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The Spacial Economy

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The Changing Pace of Space

Kristi Castano

Many of us have had the experience of sitting in our college economics or business management class madly writing, and memorizing the "fundamentals" of business management. Those time-tested foundations of how to run a business we all accepted as *eternal truths* critical to the foundation of our business success. What we failed to realize at the time was just how pliable these rules would become during our lifetimes.

The advancement of technology has impacted and continues to impact our society in astonishing and life-changing ways – the likes of which haven't been seen since the dawn of the industrial age. Unlike the Industrial Age, which took over 150 years to reach its full impact, this era's collective rate of change is simply mind boggling. The ubiquitous nature of the internet, the global adoption of smartphones, the growth of microprocessors in every day devices, the preponderance of consumer data, the growing connectedness of our global community; each of these has had an immeasurable effect on our individual lives, our communities, our cultures, our businesses, and our economies.

As business owners, we are left to the task of making sense of this change. We try to stay ahead of the curve and, when possible, turn technological, cultural, and economic change to our advantage – or even better, into profit. In times immemorial, these kinds of changes were slower to evolve and take root. This slower rate of change bought organizations precious time to calculate and strategize, "How can this change equate to a measured opportunity for our business?" and the business would invest accordingly.

Fast forward to today – the road ahead does not seem so clear. Today's demands require business owners to be prognosticators on the level of Nostradamus. Keeping abreast of changing dynamics, pulling apart the many implications, projecting the possible effects on the long-term viability of their corporation. What's an opportunity? What's a threat? How long until we feel the impact?

Take, for example, *Spacial Economics* – the study of how space (distance) affects economic behavior[1]. Every business owner understands the effect of space on the cost of doing business – the shorter the distance between a business's suppliers, manufacturing plants, and their customers; the less cost and (hopefully) the greater the profit for the company. For well over 200 years, businesses have strategically selected the locations of their headquarters, manufacturing plants and transportation hubs on the location of their customers and proximity to their supply chain.

For example, a 150 year old manufacturing company chose Pittsburgh, PA for their plant location and headquarters. This was based on ease of access to the booming steel mills, the growth of the urban hub and access to the greater North East, North Central and Southern regions through rail (and later) trucking routes. It costs the company less to ship their products to end users because they were located closer to their demand center and near major transportation hubs.

A short distance from demand equals more efficient and higher profits.

The technological and cultural changes of today could greatly impact the foundations of how businesses approach their supply-chain and make for interesting spatial economics cases.

We see this pattern of development repeated when we examine business growth through the ages. In the United States, we can track old stage coach and rail lines. Families have been uprooted, land purchased, and homes built on the basis of where people were likely to secure work.

Thanks to the Industrial Age, work was increasingly centered in cities and urban hubs driven by the growth of manufacturing and business. Improvements in transportation lead to suburban sprawl – but for the most part, people continued to live near work. Businesses have always invested and grown accordingly.

As noted economist and author Wolfgang Kasper explains, "Much commercial activity is concerned with 'space bridging,' and much entrepreneurship is aimed at making good use of locational opportunities and cutting the costs of transport and communication. The technological and cultural changes of today could greatly impact the foundations of how businesses approach their supply-chain and make for interesting spatial economics cases.

The costs of communication and transportation have been plummeting for decades. Consider for a moment that between 1950 and 2000, the price of bulk sea freight and port handling dropped, on average, 0.9 percent annually. Trans-Atlantic phone calls have fallen by 8 percent annually. According to Kasper, "The inflation-adjusted price of a long-distance phone call from New York to London is now less than 1 percent of what it was in 1950. Satellite TV, computers, and cell phones have all cut communication costs greatly [and] the Internet has made global communication so cheap and user friendly that words and images can be distributed by almost anyone globally, without delay and at near-zero cost."

But a recent study by management consulting firm, Bain & Company, suggests an even more dramatic fall in these kinds of expenses is yet to come. "Over the next two decades the cost of distance will decline sharply altering the way we live and work.... providing an astonishing array of opportunities for businesses and investors – and unexpected risks." The reasons for this dramatic change, according to Bain research, include multibillion-dollar investments in:

- robotics
- 3-D printing
- delivery drones
- logistics technology
- autonomous vehicles
- low-Earth-orbit (LEO) satellites

Quick Facts

"We're likely to see an incredible increase in the utilization of assets. Once you connect those to the Internet, you can really find a way to share the use of those assets, and extract an incredible amount of productivity." **Simona Jankowski**

