

REGIONAL SCIENCE CYCLOPS— FROM A ONE EYE TO TWO EYED VIEW OF A CHANGING REGIONAL SCIENCE WORLD¹

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ABSTRACT: Region is now on the political agenda. In fact, much regional science is available and made more accessible to policymakers in their quest for global regional economic and political agendas. Words like cluster analysis, regional advantage, along with forward and backward linkages are now common speak in many civic meetings, even in city halls. The race to region is now well entrenched. In Australia, six regional strategy plans have been produced in the last year. The Australian regional plans have been initiated in large measure because state governments recognise they are no longer just in competition with internal economic regions but international localities as well. As a result, the rush to region in Australia focuses on building regional plans, but regional science is not an important ingredient in this planning process. The reason for this is that the new emphasis in regional tools by policymakers is on more fashionable soft-structure aspects of regional development than on economic models of regional scientists. This paper discusses the shift in paradigm from regional hard economics to institutional drivers for regional economic development and urges regional scientist to find new tools, techniques and strategies to meet the needs of policymakers. It is argued that if regional science cannot meet the challenge of crafting new ways to identify, measure and create new institutional tools it will be marginalised from the important policy directions of global regionalism.

1. INTRODUCTION

It is interesting to note how the concept of regions now dominates virtually all discussions of economic development. Global regional cities as the platforms with the new economy are the accepted essential building blocks of national economic development. As Scott (2001) says, "Cities (city-regions), furthermore, are fast coming to function as the basic motor of the global economy". Even while the concepts of region and regional actions are accepted, regional science seems to be more marginalised as the base science underpinning this movement. The basic store of regional sciences knowledge has made very little impact on the actions of economic development decision-makers. Few policymakers understand the basis for regional equations to assess their alternatives and even fewer would even be aware of the underlying regional analytic techniques that form the basis for their buzz words like clusters, forward and backward linkages or comparative or competitive advantage. On the other hand, business and

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political leaders across the world are acknowledging regional development as basic global economic platforms.²

It is clear regional scientists have used the single entry point—a one eyed view of a firm-based economy axis to assess a new economic world. A new more complex and interconnected view of regional economics is emerging based on institutional arrangements and networks not easily captured in regional science equations. A few regionalists are giving some attention to this complex array of hard to quantify forces that form soft-structure—i.e. the neuro-regional network perspective on regional development (Saxenian, 2000; Florida, 2003; Porter, 2001). This perspective of regional is resonating well with policymakers without much of the hard data of typical regional science. Intuitively policymakers understand the shift from manufacturing to knowledge base which requires a very different set of regimes to control economic outcomes. Arguments put forward by Saxenian, that “the ‘organisation’ of the regions ...accounts for global economic success ...rather than a detailed analysis of the economic base of the cities (regions) themselves” (Sassen, 1991, p.64). In essence, as noted by Beaverstock and his co-authors (1999), the capacities nested in cities and a region “...manage and coordinate economic power...(p.448)”. This is the real story of successful global regions. There is very strong agreement that these less tangible forces are now primary in understanding cities and regions capacities to become or remain economically competitive globally or locally. Regional scientists can and do count the interactions between places and the outcomes of characteristics such as air traffic, financial firms, headquarters, locations and the like. However, regional organisation and management is not an easy focus for regional economists no matter how interesting such dimensions are for policymakers.

We regional scientists find it difficult to capture or quantify the necessary ingredients that drive a new more institutional and informal base for global regional success. As a result, regional science views much of the new literature on regional organisations as hype and lacking in sound economic evidence. Yet regional economic tools are viewed by some policymakers and students as esoteric and marginally useful knowledge investments.

Florida’s (2003) work and the earlier work of Porter (2001) are the best illustrations of this change from hard economic frameworks to a place based organisational analytic base. In the case of both these widely read authors their thesis are derived from policy over economic science. That is, the focus of their work stripped of its economic orientation is on organisations and institutions and not on direct economic production. The core concept of regional science in capturing economic inputs and outputs seems almost irrelevant for this new thrust.

Institutions, organisation, leadership, community milieu and similar values are now the paramount constructs influencing public and private policymakers. It is this new understanding and dimensionality of these institutions that forms an

² City State, City Region and a variety of terms are now used to describe the larger metropolitan systems that are a base for the new economy.

important future direction for regional science if it is to be relevant in policy processes.

