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COSMOS + TAXIS

Studies in Emergent Order
and Organization

Spontaneous Urban Planning
at the Intersection of Markets,
Democracy and Science

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Urban Planning in the Spontaneous City

DAVID EMANUEL ANDERSSON

Editor

Web: https://db.cm.nsysu.edu.tw/pages/安大衛_1404_EN.html

Abstract: This is an editorial that explains the significance of the Special Issue on Spontaneous Urban Planning at the Intersection of Markets, Democracy, and Science. Urban planning has traditionally neglected dynamic theories of markets or politics. In this issue, the authors show that much can be gained from a theoretical approach that recognizes the spatial aspects of entrepreneurship and institutions, as well as higher-level entrepreneurial innovation of the very institutions that shape the entrepreneurial discovery process in cities.

1. INTRODUCTION

In May of 2019, *Cosmos + Taxis* organized its fourth conference in Vancouver, British Columbia, with the generous support of the Department of Pathology and Laboratory Medicine at The University of British Columbia. The theme of the conference was spontaneous urban planning at the intersection of markets, democracy, and science.

Vancouver is a suitable choice for a conference with this theme. It was one of the first cities in North America to embrace a new type of urban planning in the 1970s, in part in response to activism inspired by the pathbreaking contributions of Jane Jacobs in the preceding decade. Not only is it the city with the third highest population density in North America; it is above all a city that has embraced mixed land uses and downtown living. Recently, however, Vancouver has been beset by a common problem among successful cities around the world—it has become increasingly unaffordable. In part this is due to its success in attracting creative and productive workers, but in part it is also due to growth boundaries that in retrospect have proved to be too restrictive to accommodate a growing population.

Urban planning is as a field of research both multidisciplinary and interdisciplinary, and planners may have an educational background in a discipline such as architecture, engineering, economics, or political science. In this issue, the theoretical starting points are in economics and political science, or—more broadly—in political economy. A general feature of all the contributions to this issue is that they explicitly consider the spatial organization of economic activities, as well as the role that institutions play as enablers or constraints.

2. THE SPATIAL ORGANIZATION OF ACTIVITIES

While most economic and political theories tend to disregard space, the conception and analysis of spatial relationships is central to the theory and practice of urban planning. Probably the most influential theory in the social sciences from an urban planning perspective is spatial economic theory, where the central concern is the trade-off between accessibility and space in the choice of location, as Gordon and Cho note in their contribution.

The foundation of spatial economics is Johann Heinrich von Thünen's model of an "isolated state" (Thünen 1826/1875). This early model assumes a featureless plain, a central marketplace, and different rings around the marketplace that specialize in different types of agricultural production. The criterion for where to locate each productive activity is the transport cost to the marketplace per unit of land area. Like most modern spatial theories, this model assumes a static economy without entrepreneurship. Another similarity is its disregard of institutions, which implies an underlying assumption of perfectly delineated and universally respected property rights over land.

While there are thus unrealistic features in Thünen's model, it is still the case than planners who are cognizant of this model, and the various modern models that build on it such as the monocentric model of Alonso (1964), represent a concession to realism as compared with those who ignore economic theory. Architects, for example, often think of themselves as artists who design aesthetically pleasing cityscapes. But, as Ikeda (2017) explains, a city cannot be a work of art. Designating a city centre lot to an activity that demands extensive space but requires little interpersonal interaction implies an economically inefficient use of space, as does a design that includes a high-rise suburb.

But a problem with the foundational model is that it implies a strict separation of land uses. The problem is twofold. First, a strict separation of productive activities is only efficient in a static economy where all actors possess perfect information about relevant economic variables. Second, even in a static perfect-information economy, consumers may be heterogeneous in their trade-offs between space and accessibility, as well as the specific accessibility they care about, if we assume subjective preferences. The theorist can only avoid this second aspect of the problem by imposing the unrealistic assumption that each household is representative in the sense of having average preferences and budget constraints.

Both these problems represent considerable limitations on the usefulness of the model to real-world cities. If entrepreneurial innovation plays an important role, then spatial separation of activities is no longer necessarily efficient.

3. URBAN ENTREPRENEURSHIP

The urban economy is nothing like Thünen's isolated state. It is intrinsically dynamic in the sense of being powered by innovative entrepreneurs. Indeed, the most innovative entrepreneurs are disproportionately in big cities.

Marshall (1920) describes the agglomerative tendencies of industrial activities, giving rise to clusters of complementary industries. One of the reasons for such clustering is the existence of knowledge externalities, which refer to the greater likelihood that an individual will benefit from others' knowledge when those others are nearby.

But Jacobs (1961) is the first major contribution to focus on the creative prowess of cities, and how creativity and, more generally, economic vitality benefit from mixed rather than spatially separated (primary) land uses, along with certain other desirable attributes of the built environment such as short blocks, high population densities, and a mixture of new and old buildings.

In his paper in this issue, Ikeda explains how Jacobs' analyses of cities would benefit from a stronger focus on the economic role of entrepreneurs from a market process perspective. Entrepreneurs benefit from access to a wide variety of knowledge. It is easier to discover such knowledge in an economically diverse urban environment, and it is also easier to combine cognitively distant ideas in innovative ways if the inno-

vator is spatially proximate to people with *different* kinds of knowledge. These effects weaken the efficiency conclusions of the monocentric model since that model separates different types of specialists from one another in space.

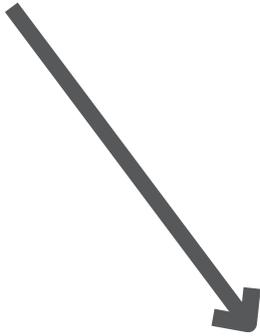
Ikeda not only contends that it is important that the people working and residing in a city should embody diverse types of knowledge, it is also important that they are open to economically meaningful interactions with people who know different things than themselves. Hence an entrepreneurial city must not only be heterogeneous and complex in its land use patterns and people. People must also be able and willing to create weak links among themselves. Taking a cue from Granovetter (1977), such weak links facilitate entrepreneurial discoveries of profitable complementarities among bits of information, ideas, theories, and skills.

Much of Jacobs’s work alludes to Hayek’s (1945) contention that the use of local knowledge is important for economic development. It is often beneficial to have good access to face-to-face interaction opportunities with people who possess specialized knowledge of various kinds. Examples of relevant local knowledge are local or emergent consumer preferences as well as technological breakthroughs that an entrepreneur may harness for profitable innovative ventures (Andersson 2005).

But not all knowledge is alike. This is the subtext of Gordon and Cho’s contribution to this issue, where they note that although different cities tend to specialize in different industries, it is not the case that each industry is tightly clustered in a handful of contiguous neighbourhoods. In the San Francisco Bay Area, software establishments are found in all parts of the region, not just in Silicon Valley. What really matters are the different space-accessibility trade-offs that workers in different jobs but the same industry or supply chain face. In this context it is important to remember that there are different types of knowledge. Some is easy to transmit with the help of computer communications, while some requires face-to-face contact. Tellingly, Gordon and Cho find that the film industry is more distance-sensitive than the software industry.

A general rule is that entrepreneurship benefits from plentiful personal contact opportunities with dissimilar others. But this rule does not apply to all economic interactions. Table 1 is an attempt to rank different types of knowledge according to how much they benefit from face-to-face communication. An implication of this ranking is that the outsourcing of routine data processing tasks to distant lands often makes a great deal of economic sense. The creation of new product designs and the learning of problem-solving skills are much more distance-sensitive.

Table 1. Types of knowledge transmission and efficient transfer mechanisms

	Information (nits or bits)
	Data
	Patterns
	Concepts
	Theories
	Designs/compositions
	Innovations
	Tacit knowledge

Source: adapted from Andersson and Beckmann (2009).

In abstract economic theories of entrepreneurship, such as those of Schumpeter (1934) and Kirzner (1973), it is common to take the institutional structure for granted. They implicitly assume well-defined property rights and reliable law enforcement, as in neoclassical models. In real-world cities, this is often not the case.

In many cities in the Global South, dysfunctional institutions have increased the importance of informal small-scale entrepreneurship. At the same time, they have exacerbated the difficulties of engaging in more capital-intensive kinds. In his paper, Lozano-Paredes explains that it is common for private entrepreneurs to innovate transport services in many Latin American cities. There the public sector has demonstrated that it is incapable of providing acceptable mobility services to most urban residents. Because government agencies in countries such as Colombia have a history of being unresponsive to most residents' preferences, private paratransit and neighbourhood ridesharing schemes have emerged as viable options. Entrepreneurs have innovated these services in a bottom-up fashion, taking advantage of their greater local knowledge as compared with governmental planners.

While developed cities have been better able to provide their residents with acceptable transport, they too are less than fully functional, owing to institutional constraints that have made many otherwise promising entrepreneurial ventures infeasible. Land use zoning often prevents the discovery of higher-valued uses of land in specific locations, and taxes on buildings or local services have frequently had similar effects.

4. INSTITUTIONAL ORDER

In the economic life of a city, the most salient institutional consideration is whether (and to what extent) land use regulations and various taxes and prohibitions impinge on entrepreneurial—that is, dynamically productive—as well as statically productive economic activities.

Spatial economists have known for a long time that the only tax that does not impose a penalty on entrepreneurship or the productive use of resources is a tax on the value of land. Such a tax only makes rent capture more difficult (George 1879/1935). In their paper, Foldvary and Minola propose an alternative democratic principle of organization that they believe will result in a predilection for making a land value tax the only or main source of public revenue. They call this alternative principle “cellular democracy,” which would privilege decentralized decision-making at the neighbourhood level. Many public goods only have local effects and decentralized elected decision-makers or for-profit community entrepreneurs have the strongest incentives to provide them in an efficient way. Conversely, federations of neighbourhoods, with representatives of each constituent “cell” in higher-level legislatures, could then concentrate on the provision of public goods with effects on larger geographical areas.

Dobuzinskis offers a skeptical counterargument in his paper. While acknowledging that a Georgist land value tax is the most efficient tax, he contends that it is too far from where we are at present. Dobuzinskis contends that this is a common problem that bedevils many political prescriptions that have their origin in some explicit or implicit social contract theory. This not only includes George's proposal, but also those of such leading twentieth-century political philosophers as Rawls (1971), Nozick (1974), and Gauthier (1986). In addition, there is also the practical problem that Western publics demand more comprehensive welfare states than existed at the time of George's proposal, and thus a land value tax can at most be an addition to some of the existing taxes. The gist of Dobuzinski's argument is that political reform must take the existing structure as its point of departure and can only be successful if it takes a pragmatic and incremental approach.

5. SPATIAL INSTITUTIONAL ENTREPRENEURSHIP

There is not only entrepreneurship within a given institutional structure. There is also entrepreneurial innovation of the structure itself, with inevitable consequences for the spatial organization of economic life.

Hudik provides an unusual and somewhat counterintuitive example in his paper. In the post-1978 period of economic reforms in China, most people's communes decollectivized and adopted the "household responsibility system." The new system gave individual households *de facto* private ownership over plots of land, and households could therefore sell at least a share of their output at market prices and as residual claimants. This reform resulted in a dramatic increase in agricultural productivity, yet some communes resisted decollectivization.

Huaxi Village in Jiangsu Province is an example of such a commune. Despite retaining its collective governance structure, Huaxi became the richest village in China, though it had been a typical poor village in the pre-reform period. Whereas the village resisted decollectivization, it did engage in diversification by focusing on different manufacturing activities, rather than on farming, after the reforms. Hudik argues that Huaxi introduced an institutional innovation. In effect, the new institutional structure has made the village akin to a cooperative holding company that sells its output at market prices. It has become an island of planning within a sea of markets. Unlike Chinese state-owned enterprises, it faces a hard budget constraint, and its workers are part-owners rather than employees. Because of prevalent scale economies and high levels of trust among the villagers, the new market environment has made it more successful than it would have been under the more common small-scale agricultural model of the household responsibility system. It resembles a classic company town more than a traditional village. Although a traditional village may spontaneously evolve into a great city or disintegrate into a few scattered farms, a company town occupies a more constrained niche somewhere midway between a small village and a great city.

In a related vein, Berg and Berg use the concept of *forking*, which they have borrowed from the open source software community. Forking happens when a joint source splits into two forks with a shared history but divergent futures. The same can happen with institutions, which are in principle like open source code. They describe two such forking incidents in their paper. In one case the institutions of the United Kingdom provided open source institutions for the new fork of Australia. This was a successful fork that eventually generated great cities such as Melbourne and Sydney, with institutions—both formal and informal—that at the same time resemble and are distinct from those of contemporary Britain. The second forking, which was less successful, was the new fork of New Australia in Paraguay. This was a settlement that tried to innovate institutions based on an Australian source in the late nineteenth century. In New Australia, the Australian norm of "mateship" was combined with the new institution of sharing resources equally, regardless of ability or effort. Due to the predictable incentive problems that occur among people who earn the same no matter what they do, New Australia did not retain or attract enough people to survive, let alone thrive. Berg and Berg argue that the world is full of both successful and unsuccessful institutional innovations, and further that the most successful ones tend to use a good source code, to which compatible and efficiency-enhancing institutions are added.

The paper by Allen, Berg, Jowett, Novak, and Potts proposes a more forward-looking institutional innovation for entrepreneurial cities. The main contention is that an intelligent city based on blockchain reasoning offers a superior alternative to currently popular "smart city" policies. The "smart-city approach" depends on centralized collection and analysis of big data, uses machine learning algorithms, and offers uniform solutions to heterogeneous residents. In contrast, blockchain technologies allow for decentralized creation of geocoded information and services, while protecting the privacy of individuals and organizations. They also provide opportunities for entrepreneurial discovery processes, whereby individuals can offer tradable services. One example among many is monitoring local production processes at the various stages of a supply chain.

6. CONCLUSIONS

Urban planning as it is conventionally practised tends to pay too little attention to underlying economic and political processes. In its crudest form, architects view the city as a canvas on which to paint an aesthetically pleasing image, while disregarding economic and political constraints. More economically liter-

ate planners are aware of some economic forces, such as the differences in trade-offs between space and accessibility across industries. They are then less likely to plan suburban high-rises, as in Soviet-era Moscow, or conversely to plan for agriculture in inner-city neighbourhoods as has happened in some Japanese cities.

But planning that cultivates creativity and innovation requires more insight. It then becomes necessary to understand the role of local knowledge and heterogeneous networks in entrepreneurial experimentation with novel land uses, local services, or product development. Such entrepreneurs must often harness various types of tacit knowledge with steep distance gradients. It also becomes necessary to understand how institutional structures enable or constrain entrepreneurial and other productive endeavours.

In many cities stringent zoning regulations and building codes have made it impossible to embark on many otherwise profitable ventures, as have taxes on productive activities or bans that tend to affect various small niche markets. An even more urgent problem in many cities is the unaffordability of housing, which makes it difficult to attract new residents. Potential new residents may then never arrive, even when they offer skills in great demand or when they have knowledge profiles that are suitable for entrepreneurial activities in a specific unaffordable location.

Affordability problems are often the result of stringent growth boundaries, minimum lot size requirements, or maximum floor area ratios. Such restrictions make the supply of housing less elastic, in some cases approaching perfect inelasticity. A higher price is then the only possible market response to an upward shift in demand.

The contributors to this special issue recognize the need for an urban planning approach that take into account the dynamic, entrepreneurial features of the market process as well as the role of institutions as cultivators or inhibitors of entrepreneurship with a spatial dimension. This ties in nicely with the idea of spontaneous orders, which is the main concern of *Cosmos + Taxis*. In a static perspective, cities function in predictable ways with more or less competitive markets. If these markets have features that resemble textbook models of supply and demand, then this would indeed justify a plan that spatially separates productive activities from one another. Reality, however, is more complex and dynamic.

With the intrinsically dynamic spontaneous-order approach, entrepreneurs attempt to break free from the zero or low profitability conditions that are typical of mature markets. Mature markets have tight system constraints, which limit producers' freedom of action as they struggle to break even. The only way to break free from the constraints is through innovative activities that consumers have a higher willingness to pay for than the opportunity costs of the inputs that the innovators use.

Entrepreneurs benefit from idiosyncratic local knowledge, which guides their perceptions and imaginations along spatiotemporally specific trajectories. Such trajectories are not only specific to localities and time periods; the "width" of a trajectory depends on indirect knowledge, that is, the knowledge of relevant others. These relevant others are not equally accessible from all points in space.

Cities that offer locations and institutions that support the generation of new ideas and innovations, and which provide reliable feedback about their quality, are more likely to become and stay economically competitive. This requires diverse land uses, diverse industries, and diverse people. And as Ikeda likes to remind us, it requires values that combine tolerance and a critical mindset.

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Milestones

LESLIE MARSH

Managing Editor

This issue is significant for two reasons. First, it marks the final issue under the editorship of David Emanuel Andersson, *Cosmos + Taxis*' first editor. Second, it also marks the return of the biennial conference¹ to the C+T home base of Vancouver BC, where the first conference inaugurating the founding of C+T was held in 2013.² C+T has come a long way in just over seven years, expanding its output from three issues per annum in the first year to twelve this year and registering more than five thousand downloads in the month of July alone. The contributor roster too has expanded exponentially, now populated by some of the most distinguished names in the various overlapping classical liberal circles. Moreover, C+T has lived up to its ecumenical brief by publishing writers critical of some aspect or another of the tradition. C+T has been especially commended for making a concerted effort in offering opportunities to early career academics.

David very graciously assumed the editorship of the then nascent project of C+T and for that we thank him for his sterling service. It is fitting that David ends his tenure as editor with this themed issue, urban planning being one of his steadfast research interests.³ David will remain on the executive committee; his wise counsel and enthusiasm vital to our continued success.

Neither conference, nor indeed the setting up and on-going operations of C+T would have been possible without the behind the scenes support of David Hardwick⁴ and Charles Ramey. The Hardwick civic mindedness is synonymous with Vancouver. Two of C+T's conferences took place in (David) Hardwick Hall; there is also a Walter Hardwick⁵ Avenue named after Dave's brother; and we were also pleased to have Dave's niece, Vancouver City Councilor, Colleen Hardwick, in attendance. It is a Hardwick trait that intuitively understands sociality as a spontaneous or emergent order, well aware of the rationalist's conceit of believing that civic good must emanate top-down. Dave, particularly, has masterfully negotiated the complexities of social reality be it within medical practice, research and a medical management context or in the socio-political realm. C+T and the joint work Dave has done with Gus DiZerega⁶ and myself,⁷ is the conceptual analog to Dave's lifetime as a man of practice.

For forty years Charles Ramey has been Dave's Man Friday. Charlie, a renaissance man in his own right, is the master of negotiating the ever-shifting sands and maze-like back office bureaucracy characteristic of a large university. Charlie's good cheer and "can do" disposition always lifted the spirits when the going got tough. On many an occasion, it was Charlie who saved the day.

Given that Dave ostensibly retired in 1999 and Charlie in 2006, both have been as busy as ever, a significant proportion of their time devoted to the continued success of C+T. This speaks to their lifetime of enthusiasm for communal service. It's been a deep privilege and indeed a lot of fun so-called "working" with both Dave and Charlie—there's plenty for us still to do to keep ourselves amused.⁸



Left to right: Charlie, Dave, Leslie.

NOTES

1. <https://cosmosandtaxis.org/vancouver-2019/>
2. <https://cosmosandtaxis.org/conferences/vancouver-2013/>
3. Andersson D. E., Mellander, C., and Andersson Å. E. (Eds.), *Handbook of Creative Cities*. Cheltenham and Northampton, MA: Edward Elgar, 2011.
4. https://en.wikipedia.org/wiki/David_F._Hardwick
5. <https://www.facebook.com/Dr.WalterG.Hardwick/> and <https://vancouverunandprovince.remembering.ca/obituary/walter-hardwick-1065334269>
6. With D. F. Hardwick, *The Emergence of Vancouver as a Creative City*. In: Andersson et al. See note 3.
7. *Reclaiming Liberalism*, Cham: Palgrave, 2020 and *Propriety and Prosperity: New Studies on the Philosophy of Adam Smith*, Cham: Palgrave, 2014.
8. Leah Hall, our Administrative Assistant in the Department of Pathology and Laboratory Medicine, is our powerful hidden force; we are indebted to her for her always indefatigable support and for "looking into things" when bureaucratic potholes had to be navigated. C+T is also heavily reliant upon Claire Roan, the designer behind the journal's appealing look, the fun stuff. But Claire also has the mind-numbing task of assimilating each issue's final corrections which she does with the patience of a saint.

Agglomeration Near and Far: San Francisco and Los Angeles Metropolitan Areas

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Abstract: People (and businesses) in cities want two things, access and space. This presents difficult trade-offs. There are many circumstances and many trade-offs and many resulting choices. This explains commuting near as well as far. When it comes to the spatial arrangements prompted by agglomerative forces, less is known. Despite the label, the many suggestions concerning “clustering” strategies are unclear on suggested spatial layouts. This research relies on firm-level location data for the Los Angeles and San Francisco areas for selected industries and plant sizes. We find that there is agglomeration *near as well as far*—no matter the region, the industry or the plant size. “Clustering” strategies and discussions must be wary of suggesting (as the name seems to imply) tightly packed spatial arrangements. That is too simple.

Keywords: Spatial agglomeration, clustering, co-location of firms

1. INTRODUCTION

The basic ideas of this paper are straightforward. They are (1) sustained economic growth is a fundamental¹ objective; (2) economic growth requires innovation; (3) among the prerequisites for innovation are opportunities for interacting and exchanging ideas; (4) interaction opportunities involve a spatial settlement dimension. In short, our astonishing well-offness has, in large part, a spatial explanation. Just as supply chains are emergent, so are their spatial configurations.

Beyond this, things are less clear. Agglomeration economies are part of the story and it is agreed that they have a spatial dimension. Is there such a thing as a preferred spatial arrangement? There is much talk about the importance of “clusters”² and “density” but specifics, degree of dimensionality, layout, are left unclear. Map 1 shows the locations of software establishments in the San Francisco Bay area. Whereas there is much discussion of Silicon Valley, it appears that these firms are all over the Bay Area—at all sorts of densities. There are also numerous assertions about “sprawl” and “urban containment” but these too are often vague and/or contentious. Most of them are also too broad brush.

Human design capabilities have limits. Designers (subject to competitive forces) create all of the products we can

put our hands on, even the buildings and facilities that house all these items. Designers have also tried their hand suggesting the best layout of major facilities, including commercial and industrial centers. But there are limits to what human design can accomplish. Scaling-up capabilities only go so far. Jane Jacobs told her readers that “a city cannot be a work of art.” Monumental buildings have been important for a long time. But at some scale, human action, not human design, takes over. *Emergent orders*—those based on voluntary interactions—denote the arrangements that result. Beyond some threshold, knowledge is so complex and so dispersed that trial-and-error learning (usually best in a competitive setting, with inevitable errors made along the way) is the only way to bring about beneficial designs and outcomes.

There are many examples. The ones most widely cited are language, science, common law, art, and culture. Cities also. Jane Jacobs had famously noted that neighborhoods and cities are also examples of what sounds like an emergent order. In her words, “Their intricate order—a manifestation of the freedom of countless numbers of people to make and carry out countless plans—is in many ways a wonder” (Jacobs 1961).³ Agglomeration opportunities are *realized* if spatial arrangements congenial to entrepreneurial trial-and-error are permitted. This requires that a degree of open-endedness is allowed by land use planners.^{4 5}

Everyone tries to make the best of the situation they face. Everyone plans. Large numbers of individual plans coalesce into orders that may *appear* to be somehow fashioned top-down but, following Jacobs, we now know that such top-down success is an impossible dream. Anyone can see Jacobs’ “intricate order” but what do they make of it? Looking down at a city from an airplane, we claim, one looks down on the spatial layout of a large number of overlapping supply chains, *including supply chains for things and supply chains for ideas*. Where does any supply chain begin? With a chain of ideas.

Can we clarify agglomeration (and cities) by probing the meaning and importance of supply chains? Arnold Kling has argued that the idea of production functions is superseded by “paths of production.” New things and new ideas feed and enhance each other. Carter (1989) has touched on a similar idea. When there is production, there is very likely to be information exchange and learning.

Ronald Coase famously observed that plant managers decide what to make vs. what to buy. They must also decide what to buy (and sell) *where*. Supply chains have a spatial layout. Consider that everyone in cities, people or businesses, wants two things: space and accessibility(ies). This describes the choice problem faced by all locators as well as the mediation problem that we expect land markets to handle. Add to all of this the important fact that most locators participate in supply chains for things as well as supply chains for ideas. We each make it our business to seek and find *useful* knowledge⁶—useful to our enterprise or our mission. The use and application of the knowledge is likely to add value to it. It can even provide first-mover advantage and, thereby partial excludability. “Partial excludability is a beautiful thing”.⁷

There is purposeful entrepreneurial search and action on the demand side along with reputational (and other) rewards on the supply side. These observations challenge the textbook concerns over free-riding on ideas that are simply “in the air.”⁸

Supply chains for ideas can involve physical access as well as electronic access. Many people work remotely some of the time as well as at a workplace. Most of us are keen to find the *blend* of access modes that works for our enterprise or project. Death-of-distance dreams were premature. Establishing and maintaining trust relationships requires some physical presence. “The problem with the internet is that he cannot look her in the eye through a screen, and she cannot ‘feel’ or ‘touch’ him. It is a medium that may help to sustain relationships, but it does not establish deep and complex contacts” (Leamer and Storper 2001). Social capital is enhanced along with other capital. Trust and cooperate (trade) and prosper.

Access, reduced access costs, distance and place enter this discussion. Knowledge is exchanged for money (or for other tangible rewards) *via carefully cultivated networks*. Within these, reputations for careful and truthful attribution are established, honed, and maintained. This applies especially to non-codified (tacit and also not easily patented) knowledge which may require extended conversations, even face-to-face interaction, acquaintanceship and geographic proximity. Knowledge involves learning. Learning is hard. Conversation establishes context which can make all the difference.⁹

Networking is a popular idea but is *fashioning and managing supply chains for ideas* more apt (Figure 1)? We know that new ideas are new combinations of old ideas. This refers to forming new neural connections in our cortex, the “aha” moments.¹⁰ The number of possible combinations is uncountable but as our brains become embedded and part of a networked network, as we network with others, the combinatorial possibilities expand dramatically. Intelligence expands dramatically. The bigger the network, the better. We can describe innovation and the benefits of accessibility, connectivity and agglomeration in this way.

2. THIS RESEARCH

Spatial agglomerations have been explained via a variety of impulses. There are plausibly gains from locating near firms of the same industry (specialization; Marshall, 1890); there are also plausible gains from locating near firms that represent complementary (diversification opportunities; Jacobs, 1969) sectors. Are the worthy spillover ideas the ones that are highly specific and specialized? Or not? There is no simple answer. Complementarities can reach across sectors and disciplines.

There are also likely gains from the sheer nearby availability of possible substitutes if/when existing relationships of any sort are disrupted or deemed inadequate. Locating near diverse labor pools confers similar benefits—for the present or the uncertain future.

We studied the co-location of firms for selected industries in the San Francisco and Los Angeles metropolitan areas.¹¹ The sectors chosen represented entertainment (NAICS 512: Southern California’s presumed current growth engine); various sectors that represent “tech” and engineering (the Bay Area’s growth engine NAICS 4147); a combined information sector including computer programming, software, and information retrieval services (NAICSS 541511, 511210, 517210, 517919); a finance sector that presumably includes venture capital groups (NAICS 523910); a large technology-based manufacturing sector that includes 43 (six-digit NAICS) sectors.¹² These are sectors that presumably have good reasons to “cluster.”

Ideas and capital have a natural synergy; either one without the other is almost useless. We should emphasize *people* with capital and ideas. *Nearby* venture capital people and firms accentuate the complementarity by being available to mentor as the young firm develops.

We also combined all five of our sectors into one. Table 1 presents summary data on these sectors. Maps 2a -2d show firm locations in the two regions.

A recent study that also compared these two regions is by Storper, et al (2016). These authors tried to explain how and why the Bay Area outpaced LA’s growth in recent years. They focused on what they saw as better regional coordination by major actors. But it may be simpler. The Bay Area includes the world’s premier “tech” center. Moreover, the dominance of Silicon Valley has been shown to have had little to do with top-down regional planning choices (Saxenian, 1998). Both, the Los Angeles and San Francisco metropolitan areas, have had most of their development at the outer edges for many years.¹³

We began by looking at the pairwise co-locations of firms, here defined as observed correlations of jobs at the census block group level.¹⁴ There were 8,248 and 3,978 CBGs in the Los Angeles and Bay Area regions, respectively. “A Census Block Group is a geographical unit used by the United States Census Bureau which is between the Census Tract and the Census Block. It is the smallest geographical unit for which the bureau publishes sample data, i.e. data which is only collected from a fraction of all households. Typically, Block Groups have a population of 600 to 3,000 people.” (U.S. Census Bureau, 2018). Writers prefer to remain open as to the dimensions of a “cluster” (see, for example, Cortright, 2006 p.6). But the word can easily lose its meaning and usefulness. The clear implication of the term, however, denotes fairly proximate spatial arrangements. “Clustering” advocates usually make clear their desires for high densities. Our empirical tests start with the question of whether CBGs are meaningful “clusters” of firms. We will henceforth use observed co-locations in place of vaguely defined “clusters.”

Our first step was to test the extent to which the observed pairwise co-locations are explained by sales and purchase coefficients from U.S. input-output models.¹⁵ Regional scientists have looked to input-output relationships to form the basis for planning strategies. Hirschman (1958) saw production linkages as the

basis of a development strategy.¹⁶ Actual (and conceivably potential) backward- and/or forward- linkages among the rows or columns of input-output models would guide planners in their search for appropriate industries to try and attract. We tested whether U.S. input-output coefficients can explain variation in the observed co-location correlations.