MORE THAN

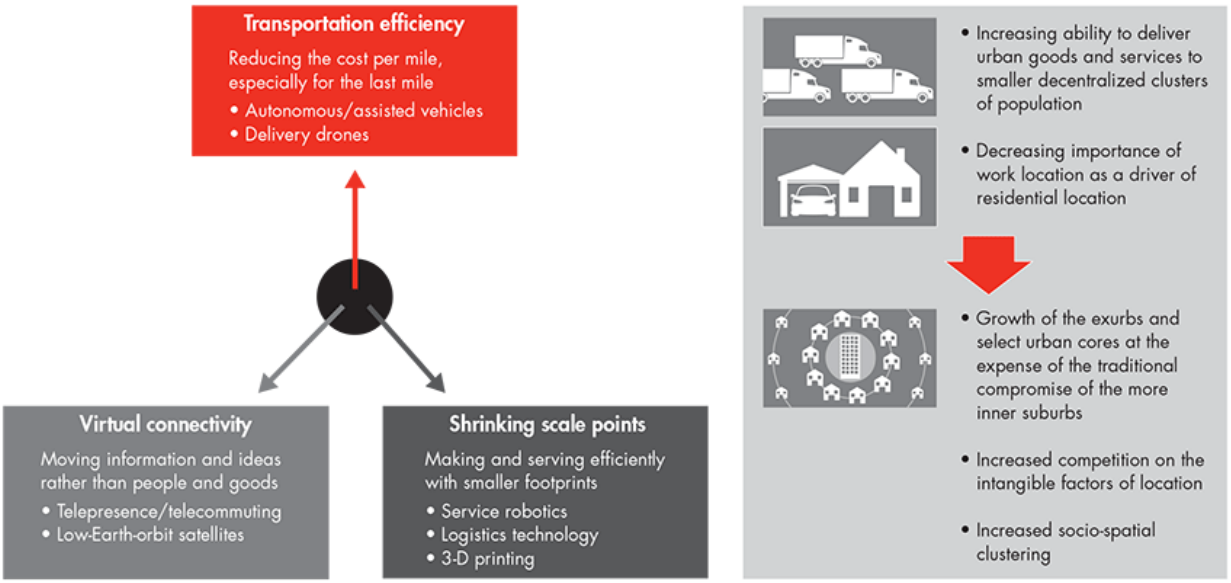
12 Billion

devices are already connected to the Internet of Things—and by 2020, that number could surge to 30 billion.

Source: Goldman Sachs

Will changes in technology, business and society make it possible to have the best of both worlds?

Changing spatial economics



Source: Bain Macro Trends Group analysis, 2016

All these technologies will give rise to new products and services focused on lowering the cost of moving people, goods and information. "As these technologies combine and converge, change will accelerate.[2]"

Over time, it's possible our urban centers, the cultural and business hubs of the Industrial Age, will lose their strategic and economic advantage for businesses and individuals. People, through the use of technology and the internet, can now work more cost-effectively from remote locations.

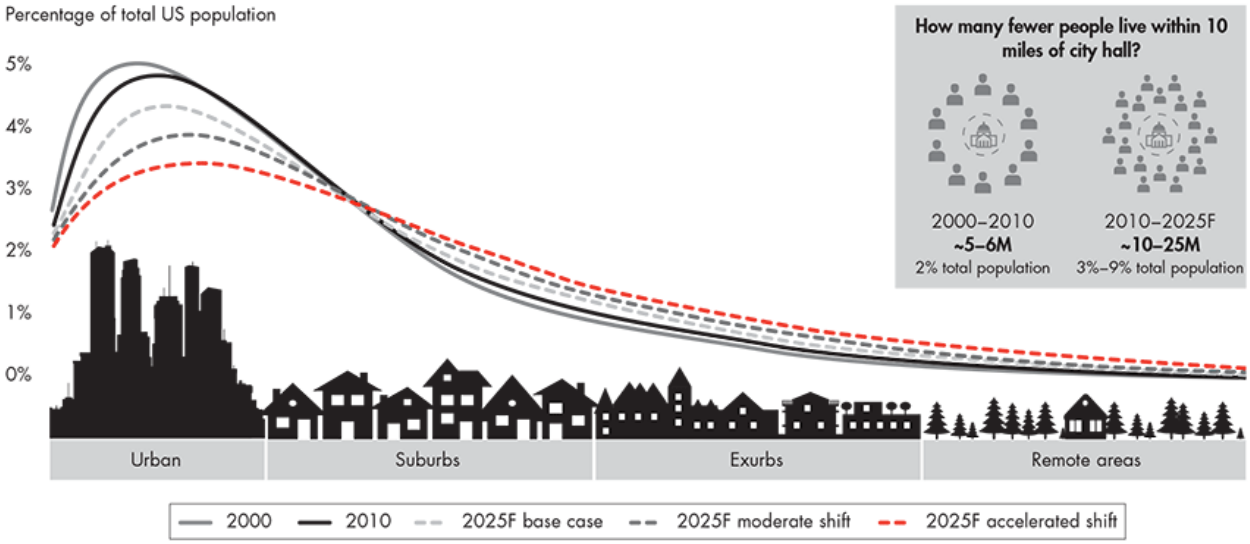
Will individuals remain in the same cities and locations close to the headquarters of the business they are employed by? Will they remain in crowded cities or expensive suburban neighborhoods to have access to potential work opportunities? More likely, the location of workforce becomes increasingly unimportant. People may begin to choose their home town and location based on other factors - proximity to other family members, cultural preferences, habitat, climate or economic factors.

