RURAL REGIONAL INNOVATION: A RESPONSE TO METROPOLITAN-FRAMED PLACE-BASED THINKING IN THE UNITED STATES

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ABSTRACT: The purposes of this paper are to examine the origins of the place-based policy initiative introduced by the Obama Administration and the implications of this approach to rural America, and so provide a framework for emerging thinking in the United States around the idea of "rural regional innovation". The paper begins by discussing the measurement of rurality, and how that feeds into the prevailing public discourse about the contribution that rural America makes to national prosperity. The lack of a clear understanding of rural-metropolitan relationships provides the background for a discussion about innovation and the current strong interest in regional innovation clusters. The paper then proceeds to suggest what rural regional innovation might entail and to present its key components, and concludes with some thoughts about the implications for regional science.

1. INTRODUCTION

In the United States, there are many forces at work that make forging a coherent policy view of rural America extremely challenging. Apart from the more obvious forces such as the dramatic changes in economic structure and population distribution, there are questions about the nature of rurality and how it is measured, the perceived and potential contribution that rural people and places make to national well-being, and the appropriateness and effectiveness of public investments in rural America. These have been sharpened by the impact of the economic recession and the draconian measures that may be taken to shrink the federal deficit, and ironically by a new policy initiative introduced by the Obama Administration that embraces principles in support of "place-based investments."

The purposes of this paper are to examine the origins of this place-based policy initiative and the implications of this approach to rural America, and so provide a framework for emerging thinking in the United States around the idea of "rural regional innovation."

The paper begins by discussing the measurement of rurality, and how that feeds into the prevailing public discourse about the contribution that rural America makes to national prosperity. The lack of a clear understanding of rural-metropolitan relationships provides the background for a discussion about innovation and the current strong interest in regional innovation clusters. The paper then proceeds to suggest what rural regional innovation might entail and to present its key components, and concludes with some thoughts about the implications for regional science.

2. THE MEASUREMENT OF RURALITY

The distinguishing of urban from rural has long been a central theme of demography, whether it takes the form of a single dichotomy or is expressed as a continuum based on population size. The usual result has been the defining of rural places as residual – those places that are not urban – and a tendency to base place-based policies on a dichotomous view of human settlement. As Coombes and Raybould (2001, p. 224) note, "in an increasingly complex pattern of settlement…no single measure can represent all of the distinct aspects of settlement structure that will be of interest to public policy". They argue that there are at least three distinct dimensions to modern settlement patterns: settlement size, ranging from metropolitan to hamlet; concentration, ranging from dense to sparse; and accessibility, ranging from central to remote.

In an examination of these dimensions, Hugo *et al.* (1993) note that many countries use population size as their sole criterion for defining urban settlements and for creating distinctions between settlement types. This has deep roots in central place theory, and is still the preferred metric for those with an interest in large cities and metropolitan regions – size, it is argued, matters in terms of competitiveness, diversity, interaction, and innovation. The measurement of concentration in terms of population density is often used to measure the extent of urbanization, and has been used a predictor of population growth or decline (Smailes, 1996). The third dimension of access to basic goods and services is used as an indicator of quality of life and cost of living. Hugo *et al.* (1993) argue that there is no need to restrict analysis to just these three dimensions, given that the advent of sophisticated geographical information systems permits the use of a much wider set of variables to better capture the diversity and complexity of settlement, both urban and rural.

In the United States, there have been many attempts to create typologies that echo this broader approach (Isserman, 2005; Cromartie, 2007), yet public policy tends to be tied to one of two types of measurement. The first, used by the US Census Bureau, defines "urbanized areas" in terms of population (over 50,000 people) and density (1,000 persons per square mile at the core, 500 persons per square mile in adjoining territory) and "urban clusters" with populations between 2,500 and 49,999 people. As Isserman (2005, p. 465) observed, "…we define urban very carefully and precisely and designate as rural that which is not urban. This separation of territory into town or country, urban or rural, leads us to define rural simply as homogenous with respect to not being urban".