Four regression results are shown in Tables 2a-2d. We expected that greater sales or purchases between any pair or sectors would favor more proximate locations. The two estimated coefficients are indeed significant with the correct positive signs in three of them. But in all four regressions, the proportion of dependent variable variation (for co-locations at this level of spatial detail) explained via industrial linkages was very low, usually less than two percent. Note that this test involves the level of spatial detail often suggested by clustering strategy advocates. Our candidate for other explanations for observed co-location and agglomeration is the importance of information exchange. Depending on the nature of the exchange, this activity can involve co-location near or far. Near and far commuting is well known (Figure 2). Recall that the big cities continue to grow mostly by spreading outward.¹⁷ This is how urban scale diseconomies have been avoided; there continue to be *net* growth advantages via the discovery of propitious urban spread—which many deride as “sprawl.” It suggests we also have near and far agglomeration. There are a variety of interaction opportunities and accommodations to a variety of situations. They need not involve *close* or nearby co-location.

3. FINDINGS

Our data on firms and jobs by sector, location, and size of firms enabled us to estimate Ripley’s K-functions (Dixon 2002) for our five sectors in each of the two regions. There were separate estimations for all firms as well as the largest firms. The Ripley’s K plots are shown in Appendix 2.

In this research, we try to learn from the spatial arrangements that we see on the ground. To avoid the problems of identifying centers and subcenters—and leaving out all the other jobs—we relied on the Ripley’s K-functions estimated on location data for *all* the firms. To give “clustering” some meaning, we investigated the degree and extent of observed co-location of firms via Ripley’s K-function results.

The estimation results denote the extent to which *encountering another firm of the same (or designated) sector is greater than random, as distances between designated (same-sector or other-sector) firms increase*. The algorithm considers ever larger concentric rings around all firms. As the circles get bigger, the odds of encountering a designated-sector firm grow. Are the actual encounters greater-than-random? Greater-than-random is denoted by displacement of the estimated function above the 45-degree line. Our Ripley’s K estimation results are summarized in Table 3. The estimated functions are shown in Appendix 2. The plots Observed K represent the observed pattern of co-locating or dispersion. The plots Expected K which are the 45-degree lines represents a random spatial pattern. When an Observed K value is larger than the Expected K value for a particular distance, the distribution denotes more co-locating than a random distribution at that inter-firm distance. When the Observed K value is smaller than the Expected K, the distribution is more dispersed than a random distribution—at that inter-firm distance. LwConfEnv and HiConfEnv represent lower confidence and higher confidence envelopes, respectively. When the Observed K value is larger than the HiConfEnv value, spatial co-locating for that distance is statistically significant. When the Observed K value is smaller than the LwConfEnv value, spatial dispersion for that distance is statistically significant (ArcGIS Pro 2017).

The Ripley’s K estimations help us address this question: as distances between (designated sector) firms increase, are the odds of encountering a co-locating firm greater than random? Are estimated Ripley’s K functions above the rising 45-degree plot? A rising 45-degree line shows the expected increasing odds of an encounter with co-locating firms as distances from sector firms increase. Are the actual encounters greater than random? Measuring the areas of the bulge above the 45-degree line summarizes all this.

Table 3 reports the results. All of the percentages are above zero indicating strong co-location. Note that the plots are all outside the 95-percent confidence bands. For all of the 24 estimations, we see this type of “clustering” all the way to distances about equal to edge of observed plant locations (30-40 km), almost equal to the distances to the edges of major settlement. Consider also that these co-location distances are much greater than, say, the 5km edge of a large downtown cluster. We find this for both regions, all five sectors, all plant sizes. In most cases, less co-locating by the largest (perhaps more independent) firms.

According to bulges above the 45-degree line, most clustering is among LA-area entertainment firms (Row 1)—where smiles and handshakes matter most. In both regions, there are least clustering among computer programming (Row 4) firms—where considerable electronic data exchange most likely. Row 2 involves more “tech” firms; the results are broadly similar for the two regions, with less clustering for the largest firms—that are expected to be less dependent on outside help. Row 3, venture capital firms shows the same type of clustering, but the largest firms cluster more. The biggest regional differences are for the largest sector studied (Row 5). This may be the outlier. Combining all five sectors (Row 6) shows that overall spatial layouts are remarkably similar in the two regions.

The final row refers to the sector that combines data for all the sectors studied. These results address co-locating across sectors. As the Jacobs hypothesis suggests, there is *not* less “clustering” when we go beyond a single industry. Complementary matters. Supply chains can involve many sectors and many specializations.

4. DISCUSSION

“... [A] central paradox of our times is that in cities, industrial agglomerations remain remarkably vital despite ever easier movement of goods and knowledge over space” (Glaeser 2010). We say no paradox. We have shown that there are firm co-locations that suggest agglomeration benefits *near and far*. This makes sense, especially in light of the fact that more than one kind of information is communicated and exchanged, the codified and the tacit. Locators pick a suitable *blend* of interaction channels which helps them select their preferred location-networking choices. Over a half-century ago, Mel Webber noted “community without propinquity.” Even in pre-internet days, he saw that people chose to link in a variety of ways. The choices that individuals make in their personal spheres obviate the many grand plans, including the many “cluster strategies.” Networking has seemingly edged out hierarchy.¹⁸

The co-location of workers and employers is well known. Employers as well as employees have an interest in avoiding high commuting costs.¹⁹ Firms, likewise, have reasons to be strategic about choosing a location vis a vis other firms. We have tried to be more precise than simply alluding to “density”, “clustering”, “agglomerating.” We have argued and shown that co-location by firms near as well as far makes sense and, in fact, happens. “Local brain drain” refers to spin-offs, a widespread phenomenon in the tech sectors.²⁰ The progeny often locate relatively nearby where they know people and places. Nearby as in the same metropolis (Map 1) can mean agglomeration near or far, but not too far. Distributions derived from gravity models explain commuting near and far; they probably apply to all human interactions near and far, including those involved in the exchange of goods and ideas, but to various degrees.

Cities are defined by their peculiar land use arrangements. These are emergent even though constrained by topography, history, and development rules. The city will only grow and prosper (and contribute to general human advancement) if the emergent spatial patterns are congenial to the formation and functioning of very large numbers of supply chains—for goods as well as for ideas. “Emergent” is quite distinct from the many discussions focused on “cluster strategies.” “Efficient” may be a fraught term but economic growth is clear enough.

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APPENDIX 1

Comparisons, Two Urbanized Areas (UZAS), 1950-2010

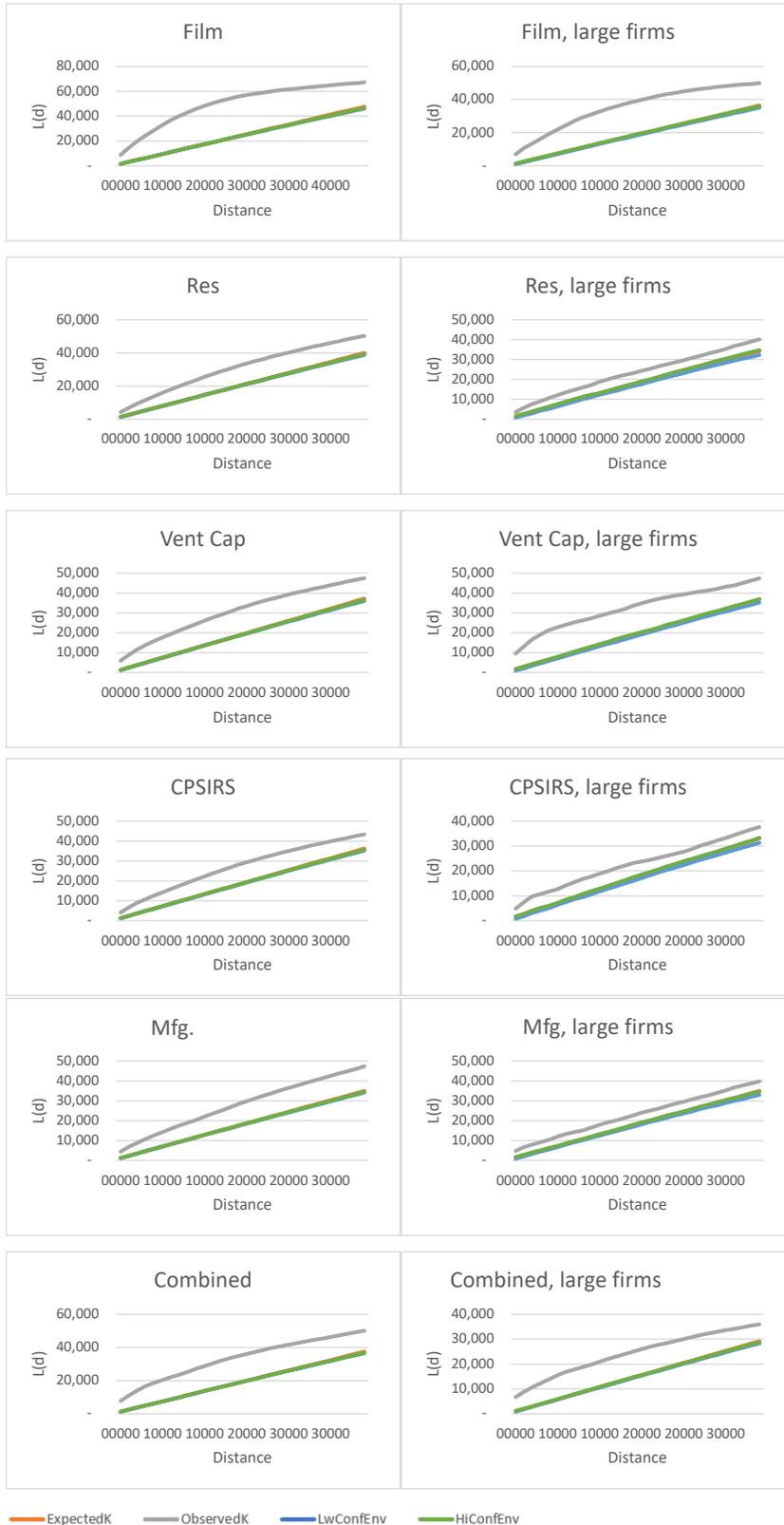
	1950	1960	1970	1980	1990	2000	2010
POPULATION (1,000s)							
Los Angeles, CA	3,997	6,489	8,351	9,479	11,402	11,789	12,151
San Francisco–Oakland, CA	2,022	2,431	2,988	3,191	3,630	3,229	3,281
URBANIZED LAND AREA (sq mi)							
Los Angeles, CA	871	1,370	1,572	1,827	1,966	1,668	1,736
San Francisco–Oakland, CA	287	572	681	796	874	527	524
DENSITY (pop/ sq mi)							
Los Angeles, CA*	4,589	4,736	5,312	5,188	5,800	7,068	6,999
San Francisco–Oakland, CA	7,045	4,250	4,388	4,009	4,153	6,127	6,266

* LA densest in U.S. since 1990

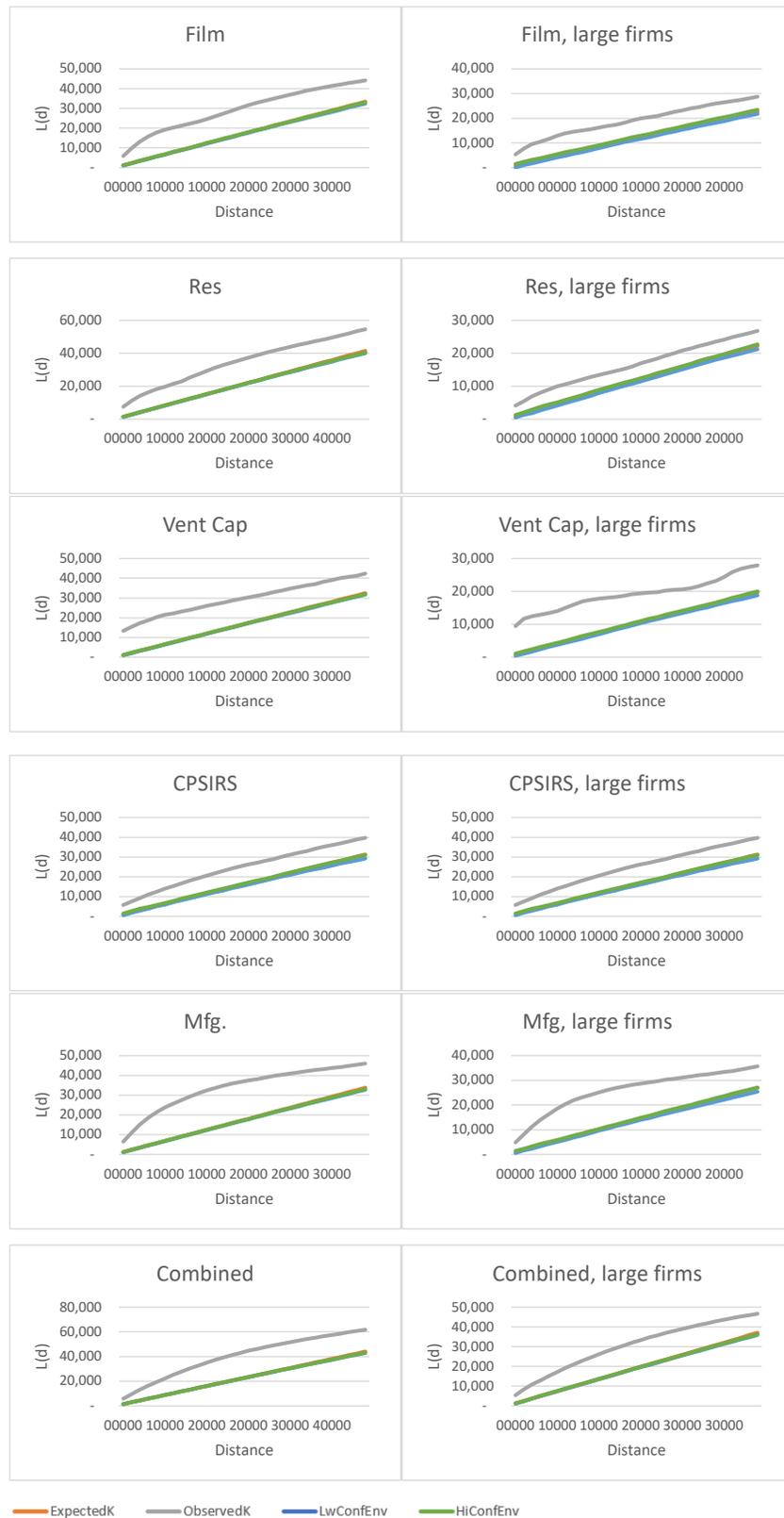
Source: <http://www.demographia.com/db-uza2000.htm>

APPENDIX 2: RIPLEY'S-K FUNCTION PLOTS

Los Angeles/Orange Counties



San Francisco Bay Area



APPENDIX 3

The K function is

$$K(d) = \frac{1}{\lambda N} \sum_{i=1}^N \sum_{j=1, j \neq i}^N \frac{I_d(m_{ij})}{w_{ij}}$$

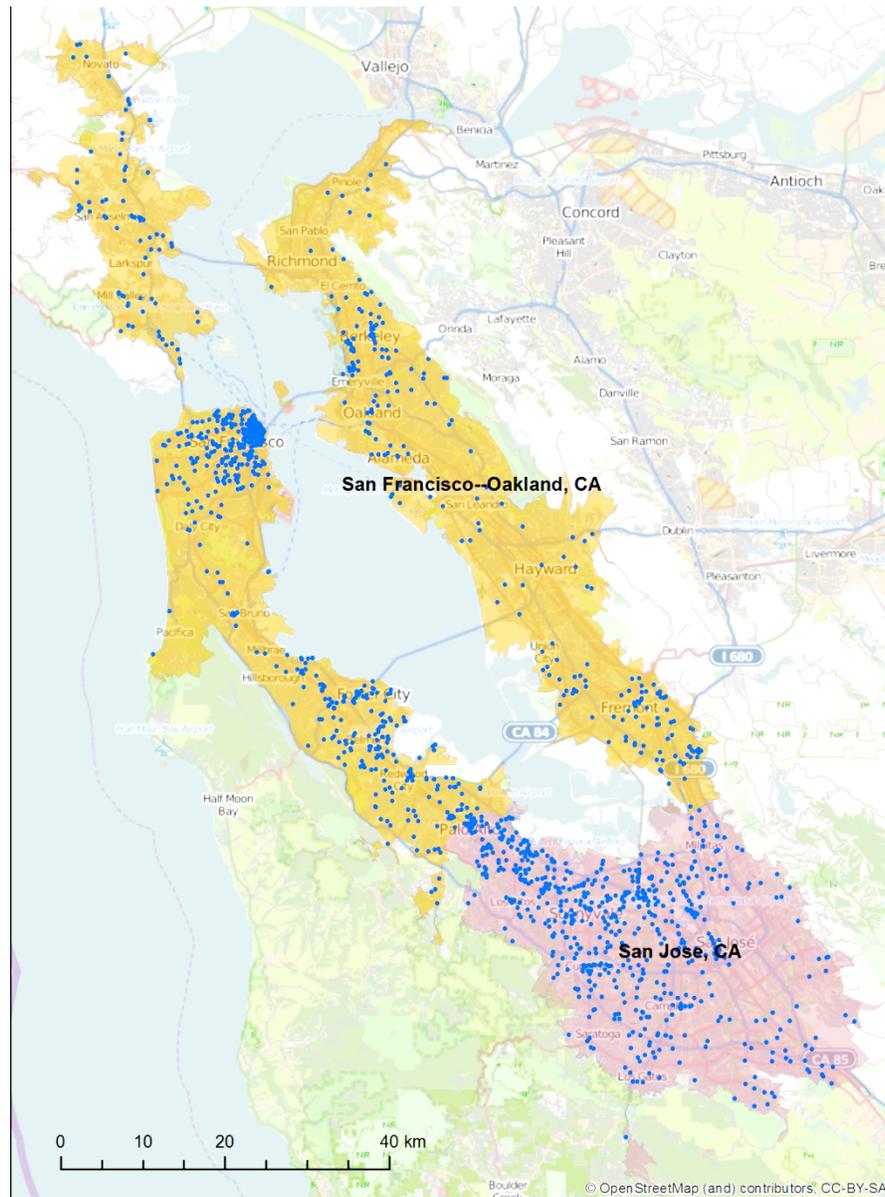
Where d is distance between firms in meters, λ is the density of firms in the study area, N is observed number of firms, $I_d(m_{ij})$ is an indicator function where it becomes 1 when $m_{ij} \leq d$ or 0 when $m_{ij} > 0$. m_{ij} is the distance between firm i and firm j . w_{ij} is a weight function for edge correction. Simulated outer boundary method is applied for edge correction (ArcGIS Pro, 2017).

To make the $K(d)$ values easier to interpret directly, they are transformed to $L(d)$ so that $L(d)$ becomes d for a random distribution.

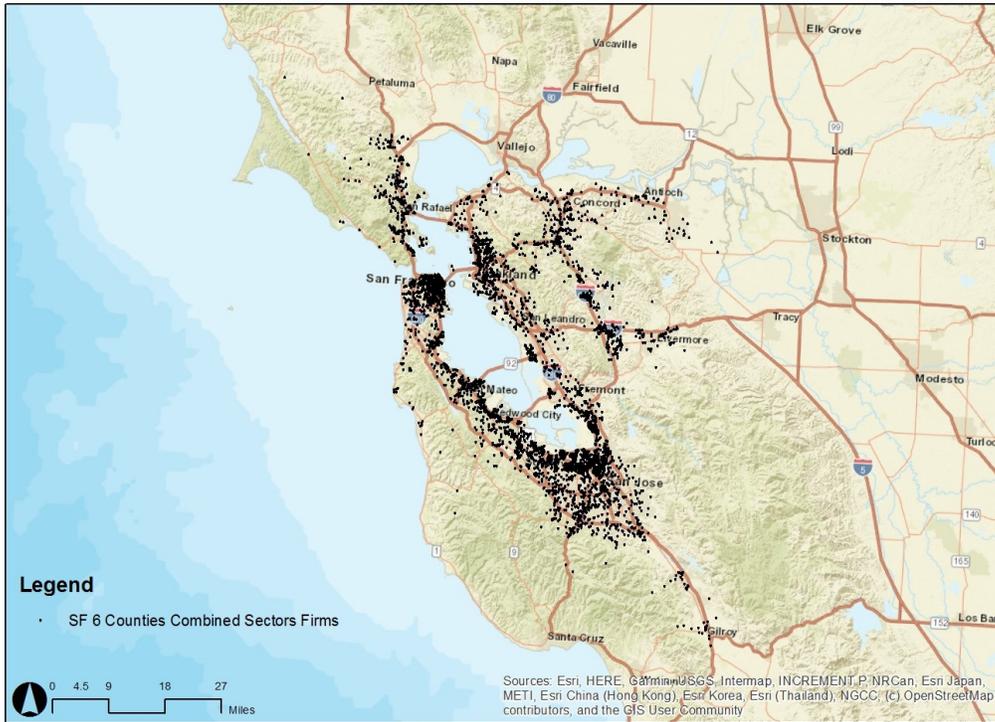
$$L(d) = \sqrt{\frac{K(d)}{\pi}}$$

MAPS, FIGURES, TABLES

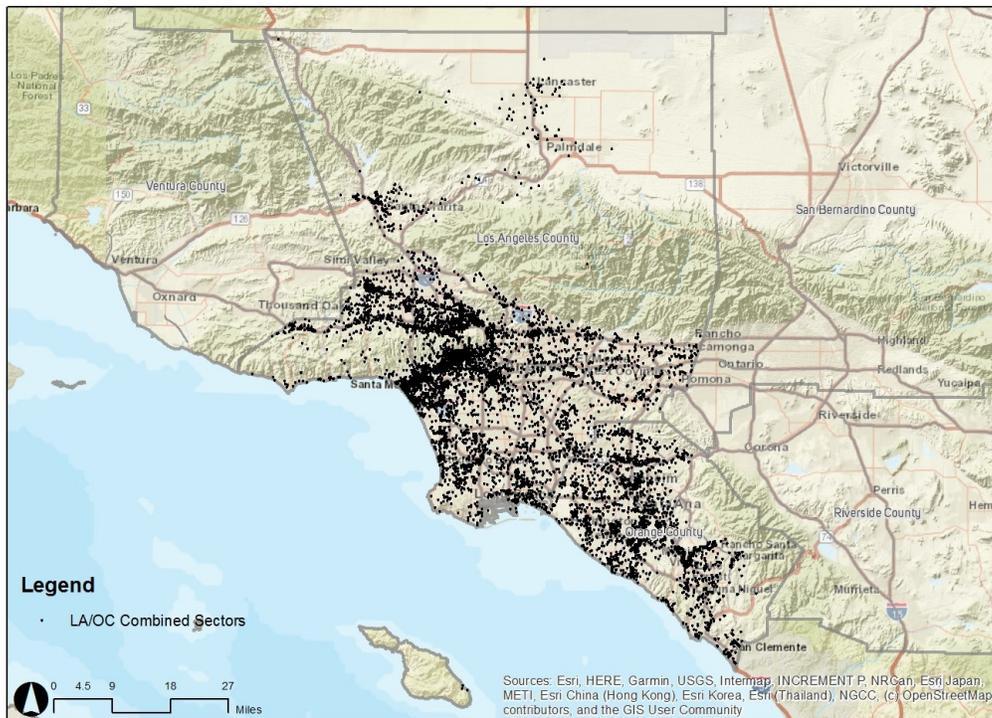
MAP 1: Location of all software establishments in the San Francisco Bay Area, 2013: We see the dots but not the interconnecting networks; firms network near and far. (Source: Geographic Research Inc., 2014)



MAP 2a: San Francisco MSA plus Santa Clara County, Locations of combined sectors firms



MAP 2b: Los Angeles MSA (Los Angeles + Orange counties), Locations of combined sectors firms



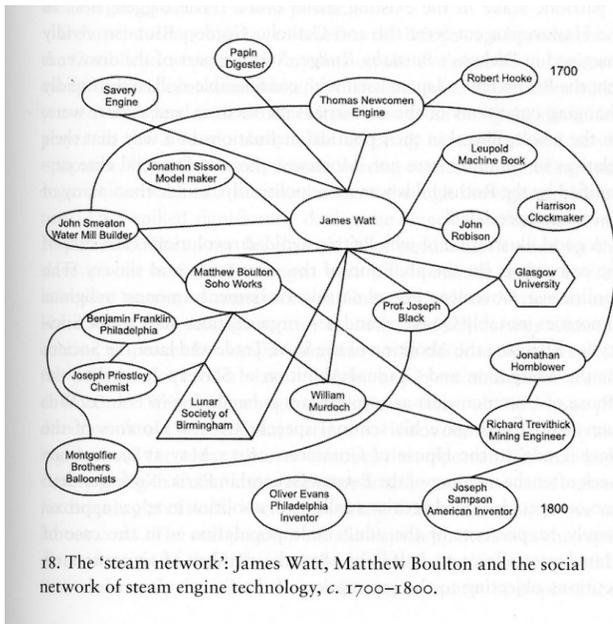
MAP 2c: San Francisco MSA plus Santa Clara County, Locations of technology based manufacturing sectors firms



MAP 2d: Los Angeles MSA (Los Angeles + Orange counties), Locations of technology based manufacturing sectors firms

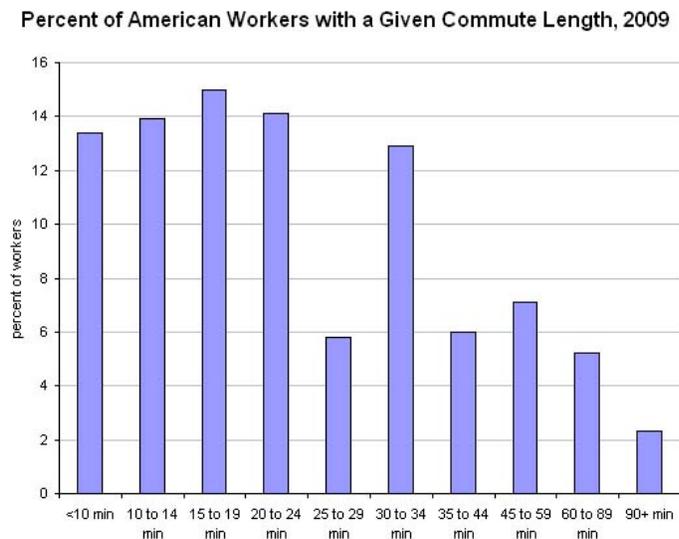


FIGURE 1: Network? Web of social relations? Supply chain for ideas?



Source: Niall Ferguson, *The Square and the Tower: Networks and Power from the Freemasons to Facebook* (2017, 147; includes more examples).

FIGURE 2: Cities spread outward; commuting near and far; why not agglomeration/clustering near and far?