Of course our sense of community and history is the counter force to this movement, at least for the time being. The need for schools, social networks and community services will be a natural force to keeping sprawl generally to the developed rural areas in the short-term. (No fear of a major migration to the wilds of Montana just yet).

From the business owners' perspective – workforce assets could experience their own kind of "sprawl." Savings in capital investments for large HQ sites, HR support and other benefits could trump the desire to have everyone under "one roof" to collaborate. Businesses, like people, could find reasons to escape the urban areas and relocate beyond cities and suburbs to more remote and cost-effective "exurbs" (a district or prosperous area outside a city, beyond the suburbs).

Large, well-established companies – like our manufacturer in Pittsburgh in our earlier example – could be left with costly investments in buildings and resources in areas that are experiencing a population thinning. To quote Bain's research, "The very nature of this growth shifts some of the underlying assumptions of existing business models – leaving many companies with assets stranded in the wrong locations or with businesses that are becoming obsolete."
Bain gives one particularly compelling example of how dramatic changes in population shifts might

By 2025, the US population living within 0-10 miles of a city hall may fall by around 10-25 million people vs. 2010.



*As defined by the US Census Bureau, for each metropolitan statistical area (MSA), city hall for the largest city has been used as a proxy for the area's central business district. Chart shows US Census data for 366 MSAs, about 85% of US population
†Increase in spatial dispersion for an MSA has been calculated as share of total MSA population staying within 0–10 miles of a city hall in 2000 minus that in 2010
‡2010 population equivalent is the distribution of population if the total population in a given year were the same as 2010, excluding the effect of birth rates, death rates and migration
Sources: US Census Bureau; Bain Macro Trends Group analysis, 2016

impact management decisions. Large retailers such as Target, Walmart and even Apple calculate the minimum retail shop size to turn a profit based on the population density within a given radius. Should local populations shift as dramatically as has been predicted, we could see another round of brick and mortar blight. Deciding where and when this shift could happen is next to impossible, leaving retail owners guessing how best to prepare and invest in the future.

With regards to a business's supply chain – what if a business could cost-effectively produce smaller batches of their product in local markets through the use of 3-D printing and robotics? Think of it as a hyper-local specialization, tailoring products to service quickly evolving local needs or tastes. We see this trend in the form of Internet-enabled , hyper-local shopping through innovative, fashion-focused businesses such as eShakti and Shosity. In addition, companies may begin to collaborate with local service providers for the final production of goods, rather than shipping from a larger distance. Finally, facilities will no longer need to pay a trucker to haul products to market thanks to innovations in driver-less automobiles. Alternatively businesses may take a page from Amazon's book and invest in an army of delivery drones to complete the "final mile" from distribution center to consumer.

This is only a portion of Bain & Company cover in their February 2016 report. So what is a progressive business owner to do? Here are some of Bain's recommendations for business owners and investors alike:

Be on the look-out for impending stranded assets.
The movement out of urban centers has already begun. Companies should carefully review fixed assets in urban locations, some locations could fall sharply in coming years. Keep an eye on population migration patterns where your company holds physical assets.

Look for ways to strip out distance costs in existing supply chains.
Look for opportunities to substitute capital investments for labor in manufacturing. Examine opportunities to produce closer to the end-consumer but keep in mind possible population migration and the wider disbursement of consumers. Experiment with alternatives within the supply chain to lower distance costs.

Be open to alternative human resource and talent arrangements. Talent will begin to migrate and disperse more widely. Be open to alternative work arrangements, work flexibility and remote workers. Virtual teams could dominate the future but geographic clusters – like Silicon Valley for technology – will continue to exist and may even become more important. Embrace virtual collaboration at all levels within your organization.