The second type of measurement is provided by the Office of Management and Budget (OMB) – part of the White House. This defines "metropolitan" areas as central counties with one or more urbanized areas together with outlying counties that are economically tied to the core counties as measured by commuting to work flows. The areas outside the metropolitan areas are designated as "non-metropolitan", although there is an additional category of "micropolitan" areas that are centered on urban clusters of 10,000 or more persons. Again, as Isserman wryly noted, "We define metropolitan very carefully and precisely, beginning with an urban area at the core, but then we use the word "rural" indiscriminately as a widely adopted synonym for places both urban and rural that are not within metropolitan areas. In short, rural is used in two different overlapping and often contradictory ways, always defined by what it is not – not urban, not metropolitan" (p. 465). This takes on an important policy dimension when one considers that in 2000, more rural people as defined by the US Bureau of Census, some 59.1 million, lived in metropolitan counties than in non-metropolitan counties (Miller, 2006).

3. A CRISIS OF RURAL IDENTITY

This lack of official identity for rural America carries through into the frames through which information is interpreted. According to one survey report, there are two predominant frames (Borgstrom, 2005). The first is "rural utopia" where rural life is simple and pristine, and poverty is a virtue, and where metropolitan sprawl would threaten their lives. In this frame, rural people choose freely their lifestyle, help each other in times of adversity, and take care of their own. Thus, there is no need of public policy focused on rural people and places. The other frame is "rural dystopia" in which rural communities are backward, hopeless and dysfunctional, and where rural poverty is the result of bad behaviour and bad choices. In this frame, rural residents do not deserve public support. As Borgstrom (2005, p. 5) noted, "neither of these frames helps efforts to change policy".

Part of the challenge is the deep-seated association between rurality and agriculture. There is no argument that on many metrics, agriculture and associated industries have great significance in terms of land use, output, and exports, but farm jobs represent only 6.2 percent of total non-metropolitan jobs (2004) and an average family farm receives only 11.1 percent of household income from farm sources (2009). The reality is that there are many different rural Americas, not just defined by different crops and farming methods, but by more fundamental economic, social, cultural and geographical factors. The Carsey Institute (Hamilton *et al*, 2008) attempted to capture some of this diversity in a recent report by suggesting four broad categories, summarized in the Table 1 below.

Stauber (2001) posed a critical public policy question: "Why invest in rural America – and How?" He believed rural policy in the United States to be unfocused, outdated and ineffective, and that "one size fits all" sector-specific, urban-based, top-down, and uninformed approaches to the challenges that face rural America to do more harm than good. His historical perspective showed that in the two hundred years up until the 1970s, there had been a common understanding, a social contract, between urban and rural America that clearly identified and supported their respective economic and social roles. Since then, Stauber argued, there has been no such social contract and no compelling arguments articulated and accepted for metropolitan America to continue to invest in rural America.

Almost a decade later, this view has been reinforced by a sharp focus of the work of the Brookings Institution on the ascendency of large metropolitan regions in the United States, and supported by an urban-inclined White House. Brookings' Bruce Katz (2010, p. 1) encapsulates this view thus:

> "… if we unleash the energies in our metros, we can compete with anyone. Our 100 largest metropolitan areas constitute a new economic geography, seamlessly integrating cities and suburbs, exurbs and rural towns. Together they house two-thirds of our population, generate 74% of our gross domestic product… We mythologize the benefits of small-town America, but it's the major metros that make the country thrive. Why? When cities collect networks of entrepreneurial firms, smart people, universities and other supporting institutions in close proximity, incredible things happen."

Table 1. Four Broad Categories of Rural America

Amenity-rich	New growing populations of older, wealthier, and more educated amenity-driven migrants supported by employment-driven immigration of younger workers. Natural environment very important factor, concerns about sprawl and over-development.
Declining resource-dependent	Long-term residents, but out-migration of younger adults driving population decline. Poverty relatively low, employment levels high. Steady long-term decline and aging population as resources depleted.
Chronically poor	Employment levels low, poverty high and longstanding. Education levels low, high dependency on transfer payments, problems of limited opportunities, crime.
Amenity/ decline	Contrary trends of in- and out-migration, changing economic opportunities, average unemployment and poverty levels.