Source: U.S. Census Bureau, American Community Survey, 2009

TABLE 1: Firms and Jobs, LA and SF areas, selected sectors

Region	Sector (NAICS)		Firms	% of total firms	Jobs	% of total jobs
Los Angeles County/ Orange County	Film: NAICS 512	Motion Picture and Sound Recording Industries	4,501	0.8%	72,847	1.2%
	Res: NAICS 5417	Scientific Research and Development Services	1,832	0.3%	28,316	0.5%
	Vent Cap: NAICS 523910	Venture Capital Companies	1,680	0.3%	11,953	0.2%
	CPSIRS: NAICS 541511, 511210, 517210, 517919 ²¹	Computer Programming, Software, and Information Retrieval Services	1,761	0.3%	21,080	0.3%
	Mfg.: NAICS 32-33 ²²	Technology-based manufacturing industries	2,114	0.4%	109,113	1.8%
	Combined	Five sectors combined	11,888	2.1%	243,309	4.0%
		All Sectors	563,326	100.0%	6,034,164	100.0%
SF 6 County	Film: NAICS 512	Motion Picture and Sound Recording Industries	1,158	0.4%	10,678	0.3%
	Res: NAICS 5417	Scientific Research and Development Services	1,629	0.6%	41,990	1.3%
	Vent Cap: NAICS 523910	Venture Capital Companies	1,261	0.4%	11,365	0.3%
	CPSIRS: NAICS 541511, 511210, 517210, 517919	Computer Programming, Software, and Information Retrieval Services	1,738	0.6%	55,039	1.7%
	Mfg.: NAICS 32-33 ¹¹	Technology-based manufacturing industries	1,605	0.6%	158,574	4.9%
	Combined	Five sectors combined	7,391	2.6%	277,646	8.5%
	All Sectors	280,332	100.0%	3,264,760	100.0%	

TABLE 2a: OLS Estimations: Pairwise co-location correlations explained by national IO coefficients, sales and purchases: Los Angeles county

Variable	Coefficient	Standard Error	Pr > t	R-Squared
Intercept	0.1233	0.0047	<.0001	0.0182
Tech_coef_ij	0.4407	0.1877	0.0190	
Tech_coef_ji	2.1427	0.3120	<.0001	

* Statistically significant

N = 2,980

TABLE 2b: OLS Estimations: Pairwise co-location correlations explained by national IO coefficients, sales and purchases: Orange county

Variable	Coefficient	Standard Error	Pr > t	R-Squared
Intercept	0.1962	0.0068	<.0001	0.0182
Tech_coef_ij	-0.0932	0.2382	0.6956	
Tech_coef_ji	1.7637	0.4477	<.0001	

* Statistically significant

N = 2,902

TABLE 2c OLS Estimations: Pairwise co-location correlations explained by national IO coefficients, sales and purchases: Los Angeles and Orange

Variable	Coefficient	Standard Error	Pr > t	R-Squared
Intercept	0.1239	0.0042	<.0001*	0.0182
Tech_coef_ij	-0.0749	0.1482	0.6132	
Tech_coef_ji	2.0550	0.2769	<.0001*	

* Statistically significant

N = 2,988

TABLE 2d: OLS Estimations: Pairwise co-location correlations explained by national IO coefficients, sales and purchases: San Francisco 6-county area

Variable	Coefficient	Standard Error	Pr > t	R-Squared
Intercept	0.1275	0.0053	<.0001*	0.0169
Tech_coef_ij	0.5456	0.2114	0.0099*	
Tech_coef_ji	2.3452	0.3534	<.0001*	

* Statistically significant

N = 2,951

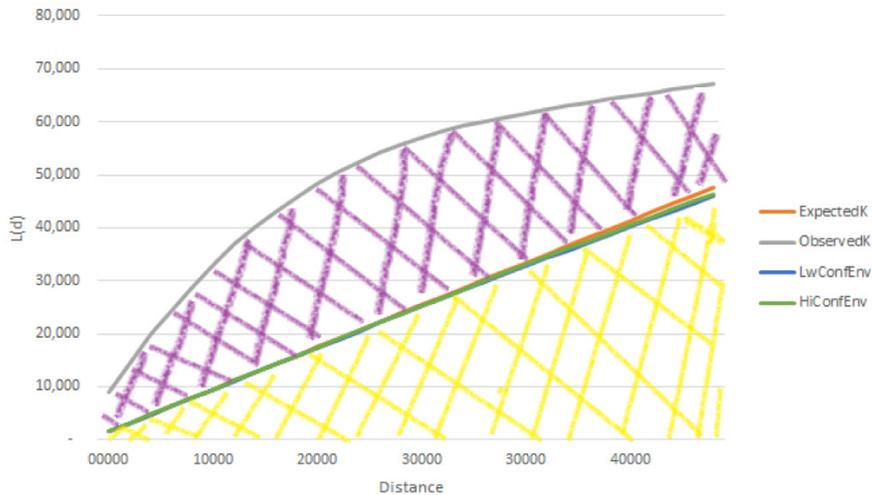
TABLE 3: Summary of Ripley’s K function estimations, degrees of observed clustering

Sector (NAICS, SIC)	Description	Degree of observed clustering			
		LA/OC Counties		6 Bay Area Counties	
		All firms	Largest firms	All firms	Largest firms
Film: NAICS 512	Motion Picture and Sound Recording Industries	104% ²³	90%	71%	63%
Res: NAICS 5417	Scientific Research and Development Services	50%	32%	62%	44%
Vent Cap: NAICS 523910	Venture Capital Companies	60%	71%	76%	87%
CPSIRS: NAICS 541511, 511210, 517210, 517919	Computer Programming, Software, and information Retrieval Services	44%	33%	56%	53%
Mfg.: NAICS 32-33	Technology-based manufacturing industries	55%	28%	95%	88%
Combined	Five Sectors Combined	77%	60%	73%	61%

NOTES

1. Some prefer sustainable development but are often unclear by what they mean. Cowen (2018) makes the case of *sustained economic development* of “wealth plus” A key additional problem is that we may disagree about what to include in measures of wealth or well-being. He suggests “wealth plus” that expands what is measured as GDP, adding the value of leisure time, household production and environmental amenities. All three bring their own measurement controversies.
2. Porter (2000) has done substantial work elaborating strategies to promote spatial clustering.
3. “Death and Life is probably the most sensible book ever written about cities” (Watson 2001, 521).
4. A similar argument as ours with empirical results for the UK is in Huggins and Thompson (2017).
5. Considerable empirical literature shows that land use in cities is so heavily regulated as to cause housing shortage and housing “affordability” problems. See, for example, Pollakowski and Wachter (1990).
6. Mokyr (2007).
7. McAfee (2019, 233).
8. Kling (2013) argues for replacing the idea of a production function with the idea of a *production path*. This gets close to our thought that supply chains for ideas and supply chains for things are, together, involved in production.
9. McCloskey (2019) elaborates by citing all that we normally do in the way of persuasion and “sweet talking.”
10. Romer (1994).
11. We use the Los Angeles MSA, defined as Los Angeles plus Orange counties. The San Francisco MSA excludes Santa Clara county which we add to it to create a six-county area; leaving out the “Silicon Valley” growth engine would make no sense.

12. See Paytas and Berglund (2004)
13. San Francisco 1900-2012 dispersion, <https://www.newgeography.com/content/004165-the-evolving-urban-form-the-san-francisco-bay-area>, See Figure 2. Los Angeles <https://www.newgeography.com/content/002372-the-evolving-urban-form-los-angeles>. See Table 1.
14. From InfoUSA 2016.
15. US Implan, 2013, 536 sectors. Using regional model coefficients would have introduced two-way causation problems.
16. Isard and Schooler (1959) elaborated “industrial complex analysis” as a regional planning approach.
17. Angel (2011).
18. Gurri (2018) elaborates. He speculates that networks will replace hierarchies.
19. “The data on the largest U.S. MSAs show that commute times increase only slightly with city size: the elasticity of the average commute time with respect to the number of workers was about 0.1 in 1990 and 2000” (Anas 2012, 146).
20. Moretti (2012, 144).
21. Suggested by Rosenthal and Strange (2004).
22. The sector includes 43 technology-based manufacturing sectors defined by Paytas and Berglund (2004).
23. The following graph illustrates how the degree of observed clustering for the Film sector in Los Angeles/ Orange County is calculated: $(\text{Purple area}/\text{yellow area}) \times 100 = 104\%$



Urban Diversity and Cohesion: A Jacobsian Solution

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Abstract: To try to understand a city means appreciating that it is a complex, dynamic process in which diversities must tend strongly to cohere and complement one another. I present the conditions for and virtues of urban diversity, as developed by the urbanist Jane Jacobs, and adjust her framework to account for subsequent urban evolution. I address the following questions: What is diversity and how does it arise? What are the conditions that enable complementarities and cohesiveness to emerge and to be maintained among heterogeneous persons, places, and things? Jane Jacobs uses reciprocating systems and social networks to address these questions. I argue that market-process analysis with its emphasis on entrepreneurial competition usefully complements Jacobs's approach to understanding large-scale social cooperation and cohesion.

I. THE PROBLEM OF SOCIAL COOPERATION

How do certain elements of a real, living city work together to spontaneously generate a complex urban order? Because such a city is largely the unplanned outcome of individual choices, rather than a preconceived, overall design (Bertaud 2018), grasping how a city works means approaching it from the bottom up, beginning with individual perceptions and choices, and tracing their consequences for social outcomes.

For Jane Jacobs, the key to understanding the dynamics of urban development is diversity. This raises several questions. Specifically, what is “diversity” in this context and how does it arise in urban environments? Given this diversity, what are the conditions that enable complementarities and cohesiveness to emerge out of it and to be maintained, among the heterogeneous persons, places, and things of a living city? In the presence of self-interested persons with limited information operating in a world of scarce resources, why should they choose freely (rather than through force) to associate with such diversity at all? For Jacobs the answer lies in the networks people form in public space. I argue that a market-process analysis, with its emphasis on entrepreneurship and the price system, easily complements Jacobs's focus on social networks as dual forces for large-scale social cooperation and cohesion.

We begin by defining for present purposes the meaning of diversity, and then analyzing the microfoundations of a living city to see what generates the needed diversity within it and what is responsible for turning that diversity into complementarity, integrating insights from economics and sociology based primarily on the work of Jacobs (1961). In particular, we will examine how the “built environment” of

a city, especially the design of its public spaces,¹ influences the patterns of social activity that then emerges within it.² Finally, we will explore how market-process theory can combine with Jacobs’s framework to offer a fuller explanation of how a living city achieves coherence among all that urban diversity.

II. MICROFOUNDATIONS OF JACOBSIAN ECONOMICS: WHAT GENERATES DIVERSITY?

According to Jacobs, a city that has achieved greatness (i.e. Tokyo, London, New York, Paris) does so because its inhabitants, other things equal, are better able than smaller settlements to take advantage of an enormous range of diversity in land use and in knowledge, skills, and tastes. The question then is how a great city achieves this. But what does “diversity” mean in this context?

First of all, diversity can refer to people, things, or places. I will be using diversity in all three ways. With respect to people, diversity refers to differences in their knowledge and ideas, skills, and tastes. There are of course a number of other important ways people differ from one another but I will focus on these for now. Notice that these differences are very real, despite being subjective and intangible. A diversity of people—owing to differences in personal background, culture, work experience, education, etc.—can create “social distance” (Ikeda 2012) among them, and so the challenge is to bring relative strangers together in such a way that their diversities complement one another rather than conflict; that they cohere in a way that benefits exceed costs. The same goes for the diversity of things and places.

The diversity of things refers to the uses to which people put physical objects such as buildings, cars, and roads. Now, although the things themselves are tangible, the uses to which people put them are purely subjective. That means the same physical object, such as a stone, can be put to different uses, such as part of a wall or as a paperweight; and objects that differ physically, such as a stone and a book, can be used in the same way, e.g. either to hold open a door or to place on a bookcase. And with respect to places, diversity refers to the different ways people perceive and use space; uses such as residential, business, entertainment, sacred, and so on. Again, although a particular land-use may be tangible, the same space may be used for different subjectively determined purposes, such as a gymnasium at different times of the day; or different spaces may be used for the same purpose, such as a restaurant or a church, either of which can serve as wedding venues.

Jacobs argues that to create an urban environment in which people feel safe and secure, a city needs to rely on a self-regulating harmony of diverse elements rather than on only formal policing.

A mixture of uses, if it is to be sufficiently complex to sustain city safety, public contact and cross-use, needs an enormous diversity of ingredients (Jacobs 1961, 144).

Section IV below will explain further why that is the case by showing how the four elements outlined below interact to generate the diverse, “organized complexity” necessary for a city to flourish. Here, I will first address the questions of whether diversity rather than formal policing is chiefly responsible for laying the groundwork for safety and security in a great city, and of how order is generated without a plan or conscious design? How does Jacobs explain this?

For Jacobs (1961), it is vital to attract people into a neighborhood at different times of the day and days of the week. We’ll use that as our starting point and then move on to three other factors that Jacobs emphasizes. Later I will update Jacobs’s analysis to current urban contexts.

Jacobs arrived at her “generators of diversity” through a combination of keen observation, extensive scholarship, and genius (Szurmak & Desrochers 2017). She concluded that in order to successfully generate land-use diversity, all four of the following conditions must hold and interact in an organized, complex process.

Two or more primary uses

The district, and indeed as many of its internal parts as possible, must serve more than one primary function; preferably more than two. These must insure the presence of people who go outdoors on different schedules and are in the place for different purposes, but who are able to use many facilities in common (Jacobs 1961, 152).

Jacobs argues that, in order to encourage large numbers of people to use public spaces at all times, there needs to be something in a particular location, for convenience let's call it a "neighborhood," to attract them to it. Once there, the dynamic of people attracting people can take hold. Jacobs called these attractors "primary uses." Primary uses give people a reason, an incentive, to enter a given neighborhood. A residence is one common primary use. Other uses of urban land include e.g. an office building, a high school, a courthouse, a shopping center, a multiplex movie theater, a bus or subway stop, a museum, or a medical practice. You can probably think of others, but remember that a primary use brings people from outside into a neighborhood.

Some spaces can serve multiple primary uses such as a schoolroom that doubles as a club-meeting room in the evening, or a high-school gymnasium that serves regular students during the day and hosts athletic events on weekends, or a civic plaza that accommodates a farmers' market outside regular working hours.

In order to fulfill the role of encouraging people to use public spaces at all times of the day and throughout the year, it's important that there be more than one primary use in the neighborhood. A single use, particularly a massive single use such as a sports arena or a residential complex, by taking up so much space often precludes more than one primary use in a neighborhood. Sometimes this is unavoidable if indeed the citizens of a locality demand such a single-massive use—or what Jacobs terms a "border vacuum" (Jacobs 1961, 257-69)—but when the facility is not in use it repels rather than attracts people. With multiple primary uses—e.g. a combination of residences, workplaces, and entertainment venues—it's more likely that there will be people on the streets, sidewalks, and plazas going about their business at different times of the day and night, perhaps looking for interesting things to do, including looking at other people.

It is this influx and outflux of strangers that radically differentiates a neighborhood of, say, 50,000 persons in a city of one-million from a small town of 50,000. A successful neighborhood is going to bring in many more people, most of whom are strangers to one another, from the outside during the day—as Joel Garreau (1991, 7) remarks, one sign of success is if the population increases between 9am and 5pm—than is typically the case in a town. Moreover, pound-for-pound, the people residing in and attracted to a big-city neighborhood will be weirder (i.e. socially distant) by almost any measure than what you would find in a small town.

But there are also land-uses that do not necessarily bring strangers into the neighborhood but cater to people who are already there because they have been attracted by a primary use. Jacobs calls this "secondary diversity." Examples of secondary diversity might include a fast-food restaurant, a laundromat, a grocery store, an elementary school, and a pharmacy. Occasionally a use that would ordinarily be secondary, a local restaurant perhaps, may become primary if its favorable reputation has spread to other places around the city or even to other cities. Also, over time, a plot of land currently serving as a secondary use, for example a local pharmacy, might be refitted, if local regulations permit, into a primary use such as specialty clothing shop, or if its hours of operation extend from regular business hours to 24/7. The reverse could also happen, of course, which would reduce local diversity.

One of the catch phrases of contemporary urban planning and development is "mixed uses." Developers often characterize new projects as "mixed use," by which they mean in addition to housing, the project might include retail space for shopping and eateries, perhaps a movie theater or even a primary school. But aside from the residential use, the other uses listed are secondary uses, not the primary ones that attract

people from outside the neighborhood or district. As a necessary factor for generating diversity, Jacobs was careful to specify “mixed *primary* uses.”

Population density

The district must have a sufficiently dense concentration of people, for whatever purpose they may be there. This includes people there because of residence (Jacobs 1961, 200).

Jacobs writes about the necessity of having a high concentration of people in a given location in order to supply, as it were, the raw material for “eyes on the street.” Without an adequate pool of people to fill public spaces as they work, shop, play, and so on, the informal social institutions that promote public safety and security, and the economic and cultural creativity that build upon them, will not spontaneously emerge.

Note, however, that Jacobs lists this as only one of the four generators of diversity. (In fact, she lists it last among the four.) It’s worth noting because much of the recent conversation in the urban-planning community has been about the virtues of population density, almost as if density were an end in itself; or how once population density has reached some critical level all the vitality and benefits of urbanism will somehow then emerge, without paying enough attention to other, equally important, factors. (This is somewhat ironic given how anti-density most urban planners were in the early 20th century.) But as we have seen, Jacobs is concerned less with population density itself than with land-use diversity. Density is a virtue only to the extent that it interacts with the other factors mentioned, below, to generate diversity. An overcrowded prison in California or Yankee Stadium during a home game both have high population densities, but without the diversity that emerges from all four of the generators that Jacobs discusses, neither would hardly be considered a real city, despite the large number of people involved.

It may be appropriate to mention here that Jacobs is careful to distinguish density from overcrowding. “Density” refers to the number of people or dwelling units per acre or square kilometer; “overcrowding” refers to the number of people in a dwelling unit (Jacobs 1961, 205). You can have a very high population density—the extremely wealthy Upper East Side of Manhattan has one of the highest population densities in the City of New York—without overcrowding. That’s because while the number of people per apartment may be low, the many high-rise buildings on the UES each contain a large number units per acre. (Incidentally, this is why as people grow wealthier the population density tends to fall even as dwellings per acre rises.) Generally speaking, overcrowding (too many people or families sharing the same dwelling) is undesirable. And it’s also possible for density to be too high, especially when the physical infrastructure in a neighborhood—the sewers, streets, power grid, etc.—cannot adequately accommodate those who are attracted to it, a problem that typically falls to city planners with uneven success (Bertaud 2018, xiii).

Finally, it’s no mystery why population density and congestion go hand-in-hand. Put a lot of people into a relatively small area and there are bound to be bottlenecks. High congestion, meaning a great many people using limited public space at some or all times, can sometimes make life miserable with the crowds, noise, smells and overall slowness and jumble. In a great city, however, congestion is often the setting for opportunity. When Rem Koolhaas speaks of the “culture of congestion” he means it in a good way; that a dynamic culture arises from congestion (Koolhaas 1994, 10). Jacobs, too, recognizes this connection, as well as the common foundation for both cultural and commercial creativity in cities.

[W]herever we find a city district with an exuberant variety and plenty in its commerce, we are apt to find that it contains a good many other kinds of diversity also, including variety of cultural opportunities, variety of scenes, and a great variety in its population and other users. This is more than coincidence. The same physical and economic conditions that generate diverse commerce are intimately related to the production, or the presence, of other kinds of city variety (Jacobs 1961, 148).

Density is one, but only one, of those conditions.

Short Blocks

Most blocks must be short; that is, streets and opportunities to turn corners must be frequent (Jacobs 1961, 178).

Always look to invest in properties on a corner! That's what my father used to tell me. I believe this is probably common sense in the real-estate industry. From a commercial point of view, a corner has the advantage of having more street frontage than a midblock unit, which means more passersby per hour. According to Joel Garreau (1991, 465), the rule of thumb for commercial success—and I believe this applies to shops in a mall as well as on outdoor streets—is to have about 17 persons per minute pass by your store during business hours, so locating on a corner roughly doubles the chances of meeting that minimum and increases your visibility. For a given area “short blocks” translates into more intersecting streets and therefore “more corners.” And while increasing the supply of corner properties would, other things equal, lower the real-estate value corner of properties, other things will not be equal if enough additional people use public space and help to make it flourish.

Now, Jacobs prescribes “short blocks” for a related but different reason. First, short blocks promote walkability. How so, since 100 yards is still 100 yards whether there is one street intersecting a block or none? That's because, up to a point, dividing a long block by one or even two streets draws pedestrians onward (though perhaps not car-drivers or bicycle-riders) farther than the 600 feet or so that William Whyte (as interpreted by Garreau (1991, 464)) estimates the average person will walk downtown, much as modern shopping malls no longer feature very long, straight, unbroken walkways. As Garreau (1991, 464-6) points out, it's a mistake for a mall-builder to let shoppers see exactly how far it is to the end of a mall, for fear that they may give up (and go back to their cars) before going all the way there. Some of the earliest malls made that mistake, but indoor and outdoor malls today are constructed so that the lines of visibility are rather limited, stoking a person's curiosity about what may be “just around the corner.”

The same principle applies to a city street: short blocks lend intricacy and visual interest to public spaces. Again, shorter blocks mean more intersections and as a result more ways to get from one point to another.

Throughout history the length of city blocks and the layout of city streets have been mostly the result of deliberate human design. From ancient cities in the Middle East (Kostof 1991) and Roman colonies (Vance 1990) to Medieval towns (Scott 1998) and Manhattan's more-recent grid plan of 1811 (Koeppel 2015), people have deliberately constructed a vital piece of the physical infrastructure onto what became the urban fabric. But there have been exceptions to this pattern, and even if an entire system is preplanned at a particular time there are always adjustments to that system over time that were not predicted and indeed could not have been predicted (Ikeda 2017). Manhattan is a good example of both phenomena. Its grid integrated both the largely unplanned matrix of streets in the part of the island that was first settled as well as the native-American path that ran along the spine of the island—what later became Broadway. Also, the Commissioners' original street grid didn't set aside any significant parkland, which decades later New York's municipal leaders corrected by designating a large area in the middle (at the cost of already existing settlements) for what became Central Park; something the earlier planners evidently hadn't considered; and the addition of two more avenues, Madison and Lexington, on the UES.³

The need for old, worn-down buildings

The district must mingle buildings that vary in age and condition, including a good proportion of old ones (Jacobs 1961, 187).

Aged buildings are a naturally occurring part of an organic, urban landscape, just as trees of different vintages, which add temporal variety to sylvan flora and fauna, are part of a healthy forest (Scott 1998). And just as you can't grow old trees, you can't build old buildings, though they are a critical ingredient of urban vitality. Why are they?

Quite simply, an aged, old, or worn-down building offers comparatively cheap space for people, often young people, with new ideas but little capital. Such a building typically has unpleasant or inconvenient aspects—its location isn't ideal, the floors are uneven, the plumbing unreliable, and the roof leaks. But in this case these things are, as they say, a feature not a bug. A building with a good location and reliable plumbing, because it's new or newly renovated, would be too costly for most people to use to test out new ideas. Only the already wealthy would be able to afford new digs and even they would tend to shun using them for risky experimentation. But an old, run-down building offers a promising-but-poor innovator to trade-off fewer amenities for more cheap space. If a living city is one in which economic development through innovation takes place (Ikeda 2012a), it needs somewhere, indeed many places, for people to incubate ideas, for trial and error. Old buildings in this way are ideal incubators, which is why Jacobs (1961, 188) declares, "New ideas need old buildings!"

You can find this sort of re-use of old buildings all over North America, Europe, and elsewhere where abandoned factories and warehouses become homes and studios to artists.⁴

I should note that Jacobs is not here referring to what today is known as the "landmarking" of historically significant buildings that lend distinction or character to a particular place.

By old buildings I mean not museum-piece old buildings, not old buildings in an excellent and expensive state of rehabilitation— although these make fine ingredients— but also a good lot of plain, ordinary, low-value old buildings, including some rundown old buildings (Jacobs 1961, 187).

Taking her cue from Kevin Lynch (1960) who wrote about the importance of landmarks to people in cities for navigating the urban landscape, Jacobs was a strong supporter of landmarking buildings of that sort. Such landmarking is typically associated with the costly restoration of buildings often located in high-rent areas where well-heeled local residents use political clout to pressure the municipality to do the preservation.⁵

Jacobs is careful to note that old buildings should "mingle" with newer ones. That's because if old, worn-down buildings dominate a neighborhood, it indicates its residents lack capital for local investment with an accompanying absence of primary uses, and that the neighborhood is probably in decline; what she calls a "slumming" slum. In the most general sense, however, a "slum" is simply a neighborhood where poor people live (or where they work, in the case of a commercial or industrial slum). It may well have enough primary and secondary uses to attract and, just as importantly, to retain people along with their social networks so there is increasing density (without overcrowding), land-use diversity, and rising per-capita wealth—i.e. it is "unslumming" (Jacobs 1961, 270). It's also the case that if there is a broad range of buildings of different vintages and sizes in a neighborhood, people incubating budding enterprises are likely to find many of the amenities they need nearby, which can also boost local development.

It's the interaction of these factors that generates diversity

According to Jacobs, these four factors complement one another over time and need to be present in the same neighborhood in order for diversity, and ultimately cohesive complementarities, to emerge and thrive. All four in combination are necessary to generate city diversity; the absence of any one of the four frustrates a district's potential (Jacobs 1961, 151).

Without mixed primary uses to operate as a people-attractors, for example, high population density won't supply eyes on the street; if there are mixed primary uses but very low population density there won't be enough people to occupy public space at different times to provide safety and to grow social networks;

blocks that are overly long will discourage pedestrian use and face-to-face contact, what Jacobs calls “small change from which a city’s wealth of public life may grow” (Jacobs 1961, 72); and without enough cheap space mingling with the new, a neighborhood will lack a crucial foothold for potential innovators—it may survive but won’t contribute to the long-term economic development of the city. All of these interact to enable complementary uses of people, places, and things.

Another point to keep in mind is that land-use and other forms of diversity can’t emerge or sustain itself unless social institutions—i.e. shared rules, norms, conventions, networks, and organizations—are stable enough that people can rely on them to make meaningful plans, especially for the long-term. It may sound paradoxical, but one of the factors important for stable populations and social institutions, is mobility: How easy is it for people to move from one part of the city to another either for daily commuting or for longer-term residence? If an area that is otherwise highly desirable to be in is difficult to enter or leave, it’s unlikely to generate much diversity because people will tend to avoid it. For example, if you know that living in “Lonely Gardens” means having an inconvenient commute—perhaps because of long distances from jobs and poor transport options, or because it abuts a dangerous area—this may raise costs enough to discourage you from moving there in the first place or staying there for very long if you do. That’s one of the problems with “slumming slums”: People want to get out as soon as they can; whereas “unslumming slums” are able to maintain reasonably healthy social institutions and connections that foster economic development because people remain long enough for social networks and social capital to take root and flourish (Jacobs 1961, 270-90).

Stable, however, doesn’t static. Social institutions need to be able to adapt to changing tastes, technologies, and resources; or to changes in demographics, lifestyles, and the natural environment (Ikeda 2012).

A diversity of land-use within any given area at different times, fosters an on-going process of creativity and innovation, and may promote urban resilience during an emergency. *The New York Times* architecture critic, Michael Kimmelman, observes for example that just after Hurricane Sandy severely damaged parts of the New York-New Jersey shoreline, clubs and other public spaces served as emergency shelters and gathering places for those threatened by or made homeless by the storm.

Less ravaged neighborhoods were more densely populated, with vibrant commercial strips and social networks, community gardens, parks and well-tended sidewalks. They drew people out of overheated homes and into the streets, shops, gardens, parks, and into libraries, too: places where there were things to do and friends to meet (Kimmelman 2013).

Not only could the same public space be used differently over long periods of economic development, the same place could be used for entirely different purposes and retasked very quickly if the social networks and social capital in the surrounding neighborhood are sufficiently robust (“multiplex” in the language of social-network theory) to enable strangers to come together in a crisis. As Kimmelman suggests, that kind of rapid adaptability and resilience is most likely where land-use is diverse.

Combined in an urban setting, these four generators of diversity enable ordinary people to draw on that diversity not only for their “necessaries, conveniences, and amusements” but to more effectively utilize the resulting complex divisions of labor to more easily and effectively explore and experiment⁶ and to adjust to sometimes rapid, unexpected change.

III. UPDATING AND ELABORATING ON JACOBS’S FOUR GENERATORS OF DIVERSITY

It might be argued that Jacobs’s analysis is limited to American cities in the mid-twentieth century. That she was focusing on “great” cities and not on smaller cities or towns, she herself concedes. A “great city” in her framework being *sui generis* (Jacobs 1961, 16). That it was limited specifically “American” cities is more debatable. It’s true that the examples in her 1961 book draw mainly from the United States, although her later

writings include other North American, Asian, and European cities.⁷ However, urbanists from around the globe acknowledge the relevance of her insights to their locations. In any case, Jacobs herself would not insist on slavish adherence to her principles. Indeed, I believe she would insist, as an inductivist (Jacobs 1961, 440), on changing or rejecting them if we observe patterns that contradict the ones she describes in her books and we were able to provide reasonable explanations different from hers for those patterns.

What I would like to do here then is to offer some extensions to and re-interpretations of her “four generators of diversity” in order to address some of these criticisms and to show that her “four generators of diversity” are sufficiently robust to continue to explain how a great city achieves cohesion among that diversity.

I’ve already noted that we can usefully and legitimately extend her concept of diversity to include the knowledge, skills, and tastes as well as the backgrounds of people. Indeed, this is implicit when we talk about land-use diversity, proper, because what leads some to open a Thai grocery and others a bodega is precisely their human capital and preferences.

Reimagining “mixed primary uses”

While it’s crucial to retain the idea of a primary use as an “attractor” and not to confuse a primary use with “secondary diversity,” some might interpret Jacobs as saying that primary uses must attract people on foot, not people in cars. But Jacobs does not denigrate the automobile as such. In her chapter on “Erosion of cities or attrition of automobiles” Jacobs says (1961, 338-9), for example, “But we blame the automobile for too much” and goes on to say,

Suppose automobiles had never been invented, or that they had been neglected and we traveled instead in efficient, convenient, speedy, comfortable, mechanized mass transit. Undoubtedly we would save immense sums which might be put to better use. But we might not. For suppose we had been rebuilding, expanding and reorganizing cities according to the project image and other anti-city ideals of conventional planning. We would have essentially the same results I blamed on automobiles a few paragraphs back.⁸

But even more important than how they get around—by transit, by car, on foot—is what people do, how they interact or don’t interact with one another, once they get out of their cars, trains, etc. wherever that may be. Because no matter how ubiquitous the car (and now the internet) has become, it’s still the case that people interact with one another, to a greater or lesser degree, face-to-face and informally (Christakis & Fowler 2009, 275) in essentially the way they did in the 1950s on Jane Jacobs’s Hudson Street in Greenwich Village.

The places where these interactions take place look superficially different today and one main driver of that change (no pun intended) has of course been the car. For now I would like briefly to look at the some of the major patterns of urban development in the 20th century and then say something about the limits of social media as a substitute for face-to-face contact. After all, what’s the point of primary uses if there are no people going out into public space to attract?

Joel Garreau, author of *Edge City: Life on the New Frontier*, identifies three waves in 20th century urban development in the United States. The “first wave” is the era of the large-scale, residential subdivision and of mass suburbanization, which took place largely right after World War II. Since Gertrude Stein lamented about her childhood home of Oakland, California that “there’s no there there” people have equated suburbia with placelessness, the absence of identity, homogeneity of population, and a lack of land-use diversity. The “second wave” begins in the 1960s as businesses leave downtown and set up in newly created malls in the suburbs where people have moved, now establishing two broad categories of primary use outside traditional downtowns: residential and commercial. The “third wave” begins in the 1990s as office parks and other “industrial” uses cluster with residential and retail centers in suburbs and the even more distant “ex-

urbs” near airports and where interstate highways intersect outside the central city. The consequence is the emergence of what Garreau claims is a totally new phenomenon: The “edge city“ (Garreau 1991, 6-7) that

- 1) Has five million or more square feet (465,000 m²) of leasable office space.
- 2) Has 600,000 square feet (56,000 m²) or more of leasable retail space.
- 3) Has more jobs than bedrooms.
- 4) Is perceived by the population as one place.
- 5) Was nothing like a “city” as recently as 30 years ago. Then it was just bedrooms, if not cow pastures.

So the continuing demand for physical contact is borne out by the emergence of the edge-city phenomenon. For example, Nicholas Christakis and James Fowler (noted earlier) finds that while we may have a large number of “friends” on a social media app such as Facebook, we have much more contact with some people than others. And who are they?

While many users of social networking sites have hundreds or even thousands of people they list as friends, it turns out that the average user has approximately 110 friends on Facebook. And it is clear that only a subset of these are close friends. To figure out who was close and who was not, we developed a “picture friends” method based on the photographs that people post on their Facebook pages. The idea is that two people who post and “tag” pictures of each other are much more likely to be socially close than those who do not. We studied all the Facebook pages at a college (we can’t say which one), and when we counted the number of picture friends that students had, we found that, on average, just 6.6 were close friends (Christakis & Fowler 2009, 275-6).