Deciphering the opportunities and risks of tomorrow's economy may be difficult but the most important factor is to continue to test out different strategies and remain open to change. Don't wait. The assets of today could become the write-offs of tomorrow for established companies unwilling to recognize the business environmental changes already underway.

1. *Library of Economics and Liberty: The Concise Encyclopedia of Economics. "Spatial Economics" by Wolfgang Kasper.*

2. *Bain & Company, Insights: Feb.10, 2016 "Spatial Economics: The Declining Cost of Distance"*

The Farther the Better... The Closer the Better

Rohan Rodney

There has been a seismic shift in how technological trends have evolved to minimize global distance in less than two decades. Today, business leaders enjoy cutting edge technology that enables them to easily bridge both the communication and geographical gaps wherever business partners may be located. Distance is rapidly being diminished as a barrier to doing more business or obtaining the best talent.

Continuous global improvement in technology has enabled businesses to provide many services over greater distances. Services have become mobile for professions such as design, finance and accounting and many of these professions have migrated from high-wage domestic-based locations over to low-cost areas overseas. Established service providers are now dealing with increased competitive pressure from new, low-cost competitors in distant places. Software development teams stationed in India or Brazil have become the norm. Management based in the United States are now able to supervise construction workers down in Mexico. Elite educational institutions are now more willing to deliver their professors' global lectures via video conference and office hours have been transformed into Skype sessions with whiteboards. Instant connectivity has allowed enterprises and institutions the ability for businesses to communicate to corners of the globe more efficiently than ever before.

The world may be turbulent for many traditional global providers of goods and services and the risks will multiply for industries of all kinds. As the very nature of growth shifts, some of the underlying assumptions of existing business models may no longer be valid, leaving many companies with assets stranded in wrong locations or with businesses that may become obsolete. Geographical constraints on businesses will diminish, which in turn will open the door to new opportunities. Forward technological strives, such as robotics and advanced 3-D printing, will allow companies to run scaled-down, efficient manufacturing units much closer to their customers, which will allow for much more personalization for local tastes. Technological breakthroughs will allow nimble

manufacturing pods to dramatically increase the viability of local production. Pride in community will allow local producers to attend to local demand with competitive pricing.

Locations that were once seen as ideal will soon lose value as the cost of doing business over large distances continues to decline. Converging technologies will accelerate change and increase the odds of traditional business failure. The challenge may be particularly formidable for asset intensive industries such as manufacturing or warehousing. 3-D printing is already reducing the cost of distance by allowing local production of common parts or low volume, specialty products. Large distribution centers located on cheap land are in danger of becoming relics of an era of a time where scale was one of the most attractive business attributes to have. Dependencies on finding a concentrated work force to optimize manufacturing will also rapidly decrease.

Inroads into transportation technology will be crucial to developing next generation goods and services adapted to spatial economics. By investing in cutting-edge platform technologies, early-movers can lead this coming transformation and not be caught off guard by the changing waves of progress. The speed at which these waves move are staggering and traditional industry titans may find themselves unable to match the speed of early adopters.

Spatial freedom may end up disrupting major urban areas in terms of where their human talent pool is located.

Human capital will now opt to live further from city centers as advances in transportation and connectivity allow them the abundant space of a rural town combined with many of the employment options, goods and services once available only in cities. A reversal of the mass urbanization trend post-recession will lead to telecommuting becoming a necessity for attracting top talent as they get accustomed to physical freedom. In a post-urban environment, it will be less important to live within commuting distance of an office building, or to relocate for a job. Instead, people will choose where to live based on lifestyle characteristics such as good weather, vibrant cultural surroundings, proximity to outdoor recreational activities or being closer to extended family.

In somewhat of an ironic twist, some breakthrough technologies may become victims of their own success. Automobiles once brought increased mobility and freedom, but that also brought along urban nightmares of traffic congestion and added to the polluted airs of major cities. Drones have become very inexpensive, convenient and popular. However, they are deemed a serious threat to aircraft and are heavily regulated and at the present have limited commercial viability. The Hyperloop may provide phenomenal transportation solutions to people and cargo as it travels across land at 700 miles per hour, but the risks become elevated when seismic shifts of even a small magnitude can result in devastating consequences.

Spatial freedom may end up disrupting major urban areas in terms of where their human talent pool is located. A new form of urban sprawl may begin to develop as citizens will continue to move further away from the centralized business districts when the promise of rapid transportation becomes readily available. Teams of the future may no longer be physically located together. Geographical clusters, such as London or New York for financial services, or Silicon Valley and Boston for technology will remain important, but they will begin to lose their influence in economic and political matters. Businesses will have to rapidly evolve to this continually withdrawing culture.