Source: Hamilton *et al*. (2008).

4. REGIONAL INNOVATION

The views expressed by Katz represent a synthesis of decades of work in areas such as spatial economics, regionalism, technology transfer and commercialization, and entrepreneurship, with a particular emphasis on regional innovation systems and economic clusters. Twenty-five years after the publication of his seminal work on innovation and entrepreneurship, Peter Drucker's insights still provide the bedrock for any discussion on the policy and practice of innovation. He defined innovation as "the purposeful and organized search for changes…a systematic examination of the areas of change that typically offer entrepreneurial opportunities" (Drucker, 186, p. 35). Now, innovation is widely accepted as being critical to national economies. According to Ezell and Atkinson (2010, p. 12):

> "…innovation drives not just the productivity, income, and employment growth fundamental to long-term prosperity; it also plays a central role in improving citizen's quality of life. Innovation has been and likely will continue to be central in driving improvements in health care, education, transportation, and environmental protection. Innovation will be

> indispensible to helping societies address difficult global challenges, such as developing sustainable sources of food and energy, combating climate change, meeting the needs of growing and aging populations, raising billions out of poverty, and achieving shared and sustained global prosperity."

The concept of "regional innovation systems" as ways of systematically fostering innovation as part of economic development policy has attracted much attention over the past decade. Its origins come from the literatures of the systems of innovation and regional science. In the former, innovation is stimulated and influenced by many actors and factors, both internal and external to the firm, and embraces collective learning processes within the firm and collaboration with other firms and institutions. In the latter, innovation is embedded in place, and focuses on the role of proximity and the benefits that come from spatial concentration, as well as the rules, conventions, and norms through which the process of knowledge creation and dissemination occurs. Doloreaux and Parto (2005, p. 135) conclude therefore that "a regional innovation system is characterized by cooperative innovation activities between firms and knowledge-creating and diffusing organizations, such as universities, training organizations, TR&D institutes, technology transfer agencies, and so forth, and the innovative-supportive culture that enables both firms and systems to evolve over time".

One strand of regional innovation systems thinking that has caught the imagination of policymakers, economic developers, and academics, is the concept of clusters. According to Porter, "clusters are geographically close groups of interconnected companies and associated institutions in a particular field, linked by common technologies and skills… Clusters capture important linkages and spillovers of technology, skills, information, etc., that cut across firms and industries. Viewing a group of companies and institutions as a cluster highlights opportunities for coordination and mutual improvement" (Porter, 1996, pp. 199-205).

A Brookings paper calling for a more effective Federal approach to stimulating cluster competitiveness in regional economies across the United States (Mills *et al*, 2008) expressed the view that regional economies are largely metropolitan in nature and that clusters are tools to leverage the economic strengths of cities, suburbs, and metros. This view is based on the perceived benefits of geographic proximity, where clusters are seen to promote knowledge sharing and innovation by providing "thick" networks of formal and informal relationships across organizations – the social structure of innovation. Mills *et al.* (2008, p. 9) go on to present more benefits:

> "What is more, clusters enhance firm access to specialized labor, materials, and equipment and enable lower operating costs. Highly concentrated markets attract skilled workers by offering job mobility and specialized suppliers and service providers… by providing substantial business opportunities in close proximity. And concentrated markets tend to provide firms with various cost advantages; for example, search costs are reduced, market economies of scale can cut costs, and price competition among suppliers can be heightened."