Again, those internet friends tend to be people we regularly see face to face anyway. Outside of family they are the ones we feel most strongly tied to. They are people we see regularly face-to-face and know relatively much about.

Malcolm Gladwell, journalist of the social sciences and bestselling author of *The Tipping Point*, points out that when it comes to risky endeavors, the effectiveness of social media is limited by how well the people connected by it already know and trust one another.⁹

The platforms of social media are built around weak ties. Twitter is a way of following (or being followed by) people you may never have met. Facebook is a tool for efficiently managing your acquaintances, for keeping up with the people you would not otherwise be able to stay in touch with. That’s why you can have a thousand “friends” on Facebook, as you never could in real life. <http://www.newyorker.com/magazine/2010/10/04/small-change-malcolm-gladwell>

He goes on to say,

The drawbacks of networks scarcely matter if the network isn’t interested in systemic change—if it just wants to frighten or humiliate or make a splash—or if it doesn’t need to think strategically. But if you’re taking on a powerful and organized establishment you have to be a hierarchy.

A network such as Facebook consists of *horizontal* relationships among equals; a hierarchy is a *vertical* relationship among persons of unequal authority or status. His examples of such hierarchies include the Freedom Riders in the Deep South during the 1960s civil-rights movement or more in more recent clashes between organized citizens and public authorities in the Middle East. Risky change of this kind means following orders and placing yourself in harm’s way or keeping from succumbing to the passions and fears of the moment, all without close monitoring by your superiors. That in turn requires discipline and strong ties. Facebook and Twitter on the other hand are useful for building networks of weakly tied individuals or,

as was the case in Cairo during the “Arab Spring” of 2010, as a tool for coordinating the actions of people who are already strongly tied through other means. Strong ties—e.g. ties of family or among deeply committed coreligionists—bind individuals into effective formal and informal organizations. Though not impossible, it’s very hard to motivate strangers in large numbers to risk making significant personal sacrifices for other strangers or abstract concepts. In other words, to be effective in high-risk situations, social media need to link together people willing to operate in a hierarchy with strong ties among its members who are able to trust (in a sense that I clarify in Ikeda (2012, 121-4)) those “in charge.”

But weak ties are especially important for the operation of the competitive market process (Ikeda 2012, 114-9). For now, the take-away is simply that in order for certain actions to take place, especially those involved in significant social change, social media alone isn’t enough. Rather, personal knowledge gained from face-to-face contact, as well as norms that encourage informal, self-monitoring, remain essential, along with the freedom that allows people to make and break their social ties.¹⁰

But there is no gainsaying that online shopping, for example, has had a dramatic impact on how people interact and the degree to which they do so face-to-face (FTF). Bookstore chains that dominated the urban landscape in the 1990s have been disappearing, albeit not altogether as specialized bookstores remain serving a different niche than before.¹¹ Communication-at-a-distance can of course substitute for FTF contact up to a point, but I would suggest that such technical advance serves more to complement traditional human relations. In that way, mixed primary uses would continue to play a vital role in the generation and use of diversity in cities.

Reimagining “short blocks”

The virtues of FTF contact go beyond the ability to get to know one another on a more personal level and to strengthen ties. In fact, making (and breaking) weak ties is an essential part of a successful urban process (Ikeda 2012, 114-28). From the point of view of the dynamics of economic development FTF contact creates opportunities for people to make new ties, to use them if and when the opportunity arises, and to spread information outside their local networks, whether they want to or not, mainly through weak ties. Much of this can occur deliberately or simply through casual or serendipitous contact, if social institutions and the design of public spaces allow for it. Having so-called “short blocks” is, as we’ve seen, an important aspect of the urban-design aspect.

For most of the 20th century urban-design theory was dominated by the “superblock” concept which had the effect, intended and unintended, of putting as much space as possible between people. This is especially true of the urban approach of Frank Lloyd Wright and Ebenezer Howard, while Le Corbusier is a mixed case. Much of this was in response to the rapidly growing urbanization, and the negative externalities that accompanied it, that took place in Europe during the 19th century and in the United States to Garreau’s “three waves.”

Although malls are partly the unintended consequence of public policy, I will for now interpret them as an attempt by consumer demand to assert itself. Victor Gruen saw in the enclosed shopping mall an opportunity to recreate the vibrant street life of his native Vienna, Austria (Hardwick 2004). Since the 1990s, even as malls grew to enormous size, they continued to develop the earlier malls’ themes of walkability and intricacy. And with the advent of cheaper outdoor heating and cooling technology, malls began to shed their enclosures. These relatively recent urban structures, which we find increasingly in downtowns in more permeable forms, have supplemented rather than replaced the intricate short blocks of historical downtowns.¹²

Reimagining “old, worn-down buildings”

To the extent that old buildings effectively serve to incubate new ideas, they are or will become scarcer, i.e. in order to get more of it you have to give up something of value. And the more willing and able people

are to pay for these spaces, other things equal, the pricier they become. What keeps prices down? On the supply side, every building standing today grows older and more worn down by the moment. For some building owners and in some circumstances the resulting depreciation may be less than the cost of repair and renovation, and if the maximum someone would pay for that space covers those costs, i.e. if someone thinks the value of the refurbished building exceeds the costs, then the renovation will take place. In that case, the price will probably be too high for the bright-but-poor entrepreneurs earlier in our story. But in other circumstances it won't pay an owner to undertake costly renovations, and so the supply of old, worn-down buildings will increase over time. Whether on net the increase in old buildings will outnumber top-to-bottom renovations will depend on how rapidly the demand for "innovation space" rises relative to the supply and also on the rate of new construction, which both competes with old buildings for tenants on the demand side and on the supply side starts the clock on the process of adding to the supply of old buildings.

The fundamental question, however, is how do those who control scarce resources ration them among those who would like to use them? As noted, rich people will tend to shun old buildings unless they intend to renovate them. But who decides who gets space in buildings that go unrenovated? In a market, it's simply a matter of competition among buyers: Whoever is willing and able to pay the most will get the space. Whether through connections or crowdsourcing, people with little financial capital and a powerful vision will struggle to find a way. It's the same way other things are bought and sold on a market where buyers and sellers are free to adjust prices, quantities, qualities, and other relevant factors. So one method of rationing is to let competition of buyers among buyers and of sellers among sellers determine it.

Another path to cheapen space for trial-and-error is for someone to subsidize the experimenters. A time-honored source of subsidy is parents and friends. Other examples of private subsidy include how in the 1970s the Walentas family famously offered low- and zero- price rentals to artists to kickstart development in what has become the wildly successful "Dumbo" district in Brooklyn, New York.¹³ Of course, another way to cheapen space is to get taxpayers to subsidize it.

But the economics of subsidies is entirely different from that of market competition. Whether private or public, subsidies tend to be rationed according to someone's personal judgment on the basis of something other than willingness and ability to pay. How is that different from the market method? To the extent that rationing takes place solely on the basis of ability-and-willingness to pay, the process is entirely *impersonal*: It doesn't matter whether buyer and seller know each other, belong to the same ethnic or cultural group, have the same social connections, and so on. But to the extent that the rationing process is not impersonal, someone who wishes to buy or rent a subsidized space has to demonstrate that she is somehow deserving—e.g. she's a poor artist or an entrepreneur under 30-years old or comes from Iceland like the subsidizer—these factors are more likely to come into play. In other words, to the extent the decision is not market-based, an outcome that most people would regard as fair may be more difficult to achieve because the deciding criteria tend to be more personal.

Note that a private benefactor, or her agent, is still making decisions based on the benefactor's own preferences and budget. As a result, the basis for determining success from the point of view of the ultimate interests involved, whosever they may be, are harder to pin down. Success and failure of any kind of subsidy is harder to determine without the profit and loss signals markets provide. But even though both private and public subsidies suffer from this weakness vis-à-vis pure market competition, public subsidies tend to have softer budget constraints and are further removed from market tests of profit and loss. And since the taxing powers of a government typically make available much larger sums than private subsidies, the consequences of error are, other things equal, potentially much greater and the incentive to avoid error are correspondingly smaller. If people in government had perfect knowledge—i.e. enough knowledge such that they would never regret any policy decisions they make—if they wished to they could plan perfectly. In fact, if knowledge were perfect we would have much less need for cities, as most of the advantages of a great city comes from the unknown and unknowable opportunities they represent. Markets and cities are human ways of discovering and coping with our ignorance and harnessing our creativity.

Finally, another private option that has emerged in New York and other cities where real-estate prices are sky-high, is for several start-up companies to share office space. “Shared office space” and “shared co-living space”¹⁴ highlight another advantage of a private approach over public subsidy: The greater possibility, where social institutions enable economic knowledge and incentives to play the determining role, to spur innovation in the very provision of innovation via profit and loss in unanticipated ways.

Reimagining “population density”

In his 1991, Joel Garreau declared, “Density is back!” (Garreau 1991, 37). After the first wave of decentralizing, low-density urban sprawl following World War II, and the second wave of suburban commercial “mallings” beginning in the 1970s, we have noted how Garreau sees in “Edge Cities”—newly emerged, car-based, multi-use developments—a novel setting for population density. Their “five million plus square feet of office space,” combined with “six-hundred thousand square feet of retail” and “more jobs than bedrooms” reflect an updated, car-based version of Jacobsian urbanism and means that an edge city, at least to those who inhabit them, represents a unique “place” and not a placeless exurb. What once might have been sprawl has evolved, between World War II and the 1980s, into a new kind of city, in Jacobs’s sense of a city as an engine of innovation and economic development (Jacobs 1969, 262).¹⁵

Gordon and Ikeda (2007) propose an alternative to conventional density called “Jacobs Density,” in which we tried to capture the interdependence among proximity, population size, and diversity. We defined *Jacobs Density* as “the level of potential informal contacts of the average person in a given public space at any given time” (Gordon & Ikeda, 2011, 448). It’s the number of possible connections within a given group of people. Jacobs is one of the first to introduce the term “social capital” as it is commonly used today into the literature of social theory (Jacobs 1961, 138) and one of the first to recognize the epistemic significance of what today social-network theorists refer to as “hubs” (Barabasi 2003), which she terms “public characters”¹⁶ who offer what she calls “hop and skip relationships” (Jacobs 1961, 134). Jacobs density then is simply an extension of the idea of social capital. The caveat discussed in Part II about the current over-emphasis among some urbanists on density still holds, however.

But how do cities and the economic processes within them help to balance diversity and cohesion?

IV. THE MARKET PROCESS, JACOBS, AND THE PROBLEM OF DIVERSITY AND COHESION

We have seen how these two apparently opposing forces of diversity and cohesion are essential to urban vitality.

While not all diverse elements in a population are complementary, or may not be at any particular moment, it’s important to note that productive complementarities cannot exist at all unless people perceive¹⁷ differences among people, places, and things. Complementarity presupposes heterogeneity. If each of us saw all people and resources as the same then everything would be perfect substitutes for one another, such as marchers in a parade whose individuality is irrelevant to or indeed incompatible with the cohesion of the overall order, or they would compete equally for our attention. Complementarity would not be possible. And there would be little reason for people to associate with one another unless they saw enough complementary diversity among themselves to make associating worthwhile. (This is a version of the principle of comparative advantage or, as Mises (1963, 159) terms it, the Ricardian Law of Association.)

Beyond merely perceiving differences among diverse elements, for a person to regard those elements as complementary, as fitting together in a way that is more useful to her or to someone else than the individual elements by themselves, she needs to see them as part of a plan (Lachmann 1978, 54). That is, she needs to have a goal in mind that the elements she perceives can in her estimation help her to achieve. If she wants to drive from New York to Chicago then a car and a map—two otherwise very heterogeneous elements—would

be complementary to getting there. On the other hand, for different goal, such as commuting to work, a car or a map or both may in her estimation be unnecessary or counter-productive.

It's also possible that people have a plan, and do see potentially complementary diversities around them but a community's rules, norms, or conventions that somehow discourage engaging with outsiders or engaging with them only so far—"we don't associate with those kind of people"—prevent their harnessing and thereby devalue those diversities. In such cases what make a person, place, or thing unique or different from others would be an obstacle to social cooperation. In other words, the value of diversity would fall to the extent that people are prevented or discouraged from relying on or interacting with that which is different from themselves. Heterogeneity would be an obstacle to cohesion.

Again, the questions we have been addressing are: What are the conditions that enable complementarities and cohesiveness to emerge and be maintained among diverse, heterogeneous persons, places, and things? What factors determine the balance between diversity and cohesion? What are the forces that maintain or adjust that balance under changing conditions (which Jacobs refers to as "dynamic stability" (Jacobs 2000, 84))? How does a city successfully enable this? In particular, in the presence of self-interested persons with limited information operating in a world of scarce resources, how to encourage them to choose freely (rather than through force) to associate with strangers at all?

We have noted earlier in our discussion of Jacobs's "four generators" that if the inhabitants of a city don't feel safe in public, if they are afraid to allow themselves to be vulnerable among strangers (which is a form of trust), there is little chance that they will want to seek out productive complementarities with others they don't know or who are outside their immediate social network. If people in a settlement don't generally feel safe in public spaces, they would be discouraged from exploiting their diversity or uniqueness. Complementary diversities might indeed exist, but it would not be to anyone's advantage to connect with strangers, or as much of an advantage as they could be. Other things equal, the absence of a general feeling of safety would at the same time discourage anyone from choosing to increase her uniqueness by differentiating how she looks and behaves or what she does. Feeling unsafe in public hampers the creation and utilization of diversity, and perhaps channels our energies in ways that are less open to people we don't already know well, even as it retards the development of diversity, either through personal development or the immigration of socially different people into a city.

While hiring people who specialize in maintaining public safety, e.g. a police force, may be one way to achieve a feeling of public safety, a successful city is one that enables safety to arise with a minimum of conscious direction or professional policing. As Jacobs points out (1961, 32) if the only way to maintain public order is by placing formal security on every street corner, that's a sign of a failing city. How then have cities historically achieved public safety informally?

Jacobs begins with the observation that we are less likely to behave in a threatening or provocative manner if we are being watched than if we don't think we're being watched. So in most cases, the more likely it is that at any given moment we believe someone is watching us, the more restraint we will tend to show. Contrariwise, if there is no one else around to see us then, other things equal, we will tend to feel less constrained to act aggressively toward others. It's probably not even necessary to believe that someone will actually intervene; often the mere fear of public disapprobation is enough for us to refrain from anti-social conduct or at least to act with greater circumspection.

The first step then is to find a way to get more unofficial "eyes on the street" or people who, while they may be strangers to us, are still familiar with the norms of the particular public space they are in to know whether those norms encourage or discourage private intervention should a threatening situation arise. That is, can we trust that if we get involved someone else has "got our back" so that we won't be acting alone. Keep in mind though that the number of people who occupy the same public space, say a public park, may vary a lot depending on the time of day, the day of the week, the weather, the season, and so on. Different people come out to use the public space the same way and the same people will at times to use it differently. Compelling people to use public space at different times, to attend parades or rallies for instance, may be a way to achieve this but at the cost of reducing personal freedom and a loss of spontaneity. If that's not ap-

pealing to us then the second problem is to provide positive incentives to get a lot of people to use public spaces at all times.

If we look around our own neighborhoods, we'll notice that people will use public space voluntarily if there's something to attract them into the public space, or, in other words, if there is a diversity of *primary uses* in that space: i.e., different uses of different spaces or different uses of the same space at different times. It's also the case that people attract people, in part because there is "safety in numbers," which is why the condition of *high population density* is important. We may have no particular reason to go out in public other than that we like watching other people, and perhaps like being watched by them in turn. This kind of land-use diversity within the same neighborhood or location of the city, created especially (though not exclusively) by people supplying or demanding different goods and services, are attractors of people who unintentionally provide a public service: "eyes on the street." And the more diverse the uses of public space—for schools, residences, offices, museums, movie theaters, night clubs, shopping, commercial, etc.—the more likely that these attractors will operate at different times.

We have seen that commercial office space gets people to use the streets, sidewalks, and plazas in the morning, at lunch, and in the late afternoon. Residences work this way in the morning and at night. Movie theaters draw throughout the day but serve especially well at night and on weekends, as do museums, bars, restaurants, and coffee houses. Even municipal buildings such as post offices and courthouses serve this limited function. But so-called "civic centers" between 6pm and 6am or on weekends tend to be deserted and lacking in interest. This is true of any single, massive use, governmental or private. The absence of *short blocks* and the presence of *border vacuums* can easily drain the life out of a neighborhood.

While in *Death and Life* Jacobs's main focus is on the diversity of land use rather than directly on the diversity of people, people will use a space, say a store front as nail salon or a coffeehouse, if they are allowed to, depending a great deal on their personal knowledge and situation or what economists call human capital and comparative advantage. Moreover, the kind of diversity that attracts people and provides the bedrock attribute of safety in a great city is not only diversity of land use (on the supply side) but also a diversity of tastes and an openness to or at least a tolerance of the new and the different (on the demand side).

Public Space versus Private Space

I have been using the terms "public space" and "private space." Let me clarify their meanings. Simply put, a *public space* is a place where you expect to encounter people who are to some degree strangers to you. These people include people you pass on the sidewalk for a moment and never see again, a clerk at a supermarket checkout counter whom you might have dealt with before, people in a restaurant or a shopping in a mall, a service representative at a car dealership, the plumber working on your kitchen sink, a specialist whom your primary physician refers you to, a neighbor that you may have met once at your child's ball game, or a new customer walking into your store. They range from utter strangers to what William Whyte (2009) has called "familiar strangers." They may be "socially distant" from you with different language, culture, ethnic, and religious backgrounds, but not total strangers, although they likely started off that way. A *private space* then is a place where you do not expect to encounter such strangers. These include your living room, private club, church, or CIA headquarters; and perhaps also the lunchroom at work.

So as I'm using the terms here, "public" and "private" have nothing necessarily to do with whether the space is controlled by a government entity or is privately owned. A coffeehouse may be privately owned but a public space in our sense, while CIA headquarters in Langley, Virginia is a publicly (government) owned place but it is a private space.

Of course, at any given time a given space could range somewhere in between public and private: a coffeehouse where you know some of the baristas and where there are a few regular customers whom you feel comfortable enough to carry on a conversation. And most offices have designated public spaces where customers interact and private spaces where workers and suppliers operate. So, again, the distinction between

public and private space has nothing directly to do with whether or not a government provides or occupies a particular place, but on whether or not people normally expect to encounter strangers there.

The degree to which people feel comfortable in a public space depends, other things equal, on how safe they feel around strangers. The larger the settlement the more likely it is you will encounter strangers in the normal course of a day, so safety in this sense becomes potentially more of a challenge in a given place the larger its population. But as we've seen, living cities solve this problem largely by the informal mechanism of land-use diversity and that Jacobs offers one approach. But what else would enable and encourage people to voluntarily provide land-use diversity? What other mechanism would transform diversity into a coherent set of complementary uses, and turn a potential social liability into an asset?

Markets Turn Diversity into Complementarity

That alternate mechanism consists of the incentives, institutions, and resulting choices that drive the market process. And the organizing principle of the market process as well as of the living city is competition, supported by norms such as fair play, honesty, reciprocity, and trust. A community of people with diverse, socially distant backgrounds creates a wide range of profit opportunities, of potentially complementary diversities. Other things equal, the more diverse they are the wider will be the range of such opportunities. There are profits to be made not only by substituting one use for another—e.g. a Shake Shack for a Burger King—but more importantly from the standpoint of innovation by bringing complementary uses together, e.g. connecting a car owner with time on her hands with someone who needs and is willing to pay for a ride. And in the urban-process, alertness to such profit opportunities and the discovery of radical ignorance is the role of entrepreneurship (Kirzner 1973). Thus, entrepreneurial competition is one of the main cohesive forces that transforms heterogeneous elements into complementary uses.

Of course, this discovery process is never perfect. But if the rules, norms, conventions, institutions, and organizations of a social order enable flexible mobility and adjustment in the face of unexpected change, if there is tolerance of the practice of and outcomes from the competitive process, the consequences will tend to be coherent and reasonably stable.

It's the same with science. When the practice of science is healthy, beliefs old and new are open to challenge and radical criticism. True science is never settled. Likewise, in a healthy urban-based economy old and new practices are subject to radical, ceaseless, creatively destructive competition. But as with science, such criticism requires radical tolerance of the strange, the residents of a living city need to be tolerant of ideas, services, and lifestyles that may offend them to some degree. Free science, free cities, and free societies thrive with equal doses of radical criticism and radical tolerance. But the balance is crucial, and when it's right entrepreneurship will flourish. Tolerance-without-criticism and criticism-without-tolerance lead by different routes to uncreative, social torpor.¹⁸

Entrepreneurship, in the form of coordinating complementary resources, takes place in both private and public spaces. People working within a private space such as a business may discover new ways of doing something old, or a new use for an existing factor of production or process, or discover an innovation that cuts across existing processes and customers. But for our purposes it's worth emphasizing the cultural and commercial entrepreneurship that takes place in public space rather than private space. It's in public space that the main challenge of the urban and market processes lies and where the heavy lifting of entrepreneurially competitive cohesion takes place. Economic development involves new ways of thinking that, while not necessarily dependent on breaching existing social networks, offer greater potential when local agents can connect despite long social distances (Ikeda 2012) And for this, as we have seen, multiple attractors, the intricacy of short blocks, population density, and widely affordable space for experimentation, represent elements in a complex reciprocating system (Ikeda 2012a). The result of these interactions is a social order that Jacobs has characterized as “organized complexity” (Jacobs 1961, 432).¹⁹

V. CONCLUDING THOUGHTS

In her 1961 classic, Jane Jacobs explicates four factors that together generate diversity in public space. I believe these four “generators of diversity” remain a useful framework for helping us to understand how cohesion emerges from diversity, but one that may be extended and somewhat reinterpreted in the way I have done here. Jacobs also explains how social networks, which are the result of as well as generators of trust, also enable all that diversity to cohere. But social networks are only one way that a living city can make heterogeneous elements of its space, as well as its people, complementary. The other way is through the competitive market process, which offers opportunities for alert entrepreneurs to profit from turning the diversity that living cities continually generate into a rich, complex, dynamic, and unpredictable mosaic that hangs together through time.

The noted urban planner Alain Bertaud offers the following example of the value of diversity and density:

For instance, a lawyer who specializes in European agriculture regulations would not be very productive if she were surrounded only by people with the same skills. To be effective, she will have to be in close contact with other specialists in taxation and import tariffs, and she will need to engage the services of workers who will fix her computer, clean her office, deliver coffee to the board room, and prepare and serve the food that she will eat at lunch. In the same way, an unskilled industrial worker is likely to work in a factory requiring a large array of workers specialized in electronics, mechanics, labor law, insurance, and so on (Bertaud 2018, 32).

When Jacobs’s four conditions are operating as a reciprocating system (Jacobs 1969, 234) and the entrepreneurial-competitive process is allowed to operate in the urban market, diversities and heterogeneities transform into complementarities, creating a coherent social order in which potential conflict resolves into social cooperation and mutual prosperity*

NOTES

1. In Section IV I define “public space” in contrast to “private space.”
2. In her 1961 book Jacobs mainly emphasizes the role of social networks and social capital as the principal cohesive forces binding all that diversity together. In Ikeda (2012) I apply social-network theory to this theme and explain how market-process theory complements Jacobs’s framework.
3. Here is a simple but illuminating analysis of the relation between the length of blocks and the amount of street frontage by Andrew Alexander Price. <https://marketurbanismreport.com/optimizing-street-grid/>
4. See for example <https://www.cnn.com/2017/10/26/world/industrial-renovation-one-square-meter/index.html> and <https://architizer.com/blog/inspiration/collections/industrial-to-residential-conversions/>.
5. I have been able to find little written evidence that Jacobs would approve of the landmarking of entire districts (West Greenwich Village being the sole exception), especially to the extent to which it has grown today in Manhattan, where over 25% of developed real estate has been landmarked. See this letter: <https://gvshp.org/blog/2016/05/05/continuing-jane-jacobs-work/>. My guess is that Jacobs’s might have referred to this kind of preservation as “taxidermy” (Jacobs 1961, 373).
6. This is a theme I discuss below but more fully in Ikeda (2012a).
7. See for example her references to Tokyo, London, Paris, Moscow, and elsewhere in Jacobs (1969).
8. In the preface to the 1993 Modern Library Edition of *Death and Life* Jacobs acknowledges Jacobs evidently concedes that her analysis complements and corroborates the intuitions of “foot people” rather than “car people.”

9. In Ikeda (2012) I characterize this as a “strong tie.”
 10. See also https://fee.org/articles/the-limits-of-social-media/?utm_medium=related_widget; <https://fee.org/articles/facebook-and-familiar-strangers/>; and <http://www.nber.org/papers/w23608>
 11. See <https://fee.org/articles/bookstore-wars/> and <https://fee.org/articles/the-breezes-of-creative-destruction#axzz2biYFHgiJ>
 12. On some of this evolution see this <https://www.forbes.com/sites/jonbird1/2018/06/17/the-future-of-the-shopping-mall-is-not-about-shopping/#1efeb8fb5cf2> and also this on Leon Krier’s “Cayala” in Guatemala city <https://www.cnu.org/publicsquare/ambitious-classical-town-rises-guatemala>.
 13. See for example https://www.nytimes.com/2008/03/06/arts/design/06dumb.html?rref=collection%2Ftimestopic%2FWalentas%2C%20David%20C.&action=click&contentCollection=timestopics®ion=stream&module=stream_unit&version=latest&contentPlacement=5&pgtype=collection
 14. For shared office space see for example <https://www.forbes.com/sites/larryalton/2017/05/09/why-more-millennials-are-flocking-to-shared-office-spaces/> and for co-living space <https://www.architecturaldigest.com/story/what-its-like-to-live-with-complete-strangers-common-co-living>.
 15. But some of the data show only a weak relation between density and development.
To measure whether density is related to the kind of innovation implied in Jacobs’s definition of a city, Peter Gordon and I examined the relation between population density and a proxy for innovation (human capital, actually); namely, the percentage of the population holding a master’s degree or above. We found that at the city-level this relation appears to weakly hold, but looking closer at the micro-level (at PUMS data on zip codes from the American Community Survey) the relation vanishes (Gordon & Ikeda, 2007). Even if we are mindful of the limitations of population density as a defining characteristic of a city, we need to ask what’s going on here? One possibility is that there is interaction across rather than within PUMS in a city that are important for the development of human capital. This is an area of future study.
 16. “A public character is anyone who is in frequent contact with a wide circle of people and who is sufficiently interested to make himself a public character” (Jacobs 1961, 68).
 17. “Perceive” here means both 1) become aware of or 2) subjectively believe the existence of and so may be true or false (i.e. result in net gains or not).
 18. I offer my thoughts on tolerance and criticism in this short essay: <https://fee.org/articles/the-fruits-of-imperfection/>
 19. Organized complexity involves “dealing simultaneously with a sizeable number of factors which are interrelated into an organic whole” (Jacobs 1961, 432; emphasis omitted).
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Cellular Democracy as a Necessary Condition for Completely Spontaneous Urban Planning and Order

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Abstract: There are two basic forms of representative democracy: mass democracy and cellular democracy, the latter consisting of small-group, bottom-up voting. Just as biological bodies are based on cells, cellular democracy divides the political body into neighborhood cells, and the residents vote only for neighborhood councils. A central concept of public choice theory is the power and subsidy-seeking of special interests who supply funds to candidates. Special interests influence urban planning with centralized zoning, building codes, master plans, and permit requirements. Mass democracy, in which few voters personally know and meet the candidates, generates an inherent demand for campaign funds. Its antidote, small-group voting, better reflects the desires of the public for public goods, including urban planning, and by decentralizing power, better facilitates market-based spontaneous planning.

I. INTRODUCTION

Neighborhood democracy provides a framework for the decentralized provision of the public goods which do not have significant economies of scale. Private or neighborhood-controlled streets are economically feasible when a firm or association controls the space and the common elements of a community, and can therefore collect the associated rentals from the members.

The authorities of a city usually seek to control its public works, as evidenced from the lack of ability of residents to privatize or decentralize their neighborhoods. One notable exception is St. Louis, Missouri. Since the middle 1800s there have been “private places” in St. Louis and neighboring towns in which the streets are owned by private contractual associations. The private places in St. Louis have persisted even though the homeowners do not get any reduction in their property or other taxes by paying to maintain their own streets. If they could get a rebate for the cost savings to the city, then private and governmental streets would have an equal financial status, and there would be much more privatization and localization (Foldvary 1994).

The local governance of streets facilitates the reform of the relevant public finance. Civic associations or proprietary communities typically tap sources such as the rental value of membership, or the rental value generated by the services. Such private-sector financing is more efficient in both having a lower economic burden and in being more directly re-

lated to the benefit provided. The decentralization of governance to neighborhood associations can induce a restructuring of the public finances from taxes on income and sales to levies based on the locational rents. Rent-based payments prevent the implicit subsidy of public goods into higher rent, and the double billing of tenants who pay both taxes on their wages and spending, and also the higher rent.

Revenue transfers influence the placement of governmental powers. Centralized financing complements national or large-scale planning by making local governments dependent on funds from the national government, inducing them to obey national and provincial rules. For example, the US federal government induced a greater use of city-wide planning with the passage of the Housing Act of 1954, which requires cities to enact a comprehensive city plan in order to obtain revenue sharing for urban renewal (Staley 2002).

An urban plan is a design for the physical elements of a city, such as the streets, blocks, land use and transit, and also for the operational elements such as the governance and finance. Plans by developers include not only the physical elements but also the post-construction administration of the community, such as with homeowner associations. Hardware is complementary to software, and the design of the hardware (buildings and streets) implies subsequent software (administration and finance). The governing software has been mostly condominiums and residential associations, but cellular democracy would also serve while keeping the governance within the public sector.

The local governance facilitated by small-group democracy also fits well with the knowledge problem analyzed by Friedrich Hayek. Economic knowledge, such as the how-to of production, is highly decentralized, changing, and tacit. Thus spontaneous planning, tapping local knowledge, is in harmony with decentralized governance.