2. A GLOBAL REGIONAL INSTITUTION BASED SCIENCE

As suggested here, there is a very clear paradigm shift in the major regional policy literature toward a better understanding of the new emergence of a system of globalised city-regions as depicted in Table 1. These attributes are not easily identified or quantified. Yet, they are at the top of the agenda for policymakers and must form key ingredients for regional science and regional scientists. Each of these components has been identified in the literature as a component of the new economy. But it is the need to understand how and even influencing when these components interact, that regional scientists are going to have to understand and provide guidance for policymakers. Each of these has important implications for the regional science agenda.

2.1 Economic Diversity

There is little doubt that diverse economic regions do better than those dominated by even most robust technology sectors. Regional science has many tools to measure economic mix via shift-share and cluster analysis. However, the key is not just how much but what kind. We know, for example, that regional economies are more diverse in some respects but less in others. For example, the dominant world regional centres like New York, London and Tokyo have diverse set of finance, insurance, transportation and accounting dominance but they have very little product development and production capacity outside of this narrow band of enterprises. In some ways they are less diverse than they once were. So, the real issue is what constitutes diversity in this new economy where even global or perhaps especially global headquarters firms have almost no locational loyalty (Blakely and Bradshaw, 2003).

It is easy to calculate diversity but it is much harder to examine the right mix. Organisational network analysis is an important tool to examine this aspect of diversity. In doing so, our analytical tools have to move to the notion of the global and not just the local region since these networks cross international boundaries (Scott, 2001). We know that disturbances in the global networks have profound impacts on even global regional city-state. For example, Seoul's economic slump in the late 1990's was related to its regional network ties in Southeast Asia. Thus, diversity might include the diversity of the global networks the city-region is part of, as well as the internal diversity or elaborations of firm typologies.

There are, in essence, at least two forms of analysis that we need to consider in constructing diversity indices. First, we need to understand the interdependencies of firms in clusters internationally and the scope or breadth of the entire network system in the region. In some cases, a great narrow cluster mix like Boston's Route 128's engineering technology base may provide an economic warning of vulnerability. On the other hand, Silicon Valley with more diverse cluster of technologies, finance and other export bases is more resilient than Route 128 using the same measures. Second, the globalisation factor of

Table 1. Regional Economic Development Forces

Dimensions	Definitions	Authors ³	Illustrations
Economic Diversity	Agglomeration of reinforcing firms that collaborate as well as compete for global market share	Hopkins (1995); Dietz (2001); Storper (2000); Quigley (1998) Sherwood-Call (1990)	Amsterdam, Munich, San Francisco: very diverse industries that have domestic & international exports
Population Multiculturalism	High levels of immigration & cultural tolerance with regard to race, national origins & related factors	Florida and Gates (2001); Sandercock(1998); Ratcliffe (2002) Craig (1997); Young (1990)	London, Paris and New York: exceptionally vital & diverse populations that attract jobs & firms
Creative/skilled Workforce	High number of specialised university educated imaginative people in arts, sciences & management disciplines	Arrow (1962), Florida (2003); Landry & Bianchini (1995), Bell (1976); Scott & Storper (1992); Jones, Lang, La Salle (2004)	Dublin, North Carolina Triangle, Hong Kong, Bangalore and Singapore: all possess well-educated workers attractive to global capital & firms
Connectivity	High quality & reliable telecommunications, airports, seaports & efficient cross regional connectivity by public & private transportation systems	Sassen (2000); Daniels (1991); O'Connor (1991); Castells (1996); Sassen (1991); Knox & Taylor (1995)	Frankfurt, Chicago, Denver: global cities primarily because of their internal & external communication & air transport systems
Strategic Capacity	Ability to mobilise public and private actors for a common agenda	Drucker (1991) Henton (2004); Porter (2001); Jacobs (1992), Leibold, Probst & Gibbert (2003), Senge & Carstedt, (2003), Eisenger (1983), Gibbert et al.(2003); Mintzberg & Quinn (1994)	Atlanta, Boston, Washington DC, Pittsburgh, Brussels with able local leadership in public and private sectors

³ This is not an exhaustive but suggestive list.

