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Knowns, Unknowns, and Impacts

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50th Meetings of the Sothern Regional Science Association:

Knowns, Unknowns, and Impacts

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Abstract: On the occasion of the 50th anniversary of the SRSA, Jackson sums up what we regional scientists do and do not know at this stage in the field's development.

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"And now for something completely different."
–*John Cleese* of Monty Python's Flying Circus, 1971

1. LONG LASTING KNOWLEDGE—SRSA AT 50

Jouke van Dijk opened the most recent issue of *Papers in Regional Science* with "Long lasting knowledge in Regional Science," an editorial highlighting the role that the Regional Science Association International's journal has played in documenting much of the key regional science research since its inception. Publications obviously provide a long-lasting chronicle of research in regional science, but I had rather hoped to find in his editorial an actual identification and enumeration of examples of specific, long-lasting knowledge gleaned from the regional science record. My hopes stemmed from having spent the past year contemplating appropriate content for this Presidential Address on the occasion of our own 50th Anniversary of the Southern Regional Science Association, which itself seemed to be an appropriate time for reflection and contemplation. The choice had narrowed to three related questions.

1. What do we know?
2. What do we want to know?
3. Do we make a difference?

David Plane's Presidential Address at the most recent meeting of the North American Regional Science Council reinforced my decision to focus on these questions. He described a response at the earlier Philadelphia North American meeting to the question of what had been learned over the first 50 years of regional science. Tony Smith "contended that most of what we've learned about people's behavior can be boiled down to just two fundamental principles:

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1. People prefer shorter trips to longer trips
2. People prefer having more space to less space."

After making a strong case for beginning to focus research on the role of aging in regional science, Plane (2010) suggested that "Most of us can expect to get older, one year at a time" might become principle number three.

While their three-point list is thought provoking and in many ways quite satisfying, any of us when asked might well have come up with a somewhat different list. Our responses would surely reflect our own problem domains, so it would be rational to expect that the perspectives I am about to share will also reflect my own background and experience, but my goal is to arrive at a quite general identification of what we do and don't know across an array of problem domains. I will offer a set of axioms that I believe underlie a wide range of regional science knowledge, identify a set of unknowns that flow from them, and contend that for any of what we know to have an impact, to be meaningfully long-lasting, its relevance must be actively extended beyond the boundaries of the regional science community. Only then will our knowledge have made a difference. Citing a prominent example of recent national policy directions, I contend that the opportunity to demonstrate regional science relevance has never been greater, and conclude by calling for us to do so.

2. KNOWN KNOWNS, KNOWN UNKNOWNS, UNKNOWN UNKNOWNS

> …[T]here are known knowns; there are things we know we know. We also know there are known unknowns; that is to say, we know there are some things we do not know. But there are also unknown unknowns—the ones we don't know we don't know…it is the latter category that tend to be the difficult ones.
>
> –*Donald Rumsfeld*, United States Secretary of Defense, February 12, 2002[1]

2.1 Known Knowns

What in regional science do we know that we know? When the discussion arises in geography, one thing that nearly always surfaces is Tobler's (1970) well-known first law "Everything is related to everything else, but near things are more related than distant things." Indeed, first principles seem to be the natural starting points for such discussions. While we might not contend that there are regional science laws, might we at least identify first principles in regional science? Is there a set of universal propositions we can accept as self-evident without need for proof that form the bases for the simple and complex, general and specific knowledge we strive to create? If so, such axioms would constitute the known knowns of regional science.

Submitted for your consideration[2] is a candidate list of known knowns:

- (Geographic) space separates
- Separation leads to differentiation
- Differentiation leads to disequilibrium
- Disequilibrium creates tension that begs for resolution
- Spatial interaction is the resolution to spatial disequilibrium

[1] http://www.defense.gov/Transcripts/Transcript.aspx?TranscriptID=2636

[2] With a nod to Rod Serling…

Indeed, this list forms a sequence that has proven to be useful as a classroom mantra: Space, as separation, leads to differentiation, then disequilibrium, which is resolved by spatial interaction.[3] Aspects of this mantra appear in such a wide array of regional science research topics that most will recognize in it some direct or indirect tie to their own research. The partial list below reflects the range of problem domains that fall within the mantra's reach, from physical to human interaction.