Civic services by locally governed communities financed from site rents would have a significant impact on infrastructure planning. The maximization of rental income and avoidance of subsidized utilities and other services at the urban fringes would induce compact structures that would prevent both sprawl and blight. Tolls that prevent congestion can be applied to the local streets and boulevards. Local planning, and the absence of property taxes on improvements, would better activate the city centers and avoid subsidizing the sprawling fringes.

Spontaneous planning works better with private contracts such as easements, liens, covenants, and community bylaws, rather than master-planned zoning, building codes, permits, public hearings, and development restrictions. Freehold planning can be kept beneficial by competition. The proprietors depend on voluntary tenants and customers, and they thus profit from pleasing satisfied users. Thus small-group democracy, spontaneous urban planning, rent-based public finance, and contractual rules, are complementary.

“Mass democracy” is defined here as “voting by groups so large that the typical voter has no personal knowledge of the candidate and little personal access to his representative” (Foldvary 1998, 203). The German sociologist Max Weber used the term in connection with bureaucracies. In the analysis of Max Weber (1946, 224), “bureaucracy inevitably accompanies modern *mass democracy* in contrast to the democratic self-government of small homogenous units.” In mass democracy, the *demos*, i.e. the people, “never ‘governs’ larger associations” (225). Mass democracy only changes, relative to other forms of governance, how the leaders are selected.

Weber also wrote (ibid.) that “the progress of bureaucratization in the state administration itself is a parallel phenomenon of democracy” Mass democracy generates, via bureaucracy, large-scale planning, centralized taxation, and centrally imposed rules. Cellular democracy is therefore necessary for a thorough implementation of spontaneous urban planning and order.

II. MODELS OF DEMOCRACY

Winston Churchill (1947) stated that democracy is the least effective form of government, except for all the others. This proposition recognizes that democracy is flawed but asserts that no other form of government is known to be superior. But this least-bad proposition fails to distinguish various structures of democracy, and the possibility that different variants of democracy have significant variation in typical outcomes.

As noted by Malinvaud (1989), two key issues concerning the degree of centralization of government are the information held by the agents and the incentives to behave in conformity with collective efficiency. Local council-based cellular democracy, as described here, would differ significantly from mass democracy on both variables.

The two basic models of mass democracy operating in contemporary countries are the geographic model and the party model. In the party model, voters choose among political parties. Each party selects a set of candidates, which are voted on as a package. The party model is often associated with the parliamentary system of governance and with proportionate representation, in which a governing coalition requires a majority of the representatives. A problem with the parliamentary system is the possibility of an unstable government dependent on the minor parties of a coalition.

In the geographic model, voters in a territorial district choose among candidates representing that district. In the case of U.S. presidential elections, the districts are the states, whose electoral-college votes are then added up as blocks. Other districts include states and smaller districts within states for federal and state representatives.

The geographical and party models have in common the election of representatives by a large mass of voters. These two models are thus variants of the more general mass-democracy model. In that model, a large number of voters elect an agent or set of agents whom they do not personally know, and whose characteristics (whether actual or concocted) are transmitted to the voters by the mass media. This informational method implies that substantial funds be raised to pay for the media exposure. The high cost of the media, the rational ignorance of voters (the typical voter not receiving a financial benefit from an investment in information), and the large volume of competing candidate-advertisers, implies that the message presented in the media be simple and compelling. Hence the messages tend to portray issues and images the voter already has sympathy for, so that this sympathy be transferred to the candidate as well. Negative advertisements are part of this strategy, inducing antipathy against other candidates and parties.

The model presented and analyzed below, small-group democracy, is an alternative to the mass democracy both of the party and the geographic type. Before analyzing how cellular democracy would affect outcomes, I will briefly examine traditional constitutional structures, and why they fail to constrain mass democracy and the power of special interests, including centrally-controlled urban planning.

III. THE FAILURE OF CONSTITUTIONAL CONSTRAINTS

In the *Calculus of Consent*, James Buchanan and Gordon Tullock (1965) analyze “the calculus of the rational individual when he is faced with questions of constitutional choice” (vi). A key problem in governance, recognized by James Madison and the other Founding Fathers of the U.S. Constitution, is the rise of factions or special interests, which, as stated by Buchanan and Tullock, “try to use the processes of government to further their own differential or partisan interests” (ibid., 25). These interests engage in seeking transfers or rents, which not only divert resources from the public, but, as Tullock (1967) demonstrates, is itself a waste of resources.

The three main methods used in the U.S. and state constitutions to limit the excessive power of factions have been federalism, the division of government into distinct branches, and constitutional restrictions. U.S. federalism divides government into federal and state governments (and also indigenous national or tribal governments), which in principle have separate parallel sovereignty. The division of governments at both federal and state levels into three branches (legislative, executive, and judicial) provides for separate, but interlinked, powers at each government level. Constitutional constraints on the branches and governmental divisions, and the recognition of individual rights, further limit the powers of government.

John Arthur (1989, 12) notes that the Federalists recognized that “majoritarian government (which the framers refer to as ‘democratic’) is unable to protect liberty or to promote the general welfare.” Despite the presence of three power-limiting methods, governance in America has become ever more centralized, and the trend has been for both federal and state governments to grow as a proportion of GDP (see, for example, Stansel

and Moore 1999). Concentrating taxation at the federal level, and then using conditional “revenue sharing” to mandate state law and expenditures have circumvented the federal structure. The division of powers has been undermined by political party politics, pitting Democrats of the executive and legislative branches against Republicans of both branches, hence unifying the branches. Also undermining the division of powers is the dependency of the courts on federal appointments (especially since the Great Depression, when president Roosevelt threatened to pack the court) and, as argued below, by the inherent structure of mass democracy which induces transfer seeking by factions and special interests.

Constitutional constraints have been continuously undermined by the exploitation of ambiguous and vague constitutional language, accommodated by a judiciary which for the most part has not sought to challenge legislation that pushes the constraints. A well-known example is the loose interpretation of the interstate-commerce clause into a rationale for any kind of regulation of commerce and consumer choice.

As Buchanan (1980) notes, rent seeking itself creates barriers to reform, and so its reform requires constitutional change, rather than just operational reforms under the status-quo constitution such as campaign-finance reform. The direction of the more effective fundamental constitutional reform was indicated by Buchanan and Tullock (1965, 114-5) in their conclusion that “where possible, collective activity should be organized in small rather than large political units.” Olson (1971, 63) also theorizes that in large groups, the incentive is lacking to avoid transfer seeking, but that incentives could be present with smaller groupings.

IV. PUBLIC CHOICE AND DEMOCRACY

A key principle of public choice theory is that concentrated benefits induce organizing for rent seeking, or the seeking of transfers such as subsidies, legal protection, and other favorable legislation (Olson 1971). In mass democracy, the voters in a district are numerous, hence the costs imposed by transfer-seeking are spread thinly among voters and consumers, and often the knowledge of such costs is opaque, not clearly evident to the taxpayer or voter. Special interests thus have the incentive to fund the media campaigns and provide subsequent favors in return for transfers (which may of course include the prevention of negative transfers). As Rowley (1993, 1) puts it, “majoritarian democracy generates a mercantilist economy.” Rent or transfer-seeking is thus the malady of democracy long recognized in public choice theory. As stated by Wagner (1988, 438), Wicksell long ago recognized “that a constitutional order grounded in parliamentary majorities was inconsistent with the liberal or consensual value premise.”

However, since the alternative is deemed to be dictatorship, the typical sentiment, as stated by Churchill, is that dysfunctional mass democracy is the best political alternative, since with dictatorship, a tyrant may extract even more rent and distribute it much less equally (empirical studies of mass democracy versus dictatorship have not, however, determined clear economic outcomes; cf. Nalin and Torstensson 1995).

This least-bad proposition ignores the possibility of forms of social choice other than mass democracy. An examination of the alternative presented in this paper, *cellular democracy*, is in the domain of constitutional economics. As defined by Buchanan (1990, 3), “constitutional economics directs analytical attention to the choice among constraints.” This analysis is thus a constitutional comparative study of the two alternative models of democracy.

V. CELLULAR DEMOCRACY

The term small-group democracy will refer to the generic structure of voting in small groups which are in some federated system, while “cellular” will refer to the specific small-group structure presented here which includes also a particular set of rules regarding the federal structure and voting rules.

The term “cell” originally meant a small room or hut. Biologically, a cell is the basic unit of an organism, all tissues and organism being composed of cells joined into various organs and structures. In what we term “cellular democracy,” a jurisdiction such as a county or city is divided into small cells, as neighborhood dis-

tracts. The lowest level of community in society is the individual (or household). The next highest level is the neighborhood cell or district. In some communities, the neighborhood boundary is clear from the institutional structure, such as a village, small township, a condominium association, or homeowners' association. In most cities, neighborhoods do not have official governance or established boundaries, but there are voting precincts and informal neighborhood names which could be adapted.

Cellular democracy sets boundaries for local neighborhoods of some 500-1000 persons, or 200 to 300 households. The tiny population size, such as 500, is a suggestion, based on having a community small enough so that the voters could personally know the candidates for the council, but large enough to have sufficient candidates. With a voting base that small, candidates can avoid the expense of mailings and media advertising. They can easily cover all the voters door to door and host local meetings. Those who wish to be candidates may do so at little cost. Once elected, the candidates are easily accessible, both because they are local and because the constituent base is small.

Many neighborhoods are already organized as contractual associations, which can serve as the neighborhood. Condominiums, residential or homeowners' associations, housing cooperatives, and democratically-run land trusts, often already have elected boards or councils. Quite likely, an association of about 1000 persons may wish to maintain separate elections for its board of directors and the council forming the base of cellular democracy. Large residential associations are often already decentralized into smaller subset communities. In dense urban neighborhoods with apartments and a landlord, the apartment complex, already a community, would serve as the neighborhood cell.

The councils would represent residents, not businesses. The owners of residences would already be represented in their residential communities. However, commercial real estate, such as shopping centers, could form councils and sit in on the residential council meetings, but without a vote.

In cellular democracy, each neighborhood community elects representatives and alternates to its council. The neighborhood shall be designated as the level-one community, level zero being the individual voter. A rule of cellular democracy is that any council member may be removed whenever a majority of the voters desire. The small size of the neighborhoods makes it feasible to circulate a petition to recall a council member and then hold an election to replace the representative. The neighborhood members and their council decide the length of the term of office and scheduled elections.

A region containing about twenty neighborhoods would then have a level-2 council. Each level-1 council elects a regular representative and an alternate to the level-2 council from its own regular council membership; the alternate may participate in the council but does not vote unless the regular representative is absent. The alternate at the level-1 council would then replace the regular member now representing level-1 at the level-2 council. The representative to the level-2 council may also be recalled at will by the level-1 council and replaced by another member.

The suggested number of level-1 councils represented at level-2, about twenty, is intended to be small enough so that the level-2 representatives could be personally known to the level-1 electors. Several level-2 districts would then belong to the next higher-level (regional) council. The level-2 district councils elect the council of level 3, each level-2 council again electing a regular and an alternate representative to level 3. The alternate from the level-1 neighborhood then replaces the level-2 representative elected to the regional council at level 2. By electing alternates, each lower level council thus retains representation at the next higher-level council when its member is elected to a higher-level council.

Ever higher-level councils are elected up to the highest-level council for that jurisdiction, designated as level h. Hence, in the U.S., Congress would be elected by the legislatures of the states, possibly preserving the equal representation in the Senate, while being represented proportional to population in the House. Note that prior to the 17th Amendment, the U.S. Senate was elected in exactly this way.

The level-h council elects from its membership an executive and other officers. Alternate representatives replace the executive and possibly other officers. The level-h council members have all been successively elected by lower-member councils down to level 1 and are in effect on leave from the lower-level councils. Hence, if any lower-level council removes its higher-level representative, that person is then removed from

their higher-level council. The level-1 council that originally elected a representative could thus remove a level-h individual.

Cellular democracy removes much of the demand by candidates for campaign financing, since the level-1 candidates have direct and inexpensive access to the voters. There is also less reward to suppliers, since they are less likely to obtain transfers. The lower-level councils are better able to monitor the higher-level ones, being a small group of electors. Moreover, the ability to recall any representative makes them vulnerable if they are seen to favor special interests at the expense of the public.

Voting in cellular democracy should be done with paper ballots, to avoid hacking. Since each election is small-group, and the counters would be volunteers, this transaction cost would be minor.

VI. ANARCHIST DEMOCRACY

The concept of bottom-up multi-level governance is not new, but the idea has not often been designed in detail, nor has it penetrated to academic or popular discussion. The concept was originated by anarchists before the Bolsheviks adopted it. For example, as stated by Marshall Shatz (1990, xxxiii) in his introduction to *Statism and Anarchy*, the Russian collectivist anarchist Michael Bakunin advocated “a new society organized ‘from below upward,’ composed of small voluntary communities federating into larger associations for larger purposes. This was the structure that was to replace the state, with its hierarchical form of organization ‘from above downward.’”

Bakunin (1990, 13) envisioned “a federal organization, from below upward, of workers’ associations, groups, communes, districts, and, ultimately, regions and nations.” He deplored representative democracy, i.e. the mass democracy of representatives directly elected by all the voting citizens, as “the pseudo-sovereignty of a sham popular will” because, in practice, it consists of state centralization and the subordination of the individually sovereign people “to the intellectual minority that governs them.”

For Bakunin, the abolition of the state would not result in atomistic individuals, as envisioned by some “anarcho-capitalists” or individualist anarchists. Rather, Bakunin’s (1990, 90) vision was that “on the ruins of political states there will be created, in complete freedom and organized from below upwards, a voluntary fraternal union of voluntary productive associations, communes, and provincial federations ... free of all state supervisors, taxes, tariffs, restrictions, regulations, prohibitions, permissions, and applications.” Bakunin’s peaceful anarchism is founded on voluntary association, and with most of the population belonging to the federated structure all the way to the continental or even global council, the system would preserve what John Hospers (1976) posited as the greatest benefit from a state: a uniform rule of law, both because the laws of the top level would be geographically large, and because the federation or network would provide mutual aid services, however different may be the local laws and cultures.

Anarchists such as Bakunin recognized that representative democracy, even with constitutional rights and governmental constraints and division of powers, does not inherently preserve liberty. The literature of public choice provides both the logic and the evidence of the transfer-seeking, tyrannous, debt-seeking dysfunctions of both special-interest minorities and median-voter majorities. As stated by Bakunin (1990, 114), “so-called constitutional forms, or forms of popular representation, do not impede state, military, political, and financial despotism. Instead, they have the effect of legitimizing it and giving it a false appearance of popular government, and they can significantly enhance its internal strength and vigor.”

The concept of a bottom-up federation of voluntary communities was also envisioned by free-market private-property anarchists. Heath (1957) envisions the replacement of government by proprietary communities, such as those existing today for hotels, shopping centers, and office buildings. A private community could replace the functions of government for a geographic neighborhood (Foldvary 1994). These communities or firms would then federate, creating a multi-level governance structure extending to a continent or the world made up of proprietary communities. However, Heath, like Bakunin, did not present any details on how lower levels would select representatives to the higher levels.

The Spanish anarchist movement was essentially Bakuninist in that it favored an organization of society into localized collectives which would federate (Peers 1938). Hence bottom-up democracy is an old anarchist idea in which society is not atomized into independently contracting individuals, but a hierarchy of small organizations, each in voluntary union with the others. The Bolsheviks adopted this anarchist multi-level concept and proposed to implement it in Russia after the revolution. The Union of Soviet Socialist Republics was conceived as having power centered in the local soviets, with the revolutionary slogan, “All power to the Soviets!” The councils were to represent the workers, soldiers, and peasants. Lenin (1917) states that “things are moving by fits and starts towards a point where power will be transferred to the Soviets, which is what our Party called for long ago.”

In practice, of course, we know that the Communist Party controlled the government with top-down authority. But that does not detract from the features of the original anarchist model. Mass-democracy politics presents a barrier to the implementation of cellular democracy, thus it would likely require a mass movement to become implemented. Once implemented, the incentives would be transformed, and thus could well be a stable equilibrium of constitutional choice.

VII. THE COMPARATIVE CONSTITUTIONAL SYSTEMS AND EXAMPLES

A comparative analysis of mass versus small-group democracy applies public-choice and constitutional economics to large versus small groups, plus some particular institutional rules to give the small-group structure greater specificity as cellular democracy. The comparative systems issue is whether cellular democracy provides a greater immunization against the dysfunctional features of democracy, the seeking and taking of transfers, rents, and privileges.

Mass advertising could still take place in small-group voting, such as by the political parties which candidates belong to, or by transfer-seeking interests, and so in addition to the local personal campaigning, the parties could try to sway voters to elect their candidates. But this does not detract from the face-to-face potential of the local election process. With mass democracy, the thousands and millions of voters do not personally know the candidates, and the candidates then must project an image over the mass media. The need to finance the media messages is met with a supply of funds from special interests, which are later rewarded with transfers and privileges. While with a small electorate, political parties might still find it worthwhile to have media messages, special interests would find much less reward in doing so, and personal campaigning could overcome the influence of party propaganda.

Such multi-level governance has been implemented in part by various organizations. In the U.S., the Republicans and Democrats have such a bottom-up multi-level structure; the county central committees or officers select the state-level committees. There are many governmental agencies whose boards are elected by lower-level governments; regional transportation agencies are a typical example. International organizations such as NATO and the UN have representatives from their constituent country members.

Bryan and McClaughry (1989) propose an electoral reform for Vermont, where many small towns still exist, which would partially implement this structure. In their system, much of state governance would devolve to a “shire” (derived from the old English shire) one level above the small town or city neighborhood. They emphasize that genuine representative democracy depends on having a vital direct democracy at its base. In their plan, however, the citizens still directly elect the state legislature, whereas with cellular democracy described here, the next-lower governance level, such as counties, would elect the state legislature.

While there are no complete empirical cases with which to test the rent-seeking nature of cellular democracy, partial tests could be made by comparing regional government agencies elected directly by voters with those elected by lower-level governing councils. But these limited results would not necessarily imply conclusions about the complete form of cellular democracy, that is, a bottom-to-top multi-level system.

Ebenezer Howard developed a theory of civic associations in *Tomorrow: A Peaceful Path to Real Reform* (1898), with the second edition entitled *Garden Cities of Tomorrow* (1902). The basic idea was a vol-

untary plan of public finance using leaseholds of land: “One essential feature of the plan is that all ground rents, which are to be based upon the annual value of the land, shall be paid to the trustees, who, after providing for interest and sinking fund, will hand the balance to the Central Council of the new municipality, to be employed by such Council in the creation and maintenance of all necessary public works - roads, schools, parks, etc.” (1902, 51). Howard credits Thomas Spence with having thought of the concept in 1775 of assembling landed property and letting it out on leaseholds (*ibid.*, 119-23).

VIII. PUBLIC FINANCE AND SECESSION

Additional constitutional rules would strengthen the decentralist tendencies of the bottom-up multi-level structure. Nelson (1999) proposes a policy for converting neighborhoods to residential associations, similar to the policy in St. Louis, where neighborhoods may privatize (Foldvary 1994). Under Nelson’s plan, state law would permit property owners to petition to form a neighborhood association within a proposed boundary. Approval would require an affirmative vote both of 90 percent of the total property value affected and 75 percent of the individual unit owners. All property owners in the privatized neighborhood would be required to be members of the association and pay assessments.

Foldvary’s (1994; 2005) proposal for a neighborhood conversion makes the membership in private communities strictly voluntary. Any person or organization having title to land would be able to partially secede, to withdraw property and services from governmental jurisdiction, and create its own governance. The government could require an exit fee or on-going rental payments to compensate for its services that still benefit the private community. If most of a neighborhood wishes to privatize but some do not, those wishing to remain directly under the government would continue to be under government jurisdiction, and there would then be agreements for the joint provision of services such as streets that service both members and non-members. While this may result in a more complicated arrangement than that of Nelson, it maintains the voluntary nature of civic associations.

On the expenditure side, service substitution would enable any level- n council to substitute its provision of a service for that provided by the level $n+1$ level and deduct the average expense from its tax liabilities to level $n+1$. For example, suppose that the level-3 governance, such as a city, provides schooling, and a level-2 district council found the educational level to be unsatisfactory. It could withdraw its schools from level 3 and create its own level-2 school district, deducting the average cost per student from the tax liabilities to level 3. This partial withdrawal or service substitution would be an alternative to an attempt to reform the level-3 service. The exit option would supplement the voice option to limit the power of the next higher level, as well as to provide a greater incentive for the higher level to serve the lower level more efficiently.

Such a secession possibility is practiced to a limited degree in St. Louis, where a local neighborhood is able to privatize the streets and take over the maintenance. With such local control, the neighborhood association can close off one end of a street as well as organize better surveillance. Condominiums and residential associations are other examples of local governance and provision of services that are more typically considered governmental public goods (Foldvary 1994).

The secession of governance itself could take place in the cellular structure by enabling any level- n council to secede from a level $n+1$ council (except for level h) and create an alternative level $n+1$. For example, a minority which felt itself to be discriminated against could create its own higher-level council from those level- n districts which chose to affiliate with it. Thus, the membership in the higher-level councils, other than the highest level, would be flexible and this broader exit option would act further to check inefficiency and favoritism.

On the revenue side, the bottom-up voting structure is reinforced if the public finances also flow from bottom to top, hence a level- n council obtains its general revenues from the council at level $n-1$. A level- n council has no authority to tax the councils at lower levels, and only the level-1 may directly tax the households and individuals at level zero. There can be some special higher-level sources of revenue, such as royalties from oil and mineral extraction rents, and pollution charges on the sources of pollution, but no general taxes such as those based on income or sales.

With each level-1 government being able to select its own source of public revenue, competition among the communities for enterprise and residents would discourage the imposition of taxes on mobile incomes or sales. Property taxes would be the most likely base for public revenue. But while existing buildings are rather immobile, new construction can avoid being located where it is highly taxed. Hence, with very localized competition, the property most amenable to taxation without flight or evasion or shrinkage is land sites, which are both immobile and incapable of being expanded (the use of the space can be changed, but the space itself is fixed by nature).

Community competition would thus in most places lead to site rents as the basic source of public revenues. These revenues would originate with the level-1 communities and be passed up to ever higher levels. There could be some inter-level institutional arrangement to assess sites so that localities do not have the incentive to under-assess.

Besides being suitable to local collection without an excess burden, evasion, or flight, the taxation of site rents has been recognized as an effective capture of the externalities of a community. The Austrian economist Friedrich von Wieser (1927, 340) stated that “urban rent is that part of the rental which is paid as a premium for the advantages of the better location.” The Swedish economist Knut Wicksell (1896, 113) noted that “the general economic development of the community” increased the value of its land, and he proposed taxing such increases (*ibid.*, 114). There is a literature on the “Henry George theorem” with the proposition that the land rent generated by an optimal provision of public goods is greater than the cost of the goods (Stiglitz 1977), since land rent is the most efficient and least intrusive source of public revenue. Buchanan and Goetz (1972, 35) show that externalities would be internalized if communities are proprietary and competitive: “Tax shares would have to be related to the size of the locational rent component in individual income receipts.”

Cellular democracy with selective secession or service substitution provides greater scope for competition among communities, a theory set forth by Tiebout (1956) and a subsequent large body of literature (Zodrow 1983). Excessive inefficiency and transfers at higher levels induce secession, where allowed. With the reduced opacity, if not near clarity, of cellular democracy due to the access at level zero and the monitoring at level i-1, residents have greater ability to judge the mix of fees and services in local communities. Competitive effects reinforce secession effects and voice effects.

VII. CONCLUSION

There are no examples of complete cellular democracy, thus the analysis necessarily remains theoretical. However, bottom-up multilevel voting is practiced by some labor unions. According to the Office of Labor-Management Standards, U.S. Department of Labor, “all officers of national or international unions and of intermediate bodies must be elected either directly by secret ballot among the members or indirectly through representatives elected by secret ballot,” thus “by officers of the constituent unions who represent the members and who have been elected by secret ballot.” Bottom-up voting is also implemented by regional governments, such as the Association of [San Francisco] Bay Area Governments.

The representatives to the United Nations are chosen by the members’ governments rather than directly by the citizens. Why are they not elected by the people? There would be a knowledge problem, the public being ignorant of the candidates and the issues, and moneyed interests could sway the voting. But does not the same problem emerge in domestic elections?

Cellular democracy is compatible with “polycentric democracy,” which Andersson (2014, 23) regards as “the mixed systemic resources of votes and flows of mobile human or physical capital” and “a spontaneous-order reinterpretation of inter-jurisdictional competition” (*ibid.*, p. 35, note 2). Communities offer choice by both voting and by mobility, as people move, along with their possessions, to communities which best matches their preferences for public goods, locations, and cultures.

Hardin (1993, 130) notes that “the real magic of liberal democracy often lies in its tendency—sometimes overcome—to decentralize decisions.” Mass democracy, however, has tended to centralize power due to the

lack of individual political power by the lowest unit, the voter. Cellular democracy offers the structural incentives to maintain decentralist governance. Such a result is consistent with public-choice analysis, going back to the conclusion by Buchanan and Tullock (1965, 114-5) that “where possible, collective activity should be organized in small rather than large political units.”

Rent or transfer-seeking is likely to be reduced with a governance structure with small electorates at the lowest-level voting districts and has a bottom-up multi-level election of higher-level governments. Cellular democracy is combinable with other governmental structures such as enterprise zones and privately owned communities (such as residential associations) that can form the lowest-level neighborhood communities. Devolving electorates and fiscal powers to local communities could have far-reaching consequences for the resolution of the democratic pathology of transfer-seeking.

Since most state legislatures in the USA are bicameral, a transition from mass democracy to cellular democracy could be done with one of the houses. The state would create neighborhood district boundaries, and then the bottom-up voting process would generate the representatives up to the legislature level. If the voters favor cellular democracy, the house elected by the old mass democracy would be abolished, and the now-unicameral legislature would elect the new governor.

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Informal Transportation and Emergent Orders in the Latin American Context: Towards a New Conceptualization of Urban Planning in the Global South

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Abstract: The objective of this paper is to introduce the need of a new understanding and conceptualization for Urban Planning in the global south, with a special focus in the Latin American and Colombian context. It will study emergent transportation networks, always structurers of the urban space, as a lens to observe how informality, inverse urbanization and emergent orders can help understand the nature of cities in the region, and the global ‘south’ in general, together with the need of new ways of looking at them. The emergence of spontaneous, and decentralized, forms of order construction will be analyzed within the lines of New Institutional Economics (NIE). Here it will be discussed that the nature of institutional failure and the emergence of informal governance mechanisms adds to the debate of urban mobility planning and urbanism in general. Hypothesizing, whether informality, ingrained in Colombian cities is an expression of a reality of the impossibility of centralized planning for the urban space.

Finally, the idea of assessing emergent informal transportation networks in Colombia, is also used as a base to analyze the broad concept of Urban Governance for the global south. Governance is understood here as the emergent evolution of institutions and organizations to solve problems in urban spaces, and which in many cases transgress what’s mandated by formal regulation. Therefore, transgression is also analyzed as the processes of informality are linked to historical conditions in Colombian cities, which add a layer of complexity that is considered a staple of a new conceptualization of Urban Planning for southern cities.

Keywords: Urban Planning, Emergent Orders, Informal Transportation, Global South, Colombia.

INTRODUCTION

Is there a social or cultural inclination towards informality in Latin American societies? Or the transgression of the regulatory system is a clear answer and manifestation of the complexity of urban processes, which invalidates the propositions of centralized urban planning? These questions guide the development of this paper and relate to the need to revisit theory related to Urban Planning in cities of Latin America. Together with proposing new definitions regarding the informal city, which has been the norm in develop-

ing countries to date (International Labour Office 2018), and in many ways transforms into a mechanism for growth (Loayza 2016) and welfare for people in Latin America and Colombia, being this extensible to the global south.

Informality and emergence surged in the region as a response towards processes of government-sponsored monopolization, as cronyism is prolific in Latin American capitalism (Haber 2002). And this have led the excluded part of the population, to lead the way towards the emergence of informal economies, as the only way for millions to be included in progress. Informal processes, therefore, became a development tool for people in Latin American countries, as the emergence of networks for the provision of urban services, has become a clear phenomenon that needs to be studied with more detail.

And here is where is necessary to reframe the discourses regarding informality in cities of the global south, as I argue that it is impossible to understand the processes of cities in developing countries, without addressing the element of informality and emergence (and its informal institutions and organizations (North 2005)). Thus, leading us to the need for a new conceptualization of Urban Planning, which disconnects with the idea of imposing perspectives from the global centres of academia, into the realities of cities that are foreign to these contexts.

The idea of 'informality', and by-passing of existing regulations, engaged by emerging networks in cities, is being analyzed by a new vision for urban studies under the concept of 'Planning for Complexity' (AESOP 2015). This vision acknowledges a different discourse regarding urban issues, especially from Jane Jacobs (1961) who early stated that the reality of self-organizing and complex systems in cities, confronts with top-down or 'formal' governance. Formal governance which fails to recognize and get to know the complexities of urban communities, and the individuals that build them. Emergence of market and societal participation is clearer in the urban space, where a demand for good services by the population: i.e. lodging, social interaction, public space and transportation, confronts that which is mandated by regulation, that is unable to cope with the realities defining urban complexity. Thus, leading to the appearance of networks between individuals and the construction of new economic relations and interrelations that are hardly possible, or desirable, to regulate.

By considering this theoretical background, section 1 of this paper will analyze the discourses regarding informality in cities of the global south, and the need to revise them for dealing with the realities of Urban Planning in Latin America. It will comment on a post-dual narrative based on some elements of New Institutional Economics (NIE), especially the ones related with informal institutions. In section 2, there will be a study of the variables of informality in Latin America and Colombia, with a focus on transportation, here complemented by the study of collaborative informal networks of transportation in cities of Colombia:

These informal networks are formed by people independently developing creative solutions in the way they engage with transportation provision. They use freely available digital platforms such as *WhatsApp* and others, as a communication tool to build their own 'platforms' in an independent and new scheme of public transit. This was illuminated by the work of K. Reilly and me in a previous engagement with the emergence of this phenomenon in Colombia (Reilly and Lozano Paredes 2019). The reason of choosing transportation as a major subject to argue for new conceptualizations, is that transportation mechanisms are structurers of the urban space and the territory (Rodrigue et al. 2016). Moreover, that their relationship with informality and institutions is not sufficiently studied (Canitez 2019), specially observing the opportunities to harness the characteristics of their governance for better understanding and planning transit (World Resources Institute 2018).