Table 1 (continued)

Dimensions	Definitions	Authors	Illustrations
Innovation/ entrepreneurship	Firms organisations lead by creative economic & social entrepreneurs with readily available venture capital	Burch (1987); Aghion, Phillipe and Howitt. (1998); Arrow (1962); Jonathan & Kortum (1997)	San Jose, Costa Rica, Berkeley CA, Los Angeles, Stockholm: incubators of highly innovative talent
Quality of Housing/ community	Good housing in good neighbourhoods that are easily accessible to transit	Blakely (2003); Kearns and Parkinson (2001); Calthorpe (1973); Putnam (1993)	Minneapolis, Seattle, Portland, Barcelona: work at ensuring better mix of housing opportunities
Quality amenity base	Formal and informal venues for sport, recreation, relaxation & cultural celebration	Blakely & Roberts (1987), Florida (2003); Sandercock (1998); Jacobs (1969); Muller (1997)	Sydney, Melbourne, Madrid, Milan: consistently rated among the world's most attractive places to live & work because of cultural & other venues
Social cohesion	Dealing effectively with social dislocations of new economy such as homelessness, crime, economic divisions in the community	Wilson (1982); Stimson (2003); Allen & Macey (1994); Castells (1997); Giloth & Mier (1989); Woolcock (1998)	Seattle, Zurich, Helsinki, Johannesburg: cities with increasingly diverse populations
Governance	Intuitional arrangements across governments or between government & private sector to provide quality services to community	Cars (2002); Henton (2004), Pierce (1993), Putnam (1995); Post (1991), Borman, Taylor, & Williams (1994)	Dublin, Indianapolis have multi-jurisdictional governance systems that work

diversity needs to be considered. Regional communities are increasingly tied together in clusters. According to the GaWC (Global and World Cities) world centres are geo-indexed by region as well as by size and capacity. So Sydney, Seoul, Singapore and Tokyo are in an inter-related complex of diversity with Kuala Lumpur, Bangkok, and Manila etc. which defines each city-regions range and strength within a diverse network. SARS is a clear example of these diversity interdependencies.

2.2 Population Multiculturalism

A multicultural population is viewed as an important asset in the Florida (2003) schema. Presumably a diverse set of people from different cultural backgrounds generate new energy in the society. This is a politically correct view. There is some evidence that new immigrants do add taxes and skills to the local labour pools. However, there are the social drag effects of newcomers as well. The notion that the 'best and brightest' human resources are the most likely to move to a new nation in the current world economic and political situation may not be necessarily correct. What the new attractors are is not well known or studied.

Population diversity also includes the take up of internal population such as women and minorities as well. While these values are debated, beyond some general assessments there is little regional science on what levels of diversity or what diversity really is and what kinds account for what outcomes. Florida's Bohemian and Gay indexes may be useful proxies but they may also mask other internal relationships with and among populations or other factors that account for these outcomes. For example, local universities may be the actual magnets for a wider population being attracted and retained in selected regions and the actions of these institutions in generating talent in the area accounts for the population diversity gains shown by Florida (2003). Regional science has not done enough work on the role of universities as human capital capture organisations beyond studies of tech parks and graduation rates. But the link between this new human capital and these institutions seems to be very different than the reported technology transfers from universities to firms.

Age profiles are similarly misleading for regional economics today. Older populations are not what they used to be. Areas experiencing high influxes of older workers are also showing increased economic activity not just in health care. Regional science is just beginning to recognise that healthy older human resource pools are making new entrepreneurial contributions to communities. As a result, we need to recalibrate our understanding of demographic profiles and develop a new calculus of economic value associated with changing population profiles. This will require regional scientist and gerontologist to begin new economic impact research on the range of contributions of so-called seniors to regional economic development.

2.3 Creative/Skilled Workforce

Workforce has been re-labelled as knowledge worker. But the new labels are seemingly being placed on 'old wine'. We know far less about knowledge workers than we did about factory workers. In part, the factory worker had the good grace to stay in the same facility all day or all week. The knowledge worker is far more elusive because any worker can have a bit of knowledge in their work and the work can be located in the workers head, on their computer and can be operationalised from home, a coffee shop, library, lab, airplane or park bench. As a result, even categorising knowledge/creative work or locating them is extremely difficult. Yet, this is the core of the new regional science discipline.