The research and advocacy work of the Brookings Metropolitan Program in this area culminated in a conference in Washington DC in September 2010 attended by Obama Administration cabinet members. A policy paper prepared for the event argues that clusters have emerged as a major paradigm for national, state, and *metropolitan* economic steerage for three reasons (Muro and Katz, 2010, p. 25):

- New research has provided added evidence that clusters on the ground promise solid benefits at a time of economic uncertainty.
- Clusters reflect the nature of the real economy, which means that thinking about them and leveraging them can help the nation get clearer about the true sources of growth after years of diversion.
- Clusters and cluster thinking offer a compelling framework within which to rethink, reorganize, and reform federal, state, and regional economic development efforts.

5. STEPS TOWARDS *RURAL* REGIONAL INNOVATION

An OECD paper (OECD, 2006) reviewing the challenges and opportunities for rural regions identified three main factors that are impacting rural policy across the world:

- **An increased focus on natural and cultural amenities** – the rural stewardship of natural systems related to land, water, air and other natural resources, along with the protection and management of antiquities, historical sites, and recreational amenities, are all important for rural economic development. The challenge is to find ways of attaching values to this broad array of rural assets so that they can be managed sustainably while generating income and wealth to rural residents and businesses.
- **Pressure to reform agricultural policy** – in addition to concerns about the impact of subsidies and other payments to agriculture on the food system and the environment, the distorting effects on world trade, particularly for developing countries, and increasing budget pressures on governments is giving rise to debates on alternative use of public resources that target rural areas.
- **Decentralization and trends in regional policy** – there has been a shift in thinking, if not necessarily in implementation, from a top-down, subsidy-based strategy to reduce rural disparities to a broader range of policies to improve regional competitiveness, which include a focus on factors that affect the performance of local firms, on local assets and knowledge, and on collaborative working across levels of government and sectors.

The OECD regards these factors as representing a new rural paradigm, illustrated in Table 2 below. A report prepared for the EU Commissioner of Regional Policy (Barca, 2009) provides an expansion of this new rural paradigm as a place-based development approach. Barca describes a two-pronged objective of reducing *persistent inefficiency* – the under-utilization of resources that results in income below potential – and *persistent social exclusion* – an excessive number of people below a given standard in terms of income and wellbeing. He suggests that a place-based development approach is a response to two market and governmental failures – a place can be trapped in a vicious cycle of inefficiency or exclusion because of the intransigence or ineffectiveness of its institutions, or because the pursuit of efficiencies through agglomeration may have different impacts in different places.

Table 2. The New Rural Paradigm

	Old Paradigm	**New Paradigm**
Objectives	Equalization, farm income, farm competitiveness	Competitiveness of rural areas, valorization of local assets, exploitation of unused resources
Key Target Sector	Agriculture	Various sectors of rural economies – e.g. rural tourism, manufacturing, information technologies etc.
Main Tools	Subsidies	Investments
Key Actors	National governments, farmers	All levels of government (national, state, local), various stakeholders (public, private, nonprofit)

Source: OECD (2006), p. 15.

In response to the institutional failure, Barca (2009, p. xi) suggests that external intervention in a given place might be needed in the form of "integrated bundles of public goods and services aimed at triggering institutional change, improving the wellbeing of people, and [increasing] the productivity of businesses [through] innovation". These goods and services, he notes, would need to be tailored to places by eliciting local preferences and by taking account of linkages with other places.

Barca describes the process of agglomeration as being a mix of public and private decisions, with the government designing institutions that are tailored to places without the information as to whether they have overall positive or negative impacts. He suggests that a place-based approach would ensure that public interventions with a territorial impact are transparent and open to scrutiny.

For many rural communities and regions within the United States, the path out of poverty to resiliency and prosperity is blocked by factors that drain or diminish the value of their assets and inhibit the creation of new community wealth (Dabson *et al*, 2010). An initiative of the Ford Foundation, *Wealth Creation in Rural Communities*, is attempting to develop an approach to improving the livelihoods of rural people through creating wealth that is owned, controlled and reinvested in rural places. The focus is on creating economic development and entrepreneurial opportunities that will contribute to wealth, defined broadly to encompass a range of economic, social, and environmental assets. This initiative represents an effort to link concepts of regionalism and value chains to issues of social inclusion.

