The region has 31 cities (or 40% of the total number of the cities in the county) and a larger array of special districts. The region is expected to add another 600,000 new people by 2030—or adding 66 new people a day for the next 25 years—along with adding 200,000 new jobs and 180,000 new households. This sizeable growth pattern will call upon the need for coordinated planning in the area of housing, transportation, health, education and business development. (Conway 2005)

Vision for Collaboration

In 1989, a group of innovative business representatives and city managers – from Alhambra, Monrovia, and West Covina—joined together to create the San Gabriel Valley Image Study (Chang 2005, Meek 2005). The purpose of the study was to improve the image of the Valley as separate and distinct from that of Los Angeles, and to identify strengths and weaknesses within the region, and promote accessibility. A regional collaborative was designed to implement these collective goals and was incorporated as San Gabriel Valley Commerce & Cities Consortium in August 1990.

By 1998, after several name and mission changes, the organization became the San Gabriel Valley Economic Partnership (SGVEP) to more accurately describe and reflect its revised mission statement. “Our goal is to market the Valley internally and externally in an effort to attract more businesses and provide more jobs. The Partnership is working with cities and businesses to create a "business-friendly" region and promote a regional approach to marketing the Valley as the place to do business.”²

Membership

The San Gabriel Valley Economic Partnership is a non-profit membership-based organization, which includes cities, government agencies, and business interests who hold a stake in the continued improvement and competitiveness of the region. The San Gabriel Valley Economic Partnership is a non-profit coalition made of 103 partners: 55 are business corporations, 18 are cities, 17 are colleges and universities and 13 are chambers of commerce and other community organizations. Partners include Bank of America, California Institute of Technology, Century 21, City of Hope, The Gas Company, Jet Propulsion Laboratory, Kaiser Permanente, SBC, Southern California Automobile Club, Southern California Edison, Verizon, Wells Fargo, and Washington Mutual (www.calregions.org/regcivic/crn/sgvep.html).

Governance

Board of Directors--The Partnership is governed by a 21-member Board of Directors, whom are selected from amongst the membership base, as well as staffed by five full-time employees, one contract employee, and the Director of Business Assistance who is actually an employee of the Los Angeles County Economic Development Corporation (LAEDC). The governing board meets monthly and is responsible to hiring/firing the President of the Partnership and approves financial actions of the Partnership (Chang 2005).

General Membership Meetings—The general membership of the Partnership is voluntary and is based on membership dues (which varies from \$5,000 to \$10,000 depending on the size of the city or enterprise). The general membership meetings

² <http://www.valleyconnect.com/sgvep.aspx>

provide networking opportunities and include quest speakers of interest to the Partnership members.

Legislative Action Committee—The Legislative Action Committee is designed to inform Partnership members regarding current and proposed local, state and federal legislation that would directly affect the members of the region. Monthly meetings are held and include elected chairs. The committee holds sessions with local, state assembly, state senate, national congressional and senate representative, and local county commissioners. The committee recommends positions on policy issues to the Board for approval. Committee members represent their organizations when casting votes. The committee does not take positions on candidates up for election. The committee, in partnership with the President and the Board, hold special summits with political leaders in order to represent the collective interests of the region as a whole. In a separate but related political activity, the members of the Partnership also has formed a Political Action Committee (PAC) that deliberates and takes positions on various regional interests.

Transportation Task Force—This ad hoc committee is designed to discuss and take actions on issues that affect the region on transportation and economic development. Meetings are held on called when actions are needed, and include various key members of the Partnership. Often, these members attend metropolitan transportation authority meetings to voice the interest of the region.

Workforce Development Committee—This committee is headed by the Director of Business Assistance and the Vice President of Operations and covers the area of providing educational and training and consulting assistance to business owners in the region. The committee has been a significant contributor to not only bringing in new businesses, but also assisting various businesses in retaining their workforces in the face of higher state taxes, worker compensation and health costs. It will be the work of this committee monitor and advise on how to manage the growth of more that 200,000 new jobs to the region in the coming 25 years.

Operation and Staff

The five full-time employees consist of the President/CEO, the Vice President of Operations, the Director of Communications, the Director of Public Policy, and the Administrative Assistant. The lone contract employee is the Vice President of Investor Relations who earns a certain percentage of new member fees and membership renewals. The Partnership is also subject to the Brown Act and open government regulations as part of their funding comes from cities and other public agencies.