Clearly, we need to do some forms of industrial psychology to examine the character of this work form for several reasons. First, knowledge work creates a new set of economic structural inequalities. Yet, if any work is portable it is this form of work since it is not dependent on any location. A new computer program can spring from anywhere on the planet and be useful. If the work and worker are portable why is it that they agglomerate in so few urban locations? We can surmise that ‘knowledge birds flock together’ but little more. Moreover, the spill-overs from knowledge work seem to marginalise other workers rather than enhance their capabilities and make both work less hard and workers more valuable. This new economic transition that relies on worker collaborations to make new products has curiously atomised many workers and de-skilled others. Second, our information on knowledge work stops with schooling/education. Any observations of the new work show that social interaction and creative skills are more important than years of schooling. Thus, if we are to unpack the worker skills we need to move our science to the formation and the organisation of the work system so that we might propose new ways of altering the increasing gulf between the technological haves and have-nots. Perhaps the answer to this conundrum will open the doors of commercial exchange between the very poorest of people—who are clever in their own right, to new productive futures without them having to destroy their habitats as their only key to global commerce.

2.4 Connectivity

Regional scientists are making the movement of goods and people a fashionable arena of study again. We know a great deal about global air routes and sea freight connections, as well as telecommunications infrastructure which are all well documented (O’Connor 2003). Unfortunately, we act like the means are the ends in this regard. That is, we count that the numbers and locations of transactions are in themselves important. No doubt density of communications is a signal that something is going on. But we need to know more than this to provide guidance to policymakers.

There is some information that certain communication routes are very tightly linked such as financial communications between New York, London and Tokyo. These links are so deep that no financial transactions of any type can transpire without them. The depth of communications links in few other fields has not been examined as deeply. We do know that law and commercial advertising have links similar to finance. Legal transactions are within a dense network of firms in cities like The Hague and fashion with Rome and Paris. Yet we seem less knowledgeable about how other global connections are forming. This is important because entering such networks can alter the fate of regions. Johannesburg for historic reasons is linked to global commerce via diamonds. This base has opened global networks to this city as the only place in Africa that is attracting new economic capacity and wealth. We also know that connectivity links are soft links embedded in international organisations, associations and individuals. A new global connectivity forming its own social information capital is emerging as clearly as the old world’s club society like the Masons.

The annual Las Vegas Infotechnology meeting is one of a small but important connectivity links that any community or person serious about a future in that community must penetrate. Regional scientists do examine the size of the airports and the location of convention centres without documenting the connectivity links that are directly associated with these social connecting structures. So, it is important to understand how these networks are formed and how regional policy can forge such connectivity as one of the entry points to the global economy.

2.5 Strategic Capacity

Regional scientists are loath to admit the value of individual and collective leadership as seminal ingredients in a region's success. Success is more easily attributed to early agents such as government grants, certain geographic endowments or historic factors. Yet, the catapulting of some places to global prominence can scarcely be so easily attributed to these causal factors. A new literature is emerging that equates regional gains more directly with the collaborative structure within them composed of public and private organisations designed to formulate joint action across sectors. Regional stewardship, a term coined by Henton (2004), describes the leadership of collective actors who view the regional venue as the crucible of their organisational futures. As a result, this group or collective creates new institutions and networks designed to enhance civic capital without denying individual commercial success. This form of civic goodwill is not well understood or easily captured in economic models. In fact this is one of the few forms of regional advantage that is not limited to North American communities, but is increasingly seen globally in places like Shanghai, Dubai, Dublin and Berlin. In these regional communities leadership replaces leader for articulating the future of these places capturing collective benefits. Porter (2001) describes this collective capacity as "strategic resources of political and social organisations." Large organisations that proclaim a regional mandate sit on the shoulders of smaller institutional networks. It is these networks of organisations and institutions and the density of them that has not been well appreciated by regional scientists. There are few studies of the network or organisations that form regional economic development institutions. This network of institutions is an increasingly important resource for regional development and the structures along with the capacities of these organisations need to be better understood as economic engines.

Another important component of these organisations is the rise of regional indicators as policy tools. Almost all of the new regional organisations use some form of comprehensive indicators system as an important intervention device. The form of these indicators is known but the actual impacts of indicators are not known or documented. Regional science needs to launch new research on the indicators as systems but also on the measures themselves and their effectiveness in actually measuring the indicated factors. Indicators in some respects are the policymaker's replacement for regional science data. Indicators and related forms of measurement are clearly in fashion and regional scientists can assist in making such data systems more reliable and relevant for the policy process.