In 2009, the Obama Administration issued a memorandum to departmental and agency heads setting out some policy principles for "place-based investments" to advance its domestic and fiscal priorities. The memorandum was particularly important in framing Federal interest in regional approaches:

Many important challenges demand a regional approach. The Nation is increasingly a conglomeration of regional economies and ecosystems that should be approached as such. Federal investments should promote planning and collaboration across jurisdictional boundaries. Given the forces shaping smaller communities, it is particularly important that rural development programs be coordinated with broader regional initiatives. Programs in neighbouring zones and within larger regions – some of which connect rural communities to metropolitan regions – should complement each other (Office of Management and Budget, 2009). As Fluharty and Miller (2010, p. 15) observed:

> "Rural policy scholars have long argued for such a place-based domestic policy framework, recognizing the differential disadvantage in community capacity under which most rural regions struggle, and the fact that categorical grants fail to build integrative, strategic approaches. This is ironic, as most of the major players driving this federal innovation have a decidedly metropolitan world view…"

The challenge is therefore to develop a legitimate rural component for such place-based policies, one that is an intellectual, policy, and programmatic counterpoint to metropolitan-framed regional innovation cluster approaches. Some starting points are provided in the previously cited works of Porter and Mills *et al*. (2008). Porter was particularly influential in articulating how clusters play a role in developing innovative capacity in a region that can increase productivity and competitiveness, and secure regional and national prosperity. Five themes were central to his arguments (Porter *et al*, 2001, pp. 5-7):

1. **Productivity does not depend on what industries a region competes in, but how it competes.** The emphasis, he argues, should be on upgrading the sophistication of all industries within a region based on increasing skills and entrepreneurship, irrespective of industry or sector – to which should be added geography.
2. **The most important sources of prosperity are created not inherited.** This is important from a rural perspective as it implies that the past is not prelude, and that new futures can be created for rural and regional economies.
3. **The prosperity of a region depends on the productivity of all its industries.** This recognizes that the productivity of local industries, not just the ones that export, impacts the overall competitiveness of a region.
4. **Innovation is more than just scientific discovery**; it can apply at all stages of production and all parts of a firm or sector.

5. **There are no low-tech industries, only low-tech firms.** Innovation is not only relevant to technology companies – all companies no matter their sector or location increase their productivity through the application of new ideas and methods.

Although elsewhere in Porter's writing the metropolitan proximity imperative is very evident, the above themes are not inherently place-based and open the door to the possibility that the enhancement of productivity and prosperity through innovation can be just as relevant and appropriate in a rural context.

In their paper on clusters and competitiveness, Mills *et al.* (2008) acknowledge that the dominance of any given cluster cannot be taken for granted and that as innovation progresses, many clusters have become increasingly vulnerable. One of the key factors is the impact of innovations in telecommunications and logistics that have allowed the geographic disaggregation of functions that have traditionally co-located in a single cluster. They note that "[f]irms now have the freedom to place headquarters, R&D, manufacturing, marketing and sales, and distribution and logistics in disparate locations in the light of the particular competitive requirements (such as skills, costs, access to markets) of each function" (Mills *et al*, 2008, pp. 12-13).

Although they go on to argue that "whatever [the] changes in information technology, the benefits of the geographic agglomeration of economic activity will continue for the foreseeable future" (p. 13), it seems clear that rural regions can derive benefit from the loosening of these economic concentrations without necessarily negatively impacting economic performance. Mills *et al.* (2008) also note that just as radically new products and services can disrupt existing markets, new clusters that produce them can do likewise, again presenting the possibility they could also benefit economic activity outside the metropolitan cores.

A review of the academic literature on industry clusters (Cortright, 2006) provides a practical perspective on what it calls "cluster thinking" and its importance for economic development policy and practice, which has application beyond the metropolitan centres, by:

- Encouraging an orientation towards groups of firms and away from individual firms, with an emphasis on solving common problems;
- Building on the unique strengths of their regions, rather than trying to be like other regions;
- Moving beyond analysis to ongoing dialogue with firms and other economic actors;
- Recognizing that each cluster demands different strategies and approaches; and
- Fostering an environment that helps new clusters emerge rather than trying to build from scratch.