- *Weather and climate* -High and low pressure differentials
- *Migration* -Income and unemployment differentials
- *Trade* -Comparative advantages
- *Commuting and urban studies* -Differential land use
- *Tourism* -Presence and absence of amenities
- *Investment flows* -Differential rates of return on capital
- *Information flow* -Differential human capital
- *War* -Cultural and resource differentiation

Of course, the mantra's sequence doesn't simply start with separation and end abruptly with a single stroke of spatial interaction, because different individuals, groups, and regions grow and evolve, ever differentiating, ever disequilibrating, setting the stage for yet another cycle through the sequence. Indeed, each aspect of the process is continually underway. Bio-geographer Charles Smith (1989) recognized these dynamics, writing

> Populations should probabilistically tend to extend toward areas where conditions are more optimum ... keeping up with the changes in spatial interaction implicit in organism-environment relations; i.e., an organism's adaptive suite may be considered a direct expression of all the interactions (and in turn morphological/physiological/behavioural adjustments) it must enter into to remain "at the right place at the right time," all the time, to collect/process all resources necessary to its existence.

Likewise, spatial interaction is not an exclusively pairwise process, which leads us back to the premise of Tobler's law, that everything—people, places and things, of necessity in different places—is related to everything else.

2.2 Known Unknowns

While we know much about the knowns, the axiomatic set; there is much about them that remains unknown. While far from axiomatic, we might at least succeed in identifying some general categories of challenges that we can expect to shape regional science in the next 50 years, and we can address them as they relate to our list.

[3] I've been unable to find a source reference, but given its appearance in one form or another in my thirty year-old economic geography class notes, the mantra is undoubtedly at least partly attributable to the influences of my friend and colleague at Northern Illinois University, Andrew Krmenec, and to Brian Berry's introductory economic geography text.

2.2.1 Space separates

Space indeed creates separation, but its role is more or less substantial in different contexts. While it would be impossible to share tonight's dinner with my friends in Australia, it is increasingly easy to discuss with them the day's news. Further, space with borders results in different kinds and degrees of separation than does unimpeded space. Perhaps more intriguing is a consideration of the kinds of differentiation in norms and behaviors that result from not only borders, but also from differing social and cultural spaces. We live elbow to elbow with people who are worlds apart. We might well begin our list of known unknowns, then, with the ways and means by which space accomplishes its separation.

2.2.2 Separation leads to differentiation

Returning to my Australian friends, it is clear that space is not all that differentiates, and that differentiation can be moderated by a host of dimensions. Language, history, and circumstance all affect the level and kinds of differentiation that separation accomplishes. Because events take place, they normally don't happen everywhere or at the same time! New technologies are developed, for example, sometimes serendipitously, but sometimes for reasons that might include a particular form of regional structure. Finally, differentiation can sometimes be a goal, as in attempts at "regional branding." Second on our list, then, is how context conditions differentiation. What are the factors that deepen or dampen differentiation, and how do they do so?

2.2.3 Differentiation leads to disequilibrium, which creates tension that begs for resolution

Some tensions build toward thresholds for decades with no apparent movement toward resolution, while others seem to exist in a state of continual resolution in an attempt to prevent any accumulation. Groups and individuals respond to disequilibrium tension differently, in some cases because there are barriers that only some can overcome, such as having sufficient resources to support migration, while in others differences in group characteristics condition their responses, such as age groups, family status, or ethnicity. Third on our list, then, is how individual and group characteristics shape the nature of responses to disequilibria.

2.2.4 Spatial interaction resolves spatial disequilibrium

Spatial interaction is the glue that binds everything…to everything else. It involves stocks and flows that can but need not substantially alter their origins and destinations. Flows of information, for example, can but need not alter origins and destinations, while migration can have dramatic effects on the regions involved. When spatial interaction changes stocks at both origin and destination, there can be more and less immediate implications for the entire system of potential origins and destinations, and these system-wide implications are rarely fully understood.

Spatial interaction as a flow can also alter the environment in which it takes place. When spatial interaction involves physical movements, for example, it consumes energy and therefore can have consequences for air and water quality and even climate in the longer run. Some kinds of spatial interaction might well not be sustainable, and we are only beginning to understand their externalities. Our admittedly partial list of known unknowns now includes:

- The ways and means by which space accomplishes its separation,
- How and why context conditions differentiation,

- How and why individual and group characteristics shape the nature and extent of responses to disequilibria, and
- How and why spatial interaction changes origins, destinations, and the environment.