2.6 Innovation/ Entrepreneurship

There is no disagreement that innovative firms and small nimble entrepreneurial organisations are the base of the knowledge economy. We have a few good measures of these firms' small innovative organisations. But the milieu in which these firms operate includes networks of other support structures. City regions "...are said to thrive on the creativity, productivity and innovation-enhancing effects of dense and multifaceted urban milieus that are simultaneously embedded in a worldwide networks" (Scott, 2001). The structures are not easy to generate in communities but they are essential. Non-profit associations are important glue for this burgeoning creative mix. Non-profits form the arts base, the organisational structures and connectors for creative capital formation. Regional science has paid too little attention to this form of soft support structure. The non-profit organisation does not fit easily into researchable assessments. Nonetheless, it appears that non-profit organisations that do a range of things from talent search to incubating artists and other creative talent are integral to regional advantage as Saxenian (2001) dubs it.

Why some places pull in creativity and others are less successful relates to the interaction among creative people to what Ratcliffe (2004) calls "something in the air". Creativity knows where it is wanted and where it is shunned. Communities can and do work on widening their acceptance of creative inputs. Some regions like San Francisco are so widely known for this form of creative acceptance that economic downturns scarcely influence their attractiveness. Tolerance and diversity are necessary but not sufficient components of this force. For example, Miami is a reasonable tolerant and diverse community but attracts almost no technology firms and Boston is only moderately diverse and attracts many technology organisations. We need to understand this part of the puzzle better.

Venture capital is also important. But capital is very mobile. Large amounts of capital seem to be having few impacts on New York or Tokyo's technology capacities as they fuel the financial sector. Again, the links between venture funds creativity, entrepreneurship and non-profits need to be diagrammed and examined so that we can provide better and clearer advice to policymakers as they pursue global regional advantage.

2.7 Quality of Housing/Community

Housing and community are easily linked conceptually but deeply separated in the marketplace. Housing is a commodity. Communities are built by developers and are increasingly gated or privatised. But the real issue is not house or shelter availability but the kind of communal environment in which the home (not house) is situated. Old neighbourhoods in the inner city are being rediscovered because of the connections that can be forged among the people who live within them. Social diversity in the community is a re-found virtue just as economic forces are increasing the distance between classes. So, the new buzzword is affordable housing. New Urbanism and Smart Growth approaches are aimed at community restorations with appropriate mixes of people, incomes and infrastructure. Regional science seems silent on this issue aside from

discussions of housing prices and taxes. So, policymakers are forging programs without much advice on how to attain socio-economic mixes.

An entire class of non-profit community housing sector has emerged with almost no research to understand or support it in the United States and the U.K. In both nations the community-housing sector underpins both gains in the housing market as well as the restoration of new economic activity in formerly distressed areas. The social good of such approaches needs to be under girded by strong research that facilitates the understanding of the link between these community based institutions housing and community formation and sustainability.

2.8 Quality Amenity Base

Community identity is usually tied to its amenity structure. Everyone knows where important venues are located ranging from the Louvre to the Moscow Zoo. These civic amenities are attractors and retainers of community human capital. Some attractors are rural or non urban such as beaches, mountains and other physical attributes. However, if the attractors are of scale like the Eiffel Tower, Bondi Beach or Vienna Opera House they are urban or they urbanise. Salt Lake City's mountains have pulled in new economic transforming migrants who increasingly urbanise and transform the community. As such the amenity base of the community is a twin edged sword. It attracts all kinds of desirable and not so desirable activities. The relationship of various kinds of amenities on various forms of human capital is not well understood. City leaders pursue new stadia, Olympic Games along with large parks as additional human and financial capital attractors. We know very little to inform these debates beyond the dubious value of professional sports and hosting of international athletic contests. Precious little work can be found to support the investments in art museums, symphonies and other civically supported activities and regional economic health. What are the best amenities? Is the quantity or the quality of them? Is the absence or presence of some amenities economically harmful? We can begin to answer some of these questions with our current regional science tools. We need to provide more evidence on all sides of the amenity debates to be relevant.

2.9 Social Cohesion

Deep divisions in a community's social structure impede economic performance. As cities strive to be more diverse they build in new tensions among groups that in some cases remain loyal to their former ways of life and may even resent the transformation of culture as they covet the benefits of new wealth. Social exclusion including youth delinquency, economic isolation, and homelessness and rising unemployment are endemic in some global cities. Race and class riots are a culmination of these factors in many large urban centres. Mexico City's economic improvements have made the city a more dangerous place to live. Similarly, as Jakarta and Manila enter the global economic mainstream forces unleashed internally that may cast them back as they try to move forward. Big western cities are equally vulnerable, as riots in Birmingham,