By assessing the nature of emergent informal transportation networks, section 3 of this paper will propose new definitions on a conceptualization of urban planning, problematizing the relationship between individual knowledge, and the governance of emergent informal institutions, with regulation and formal

governance mechanisms. These new visions will be further addressed in section 4, with the idea of institutions, the importance of its actors, and the nature of their failure. Including the formulation of a conclusion including the recognition of universal characteristics emerging from the phenomenon of informality, and unregulated provision of urban services by informal networks, and their institutions.

1. INFORMALITY: REVISITING THE DISCOURSES ON THE GLOBAL SOUTH

For dealing with informality, and its discourses, is necessary to revise and produce new theoretical frameworks. It could be argued here that the categorization of ‘Global South’ is too generalist, as most categories of analysis are, but in this case this concept has sought to differentiate a realm within global urban studies, while highlighting the Euro-centrism of many of its theories and concepts. And, even if in some cases this conceptualization has brought a possible cost to invent a forced exclusive –south centrism-, it is still helpful to analyze and debate the idea of a very much needed interchange between theory from the centers of global academia, and what’s going on in developing countries.

There is also a need to overpass ideologically oriented debates, based on the duality ‘structural’ vs ‘neoliberal’. This duality is common when analyzing the realities of cities in developing countries, and have a clearly predominant leaning towards understanding the urban environment, under the framework of dependency theory, post-colonialism and neo-Marxism (Jayne 2006; Grassi 2003; Pinson and Morel 2016). The theoretical framework of Castells and Portes (1989) for example, continuously referenced in literature dealing with informality in cities in the global south, is focused on rising inequality in the urban space, and more specifically, the emergence of an urban informal economy. This is presented as evidence of a crisis of capitalism in its failure to include everyone in the market. Accompanied with a narrative of the informal economy as a manifestation of exploitation, joining criticism of capitalism and ‘neoliberalism’ without the opportunity of establishing a debate, or at least the study, of dissident voices in the realm of Urban Planning.

The use of the term ‘neoliberal’ or ‘neoliberalism’ in urban studies, has transformed into a political strategy, being useful for addressing a unique position towards inequality and problems manifest in the built environment. This is shown by the work of Marxist geographer David Harvey (2007), in his assault on neoliberalism using the argument of the destructive side of creation, and the consequences of rapid technological change for example. ‘Neoliberalism’ is a concept created by the German academic Alexander Rüstow (1945) defined as a ‘priority of the price system, free enterprise and a strong and impartial state power’ (Rüstow 1945, 2001). In this conceptualization, for being ‘neoliberal’ is necessary to abide into modern political economy, with a strong intervention from the centralized state. Being this very contrary to the use of terminology today; linked in many cases to a strange but undefined laissez-faire economics, mixed with fiscal conservatism, and more recently right-wing policies and political parties, to which ‘neoliberalism’ became a synonym of.

The abuse of semantics related to ‘neoliberal’ discourse is a very worrying trend, as it has become an academic catchphrase, whose usage should be questioned (Boas and Gans Morse 2009). This has caused that innovative perspectives exceeding the established narratives are not common and are lacking in terms of studying new realities affecting cities such as the impacts of technology, institutional failure and organizational self-management. Aspects currently absent of the debate dealing with cities of emerging countries, especially in a context where the dispersion of decision-making away from the state as the lone actor in the city, is not acknowledged by neither the literature, nor the public sector dealing with urban issues.

A continuous focus of the ‘State’ as the sole provider of public services and the procurement and creation of city space has not recognized the lack of legitimacy that many of the institutions of the global south, have among the population (Levistky and Murillo 2013). Moreover, it is in this context, that much of the current initiatives and power development in cities are moving out completely from state control, creating a space between shared power and engagement and fuzzy definitions and restructuring. Brenner, Peck

and Theodore (2009) realized this reality of restructuring of the city space, and acknowledged economic phenomena affecting the city. Yet again framed it under a 'neoliberal' conceptualization.

The literature dwelling on this tendency focusing on Marxist historical analysis and an antagonism towards 'neoliberalism' has been plentiful, but just recently systematized and organized in order to give a perspective on the status of urban studies in relation to developing countries. As is the case of Parnell and Oldfield's (2014) handbook on cities of the Global South: In this useful compilation, there is a strict attachment to the mentioned streams of thought, being Marxist Ontology, Scientifics or Dependence Theory. And this is prevalent when literature about the urban space emerges elsewhere, specifically for the Latin American case, Montoya 2009 and Cortes 2017 are good examples. There is even the recent creation of a conceptualization for 'Metromarxism' (Santana 2018), which is addressed to challenge the foundational theories and categories of cities, urbanism and urbanization in the region, proposing a 'critical' analysis by the creation of 'geographical metromarxism'. Supposedly intending to supersede the structuralism approach (Castells and Portes 1989) and evolve into an experimental dialectical Marxist perspective.

Urban theory related to informality in cities, especially on the global south, needs to go beyond the usual narratives of dependency, neo-marxist and post-colonial theory for emerging countries. There is a need to go towards a post-dual perspective, with a lens focused on the institutional analysis of an environment where individuals start to develop strategies and self-organize, in the absence of a legitimate structure by the state. Or, the incapacity of formal institutions to reach broad portions of society, thus leading in the case of cities, to the self-provision and self-regulation of groups working within urban services, such as transportation (Pirez 2015, 94-98) generally understood in the 'West' to be a 'Responsibility' of the state.

That's why going beyond the narratives is necessary, and a different perspective will be addressed to better understand the nature of cities in the global south, the emergence of informality, and how this relates with what's understood for Urban Planning in the south.

Going beyond the narratives

As exposed by McCloskey (2014), the vision coming from Marxist perspectives has failed in explaining global sustained growth in welfare, rising income and innovation. A claim backed by empirical data of the current development of the so-called 'third world' (Inchauste et al. 2012). Thus, leading to the need of surpassing the classification of policies, or lack thereof, as 'neoliberal', with the aim of getting going beyond structuralist and reductionist views of the urban space and informality in it, focusing on the possibility of generating a post-dual framework of understanding of cities.

A post dual narrative allows us for example, to refer the work of Hernando de Soto (1989, 2001) without classifying it as a 'neoliberal' political leaning to the right. In this case, the empirical experience, and theory of de Soto, leads us to recognize that the nature of mercantilist forms of capitalism in Latin American and global south countries, also influenced by institutional failure and legal burdens, is confronted by the people living in these contexts by the means of a creation of an informal market in its cities. Much like the case of informal transportation networks in Colombia.

De Soto's work is fundamental to understand the nature of emergent phenomena in Latin America and the global south. Mainly out of his experience with informal settings in Peru, and his understanding of capitalistic informal transactions. But, most importantly, how people build institutions based on potential capital outcomes. People in cities of the global south have been innovating and implementing non-orthodox and self-regulated solutions, to achieve a localized goal of development and own welfare. They transform and foster new kinds of local associations, mutual learning, innovation in leadership and conflict management, all of these within informal settings. The recognition of this institutional and organizational evolution is the post-dual narrative that is needed to address the emerging issues in cities of the Global South.

A post-dual narrative coming also from Institutionalism (North 2005), and New Institutional Economics and Analysis (Ostrom 2005) is very useful here due to the complex nature of urban studies when dealing with the global south. In Ostromian institutional analysis, the key point is the encouraging of human and societal cooperation, in a nodal or decentralized fashion. Particularly, in the recognition that the concept of

‘Governance’, as the emergent and collective development of rules and self-management, is not linkable to ‘Government’, which is allocated to command and control modes of authority, that are currently failing and losing legitimacy.

For Ostrom’s perspective, an overlapping set of commitments, and responsibilities in the administration of common resources such as mobility in cities, conceptualized as ‘policecentricity,’ is a very relevant alternative to a top-down bureaucracy, and sometimes authoritarian, form of the established political system. And a way for institutions to gain legitimacy in their participation of a rule-making and problem-solving structure.

Continuing, the conceptualization of Nodal Governance (Burriss et al. 2005) also provides a new perspective of analysis, where it is stated that network theory is better used to define the interaction of different actors, which decentralize their systems in different nodes. And, by itself these nodes change relationships between them to a point of influencing a change in the operation of formal government structures. This perspective is very superior to analyze the nature of cities and can bring a differentiated perspective when dealing with urban theory. Leading to a recognition of the complex reality, and an understanding that urban phenomena is generally too complex to be fully understood, but sufficiently interconnected to suggest that its analysis in a decentralized manner, can give a better outlook where interconnection between actors is commonplace.

Here, opening to a new theoretical framework also takes hold on the conceptualization brought by Schmitt and Hartmann (2016) which conforms a new theory for Urban Planning and Governance. In it, the use of Douglas’ cultural theory (1986; 1999) and the definition of imperfect cities, vis a vis Jane Jacobs (1961) for the understanding of urban design and planning, is relevant in terms of policymaking and changing the perspectives towards informality in cities. This new narrative recognizes not only that there is the need for diversity in city analysis, and that polyrational situations are more robust when dealing with diversity of processes (Davy 2004). But also, that a ‘clumsy’ solution (Verweij et al. 2011) here being the recognition of emergent realities, and the need for the embrace of different rationalities, is necessary for understanding urban planning in the future.

The use of the aforementioned narratives, is necessary to analyze the idea that the responsibility for the creation of the urban space in all its subjects’ lies in civil society as a network of networks, and that in the Global South, the discourse related to urban governance mechanisms dealing with informality should be constantly challenged. Especially in the global south, where informal transactions and the contextual relations between the people are embedded in differentiated governance mechanisms.

2. A VARIABLE OF INFORMALITY IN LATIN AMERICA AND COLOMBIA: PUBLIC TRANSIT, INFORMALITY AND SOCIAL CONSTRUCTION

For the purposes of this paper, and considering the proposed post-dual narrative, informality in Latin America as a societal-ingrained and emergent reality can be studied by many variables, and it is generally framed on the traditional view of informality: Access to the job market, and subsequent tax payment. However, the variable of informal transportation and its latent institutional informality is also a good framework to analyze informal emergence, which hasn’t been reduced nor modified, by the great investment in public developments of transit, such as the BRT projects that now populate many cities in the continent.

However evident the situation of informal or unregulated transportation is in the studied context, information available lacks in comparison to the vast range of data available for the analysis of the evolution of generally, urban employment in the informal sector (ILO Labor Overview 2018-Latin America and the Caribbean, 37-40) in all countries of Latin America. The data provided by the ILO (ILO Labor Overview 2018-Latin America and the Caribbean, 37-38) shows that in Latin America, more than a half of workers, are in the realm of informality, which prompts the question of how many people from this percentage makes a living by either using or providing informal services.

Regarding transportation, there have been some interesting views on the issue in the Latin American context. This includes the recollection and analysis of data and experience (Gutierrez 2005, 56-67) in Argentina and an analysis on the city of Cali, Colombia by Valdes Zambrano (2014) to cite some examples. Nevertheless, for Latin America, the shape in which the cities grow through history has always been paired and accompanied by a development of schemes of informal transportation (Ghersa 2005, 105-106); (Gutierrez 2005). Most cities in the region, especially the largest metropolitan areas of Buenos Aires, Sao Paulo, Santiago or Lima have subway or metro systems in different stages of development and coverage, generally complemented by a suburban train system in infrastructure and grids designed in the late 19th century and early 20th. The case of Bogotá, in Colombia with a population of almost 10 million people in its metropolitan area is a loud exception

These transportation systems however, due to the nature of its contained infrastructure, and impossibility to extend towards the capillaries of the cities, did not represent historically most of the mobility dynamics in urban spaces of Latin America. This space was first occupied by the streetcar (Rosenthal 2015), and then by the collective bus (World Resources Institute 2018), and more recently by the implementation of BRT or 'Bus Rapid Transit' systems in different corridors of the cities. The systems of BRT were implemented in accordance with comprehensive policies of urban renewal and development aimed to the generation of better quality in the public space and the extension of bike-lanes systems and more examples of transformation of the public realm (Antier 2014).

For the Colombian context, it is interesting to observe the processes of provision of urban transportation by informal alternatives even after the expansion of governmental intentions of comprehensive coverage of public transportation. Colombia is famous for its ambitious plan of extension of Bus Rapid Transit networks in many cities based on the experience of the system's implementation in the city of Bogotá D.C. The idea behind the development of these systems was to solve the problem of chaotic traffic in cities that had been a characteristic of the urban development of Colombian cities, especially intermediate ones.

There are many examples on the literature regarding both the BRT expansion, and the complementary interventions in the urban space that these systems brought to Colombian cities. There's also a particular interest regarding urban revitalization and the improvement of the accessibility landscape that was brought by these particular interventions (Delmelle and Casas 2012). Together with the study of accessibility when these systems are integrated to a more comprehensive system, such as the case of Bogotá (Guzman et al. 2018) in which it is proven that the levels of access and coverage are far lower than expected.

Recently, BRT and other comprehensive mobility systems have come into continuous criticism and scrutiny due to their inefficiency, unsafety but most of all, their inability to defeat social and economic inequality by failing to provide proper accessibility that previous traditional public transportation covered (CODATU 2017). But most of all, the apparent unsustainability both financial and social of the system. There has been an intrinsic failure in provision to many neighborhoods and districts to which the systems apparently were not designed for, adding to the increasing inefficiency, including failing route scheduling which cause extreme congestion, and low personal safety standards concerning robberies and sexual abuse towards women.

Patterns repeat themselves historically, and the problems of the BRT systems in the region are similar to the reasons previous systems came into crisis during the last century. Streetcars for example, lauded as a modern system at the beginning of the 20th century, came into crisis by competition from public buses and private cars mostly due to the flexibility of the latter examples. By the second half of the 20th century, most transit in Latin America shifted to private bus operators without stringent regulations, until the outcome of the first decade of this century, where the Bus Rapid Transit systems were implemented rapidly (Cervero 2013; Carmona Rojas 2017; EMBARQ 2009).

Here, it can't be denied that there has been substantial change in the transportation systems. Before the implementation there were a reality of difficult experiences for people, related to the state of vehicles, frequency, lack of information and connections, but It's interesting to find that even with that taken into consideration, the acceptance of people to the new system is far from guaranteed nor established. And problems

such as social and spatial disparity (Jaramillo et al. 2012) or the effectivity of state investment on these systems it's being interrogated (Bocarejo and Oviedo 2012).

The Colombian experience: institutional failure and informality

After observing the issues emerging from the different interventions on transportation in Colombia, it can be said that this country's experience re-confirms the work of Jane Jacobs (1961), who exposed that many times the visual order is confused with a social order. BRT transportation systems in Colombia behave in an orderly manner by a visual way and are clearly an improvement of the built environment on the surface. However, in their evolution fail to recognize, the reality of the social constructs behind mobility in Colombian cities, and as it has been demonstrated for the city of Bogotá, for example, (Bocarejo et al. 2015) it has caused social fragmentation, mainly due to the spatial distribution of the implemented system.

The supposed modernization of the collective public transportation towards an integrated system of massive transportation, has led to a negative effect on the supply and accessibility of transportation to the more vulnerable neighborhoods in Colombian cities. This is caused by both a lack of coverage, and a poor design and planning of the proposed routes that has also limited the number of passengers who use the service in those parts of the city, who have different alternatives of mobility. This poor design and planning of routes in terms of the analysis of urban development, (ImaginaBogotá 2019), and the reception and perception by the population (CaliComoVamos 2017) are patent in the lack of recognition of the realities of mobility and pre-existent complexities.

The case of Colombia, however, adds another element to the equation of informality and its emergence out of institutional failure. From a new institutionalist economics perspective, Colombia could be defined as a failed state (Robinson 2015), in which institutions are completely overpassed by reality on the ground and the low quality of democratic establishment. Ironically, these democratic institutions often show in appearance a prolific production of legal standards, regulations, prescriptions and judicial decisions, which usually end up being irrelevant (Bayón and Rodríguez 2003) and could contradict the narrative of institutional failure. Yet again, the existence of these rules on paper are not by any means a guarantee for the stability of a system, or even its agency in the formulation of public policy.

For transportation systems, this is represented on the mentioned inaccessibility of the legal framework in place, which do not respond to the reality on the ground. And also, to a lack of proper representation by the different actors involved in transportation provision, which leads to a 'blindness' among policymakers and urban planners, failing to acknowledge physical and social realities of the cities they were working with. Previous transportation systems, however chaotic and unregulated as they were, 'recognized' elements from the societal construction of cities due to the nature of its evolution, however they were replaced by a structured and closed systems such as the BRT (Valdes Zambrano, 2014, 27-28).

The latter has to the emergence of the mentioned informal units of transportation provision, with small niche markets that are marked by a high demand for transport and inadequate total coverage of the BRT systems, contributing to the expansion of the informal offer (Vecchio, 2018, 10-13). And, as we saw before, this is a process that has repeated itself through history in Latin American cities. What is interesting about this phenomenon, dealing with the need of new definitions on Urban Planning for contexts such as the Colombian one, is a reality of self-organization in informal schemes. Moreover, what does this means for cities.

The historical evolution of Colombian society and its response to the institutional failure of its state, and the irrelevance of its legal standards is also characterized by a reality of self-organization. This has a dramatic example in the realities of the internal conflict that the country has endured for decades, showing that the absence of the state and the irrelevance of its regulations manifest in the replacement of the formal institutions by informal institutions based on fear and violence (Ballvé 2012). Taking a more dramatic shift in how territorial dynamics are built, and how there appears to be a nature of cooperative construction and self-organization in front of the failure of state institutions. A nature present in the case of the United Self-Defense Cooperatives of Colombia paramilitary groups (Manwaring 2002) for example, a terminated ter-

rorist organization, which nevertheless shows us the power and tendency of Colombian people to self-group to provide and harness benefits and specific goals.

In the case of these Colombian cities, the institutional failure in Urban Planning gets exposed in the reaction to the creation of the BRT transportation systems by the population. And how, both to a lack of coverage or the presence of better and previously known alternatives of mobility, unfolded into the expansion of the informal systems, or even to act as last-mile components of this scheme, which has proved itself unable to reach full coverage of the cities. By disregarding control measures from the authorities, either avoiding them or because of certain attitudes from the law-enforcement units who simply “look to the other side”, informal transportation alternatives have complemented the lack of good service in an act of public constructed and public supported transgression against established governance. The relevance of this informal mobility scheme for Colombian cities is discussed following.

The relevance of informal transportation and its social construction

Taking the exposed into consideration, especially the history and evolution of the Colombian case, it could be hypothesized that a common factor of the issues affecting transportation in the global south is the exclusion, in paper, of every other mobility system that is not included in the formal, centralized, ‘tracked’ and one-size-fits all modes of transportation. In reference to this, is necessary to quote the experience of Carlos Alberto Molina Prieto, Social Development Specialist and international adviser on population resettlement at the World Bank. In his work, he looked at this issue with an interesting approach regarding the Colombian case, in reference to the development of the massive transportation system, the main users, and the consideration of their perspective to elaborate a conclusion (Molina Prieto 2014):

...I asked if she is satisfied with the new transport. And she answers: ‘Well ... is nice and the city looks better, seems like a big city! But see, for women is uncomfortable when buses are very crowded, there are people who abuse the situation and makes us uncomfortable. If one tries to make a complaint almost always, they tell you is that it is a mass transportation system, look at other cities and see that their systems are ‘fuller’, and so ... then you must put up with it, and is not easy.’...

... However, as these systems tend to have slightly higher rates than the ‘traditional’ systems, many users have expressed doubt whether it is worth the huge investment that has been made to continue suffering discomfort: ‘Sometimes I wonder if it will not be that massive for someone to fill their pockets well at the expense of our discomfort?’ asks another user...

...Although these new systems are more formal and better organized, the reality is that many of the inhabitants of large Colombian cities move through a combination of formal and informal services according to their needs or day of the week: ‘On Saturday I go out to buy food, but to get to the station (the new system) I walk a lot and my little daughter gets tired, and when I wear packages, I have very difficult access to the stations’ Said a user...

...I asked why those days they consider using the services of a neighbor who has a motorcycle, which transport her, her daughter and her shopping. Other times, she resorts to other informal services such as private cars as taxis operating unregistered or collective services, i.e. once they meet five passengers; they make a route depending on the destination of each of them...

...Although local and national authorities in Colombia are making great efforts to formalize the public transport network, until that moment arrives, users will continue using this combination of formal and informal services to reach their destination.

The findings by Molina Prieto, complement other studies on Colombian cities, mainly the one by Valdes Zambrano (2014), which deals directly with the emergence of informal transit, its origins, and how people are successful in building networks of transportation provision. Showing in this case, that they are more efficient in terms of time and accessibility for the people unserved by the regular public system.

For the case of Cali, Valdes Zambrano found what it is defined as ‘Main Street’ of the informal transportation system. There, the organization of the irregular transportation not only provides a good service in terms of efficiency, but also operates together rather harmoniously in reference to the common interest of all the actors involved in the process. It is important to reassign importance to the variable of time-to-transport, and the study of Valdes Zambrano does this in relation to the measurable importance that this variable has in terms of the election of the informal choice or the integrated and regulated transportation system.

In the Valdes Zambrano study, it is described that:

For example, the path of the ‘Pirate’ Main Corridor is the local reference for this type of transportation providers- is similar to the P1 route and takes approximately an hour and 45 minutes to two hours depending on the time of daythe informal transport halved the time spent by the formal transport. This is due to different characteristics such as the number of passengers carried and thus the number of stops made by the bus. So, the supply of informal transport has a great advantage related to the question of time, as it is more efficient to the route of the bus, quantifiable in terms of time...

More evidence about the relevance of informal transportation and the institutional and organizational settings that evolve within it is found in Reilly and my study (2019) on the same Colombian city. In it, during characterization and recognition of the informal transportation services providers, and the disruption of digital ride-hailing platforms in the country, it was encountered that:

During the realization of the field work for this project, an interesting finding emerged: Cali has two large groups of drivers that use WhatsApp as a communication tool to build their own “platforms” for ride hailing. One of the groups is constituted by up to 300 drivers and the other one by 50 drivers. Drivers use these platforms to supplement their work during off peak times for the big platform companies, and address some of the problems they face in these larger platforms. What this innovation shows us is that workers in Cali are independently developing creative solutions to address both problems with ride-hailing platforms, as well as the lack of progress on decent work standards by policymakers and legislators of Colombia. The self-organized platforms developed by workers have emerged to improve specific aspects of labor conditions and secure economic welfare. Successful policy must keep these types of innovations in mind since they establish the context for effective decent work standards in the platform economy.

Digital platforms, as used by emergent networks, are really being utilized to socially institutionalize economic relations, exacerbated in Latin America by the nature of emergent and informal economic relations that could not be regulated or much less controlled before the arrival of the digital escalation. In Colombian cities, digital platforms have reorganized and disrupted the informal schemes of transportation, and, from what is found in the study, even promoted more self-organized networks of for-profit urban services provision.

What is known about these emergent groups of economic interrelation, using both open access, and established sharing economy platforms, is that enterprising individuals, together with the joining peers, create them, establish rules and self-regulate economic relations surging from the digital platform, thus creating greater welfare for themselves. For the case of transportation providers in Colombian cities, in emergent groups from the sharing economy platforms, workers pay a fee to join the network, which neither de-

mands verification of data, nor compliance with technical or mechanical norms, but offers the possibility of even growing a micro-business by acquiring more vehicles and put them to work. On the other hand, to female drivers for example, it offers the possibility to enjoy the security of knowing that passengers have been vetted by trusted community members, such as security guards posted at known buildings. In this specific case, local collaborations, also built on trust, help drivers connect with fares, when markets are saturated, thereby improving their income. In addition, these local systems allow drivers to enhance their service offering through delivery of packages, or carpooling, together with other services.

Both studies here show that in socio-spatial considerations for the phenomena of informality in Colombia, a revision of traditional ways of looking at transportation planning and the recognition of informal alternatives is needed. Moreover, this heads to recognize emergence from the providers side, and empower these workers to be entrepreneurs and/or innovators. Therefore, producing the conditions for their own welfare, which is paramount in the road towards a new conceptualization of Urban Planning.

The analysis and purpose of this acknowledgment of urban actors, who develop informally, while providing a good service and welfare, should be approached to in a deeper manner. It is necessary to understand that apart from a problem of regulation, efficiency or economic inclusion, there is a basic unsolved issue in the way cities are planned and governed. In relation to urban services such as transportation, but also in the development itself of a city which must recognize, acknowledge and approach its very necessary and comprehensive view of urbanism. Beginning a course of action in which those who have an immediate access to the processes evolving in the city, have the possibility of their realities being recognized and introduced into a new methodology of urban planning. Providers and users enter a realm in which their agreements and transactions far outpace the existent regulation, from urban development to transit codes, and therefore a process of emergent and complex order arises which daily confronts and transgress whatever scheme is intended to impose over the dynamics of fluidity in cities.

What's evident for cities like Cali, can be extended to other Colombian cities such as Bogotá or Medellín¹, and in a more generalized way to Latin America and the Global South. The institutional failure is present in all these contexts, and as we have seen, this is an incentive to both informality and emergent processes of self-organization. Previous literature on the subject has dealt with the subject of self-organization in cities, however, as per the context of Latin America, there is one perspective which is interesting to highlight here, and which bring us not just new terminology applicable to the global south, but also some views on policymaking on Latin American cities related with this subject. From the lens of Vieta and Lionais (2015), what emerges from entrepreneurial activity linked to emergent and informal processes, is that in a context of institutional failure, there is the creation of complex organizational developments and grassroots governance mechanisms from the bottom-up.

In the emergent transportation networks, drivers, passengers, and owners of vehicles are immersed in a system that even if it offers few protections, also generates higher incomes and the possibilities of avoiding the negative issues of dealing with the mechanisms within regular platform companies such as Uber, in terms of rate settlement, complaints and others.

Drivers also are using these emergent systems to achieve personal gain in the form of the creation of microbusiness by either acquiring more vehicles or administering the newly created groups or self-organizing themselves in what could be called emergent though not formalized cooperatives. This bring mutual benefits and defense in front of punitive actions from the state regarding the development of its service, allowing people to develop processes of self-management², self-regulation and autonomous administration (Vieta and Lionais 2015) which are very relevant to analyze in a context of institutional failure. And finally, these people are creating processes of collaboration for connecting fares and drivers, enhancing their service offering delivery of packages or others forms of carpooling among many innovations to provide actual transportation but also to increase the level of earnings whenever they are outside the regulatory system, and the high cost the formal systems impose.

In terms of urban policies, this new line of thought lies in the need by cities in the global south to recognize informal operators, together with the nature of its emergence governance mechanisms. Moreover to

‘pro-actively engage them on a path toward operational reform’ (World Resources Institute 2018), which includes the possibility of connecting existing services unto an integrated network, the investment in related infrastructure, the upgrading and integration of informal operators, together with harnessing their organizational skills and their use of platform technology in order to create a more open system. In other words, a ‘hands-off’ approach to urban policy in transportation which will lead to a new way of dealing with city issues for developing countries contexts.

It could be argued that are undoubtedly many reasons to choose a system within a formal framework, it brings a sensation of safety and as mentioned before by the experience of Molina Prieto, a new image of the city related to a recognition of ‘progress’ or the achievement of a ‘big city’. However, people keep choosing an informal mean, and the proportion of participation of the extra-legal transportation systems is growing, rendering their ‘Motility’ as conceptualized by Kaufmann (2004), unrecognizable in terms of accessibility or propensity to move a geographical social or economic space.

As exposed in the (Forum Vies Mobiles, 2012):³

Motility therefore refers to the social conditions of access (conditions in which ‘supply’ is used in the broadest sense of the word), to the skills (which are needed in order take advantage of this supply) and the mobility projects considered (which can be realized by the effective use of the supply).

Taking transport as an example, motility is the way in which a person or a group uses the travel possibilities available from the transport supply...

...Motility leads one to consider that the individual is located somewhere between this supply and demand and is able to assess the possibilities offered by the supply and then transform them into demand for a journey, according to his/her specific requirements. The advantage of this model is that it enables people to identify the relationships between the different possibilities provided by supply, motility and demand. These relationships have become even more important given that travel possibilities have significantly increased in the last 50 years and that, as a result, there is no longer a mechanistic relationship between supply and demand, but instead a universe in which every individual is able to exercise choice...

Informality here becomes relevant in the point that allows people in the Colombian cities, to have a choice and to access the opportunity to move, and to provide transportation in more efficient ways than an established transit system. Next, this paper will work on that idea of informal and emergent procedures as enablers of better outcomes in context such as the Colombian. Moreover, how their recognition and study can help frame a new conceptualization of cities in the global south.

3. TOWARDS A NEW CONCEPTUALIZATION OF URBAN PLANNING IN THE GLOBAL SOUTH

Before elaborating on new conceptualizations, it is important to summarize the following factors that are present in transportation on urban contexts of the global south, and as it is the case of Colombia, illuminate the debate on the much-needed renovated perspectives on urban and transportation planning:

1. In Colombia, and this can be extended to many places in the global south, there is an ingrained nature of informality related to urban services. The perennial nature of this phenomena is prevalent no matter how regulated the scheme tries to be (Pirez 2015, 143-147).
2. There is virtual incapacity and absence of local and national governments to organize the provision of efficient formal infrastructure, which brings accessibility to all. This is more evident for the

- Latin American context as per the duality of large investments in formal infrastructure but a lack of accessibility to many places in the cities (Molina Prieto 2014).
3. The peak capacity reached by most of the existing public urban services systems in South American cities, including the case of Colombia (Yañez-Pagans, Martinez et al. 2018, 7-11).
 4. The emergence of networks with a nature of for-profit informal and unregulated alternatives for transportation in all levels of income. (Reilly and Lozano Paredes 2019; Cervero and Golub 2011; Cervero 2000; Chapain 2005; Godard 2006).