There are of course many challenges in aligning cluster thinking and analysis in a rural context. As Rosenfeld (2009, p. 21) observed, "Some even contend that the term "rural cluster" is an oxymoron, that less populated regions lack the scale to support a cluster's existence". Rosenfeld (idem) went onto argue that "[an] excessive dependence on counting, quantitative methodologies, and standardized data make rural clusters rarer than they are". He listed problems such as data suppression, rigid and inadequate industry classifications, data sources that exclude self-employed workers, and limitations of commonly applied analytical techniques that keep rural clusters out of sight. Yet, complementing what he calls *algorithmic* approaches with *heuristic* approaches based on observation, case studies, and local experience, can lead to the discovery of a rich array of rural clusters. In fact, Regional Technology Strategies (2009) have compiled a compendium of 50 such clusters in nine sectors across the United States and Europe. Rosenfeld has developed a classification of these clusters into three classes, which may be helpful for thinking about policy and practice implications (see Table 3).

Table 3. Three Broad Classes of Clusters

Clusters of Distinction	Quintessential clusters that both define and brand a local economy and particular place.
Clusters of Competence	High concentration of companies, skills, and a specialized support but lacking uniqueness and operating within a more diversified economy.
Clusters of Opportunity	Seeds of clusters of sufficient size and resources to portend growth, or declining clusters with foresight and capacity to reinvent themselves.

Source: Rosenfeld (2009).

One of the main proponents for the concept of rural regional innovation is the current US Secretary of Agriculture. In March 2010 he announced a Regional Innovation Initiative focusing on rural broadband, bio-fuels and bio-based products, linking local production with local consumption of farm products, ecosystem markets to pay farmers for storing carbon, and forest restoration and private land system. Secretary Vilsack said (Harsch, 2010): “I have reached the conclusion that we must overhaul our approach to economic development in rural America. The framework of the new effort recognizes that the rural economy of tomorrow will be a regional economy. No one community will prosper in isolation.” He went on to say that the initiative “will promote economic opportunity and job creation in rural communities through increased regional planning among federal, state, local and private entities. By creating a regional focus and increasing collaboration with other federal agencies, USDA resources will have a larger impact, enabling greater wealth creation, quality of life improvements, and sustainability.”

6. THE ELEMENTS OF RURAL REGIONAL INNOVATION

Important that the USDA’s Regional Innovation Initiative may prove to be, there is an urgent need to be able to frame rural regional innovation as something more than regional planning and the coordination of Federal programs if it is to meet the test of being the counterpoint to the regional innovation cluster approach. Accordingly, the concept of rural regional innovation should be based on the following set of propositions:

1. **While proximity may be a determining factor in metropolitan clusters, it is still possible to capture the benefits of regional clusters where participating firms and sectors are less proximate.** Although rural businesses located within or close to metropolitan centers may be able to plug directly into cluster networks and value chains as suppliers and subcontractors, those further out will need to adopt alternative competitive strategies. These may be of two main types. First, will be strategies that build upon the assets of their communities and regions, creating entrepreneurial opportunities that use telecommunications to link to customers. These will not have the institutional thickness of urban clusters but nevertheless will have community and virtual sector networks that perform many of the recognized cluster functions. The second type includes sectors that require space rather than proximity in which to operate. These include natural resource industries such as agriculture, forestry, rural tourism, and mining, and large land users such as power plants, chemical facilities, prisons, and defence establishments. They link into regional, national, and often global supply chains, and as such are part of non-proximate clusters.
2. **The exploration and capturing of the benefits of rural-urban interdependence is essential for national well-being and prosperity.** America's rural and urban areas share many degrees of interdependence without them necessarily being widely recognized or understood. Rural areas provide critical consumption goods for metropolitan consumers, such as food, energy, water, environmental remediation services, lower-cost land and labor, and unique natural and cultural experiences; urban areas constitute the end-market for rural production, provide specialized services, offer diverse job opportunities, and generate resources for public and private investment in rural America (Dabson, 2007). Some of the services provided by rural areas, such as the stewardship of ecosystem services – wetlands, carbon storage, aquifers, pollinators, etc. – and the management of natural amenities, have yet to be appropriately valued so as to yield a broader set of benefits in terms of jobs and income for rural residents, but these will become increasingly valuable in adapting to climate change, assuring plentiful supplies of clean water, and providing recreational space and activities for metropolitan residents.
3. **The inherent challenges of distance and low density, coupled with limitations of capacity and resources in many rural places call for effective cross-jurisdictional and cross-sectoral approaches.** The complex challenges and opportunities that need to be addressed demand both a systems approach to the design and delivery of services and responses for rural people and places – connecting the resources and expertise across institutions, organizations and sectors – and regional collaboration, where all levels of government, businesses and nonprofit organizations find common ground and cross real and imaginary