London and Los Angeles have shown recently. Social exclusion of the inevitable consequence of rapid wealth and technology transformations is part of the regional development process. Little research helps to guide policymakers in how to make places better for everyone beyond a few modest changes in tax policy. But global capital wants uniform taxes. Global capital also wants both diversity and stability. This is a tall order. Some communities like San Francisco and Lyon, France have taken on integrating diverse populations civic charters. Regional science might be tempted to dismiss social issues as the province of sociologists but social cohesions is an economic value that shapes regional outcomes. Regional science can pinpoint inequality with Gini coefficients but what are the coefficients of community social renewal. Here we seem helpless to do anymore than bemoan the obvious. Policymakers want more. Recent experiments in the United States and social policy formation in Europe are guided by little science and inspired by hope.

It seems both plausible and possible for regional scientist to examine the current options and suggest potential interventions as well as examining the existing trials to see what set of factors are the best options for leveraging the social and economically isolated into the global economic opportunity system.

2.10 Governance

Governance does not mean government. Regional governance models are new partnership arrangements across the public, private and non-profit sectors. In some cases they take the form of innovative governmental arrangements to organise civic resources, like elected Metropolitan Commission or Toronto's Regional Collaborative Government model. But in many more instances they are voluntary partnerships similar to the Southeast Queensland (Brisbane, Australia) or New York Regional Plan where local governments and civic groups seek alliances to enhance planning for the region. These new institutional arrangements are a new form of regional social capital. As Putnam says,

"...the norms and networks of civil society that lubricate co-operative action among both citizens and their institutions. Without adequate supplies of social capital—that is, without civic engagement, healthy community institutions, norms of mutual reciprocity, and trust—social institutions falter" (Putnam, 1998, p.98).

We need to know more about how these civic systems are formed and what the best practices among them are. Precious little is known about this new form of regionalism that is borne of the need to be globally competitive rather than simply governmentally efficient. Regional science is an ideal tool for such inquiries since the combination of social and economic outputs can be examined in some detail.

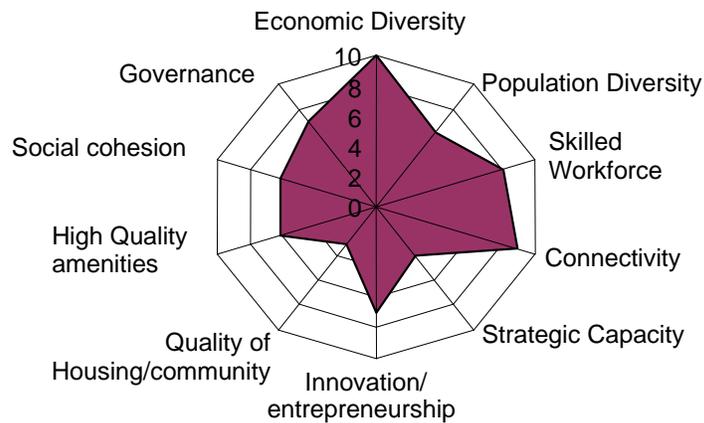
3. A NEW REGIONAL NEURO-SOFTSTRUCTURE SCIENCE

Global regional advantage is not one thing, nor a single linear set of steps or activities. It is much more like a complicated neuro-network of interconnected forces and factors that operate both alone and in concert as the needs arise. In some sense regional scientists as an applied discipline with roots and connections

in geography, urban sociology, urban and regional planning, and public policy are in an ideal position to take a fresh view of how to forge these seeming separate links into a disciplinary understanding that operates across disciplines. As the parts of the neuro-net are explored not as a system, but as interdependent components, we can learn more about how each component of the web reinforces the other parts as depicted in Figure 1.

As we explore the links we need to examine how to move our descriptive science of the parts into new prescriptions of how to make them work better as policy instruments. It is sad to say that urban planning and planners have not been able to incorporate the power of regional science into urban planning frameworks. Community leaders are left with new urban design as the only answer for building better and more economically viable communities. New Urbanism as a regional planning and economic development (Calthorpe 1973) has done a better job of developing an integrative paradigm in Smart Growth than regional science. At some time in the near future policy oriented regional scientists will craft the vocabulary we require to provide the right language for policymakers. When this goal is achieved the new regional science will help change the social and economic fate of millions of people around the world—regional science will then be able to keep both of its eyes on shaping the future.

Figure 1. Regional Science as a Neuro-Net



Source: Author based on literature review (the numbers in the figure refer to the density of citations).

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