As was exposed previously, a focus on this emergent informal transportation, and its consideration as a process of self-organization and self-management, which can guide urban policy among many other sectors of the city, helps us to elaborate a new conceptualization on Urban Planning. Here I use of the conceptual framework brought by New Institutional Economics, and more specifically the Institutional Analysis and Development Framework (Ostrom 2010). This perspective understands, especially in terms of urban, metropolitan and territorial governance realities, how human actions and situations cannot be normalized or standardized, due to the intrinsic diversity of positions, actors and possible outcomes (Ostrom, 2010, 5-12).

By this conceptual consideration, we could argue, that first, there is too much urban “planning” in Latin America. In the form of laws, rules, and plans about public and private spaces which can reach thousands of pages, but not a perspective which takes into consideration an ample framework of the context, actors and action situations, together with the multiple patterns of interactions which arise in the urban context. As a rule, however, the policymaker and the urban planner, at least in the Latin American tradition of continental regulation, view the approval of the plan or Urban Planning law, by the authorities at charge, as an achievement by itself. As if the result is already accomplished, thus becoming a passive observer during several years of urban development, generally the years which the plan has its timeframe.

Under this context, discussions taking place on how Urban Planning in the global south is developing start to become innocuous, given the lack of data to understand what problems exist, what are the actors and institutional characteristics linked to urban development, together with the consequences of the plans that are being implemented. The goals of these plans are unclear, and the ways to achieve them even less, leading to the need to start taking a different approach focused on the nature of complexity, which leads to sustain the idea that yes, the urban context can indeed be studied and managed, but that this same context is impossible to “plan”.

Ostrom’s framework here is helpful too, when engaging an urban context from a decentralized proposition of governance, as for the context analyzed, together with cities in general in the global south, arguing for centralized forms of planning and government is not applicable. Even to a point that the very study of the urban context from a unified perspective cannot only fail to grasp the nature of urban processes, but also create undesired outcomes in policy planning. Informality in the management, access and procurement of common resources services in the urban space, such as the case of Colombian and Latin American cities, and emergent transportation networks, could be addressed in the literature (Ostrom 2010, 10; 17) as staging a process of self-regulation in emergent economic interaction accords.

Even if it can be argued that the dichotomy between formal and informal definitions as characterized by Hart (Hart 2006, 25) requires a conceptualization into the formation of a stability based on rules. And moreover, that for cities, any “formal” framework for Urban Planning and Governance, is a product of the emergence of rules by an established authority. This idea must be confronted, as it is done by (Guha-Khasnobis, Kanbur and Ostrom 2006), in the recognition that this conceptualization has been at the root of major policy failures in socio-spatial planning and analysis. Leading to argue here, that presuming there are no established “rules” among informal emergent phenomena, and to pretend to “formalize” pre-existent structures is to fail on grasping a vision that could really give answers for the analysis of the urban environment in the global south and produce better perspectives on Urban Planning for the future.

The provision of this new conceptualization can be misunderstood as a support to illegality and deregulation. But it’s necessary to make the clarification that is not about supporting informality but understand-

ing it as a reality in the urban context of cities in the developing world, which policy makers should accept, confront and work in order to adapt to the pre-existent reality. This brings us to our first perspective on the proposed conceptualization:

Urban planning in the global south needs to recognize in its inception, pre-existent mechanisms and the context where it is applied.

In the case of Latin America cities, these mechanisms are categorized by Pérez (2015) as ‘inverse urbanization’ being structural to understand the local reality in Colombia that is studied by this paper:

In the urbanization, the population arrives after the place has been urbanized. This sequence allows its occupants family social reproduction in a broad sense, to the extent that it offers land, housing, infrastructure and services, at least in a minimum of quantity and quality. In the inverse urbanization, on the contrary, the population arrives before their conditions occur, or that such production is sufficient to guarantee the reproduction of the agglomerated social life. It is the ‘urbanization modality in which it is first inhabited and then it is urbanized.

In this case, it is interesting to analyze this differentiated process of urbanization not only from the perspective of urban land, but from the provision of services in an ‘inverse’ way. Being that, at the time the population begins, whether regularly or irregularly, to provide services urban transport, for example, is the moment in which it is necessary to recognize this process as a legitimate modality of urban construction. As a reality constituting a true development of the urban order in the sense of the application given by Pérez (2015) as – together, coexisting – and defining that new-urban order. It must be recognized that in South America there has been generally an absence of the State, and a process of institutional failure (Peters 2015). In addition, this has been joined by the consequent failure of the de-commodification processes, and the absence or failure of the implementation of the model of the welfare state, being necessary to affirm that the fact of urban structuring occurred despite these failures, and that it was unfailingly connected to an informality process framed in this new order raised here. As was brilliantly stated by Ghersi (2005), informal activity is a way in which the individual reaffirms his position in society, vindicating his right to work and develop in response to processes of economic expulsion evident in citizen reality, bringing us to our next view which is that:

Urban planning in the global south needs to acknowledge individual initiatives and inverse urbanization processes as a valid mechanism of city production.

The response from policymakers and academia

After considering the previous perspectives, what would the position of public policy makers, and the academia related to urban studies, should they recognize the existence of urban complexity—as is understood here—and of the emerging social constructions in the sphere urban and legislate in response to this? Or, on the other hand, should they continue trying to impose foreign orders and foreign structures on mechanisms that are pre-existing and are embedded in the realities of cities?

It is very difficult to achieve a unique response to the proposition of the importance of civil society intervention in urban policy, without recognizing that the role of citizens is to be answered by policymakers and the discourses in academia, in order to find a new position of the role of the State within this duality faced with the Market. Which must include the vision of an increasingly empowered civil society, that does not find in the state the representativeness that it supposes its existence, neither in the regulation and in the laws the protection against the abuses of power, authoritarianism, corruption and mercantilism. Issues prevalent in the global south, and the sources of a potentiality by informal processes which simply avoid the social cost of being ‘formal’ (De Soto 1989).

In the case of emergent transportation the avoidance of the cost of being ‘formal’ gives us the lens to which analyze how civil society is actually doing the planning in the South American context, as their relations are embedded by strong community ties, grassroots democratic institutional construction, sharing space with realities of utilitarianism, entrepreneurialism, hierarchies and insider arrangements. Here, an element as structural for city construction such as transportation is challenged by structures, which in many cases do a better work in providing ways for people to move around the city space. For theoretical construction, this is essential in order to understand that is actually these groups of self-governed people who are actually constructing the reality of Urban Planning in the region.

The use of different rationalities is necessary to understand the nature of cities for the future, and in this case, taking into account that civil society is the one that took upon itself the actual responsibility of engaging with the city, is the way to embrace new forms of understanding urban governance and policy. By the means of the study of emergent and self-organized mechanisms, a new discourse on how to engage with the urban problem in a more realistic way can be elaborated.

The intersection of emergent orders together with the study of governance alternatives and especially polycentric governance (E. Ostrom 2005; V. Ostrom, Tiebout, & Warren 1961, 831-842; Boettke, Palagashvili, Lemke 2013) present here an alternative in the discussion of how cities are studied, intervened and transformed worldwide. Aiming for a recognition of the importance of emergent models and bottom up approaches, vs. a vision characteristic of recent public policy literature. In them, the nature of emergent processes is understood independently from theories dealing with dependency and structuralism, and which actually understands the particularities of developing countries building a much-needed bottom-up perspective (Choplin 2012).

Although conflicting, the concept of complex orders in social constructions such as cities goes along with the idea of understanding freedom as centered on the responsibility of the individual. Accompanied by a reality that individual knowledge establishes the best for a locally defined issue or problem, taking the point towards the construction of social structures by individuals, which directly and indirectly conflict with the established regulation. There is acknowledgment crisis of responsibility of duties division, linked to a predictable change in state and society’s roles, in relation with city production. As is elaborated by De Roo and Porter (2007, 60), where they state there is a need to ‘rethink the nature of political processes’ and in particular processes that are moving away from models of command of control and being replaced by undefined or ‘fuzzy’ models of governance.

Named that way because the roles and responsibilities that are expected to be taken by planning authorities, are not as direct as the activities of independent actors, mainly civil society, could be:

‘...rethink the ‘nature of policy processes’ and in particular processes that are moving away from the coordinative or ‘command and control’ models of governance. The straightforward models are being replaced by ‘fuzzy’ modes of governance, so called because the roles and responsibilities that planning authorities are expected to take are no longer straightforward as there are to the activities of a wide range of parties including other than governmental bodies.’

This responsibility in Urban Planning and Governance, derived as a social construct, can help disband the position for the creation of an utilitarian (failed) order, as is also exposed by Alexander (1975, 10) in his critique to the concept of master plan, and planning in general regarding the complexity and organicity inherent to cities:

‘...the master plan, as currently conceived, cannot create a whole. It can create a totality, but not a whole. It can create totalitarian order, but not organic order. We shall argue, in short, that although the task of making sure that individual acts of building cooperate to form a whole is real, the conventional master plan—based on a map of the future—cannot possibly perform this task.’

For Alexander, the current nature of Urban Theory and its application by urban planners is incapable to create a built environment in which the variety and organic order pretended are achieved. In this concept, an organic equilibrium can only be achieved by the work of a community in which every member shapes the parts of the environment it is familiar with, a premise telling that only the people living in a place can recognize and know their needs.

Urban planning which intervenes on the social fabric and capital has clearly the non-intended outcome of reducing or destroying incentives, familiarity and trust of economic actors, due to the imposition of external and unnatural requirements and preconditions. Therefore, a new vision and conceptualization should seek, most of all, to achieve minimum standards for the disrupted actors, which act in response to acquired rights, but not look for intervention in the artlessness and ease of actual self-regulation mechanisms present naturally in civil society.

4. THE RELATIONSHIP BETWEEN URBAN PLANNING, EMERGENT INSTITUTIONS AND FORMAL GOVERNANCE: A CONCLUSION.

Together with the previously proposed conceptualization, it's interesting to see that various voices in the realm of Urban Planning have already alerted about a necessary shift in the way the cities are studied and thought. In 2015 at the annual convention of AESOP (Association of European Schools of Planning) a subject of utter relevance for understanding the future of urban studies was proposed as *Definite Space, Fuzzy Responsibility*, in which the limitations of planning in relation to governance and institutions were debated (AESOP Prague 2015):

While many of the initiatives and powers moved outside public control, the sense of responsibility for spatial change and sustainable development of cities and regions hardly overstepped the domain of city halls and ministries, and planners as their experts. The gap between sprawled powers / potency and blurred sense of responsibility should be the focus of the Congress debates.

Our cities are spreading, the distances that most of us have to travel for jobs, shopping, entertainment, etc. are steadily increasing, and money available for maintenance and improvement of roads, utilities and public services is shrinking. Rich people are retiring to gated communities while some others may remain trapped in social and ethnic ghettos.

All these problems are expected to be tackled by planning as an instrument for urban and regional management. But planning itself was affected by drift from hierarchical control by state and local governments, through public-private partnership projects, to governance where the actual field of municipalities' and states' action is dissolved and shared with business.

This defined 'fuzzy responsibility' is where the resolution for the needed proposition of new types of governance in relation to the city gets its inception, how it is related to the transgression against old models of governance which do not answer to the realities of social developments in urban environments. Here its pertinent again to name the work of Jane Jacobs (Jacobs 1961, 60) and her idea of the 'complex order' structured by movement and change, described eloquently as a dance, not a simple and precise one (say guided) but created by distinctive individuals, full of improvisation:

Under the seeming disorder of the old city, wherever the old city is working successfully, is a marvelous order for maintaining the safety of the streets and the freedom of the city. It is a complex order. Its essence is intricacy of sidewalk use, bringing with it a constant succession of eyes. This order is all composed of movement and change, and although it is life, not art, we may fancifully call it the art form of the city and liken it to the dance — not to a simple-minded precision dance

with everyone kicking up at the same time, twirling in unison and bowing off *en masse*, but to an intricate ballet in which the individual dancers and ensembles all have distinctive parts which miraculously reinforce each other and compose an orderly whole. The ballet of the good city sidewalk never repeats itself from place to place, and in any once place is always replete with new improvisations.

Here it is impossible to not make a close relation with (Hayek 1948, 86-87) and its development by (Machan 1988, 230). An evolutionary social and economic theory of the impossibility of centralized planning, with relation to the importance of the individual and its paper both in society as a whole, and in this case of study, in the city, but even most importantly, how the individual eventually build this participation on the social and urban construct:

Persons are not able to escape their humanity—they are human individuals. Treating them as isolated monads or atoms—an idea promptly seized upon and denounced by socialists—has to be rejected. And with this we must reject the impossibility of any degree of political-economic collective “planning,” the notion from Hayek that gives anarchists so much intellectual fuel. With respect to their equality as moral agents, individuals must be understood to share certain features which require a human social order to be constituted in certain ways.

As exposed by Hayek (1948), the importance of the individual falls in the very edge of the limits of centralized planning, specifically in the idea of knowledge dispersion. In this view, time and place are related to whom it inhabits, as there is the recognition of a de-organized knowledge (non- scientific in the sense of a knowledge of ‘general rules’) but the knowledge of circumstances of place, and time, circumstances of location, and this can be applied to the context of local knowledge in the cities we inhabit. An organic or emergent order, as exposed previously is prevalent in Colombia, Latin America and the Global South, and cannot be grasped beforehand and it can only surge gradually inside a community sharing patterns and a process of diagnostic, and which takes responsibility of the consequences of its propositions. Central planning on the other hand ends up generating structures of such conceptual simplicity that determine a simplification of the essence of the city, what makes it work.

A CONCLUSION

The construction of urban reality in the global south and Latin America and Colombia in particular, refers to the prevalence of informal processes that cannot nor should they be ignored and addressed by a simple elaboration of regulatory policies. Being here where the need arises for a study of the role of each individual’s personal responsibility in society, and how he or she create new forms of self-governance. Not only to recognize the ingrained quality of informality, but also to give an account of the power associated with this phenomenon. Moreover, to be able to give an answer to the issue of both economic and human development for the global south where most of the Urbanization will be concentrated in the 21st Century.

Presented conditions emergent transportation cases, context of cities in Colombia, and the construction of informal governance mechanisms, it can be concluded there is an evident willingness in Colombian cities to transgress an imposed order. As there is also a willingness to respect the established social pre-existent constructions, confront the inefficiency of the imposed system vs. the emergent and informal scheme, and not supporting the groups of interest involved in the provision of the regular transportation system (State, private contractors, transportation companies) in favor of the small emergent providers.

Formal governance and centralized planning inability to fulfill its duties of enforcement, causes a detriment in the business of transporting people as we have seen in the nature of irregularity and informality is not going to stop by issuing a law. Future policies addressing these issues need to be evaluated in the context of emergent business models that have significant implications for society. Policymakers need to consider

the importance and relevance of community innovations, and policy proposals need to take into consideration the impossibility of centralized urban governance and planning in spaces as complex as cities in the global south. It is necessary to recognize the entrepreneurial spirit behind these phenomena, the true nature of the relations between people on the ground.

In emerging and developing countries, attention should be fixed on the need to empower people to be entrepreneurs and innovators and build community innovations that therefore produce the condition for their own welfare. These are the people who are doing the Planning, and where attention from Urban Planning should be focused on.

NOTES

1. In the case of the City of Medellín, the situation is more complex. The efforts and relative success of its governmentally led Urban Planning had been praised internationally (Secretaría de Movilidad de Medellín, 2017). Its conceptualization of social urbanism, together with the promotion of varied transportation investments, and urban acupuncture interventions (Echeverri and Orsini, 2011, 17-20) earned the city the award of the Lee Kuan Yew World City Prize in 2016. However, informality in transportation is still present in varied forms, wherever the structured integrated mobility system of the city do not reach, or where the informal means still provide a better alternative of mobility for people, especially in marginalized areas (Valdes Zambrano, 2014, 43) of the city.
2. In the scope of organizational theory and institutional analysis used for terminology of this thesis, the term self-management, also meaning autonomous administration), is understood as the use of any method, skill and strategy through which the participants of an activity can guide the achievement of its objectives with autonomy in the management of resources. It is done through goal setting, planning, programming, task tracking, self-evaluation, self-intervention and self-development.
3. Reference: fr.forumviesmobiles.org

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Exit, voice, and forking

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Abstract: This paper offers a new framework to understand institutional change in human societies. An ‘institutional fork’ occurs when a society splits into two divergent paths with shared histories. The idea of forking comes from the open-source software community where developers are free to copy a piece of software, alter it, and release a new version of that software. The parallel between institutional choice and software forking is made clear by the function and politics of forking in blockchain implementations. Blockchains are institutional technologies for the creation of digital economies. When blockchains fork they create two divergent communities with shared transaction ledgers (histories). The paper examines two instances of institutional forks. Australia can be seen as a successful fork of eighteenth-century Britain. The New Australia settlement in Paraguay can be seen as an unsuccessful fork of nineteenth century Australia.

Keywords: Institutional choice, blockchains, Australian history, New Australia, open source software

1. INTRODUCTION

When I design a lot of other systems, I usually ... try to design it from the start the way that I want it to be. But Bitcoin is how it is right now, and we’re bootstrapping this network that already has a lot of value, and the real engineering challenge isn’t ... how would I build it from scratch better, but how can I take what exists right now and modify it in a way that isn’t going to break it that’s going to add the functionality that we want (Lombrozo 2017)

Society is nothing but a succession of exchanges
(Destutt de Tracy 1817, p. 6)

Albert O. Hirschman (1970) contrasts two methods by which citizens and consumers can exert power over firms and states. They can *exit* (migrate to a different jurisdiction or take their business elsewhere) or they can exercise *voice* (vote, protest, complain, and otherwise exercise influence over the unsatisfactory organisation). This paper offers another option: they can *fork*. Forking is a form of group secession (exit) that takes an existing set of institutions and creates a new ‘society’ with a shared history but divergent

futures. Exit can be an entrepreneurial activity (Gofen 2012). Congleton (2010, p. 11) notes that *formeteurs*—that is, individuals or groups who entrepreneurially create new organisations—frequently model their new organisations on existing organisations. Forking describes a special case of this organisational-institutional formation, in which existing forms are ‘copied’ with modifications, exploiting (deliberately or otherwise) the organisational-institutional past.

The concept of forking comes from the open source software (OSS) community. Where proprietary software (that is, software protected by copyright) requires potential competitors to create new products, OSS allows developers to copy an existing codebase, modify it, and then release a new variety of the program. For example, the popular GNU General Public License 3.0 allows anyone the ‘freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs’ (Free Software Foundation 2007).

This paper draws a relationship between forking in open source software - in particular blockchain technology - and political secession in which seceding groups inherit, alter or abandon the institutions of the originating society. Economic and political institutions are ‘open source’ in so far as there are no meta-rules that prevent potential institutional entrepreneurs from choosing to adopt them in new societies. There is nothing *proprietary* about the common law, representative parliaments, central banking or the bourgeois virtues. However, there are strong path dependencies that push secessionists to replicate originating institutions even in their ‘new’ societies. Secessionists do not rewrite the institutions of their societies from the bottom up. Rather, they consciously modify and adapt those institutions to meet specific pragmatic needs or philosophical visions, creating a fork of their originating society.

In this paper we consider two forks: European settlement in Australia (a fork of the United Kingdom in 1788) and the New Australia settlement in Paraguay (a fork of Australia in 1893). The former is usually described as a *settlement* or a *colonisation* and the latter a *colony*. William Lane’s settlers came at the invitation of the Paraguayan government. By contrast Indigenous Australians had no say in their dispossession after 1788. The expropriation of property rights of the existing inhabitants was a deliberate decision made by the colonists (Brooks, Davidson and Faff 2003) that constitutes a distinct (and devastating) institutional choice. While readers should understand that settlement was forced in the case of Australian convicts and voluntary in the case of the New Australians, each new society had to make decisions about which institutions in the old society to keep and which to discard.

Forking has been a feature of software in the public domain since the earliest days of computing. However, the similarity between secession (and colonisation) and software forks has become evident since the development of open source blockchain technology—what Davidson, De Filippi and Potts (2018) call an *institutional technology* (see also Berg, Davidson and Potts 2019b). Blockchains are the underlying decentralised ledger technology that powers cryptocurrencies like Bitcoin (Nakamoto 2008a) and distributed computing technologies like Ethereum (Buterin 2014). Like other operating systems, blockchains are multi-sided markets whose value is partly derived from network effects (Rochet and Tirole 2003; Rysman 2009). Yet blockchains are economically distinct (Catalini and Gans 2016) three-sided markets where buyers, sellers and miners each have to be satisfied (Berg, Davidson and Potts 2020). Blockchains are a co-ordinating institution for creating *new economies*—they are a new environment for exchange, not just a facilitator of more efficient exchanges.

Exchanges in blockchains are governed by the rules of the network and enforced by consensus mechanisms. In this context, blockchains are *constitutional*: they offer a framework on which diverse ends can be pursued (Alston 2019; Berg, Berg and Novak 2020; Berg, Davidson and Potts 2019a; Bodon et al. 2019; Rozas et al. 2018). Their value is derived from a history of exchanges recorded on the shared ledger. Blockchains are also highly susceptible to forking. The original Bitcoin protocol is licensed under the MIT open license, and new cryptocurrencies have been established by copying and then making changes to the Bitcoin codebase. We discuss this below.

Where Davidson, De Filippi and Potts (2018) use institutional analysis to shed light on the institutional significance of the blockchain, this paper does the reverse: it uses the dynamics of institutional innovation in the blockchain industry as a model to shed light on historical institutional innovation and change. Blockchains were not invented to be used as an economic model to be mapped onto the real world. However, they function as an institutional ‘closed loop’—they are institutional technologies in which the rules are self-enforcing. As a result of solving the practical challenges of implementing a decentralised shared ledger (that is, maintaining a consensus for coordination in the possible presence of opportunism) Nakamoto (2008a) created a model of an organised social system.

North (1990) describes institutions as the rules of the game: “humanly devised constraints that shape human interactions”. Institutions facilitate political, economic, and social exchange when transaction costs are non-zero. Institutions can be explicit codes that direct and prohibit behaviour (such as coded statutes and regulation), legal-regulatory meta-frameworks (such as the common or civil law) or norms, customs and traditions that structure and coordinate economic choices (Denzau and North 1994). In this mode, institutions coordinate mutual expectations about future action, but these expectations are fundamentally backward-looking, based on limits set by prior choices and the imaginary result of choices yet to be made (Shackle 1979). In the institutions-as-equilibria approach (Greif and Kingston 2011), institutions are mutual expectations between exchanging agents in which the rules are self-enforcing—that is, rule enforcement is endogenous.

Given these relatively static conceptions of institutions, the question is how institutions change. Institutions evolve in historical time under conditions of path dependence (David 1994; North 1991). Another way of describing this is that institutions both change and prevent change. Glaeser and Shleifer (2002) and La Porta, Lopez-de-Silanes and Shleifer (2008) develop a ‘legal origins theory’ to show that the economic performance of colonial and post-colonial societies is at least partly determined by the legal framework of the settling empire. Common law countries that inherited their institutions from the United Kingdom are better at protecting outside investors than countries that inherited civil law systems (particularly French civil law systems). There is, however, considerable variation among countries with a shared system, as there is between systems. Path dependency constrains but does not prevent institutional change.

Potts (2007) explores the evolutionary theory of institutions as a three-step process: the entrepreneurial creation or origination of a rule (institution), the adoption and adaptation of that rule by a population of carriers, and finally the retention of that rule by the population. It is at the retention stage that the rule achieves equilibrium. Evolutionary entropy means that two separate - but otherwise identical - populations will diverge over time as institutional entrepreneurs develop new ideas, and those ideas are differentially adopted by those populations. While identical populations are never perfectly replicated, the process whereby one rule-population equilibrium becomes two is a fork.

The paper proceeds as follows. Part 2 outlines the role of forking in the open-source world and the blockchain ecosystem as a model of institutional change. Part 3 discusses the Australian colonies as a successful fork and New Australia as a case study of an unsuccessful fork. Part 4 concludes.

2. FORKING AS A MODEL FOR INSTITUTIONAL CHANGE

Bitcoin and most implementations of blockchain architecture are OSS projects. The blockchain industry has inherited the practice of forking from that movement as well as many of the norms surrounding it. Forking occurs when collaborative software development bifurcates along two or more paths. Each path inherits the previously developed code and modifies it independently, creating two or more unique pieces of software. The term forking was first used in public documentation by Allman (1980), describing how a version control system could describe code changes that branched off, and was included in the POSIX operating system standards to describe a process of making a copy of itself (Robles and González-Barahona 2012).

Forking creates two development and user communities that use technologies with a shared parent but that have limited or no cross-compatibility.

Forking is a social phenomenon not simply a technical one. It is governed by strong social norms and taboos that have evolved to protect the reputation of developers (Kogut and Metiu 2001; Raymond 2001; Stewart and Gosain 2006). Considerable controversy surrounds software forks. Forking has been described as the ‘cardinal sin’ of open source software (Ågerfalk and Fitzgerald 2008, p. 390). Objections typically focus on the potential for duplicative and therefore ‘wasteful’ development work, and a divide among developers that may mean less focused attention is paid to the subsequent software (Raymond 2001). By contrast, forking can also reduce the need to force a consensus on future development direction and thereby reduce social tensions (Dash 2010), provide valuable competitive pressure (Fogel 2005; Weber 2004), and safeguard projects from opportunistic actors (Nyman et al. 2011).

Why do development communities fork? In a study of 566 forked programs on the open software platform Sourceforge between 1999 and 2010, Nyman and Mikkonen (2011) identify seven distinct self-reported motivations for forking. Half of all forks identified were to add content to, or refine the focus of, the software. A quarter were ‘technical’ modifications, including porting the software to a different operating system or hardware, and providing for technical improvements. Other forks were to revive abandoned projects, deal with licensing issues, language or regional changes. Only 4 per cent were for experimental purposes and a very small number—just 4 of the 381 identifiable motivations—reported the fork was due to community disagreements or breaches of trust. By contrast, Viseur (2012) looked at a sample of 26 larger and more mature projects and found a much higher percentage of forks driven by problems of project governance or cultural differences within the community (46 per cent). Technical motivations were attributable in 42 per cent of forks. (Forks which resulted in proprietary software were not considered.)

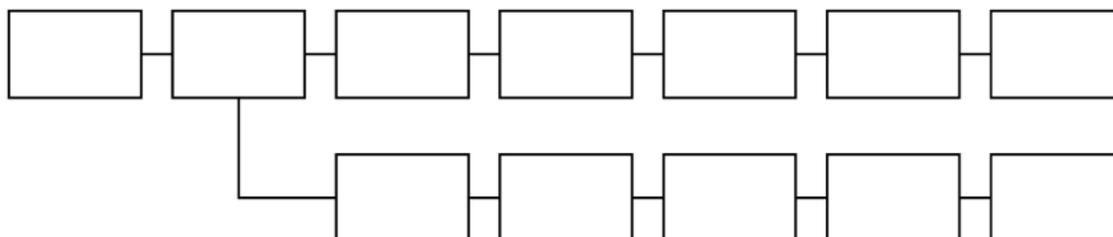
Forking is common in the blockchain community, and there are a number of distinct categories of forking. The most common type of fork occurs at the consensus layer, when two or more miners produce valid blocks near simultaneously. This event causes a divergence in consensus on the chain. Miners then seek to coordinate around the split chain that has the most acceptance, re-establishing consensus. Berg, Davidson and Potts (2019a) describe this as a *block fork*. By contrast, *modification forks* occur when miners and full economic nodes disagree on changes to the protocol and adopt different rulesets, resulting in a (usually) undesired split in the chain. The result of a modification fork is to leave owners of tokens in the original chain with ownership of tokens in both split chains - that is, each chain retains a shared history going back to the first block but has divergent histories after the split. Finally, a *coin fork* occurs when developers take the source code from an existing project, modify it, and launch a new blockchain network with a distinct history. Typically, both modification and coin forks feature iterative innovations, building on otherwise successful protocol designs to modify features.

As an open source project, Bitcoin has been subject to a large number of forks. Early modification forks, when the network lacked a critical mass, were implemented through unilateral software upgrades by Nakamoto. The Bitcoin protocol has forked repeatedly as some miners have sought to increase the block size as part of attempts to increase the transaction throughput of the network. These ‘altcoins’ have sought to maintain a brand and ideological connection with the Bitcoin chain include Bitcoin XT (which forked in 2015), Bitcoin Classic and Bitcoin Unlimited (which both forked in 2016), and Bitcoin Cash (which forked in 2017).

Coin forking altcoins that offered fundamental changes to the design or purpose of the protocol dropped the Bitcoin name. Early examples include Namecoin (launched in 2011), which allowed for data to be stored within the blockchain transaction database, allowing for identity-based management such as domain names. Litecoin (launched in 2011) adopted larger block sizes, an alternative hashing function, and a larger maximum number of coins. ZCash (launched in 2016) offers privacy-preserving shielded transactions. These forks are conceptually distinct from alternative blockchain implementations that have been built from the ground up, such as Ethereum, Steem, or Tendermint. However, these alternative implemen-

tations can also fork. The most famous example is the modification fork experienced by Ethereum in 2016, where the legacy chain took the name of Ethereum Classic.

Figure 1: Forking in blockchain



In Figure 1 we show an abstract representation of a modification fork in blockchain. Blockchains group transactions into blocks that are strung together (hence ‘blockchain’). Each block contains a cryptographic summary (a ‘hash’) of the previous block, allowing external observers to validate the chain all the way back to the first block (the ‘genesis’ block). The figure depicts a chainsplit that begins at the third block in the chain. Both the original chain on top and the forked chain below maintain the same histories (in the first and second blocks) but have divergent paths.