Even with the viability of spatial freedom, it will always be about the ability of a service provider to deliver relevant, compelling and stimulating services to a client in a manner that increases their ability to meet their business objectives. These relevant, compelling and stimulating goods and services will have to be delivered by highly skilled personnel that may be located hundreds of miles away from any other colleague in their office. The speed, quality and price with which a business can deliver will be even more critical to retaining business as competition will be swift. Early adopters who dismiss geographical boundaries as business hurdles will rise to provide unparalleled service that traditional asset intensive companies will be struggle to match.

The Illusion of Distance

David Cooper

It's a small world after all. Well, the statement has never been more accurate. The conducting of business globally, efficiently and profitably has never been easier (and more difficult). As economies advance, manufacturing and distribution hubs decentralize and localize. As migration patterns shift, people are changing where they work, live, play, shop, etc. Now, distance and geography (and shifts therein) have a major influence on communication, commerce and competition – known as spatial economics. Let's explore.

The Industrial Revolution

Centered in England, the Industrial Revolution was a transitional period (taking place from 1760 -1840) in which predominantly agricultural, rural societies evolved into industry and machine manufacturing. There were two advancements, technical and non-industrial:

A. Technical.
(1) Increased use of iron and steel, (2) new energy resources such as coal, electricity, combustion and petroleum, (3) machine invention, (4) factory systems, (5) transportation advances (locomotion, airplane and automobile) and communication (telegraph, radio, etc.) and (6) sciences

B. Non-industrial.
(1) Agricultural improvements that made possible the provision of food for a larger nonagricultural population, (2) wider distribution of wealth (3) political changes reflecting the shift in economic power, (4) sweeping social changes, including the growth of urban areas, (5) and the development of the working-class.
Source: Britannica.com

Another revolution, ushering in decades of production-oriented economies that would eventually be duplicated worldwide, followed this initial transformation. Soon after, third world countries advanced and leading economies moved to the next economy - building innovations.

The Next New Economy

Today, we are in the thrusts of the knowledge economy, boundary-less communication networks between buyers, providers and producers. As the foundation, technology redefines and/or removes barriers that previously limited opportunities (employment, economic, etc.) to one's immediate

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Next Q:
The Complexity Adaptive

The effectiveness of simplicity is an illusion that many leaders pursue assertively. Managers are implementing elementary and antiquated models, designed for less dynamic and disruptive business conditions, to resolve far more elaborate challenges. Now more than ever, leadership must incorporate multi-dimensional approaches for business

surroundings. Additionally, local buyers would consume the services and products produced. Currently, a farmer in Vietnam can sell rice in South America without ever leaving his farm, while a Spanish designer can sell her fashion in Los Angeles without ever leaving the remote town of Santander. What happens when the barrier of distance no longer exists? Disruption!

The cost and barriers of distance will continue to erode as technologies advance. As a result, unforeseen competitive influences, misallocation of resources and resource abandonment put many companies at risk of obsolescence. Smaller, convenient and agile resources find their way to previously avoided suburban and rural areas. Businesses will rethink models as employees, consumers, etc. need not be tied to certain geographies. What's the benefit? Ask Amazon.

The cost and barriers of distance will continue to erode as technologies advance.

Amazon: Making Distance Irrelevant

Amazon, that small e-retailer who sells a few products, is a great example of an effective special economy strategy. Amazon offers same-day shipping in many of the nation's most populated cities: New York City, Atlanta, Baltimore, Boston, Chicago, Indianapolis, Philadelphia, Washington D.C., Dallas, Los Angeles, Phoenix, San Francisco, and Seattle. However, Amazon doesn't have a distribution or fulfillment center in the heart of these geographies.

According to Piper Jaffray, Amazon's fulfillment centers are within 20 miles of 31% of the nation's population, but within 20 miles of 50-65% of its core same-day addressable market. Amazon improved this model by adding sortation centers, smaller centers which enables more efficient order cycle times, same day, next day or Sunday delivery, and reduced shipping costs.

How does Amazon improve customer service and profitability simultaneously? Digital. Their technology platform, combined with an advanced operations and distribution, enables higher margins at the lowest cost, improved customer care and endless inventory. The result is improved customer selection, convenience and pricing. Sounds like a winning strategy.

No Space Left Unfilled

Advancing technologies (IoT, robotics, etc.), improved transportation and efficient production are some of the disruptors that are driving spatial economy. It is important to realize that we are in the infancy; adoption of disruptors is relatively low. Closing the distance between the customer, employee, supplier, etc. is paramount to profitability. A business' success depends on the speed of leadership's adoption, strategic implementation and agile adjustments.