The San Gabriel Valley Economic Partnership is housed in the former Home Savings headquarters located in the city of Irwindale, California. An arrangement was made in 2000 that Washington Mutual, which acquired Home Savings and all of their assets, provides rent-free office space in exchange for “leadership-level” membership to the Economic Partnership. This understanding is presently still in effect (Change 2005, Meek 2005).

Core Activities and Events

Marketing the Region—Through various strategic planning processes, the Partnership has attempted to focus attention to the region through highlighting its distinctive nature as well as a history and presence that is well articulated from that of Los Angeles. The region has developed marketing campaigns that celebrate the region’s excellence through concepts like “We Have It All,” and “The Intellectual Capital of California.” The idea behind the campaigns is to bring attention to the region and to market the region to the broader national and global environment (Pierce 1993).

Business Assistance--The organization also provides business assistance in order to attract and/or retain businesses to the San Gabriel Valley. For example, the Partnership played an integral role in convincing Cal Spas to remain in the region rather than relocate to Nevada or Arizona, where the company already owns land. The company was involved in extensive legal disputes regarding land use and permits with the city. Vance Baugham, the Director of Business Assistance, immediately stepped in as a mediator between the company and the city of Pomona, brought in various government officials to help tackle regulatory hurdles, and eventually Cal Spas was convinced to stay.

Overall, 600 jobs were saved and approximately another 600 jobs were created because of the expansion of production facilities (Chang 2005).

Foreign Trade Zone--The San Gabriel Valley Economic Partnership have hosted economic development summits and organized an international conference on trade (Valley Connections 2004, 2005). In addition, the partnership is the lead organization in operating two Foreign Trade Zones (FTZ) where the U.S. Department of Commerce has granted rights to certain regions that would facilitate and improve the flow of foreign trade.

Policy Advocacy--As previously mentioned, the Partnership advocates on many regional issues on behalf of the business community. Recently, transportation has become a major public policy priority for the organization. The organization has supported the completion of three regional projects – Gold Line Foothill Extension, Alameda Corridor-East, and the 710 Gap Closure – that will contribute to the continued economic vitality of the San Gabriel Valley by improving goods movement and mobility. Bill Carney, SGVEP President and CEO, believes that the projects should be completed in a timely fashion, however does not support or oppose any particular method in completing such efforts (Chang 2005). This stance helps the Partnership maintain neutrality amongst competing interests in the transportation community. For the last 15 years, the San Gabriel Valley Economic Partnership has provided a real voice for business interests in the region. The organization is unique because it stands alone in the Valley, and is able to present a united and clear vision for the future of the region.

Events and Workshops-- Since the Partnership is a membership-based organization, most of its collaboration is on behalf of the members and thus of the region. Events, such as highly visible economic and political summits, that bring members together to network are popular because the constant exchange of information and favors is something that could be of future mutual benefit.

Summary of Case Study

Interviews with leaders of the San Gabriel Valley Economic Partnership reveal a dedicated group of individuals seeking to improve the economic well being of the region through network interaction (Chang 2005; Meek 2005). These networks seek state and national government support, but they act very independently and are often disappointed in the level of state support for their goals and objectives. Much of the success of these networks is in information sharing and service provision. For example, in the recent energy crisis in California, the economic partnership was aggressively working with companies to reduce energy usage by providing various workshops and advice on how to innovatively manage workforce revision in the face of higher energy costs.

Self-Organization and Complex Adaptive Systems

We can now turn to the work of McMillan (2004) and apply the characteristics of self-organization and the complex adaptive system to the activities of the San Gabriel Economic Partnership. Each of the elements outlined by MacMillian are listed below.

They learn to adapt to changes in circumstances—According to the President Bill Carney, the Partnership is constantly designing and implementing new programs that attempt to support the interests of the members (Meek 2005). Recent programs include legislative receptions, team-building seminars, international trade seminars and workforce development workshops (Valley Connections 2004 and 2005) offering different times to meet, always seeking to find common interests of those in the larger community.