While we have made some progress in addressing these unknowns, they still encompass a great deal of what remains undiscovered.

It might well be argued that our emphasis on the linkages that are spatial interactions forms the cornerstone of regional science relevance, and sets us apart from other disciplines. Businesses linked through purchases and sales comprise industries that populate regional economies. We identify industry clusters as synergistic subsystems that have heightened potentials for efficiency and development, and we recognize that the regional systems of which they are a part link households to workplaces and governments to the governed, exist within a physical environment, and rest upon social and physical infrastructures that facilitate and shape the interactions that constitute the patterns of daily life. And as regional scientists, we have long recognized that our regional systems also are linked one to another, forming national systems that, once linked, form the global economy.

3. IMPACTS—FROM KNOWLEDGE TO CONSEQUENCE

What constitutes long-lasting knowledge? Will our work have any impact? What is it that converts discovery into knowledge that really makes a difference? As scientists we are well aware of the continuum from basic to applied research, and my intent here is certainly not to deny or discount the value of knowledge for knowledge's sake or future-oriented research. Indeed, any knowledge can be long lasting. But the surest way for knowledge to make a difference – to matter – is to demonstrate its relevance, which happens most often and most effectively in application. The importance of knowledge that does find application is quickly tested, and when it is applied usefully and to benefit, its importance is confirmed, and its potential impacts are enhanced.

Much of what we discover in the field of regional science could and should, but somehow seldom does find immediate and important application. There is a great well of untapped potential to transform regional science discovery into long-lasting knowledge that matters, but that potential is largely unrealized because we most often stop short of transferring our knowledge from our own research communities to its rightful spheres of influence. This is not just unfortunate for the status of regional science, but also for the welfare of the individuals, regions and even global systems that stand to benefit.

Latent knowledge might ultimately be released from its dormancy, but it will not likely matter much until it does emerge. Among the most notable recent examples is Alfred Marshall's knowledge of industry clusters and agglomeration economies that lay dormant for roughly a century before being shown to matter as a result of conscious efforts to move this knowledge beyond the boundaries of academic economics, geography, or regional science to the arena of policy and practical applications. Irrespective of varying assessments of the outcomes of these applications, this knowledge has now made a difference. It matters.

4. MAKING A DIFFERENCE—A WINDOW OF OPPORTUNITY

Never were there ever more outlets for disseminating knowledge than there are now. From Twitter to Facebook through Blogs to policy papers in academic journals, voices are being heard. Ours should be among them.

We don't have to look hard or far to find ways to apply regional science knowledge. Opportunities abound, including, of course and especially governmental regional economic development programs. Among the most striking and relevant recent developments for regional scientists is the current Administration's recognition of the importance of regions in national economy. Despite calls from the Cato Institute and the Heritage Foundation to eliminate the Economic Development Administration, President Obama's FY 2012 budget proposal invests heavily in the EDA Regional Innovation Program (EDA RIP), proposing "$40 million for EDA's Regional Innovation Program, a collaborative effort with HUD and USDA, which will support a nationwide competition to encourage 20 communities 'Growth Zones' to develop and implement regional strategic plans." For its part in 2012, the USDA's Secretary Vilsack reported this month that the

> USDA proposes a Regional Innovation Initiative that works through existing programs to fund regional pilot projects, strategic planning activities, and other investments to improve rural economies on a regional basis. USDA would target up to 5 percent of the funding within 10 existing programs, approximately $171 million in loans and grants, and allocate these funds competitively among regional pilot projects tailored to local needs and opportunities.

And from Housing and Urban Development in as early as October of 2010:

> For the first time ever, the U.S. Department of Housing and Urban Development (HUD) is awarding nearly $100 million in new grants to support more livable and sustainable communities across the country. HUD Secretary Shaun Donovan today announced that 45 regional areas will receive funding through a new initiative intended to build economic competitiveness by connecting housing with good jobs, quality schools and transportation.

All available evidence suggests that the federal government is now not only recognizing but also actually emphasizing the importance to national economy of development at the regional level. Was there ever a better opportunity to make regional science research relevant? Those of us whose research bears on the decisions upon which the success or failure of regional development programs hinges can follow one of two paths: We can continue to produce knowledge for the latency store, or we can reach beyond our usual borders to the policy arena where the use of knowledge matters, where what we do can make a difference. Some of us have always made the effort, more of us should – It Matters!

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