boundaries to solve problems and plan for the future. Although there is no shortage of argument and experience to show that such approaches can be hard, expensive (both financially and institutionally), over-dependent on the commitment of individuals, sometimes unpopular, and occasionally unsuccessful, there is a rich history of collaboration and a range of institutions in place that have a regional perspective on policies and programs.

4. **The challenges of persistent poverty and limited opportunity associated with many rural places require a focus on the creation and retention of economic, social, and environmental wealth.** The development of analytical, planning and design tools to capture the stocks and flows of multiple forms of wealth in rural regions is critical to reversing the decline of poor rural communities and regions. The metrics that are currently used to describe the health and well-being of places, to guide the targeting of resources for rural development, and to measure their impact are inadequate.
5. **The ability of rural places to be resilient in the face of disruptive events requires "forward leaning" attitudes and strategies based on innovation and entrepreneurship.** The increasing likelihood and frequency of disasters, both natural and man-made, requires more intelligent and inclusive approaches to planning and preparedness, not just to cope with the immediate impacts of these events but to build resiliency in affected communities and economies to enable them to recover and thrive. Such approaches will need to embrace the previous propositions around rural clusters, rural-urban linkages, regional collaboration, planning and delivery systems, and the creation and retention of economic, social, and environmental wealth. They will also need to incorporate a positive narrative about the future potential of rural places and economies, based on the fostering of innovation and entrepreneurship. This implies, in Drucker's terms, a purposeful and organized pursuit of areas of change that might yield entrepreneurial opportunities across the public, private, and non-profit sectors.

7. FINAL WORDS

As previously mentioned, there has been considerable interest at the Federal level in exploring regional innovation, framed by interests that are primarily metropolitan and supported by prevailing regional economic theories and analytics relating to agglomeration and specialization. The problem is that rural places and people feature as after-thoughts if at all in such thinking. It is possible as Paul Krugman (2010) suggests, in an address to the Association of American Geographers, that agglomeration based on transportation, economies of scale, and factor mobility was becoming less clear cut in developed economies in favor of more subtle, more intangible factors, such as information spillover or entrepreneurial chains of influence. Johnson (2007) takes this further in a discussion of place-based economic theories in which he argues that economic behavior is a process influenced by the characteristics of places and by the associated interpersonal relationships – thus, not just a function of distance, place, proximity, transportation and communications infrastructure, and irregularities in spatial form, but also the distinctive culture and essence of places. This and other caveats expressed by proponents of metropolitan clusters, appear to leave the door open for a less dogmatic approach to the role of rural places in the national economy.

There is certainly no lack of innovation and entrepreneurship across rural America, but as yet this is not widely understood or recognized. The big gap is in research arena: where are the tools that can capture the "beneath the radar screen" rural clusters, the accumulation and leakages of rural wealth, and the measures of economic, social and environmental assets that are crucial to rural survival and well-being?

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