There is no central controlling feature in the system—the San Gabriel Valley is distinguished by its fragmented structured, it is known as the “Valley of Local Control” where there is a disproportionate number of cities concentrated within the population of the region (2 million people or 20% of the county population and 31 cities or 40 % of the total number of cities in Los Angeles County) and where there is a very large and mixed group of local jurisdictions that combined, make for a deeply complex

region. The Partnership attempts to provide and maintain a network of shared power with member of the region.

There are many levels of organization in the system (ranging from individual to various collectives of individuals—cities, private organizations, insurance companies, utility companies, bankers, real estate developers, hospitals are all participants in the Partnership network.

*They are constantly reconsidering and reorganizing themselves as they gain experience—*Changing leaders, missions and collaborative name over the past 15 years indicate a constant focus on reorganization and focus over time. The Partnership continues to expand the network seeking new members and partners.

*They are pattern seekers that learn from their experiences—*Through the committee structures and member meetings, the Partnership develops legislative agendas and selected members meet with local, state and national officials. Many members also join in other networks and bring further connections to the region.

*The anticipate the future—*The Partnership holds an annual “Economic Outlook Conferences” that provides economic forecasts for members. The Partnership holds specialized conferences, such as one on biotechnology, to inform members on cutting edge issues that effect their lives. The Partnership also holds focused sessions on housing and population and transportation based on trends in 2030 and the need for housing to match 600,000 new citizens by 2030 (or adding 66 people to the region each day for the next 25 years). These are significant attempts to anticipate the needs and demands of the region in the future.

*Are always changing, an adaptive system is able to take advantage and learn from what the world around it is able to tell it—*After holding various sessions, the Partnership reports and communicates directly back to Partnership members and various audiences through quarterly reports that summarize major events, findings and approaches that were covered in the previous three months.

Combined, the elements of self-organization and adaptation reveal a regional collaborative that seeks to learn and adapt to its environment. The following table summarizes the key activities of self-organization as illustrated by the collaborative.

Table 2 Self-Organizing Features of a Regional Collaborative

Self -Organizing Features of Living Complex Adaptive Systems	Case Example
They learn to adapt to changes in circumstances	Constant Offering of New Programs, Dissipative Tasks Constant Altering Program Schedules
There is no central controlling feature in the system	Collaborative as a Facilitator of Interests
There are may levels of organization in the system (ranging from individual to various collectives of individuals)	Mixed Membership Collaborative Network with Other Networks
They are constantly reconsidering and reorganizing themselves as they gain experience	Name and Mission and Task Changes Program Focus Changes Leadership Changes Member Expansion
They are pattern seekers that learn from their experiences	Collaborative Leadership and Member engagement with Various Jurisdictional Leaders with Overlapping Mandates and Co-Mingled Responsibilities
The anticipate the future	Regional Economic Outlook Conferences Selective Reports on Regional Data Symposium Connecting Various Partners for Coalition
Are always changing, an adaptive system is able to take advantage and learn from what the world around it is able to tell it	Member Communications and Reflexive and Deliberative Features

In summary, it seems clear that the SGVEP represents features of complex adaptive system. The diverse, interactive leaders of the region interact in various forms and through various relationships that bring meaning to the region, and bring overlapping interests into and larger understanding of what is best of the region and its diverse members and citizens. These members work on concert to anticipate the challenges ahead and to initiate actions that attempt to manage the transitions necessary to meet those challenges.

The challenging nature of network development and collaborative involvement in complex metropolitan environments includes an exploration into the motivation to join in a collaborative, to be involved in a network, and to engage individuals and organizations that share similar interests beyond short-term economic benefits. One key feature of the SGVEP collaborative that emerged from interviews with members, is that most has a higher order of interests, a broader common regional welfare interest. In a metropolitan environment that has evolved well beyond its institutional and jurisdictional traditions, and where structural issues are identifiable and where new problems need new sources of resolution, it is clear that the Partnership has embarked on new patterns of interaction that are motivated to address common problems by working across boundaries to reconcile issues. And they are! In maintaining membership, the challenge is to keep the work of the partnership meaningful to each individual and the group as a whole. This goes beyond simple combination of individual rational self interest calculations, it means the recognition and nourishment of a common vision of collective whole and how collaborative efforts can achieve that vision.

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