Open source software and blockchain implementations have distinct philosophical cultures, coming out of the hacker and cypherpunk communities respectively (Hughes 1993; May 1988). Before its public release, Nakamoto (2008b) described the system as “very attractive to the libertarian viewpoint if we can explain it properly”, and political philosophy—particularly libertarian and anarchist philosophies—motivated many early community participants (Faife 2016; May 2017). Disputes about the desirability of forking have pivoted on the technical, economic, political, and philosophical implications of the fork. For example, one former Bitcoin Core developer wrote of how the dispute over the Bitcoin block size “reflects deep philosophical differences in how people view the world” (Hearn 2016). These debates often hinge on questions of legitimacy, given the collaborative governance structures and norms of the Bitcoin community (Back 2015). The question of whether Bitcoin XT was a fork or an effort to create a new consensus on the core Bitcoin chain was challenged by moderators on the Reddit Bitcoin forum, *r/bitcoin*, who disputed the legitimacy of discussing XT on that forum (theymos 2015), and accusations of censorship on topics concerning block size led to the Reddit Bitcoin community splitting (Blocke 2016).

Lehdonvirta (2016) describes the disputes over forks as a problem of governance in the Bitcoin ecosystem, which had been designed as (and is still often conceived as) a domain of mechanism design rather than one in which problems of governance—and politics—are pervasive. De Filippi and Loveluck (2016) argue that the contest around the Bitcoin block size reflected a crisis of governance, where no clear constitutional mechanism had been designed to resolve disagreements about the future of the protocol (however see Allen and Berg 2020).

3. INSTITUTIONAL FORKS IN HISTORY

Blockchain modification forks consist of shared histories and iterative institutional variation. They create two cryptocurrencies with identical ledgers up to the point of divergence. Institutionally, they can be said to have shared histories, inheriting the past history of exchange transactions. Their relative future value is determined by the future economic activity that occurs on the different chains, which is in turn determined by the institutional variation and the economic and community environments in which they operate. Success depends on the effectiveness and sustainability of the institutional variation and the environment in which the fork is deployed (i.e. what users come across to the new cryptocurrency and whether new users can be attracted).

The preceding paragraph, indeed, can also serve as a reasonable description of the uncertainties surrounding settlement in Australia. Would the institutions they inherited from Britain be successful in the antipodes, how should they be varied to adjust to the new environment, and would further settlers be attracted to the Australian settlement?

a) A successful fork: Australia

In January 1788 Captain Arthur Philip established a colony at Sydney Cove, Port Jackson, in today's New South Wales. At the time of this settlement, there was an indigenous population on the Australian continent of approximately 750,000 to 800,000 (Hunter and Carmody 2015; Mulvaney and White 1987). However, the post-settlement dispossession of indigenous property rights (see Brooks, Davidson and Faff 2003) meant that the Aboriginal population was prevented from making a direct contribution to the institutional choices of colonial society. Although Aboriginal people contributed to the settlement economy in the labour market, the stock of existing indigenous economic activity (described in Gammage 2011; Pascoe 2014) was not integrated into the new settlement (McLean 2013).

The Port Jackson colony was established as a penal colony to relieve prison overcrowding in Britain. The end of penal transportation to American colonies after the Declaration of Independence and the failure of an interim measure—confinement in hulks on the Thames—presented a need to establish an alternative destination for felons. A possible secondary, but unpursued, rationale was to establish a permanent naval presence in the Pacific (Frost 2012) and acquire resources, such as flax and naval timber, that would serve geopolitical ends in Europe (Blainey 1966). The dispute over the motives of the founding of Australia has continuously and inconclusively raged in some way since 1888 (Frost 2012; Martin 1978). Nevertheless, the settlement was not intended just as a penal 'dumping ground'. Australia was chosen over alternative sites such as The Gambia because the climate was understood to be mild and the soil fertile enough to support a self-sustaining colony in a reasonably short time. For the same reason, the colony was granted a governor and a marine detachment, rather than leaving the convicts to fend for themselves (Abbott 1995).

The extent to which Australian institutions were derived from British ones was not immediately obvious. Shann (1930) famously described the colony in its earliest years as a barely functioning military despotism, with public provision of agriculture ("prison communism") and a rationing system. Yet as Hirst (1983) has argued, despite the dictatorial illiberalism of its earliest years, the colony was in some sense born 'free'—the convicts were treated as stakeholders in the new society. Englishmen transported to Australia as convicts were still Englishmen and carried with them the stock of liberties and institutional relationships that they had enjoyed in Britain (Atkinson 1994). In his analysis of the Kable case, the first civil case in the first Australian civil court, Neal (1991) shows how convicts were seen to have property rights and the right to have those enforced against an authority figure. The half century towards self-government involved the adoption and integration of British civil, economic, and legal institutions into the colony, such as jury trials and parliaments.

These British institutions were less chosen than confirmed. Early Australian public culture was an enlightenment, neoclassical one (Berg 2017; Dixon 1986; Gascoigne 2002), less imported or adopted from Europe than continued. As the nineteenth century liberal James West put it, "In her colonies [Britain] recognises the reproduction of herself, and, without envy or jealousy, awaits the hour when the communities she has sent forth shall be enrolled among the nations" (West [1854] 2001). The conservative James Macarthur wrote of the "British character ... spread over the uncultured regions of primeval nature" in Australia and the United States (Macarthur 1837, p. 282). This Britishness was defined partly as the institutions and ethos that could be recognised and imported from Britain and partly defined in contradistinction against the indigenous population, which were assumed to be lacking in British virtues (Buchan 2015) and presented a challenge to the orderly implementation of its institutions.

Nevertheless, the Australian colonies were a fork of their British inheritance, not a straight transplantation. The rights which the convicts enjoyed as British subjects exceeded those held by felons in Britain, who were seen by the legal system as ‘civilly dead’ (Neal 1991). To allow convicts to hold property and sue in this way was to transport the “personal autonomy of English law ... to Australia, but in a new form” (Kercher 1995, p. 23). While that discrepancy between Australian and English convict law was removed in 1820, it was one of the first of a century of institutional choices, deliberate or otherwise, that had to be made by inhabitants of the Australian colonies.

Australian culture and identity were shaped by the human capital which settled in the colonies—not a cross-section of British society, but convicts and ‘paupers’. Ward (1956) writes that “In early Australia convict and working-class attitudes strongly influenced those of the whole community”, whereas in Britain aristocratic and upper-middle class manners and culture set the tone for British society. In his history of the English, Tombs (2016) emphasises the function of politeness moderating difference, extolling rationality and sincerity. By contrast, Anglo-Australian culture is ironic, anti-sentimental, ‘tough’, and egalitarian, as linguistic evidence amply testifies (Goddard 2006, 2009, 2012; Mullan 2010; Peeters 2004; Wierzbicka 1986, 1997, 2002).

A more concrete institutional choice faced by the colony was whether to maintain the structures of British privilege. Cochrane (2006) traces the contests over democratisation in New South Wales as the colony struggled with two competing visions of Australia: the establishment and maintenance of a ‘bunyip aristocracy’, or a more radically popular democracy (see in particular Pickering 2001). These institutional choices had a material effect on the success of the colony. McLean (2013) argues Australia’s relatively more liberal political institutions and land reform that limited the build-up of land empires meant that it avoided the development path of Argentina—a country with similar land endowment but whose economic development has been poor relative to Australia. The similarities between these two countries has meant that comparing Australia and Argentina is a mainstay of understanding Australian success (Duncan and Fogarty 1984).

Yet as Ville (2013) identifies, Australian and Argentinian prosperity only diverged in the 1930s, long after these institutional choices were made. If we are to view European settlement in Australia and Argentina as a natural experiment, then from an institutional perspective, the two colonies, one a fork of Britain, the other a fork of the Spanish empire, were operating with a near-completely different rule set and human capital stock (user base). At one fundamental institutional level, Argentina is a (French) civil law country and Australia a common law country; a distinction which La Porta, Lopez-de-Silanes and Shleifer (2008) show has a deep and pervasive influence on economic outcomes (see also Glaeser and Shleifer 2002; Porta et al. 1997, 1998). The transplantation of a legal system:

involves not just specific legal rules (many of which actually change later) but also legal institutions (of which judicial independence might be the most important), human capital of the participants in the legal system, and crucially the strategy of the law for dealing with new problems. Successive generations of judges, lawyers, and politicians all learn the same broad ideas of how the law and the state should work. (La Porta, Lopez-de-Silanes and Shleifer 2008, p. 307)

As this suggests, these ‘broad ideas’ include beliefs and ideologies that underpin and draw from those legal rules, institutions, and educations. But that transmission is not costless, and La Porta, Lopez-de-Silanes and Shleifer (2008, p. 288) emphasise how the transplanted institutions were “changed, evolved, and adapted to local circumstances”.

In the institutional fork model, the initial circumstances were technical. The original fork was driven by resource constraints in Britain (prison overcrowding and possibly access to flax and timber). Despite the vast initial institutional difference between relatively liberal Britain and penal colony despotism, the overriding goal of most settlers in the early decades was to replicate as close as possible the society that they left.

Early Australian libraries were full of the works on legal and political economy that settlers believed characterised Britain at the time. Berg (2017) finds 132 copies of Adam Smith's *Wealth of Nations* and 61 copies of Blackstone's *Commentaries* on sale in Australian colonies between 1800 and 1849.

Yet the process of forking meant that the new colony had institutional divergences that play key roles in Australia's later development. Some of these differences (such as treating convicts as legal entities with property rights at law) were established in order to pursue the broader intent of British institutions despite necessarily diverging in the specifics. Larger and more consequential to Australia's long-run development was the fact that the spread of human capital in the colony was significantly different from Britain. This had specific institutional consequences, shaping language and culture, resisting the adoption of class structures that would have otherwise been inherited from Britain, and heavily influencing the path towards self-government.

2. An unsuccessful fork: New Australia

"Where we shall we be able to form new habits, uninfluenced by old social surroundings, where none but the good men will go with us" (Souter 1968)

"Most forks are failures. They find that the things they needed were not actually worth doing and as a result, most forks die" (Torvalds 2011)

New Australia was a settlement founded in Paraguay in 1893 that was intended to be organised according to the principles of communal property ownership and white racial hegemony. New Australia is a fork of Australia that presents a case study of a failed institutional fork. Most accounts of New Australia attribute its failure to resource scarcity ('Colonia Cosme' 1895), the dictatorial character of its formateur William Lane (Marsden 1896), or the 'selfishness' of the colonists (Souter 1968). Here we frame its failure in institutional choice. After all, Australia in 1788 also suffered from these defects. Rather, the choices made to vary Australian institutions in the new society were philosophical and unsuited to the colony's development. Institutional variations were forced on the settlement of Port Jackson by circumstance (the needs of a penal, rather than free settlement, for example). For New Australia, institutional variation was the rationale for the entire project.

New Australia was conceived in a formative period of the Australian labour movement. In the 1890s many in that movement wished to establish a society along socialist lines (Whitehead 1997). Lane, a prominent leader in the 1891 shearer's strike and editor of the *Worker*, was inspired by the Texan and Illinois utopian socialist colonies founded by Étienne Cabet (see Kagay 2013), and the Topolobampo in Mexico founded by Albert Owen (see Katscher 1906). Lane would also have been aware of the thousands of people living in communal settlements across Tasmania, South Australia, Victoria, New South Wales and Queensland in the late 19th century (Foster 2005). After a failed attempt to obtain land in Australia for his settlement, he set his mind on South America, where the Paraguayan government was trying to encourage settlement to resolve a demographic crisis (Kellett 1997).

The first colonists left for Paraguay in 1893. The institutions of New Australia were to be governed by the 'Basis for Communal Organization', to come into effect when 500 colonists had reached New Australia; it called for the communal ownership of the means of production and distribution. In addition, any surplus wealth accumulated would be distributed amongst all members, with no variances based on sex, age or ability (Souter 1968). Underlying this was 'mateship' that would provide the economic and political ethic of the settlement. Mateship (as Lane understood it) was a masculine, fraternal egalitarianism (see Dyrenfurth 2015) that could coordinate activity in the absence of property rights (Whitehead 1997). As Lane wrote his 1892 novel *The Workingman's Paradise*, mates

is them wot's got one purse. If I go to the shed with Jack an' we're mates an' I earn forty quid an' Jack gets sick an' only earns ten or five, or mebber nothin' at all, we puts the whole lot in one pus, or if it's t'other way about an' Jack earns the forty it don't matter... If Jack's got the pus an' I want half-a-crown, I says to Jack says I, 'Jack, gimme the pus.' An' if Jack wants ten quid or twenty or the whole lot he just says to me, 'Bill, gimme the pus.' I don't ask wot he's goin' to take an' I don't care (Lane 1892, 113)

Mateship, however, was understood by Lane to be an *inherited* institution, rather than a variation of Australia's institutional setup. Mateship is an ethic that was seen to be held by the working class. The poet Henry Lawson, who was in the same social group as the New Australians, wrote of mateship as being a quality where those in need are selflessly helped without thought for reward (Page 2002; Souter 1968; Whitehead 1997).

Consistent with this approach to institutional selection, Lane was also particular about which Australians would be permitted to settle in his new colony. Lane's vision was of an idealised working-class segment of Australians along racial and moral lines. Paraguay was attractive because the remoteness meant that the "weak" would be discouraged from attempting the journey (Souter 1968). The settlement was to exclude those who lacked fluency in English, those living together out of wedlock, those not willing to abstain from alcohol, those who had in the past been disloyal to the labour movement, and any non-white settlers. As Lane saw it, New Australia could be the realisation of his (and many in the labour movement's) anti-Asian views. White racial homogeneity was almost as important as the abolition of private property, as those who went to Paraguay would be "free from the weaknesses of outside races" (Mawson 2011, p. 94).

The instability of the 'mateship' property regime was apparent even before the colonists reached Paraguay. The first voyage featured the loss of most of the cutlery due to carelessness and neglect of common property. Bartering with the Guaraní people in Paraguay was a 'constant source of friction' at it gave rise to questions over ownership over shared goods (Souter 1968; Whitehead 1997). As new settlers arrived in the colony, existing settlers were expected to offer the arrivals 'a pound of flour and half a pint of treacle', but this was resented. One colonist reflected that 'however workable communism may be for angels, we were not suited for it. Communism is an exceedingly high religion. In practice it is only a few who are fit to live that high life' (Souter 1968). There was little agricultural production in the colony and in a few years increasing instances of theft, particularly of cattle and horses, as well as heavy drinking. By 1897 there was an almost complete reversion from communal to individual ownership in New Australia (Mawson 2011). Lane had left New Australia in May 1894 to establish a new colony, Cosme, 72 kilometres to the south. In Cosme the wage system was introduced virtually at founding (Souter 1968). Native Paraguayans were paid to clear woodland, although at the time it was remarked by one colonist that "it strikes me that it is the thin edge of the wedge which will bust up the brotherhood" (Whitehead 1997).

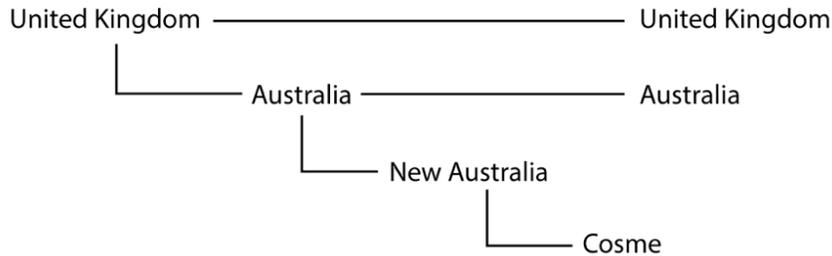
The total population of New Australia and Cosme at any one time likely never numbered more than 350 (Souter 1968). Within a few years, communal ownership ceded to individual ownership and production. Over time, even social habits and language adopted to local customs. Spanish became increasingly adopted by the colonists, as well as Paraguayan eating and drinking habits. Rather than a racially pure Australian socialist utopia in South America, those who remained were gradually amalgamated into rural Paraguayan society.

4. FORKING AS INSTITUTIONAL ENTREPRENEURSHIP AND COMPETITION

An institutional fork occurs when a society splits into two divergent paths with shared histories. Australia was a remarkably successful fork of the United Kingdom, and New Australia a notably unsuccessful fork of colonial Australia. In each instance deliberate and implicit institutional choices were made that determined the success or otherwise of the new population. The decision to establish a settlement is a choice made by an

institutional entrepreneur, and the institutional choices of the new settlement are subject to that initial decision. Institutions evolve over time but do so unpredictably, affected by entropy, environmental-technical factors, and ideological influences. Forking presents a framework in which to analyse secession and institutional change in the context of path dependencies—that is, the long-run effect of those shared histories.

Figure 2: Australian institutional forks



In Figure 2 we show an abstract depiction of this process of institutional forking. Each new colony brings the institutional history from its originating society, embedded not only in the legal framework that was explicitly imported, but in the norms, attitudes, and memories of those who were the settlers. As Kir-sop (2011) has written, in the minds of the settlers, the Hobart of 1846 was not so far away from Warwickshire of the 1770s and 1780s. The divergent paths create new institutional dynamics. At the first instance, the new society is physically separated from the divergence in a new environment—the types and patterns of agriculture are different in the United Kingdom and Australia, and again in Paraguay. For example, early Australia suffered from extreme labour shortages. This favoured the grazing of livestock, which in turn led to the development of a class of wealthy ‘squatters’ (who grazed livestock on crown land) that sought to entrench the bunyip aristocracy (McLean 2013). Yet these aristocrats had relatively little social and economic bargaining power compared to their counterparts in Britain, and the colony made the explicit institutional choice to diverge from the British class system. New Australia likewise made explicit institutional choices—Lane sought to maintain Australian cultural norms (mateship) yet at the same time vary the institutions of private property and wage labour. The subsequent settlement fork, Cosme, varied these institutions again (in fact re-adopting some of the economic institutions of Australia).

Forks compete with their originating economy for resources and economic activity. Bitcoin and Bitcoin Cash compete to both represent ‘Satoshi’s vision’ as well as for attention and adoption (see for instance Ver and Vays 2019). These compete on the margins of adoption (given the centrality of network effects), and institutional qualities (such as fast transaction speed or security). Kwon et al. (2019) show how the competitive co-existence of two coins with the same mining algorithm—meaning that miners can switch between mining each coin at low or zero cost—can weaken security and decentralisation in both. Likewise, settlements compete with their originating economy for resources and in export markets. Where just over 300 individuals (freely) migrated from the United Kingdom to Australia in 1821, more than 73,000 migrated in 1854 after the Gold Rush in Victoria (Haines and Shlomowitz 1992). Haines et al. (1998) show that migration contributed to a ‘brain drain’ in another British possession: Ireland.

Institutional orders are subject to network effects and these are often achieved by having one side of the market subsidise the other side. In the blockchain industry the process of creating network effects—of encouraging the decentralised development of an ecosystem/economy of token holders, users, developers and applications—is described as “bootstrapping” (Catalini and Gans 2016). Cryptocurrency tokens incentivise investment in the network, and some blockchains have experimented with airdrops (giving away tokens freely to developers or users), as well as the (in)famous initial coin offerings common during the 2017-2018

cryptocurrency boom. Parallel attempts at institutional bootstrapping are also evident in examples of institutional forks. Australian colonial governments subsidised migration, competing against other colonies for immigrants, which in turn shaped the types and occupation of migrants in each colony as both implicit and explicit policy choices (Haines and Shlomowitz 1996).

Institutional experiments on one forked economy can be adopted by the originating economy or by other forks through their own endogenous process of institutional change. There is a long history of institutions being developed in Australia, where a smaller population and fewer inbuilt constraints encouraged experimentation, that were then exported to the United Kingdom, most prominently the expansion of suffrage to women (in South Australia in 1894, although New Zealand introduced women's suffrage a year earlier) and the secret ("Australian") ballot.

Forking presents a powerful descriptive framework in which to analyse secession and institutional change in the context of path dependencies. This article has introduced the concept of an institutional fork, thereby opening the opportunity for the study of further instances. These include socialist experiments in Mexico (see Katscher 1906) and Australia (see Foster 2005), as well as major forks from the United Kingdom such as the United States and Canada. The comparative study of institutions and societies which have shared histories but divergent paths can be a powerful tool for analysing the multitude of different economic and social outcomes throughout the world.

Finally, forking offers entrepreneurs who are seeking to exit existing institutional sets a framework to think about institutional choices. The creation of special jurisdictions such as charter cities (Romer 2010), special economic zones (Moberg 2015, 2017), seasteads (Friedman and Taylor 2012, Quirk and Friedman 2017), and startup cities (Bell 2018) all require choices to be made about what rule sets to adopt. The opportunity for institutional experimentation is enhanced by digital technology that allows for territorial jurisdictions to integrate more deeply with foreign jurisdictions, as well as allowing for new forms of 'cryptosecession' (Macdonald 2019) or 'pop-up economies' (Rennie 2019), where institutional rule sets are taken entirely online (see also Allen, Berg and Davidson 2020). The forking framework clarifies the dimensions of institutional choices that need to be made.¹

NOTES

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Justice in the City: Georgist Insights and their Limits

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The history of ideas offers many examples of “ideal” solutions to real or perceived problems which generated much initial enthusiasm but turned out to be disappointing in the end. Henry George (1839-1897) was an original thinker whose economic analyses and suggestions for reforming the taxation system should be of interest to classical liberals considering that he was a firm believer in the virtues of free markets. This is a point I elaborate upon further below. But the conviction he and his follower held that they had found *the* path toward abolishing poverty proved to be untenable. This is not to say that his ideas ought to be dismissed and, in fact, they are being rediscovered. The trend began quite a few years back in the academic community and by now the literature on Georgist idea is quite voluminous and still growing (without making any claim of this being an exhaustive list, see Backhaus 1997; Blaug 2000; Andelson 2003 and 2004; Bryson 2011; Nell 2019; see also many articles in the *American Journal of Economics and Sociology*). More recently, George’s land value tax has become an almost obligatory reference in commentaries (Bess 2018; Neklason 2019) about the extraordinary rise in the price of land in global cities such as New York, San Francisco, London, Toronto or Vancouver, where lots in practically any neighbourhood have reached prices that would have been unimaginable two or three decades ago, making the purchase of a detached house out of reach for even well-off households.¹ But this intellectual curiosity is unlikely to have much of an impact on policy-making beyond a few local initiatives.

George’s hopes of ushering in a new age of prosperity benefiting *all* citizens fairly were dashed. Even though George had many followers during his lifetime and for a few decades after his death, Georgism, as a reform movement, ended in a political failure. The main objective of this paper is to explain the origins of that failure. I discuss two of them: first, the tactical mistakes George or his followers made and the political circumstances in which they were working; second, at a more fundamental strategic level, the very nature of the project he undertook shares with all contracstarian projects aiming at an overarching and logically constructed ideal an incapacity to acknowledge and accommodate the complexity of the real world. But my perspective is not entirely negative. I want to explore some avenues for giving at least the spirit, if not the letter, of the Georgist plan a chance to produce some practical effects by following a pragmatic strategy for addressing pressing problems caused by economic rents in areas other than real estate. Accordingly, the next section provides an account of George’s analysis of the “law of rent” being the cause of poverty and of how he proposed to solve the problem by taxing land rents; a brief comparison with similar views advanced by the French economist Léon Walras suggests that

placing severe limitations on land ownership was “an idea whose time had come.” George’s proposed reform was indeed very popular in his days, but I also explore in that section the circumstantial causes of George’s inability to build on that initial popularity to radically redefine the conditions under which land is owned and used. In the subsequent section, however, I argue that the root cause of that disappointing outcome was not merely circumstantial: it can be traced back to limitations and contradictions inherent in any attempt to implement an ideal and all-encompassing social contract. Finally, I turn to potential “windows of opportunity” for building on Georgist ideas to perhaps more feasibly tackle other types of economic rents that are becoming a pressing concern, especially in the digital economy.

THE APPEAL OF GEORGE’S “REMEDY” AND ITS LIMITATIONS

George’s political project came to be known as a plan to impose a “single tax” on land value (i.e., to replace all other taxes with this unique levy). But this catchy phrase does not do justice to the subtleties and depth of the analyses he developed to justify it.² In what follows, I provide an overview of his theoretical political economy and of the obstacles he encountered in attempting to move from theory to practice.

i) *George’s Path to the Just City*

As a young journalist, Henry George was deeply affected by the effects of the poverty he witnessed during his first trip to New York in 1869. (A previous trip to India had already awakened his social conscience.) This prompted him to immerse himself in the study of political economy³ and he came to realize that his intuition about the unfairness of profits from land rents had been a running theme in the history of economic thought. The 18th century Physiocrats in France and, in 19th century Britain, David Ricardo and J. S. Mill, among others, had all inveighed against the dysfunctional effects of excessive profits from land and other natural resources.⁴ That economic agents can passively benefit from the rise in price of an asset in the production of which they played no part is a phenomenon generally known as the consequences of an “economic rent.” The most obvious but by no means the only example of economic rent is the rise in the value of land when demand for goods that require a large amount of land (agricultural food production or housing) goes up. It is important to stress that he was not concerned about increases in the price of a property brought about by improvements resulting from investment of capital and labour, but only with increases in the value of land per se. George was certainly not the first one to suggest that rent should be taxed (the 18th century Physiocrats had already suggested that the best tax would be a tax on the net rent of land [Schumpeter 1954, 238-231]). But he had more success than others in mobilizing public opinion. By contrast, as I explain below, the French economist Léon Walras’ plan for dealing with land rent was largely ignored in his own times and is rarely evoked today.

Contemporary economists are almost unanimous in condemning economic rent per se, but are far more divided on its sources, and are less prone to equate it with land rent. Although there are exceptions (Arnott and Stiglitz, 1979; Foldvary 2005), most contemporary economists do not attribute any special attribute to land and consider it as one factor of production among others; land is assessed in terms of its marginal productivity, just as is the case for capital and labour which are generally considered to be far more significant factors of production.⁵ And when it comes to economic rent, the Public Choice school has rather successfully shifted the debate toward a criticism of “rent-seeking” rather than passive rent-capture. The former evokes lobbyists, the latter rentiers. Rent-seeking is an active strategy pursued by economic interests with good political connections aimed at obtaining a competitive advantage from public authorities. Regulatory “capture” (i.e., influencing regulatory agencies in such a way that they become advocates for the industries they regulate) and protective tariffs are good, but certainly not the only examples. The concepts of rent-seeking and rent-taking are not completely separable. Ricardo already had argued that what allowed landlords to charge higher rents in his days was not only their ownership of a scarce but indispensable natural resource but also the trade restrictions imposed by the “Corn Laws” for the abolition of which he actively campaigned. Nevertheless, there is a significant difference in terms of the policy remedies pro-

posed by those who are mostly concerned with rent-seeking and those who are mostly concerned with rents from property rights in natural resources. The former argue for *less* government intervention, such as the termination of the special status enjoyed by certain economic actors; the latter, by contrast, expect a *positive* intervention from government, such as a heavy tax on land rent. This emphasis on government intervention is compatible with intervention in other domains or, at the very least, the possibility of widening the definition of rent to include talents, social advantages, technological progress, etc., although George himself did not follow that path. Public Choice scholars are not inclined to move from the condemnation of rent-seeking to the advocacy of increasing taxes on rent-producing assets of any kind, although James Buchanan (1986, 133-135; Block 2012) did suggest that inheritances should be fully taxed.

This contrast between the *potentially* more interventionist implications of an emphasis on the negative effects of rent capture, as opposed to simply rolling back the effects of rent-seeking, stems from differences of opinion about the significance of property rights. This tension had serious consequences for George's political project and continues to play out in practical politics because it placed him between the proverbial rock and the hard place. He offended the most conservative guardians of the established order while some socialists understood him as being sympathetic to their cause. But this was a misunderstanding because George was very much in favour of free markets, and in that respect did not radically depart from the classical liberal perspective inherent in the contemporary Public Choice literature. (Most Georgist economists share the same commitment.) Indeed, any reader of George's two major economic works, *Progress and Poverty*, and *The Science of Political Economy*, will be struck by the vigour of his advocacy of unrestrained competition, free trade, and limited government.⁶ Notwithstanding the fact that George, who never fully grasped the significance of the new marginalist paradigm advanced by Carl Menger, had some harsh words for Austrian economists, Leland Yeager (1984) has meticulously parsed George's writings and found significant "affinities" with the Austrians.⁷ For Public Choice scholars, Austrian and Georgist economists alike, the only justifiable way in which a state can raise taxes is to do so in away that is minimally harmful to the spontaneous order of the market. That is precisely what George had in mind when he proposed his "single tax" on land rent. However, as I am about to explain, the economic efficiency of the single tax does not now, and did not then, suffice to bridge the gap between defenders of limited government who accept the status quo with respect to property rights in land and the Georgist project to fundamentally alter these rights.

To understand this tension, one must realize that George's primary motivation was ethical: he wanted to find the best way to remedy poverty. The single tax was a means toward that end, but it so happened, *mirabile dictu*, that it could also be shown to be remarkably efficient from an economic point of view. Therefore, it was easier to defend in a cultural context that was a priori hostile to any attack on private property. Or, to put it in more colloquial terms, the single tax was the proverbial "stone that kills two birds." (I do not want to imply that George was cynical or opportunistic; he firmly and sincerely believed in the advantages of free markets but, again, his motivation, the cause he devoted his life to, was not the defence of free markets but the abolition of poverty.) I want to elaborate on these two interdependent themes which, interestingly, find an echo in the works of the neoclassical economist Léon Walras ([1893] 2010). But Walras was more inclined to characterize his stance on the need to address inequalities caused by the capture of land rents as a normative judgement. Walras compartmentalized his works into "pure," "applied" and "social" facets; his proposed reforms were only indirectly related to his "pure" theory of general equilibrium. George's position on rents flowed more seamlessly from his familiarity with the classical political economy literature; he did not feel bound by an epistemological requirement to isolate as explicitly the normative and positive sides of his economic analyses.

Both George and Walras argued that when economic growth occurs, landowners are in a position to capture an increasing fraction of the total wealth that is produced. George (1935, 171) put it more dramatically in these terms:

Wages and interests do not depend upon the produce of labor and capital, but upon what is left after rent is taken out; or, upon the produce which they could obtain without paying rent—that is,

from the poorest land in use. And hence, no matter what the increase in productive power, if the increase in rent keeps pace with it, neither wages nor interest can increase.

Walras (1954, 390-91) held a different view on the impact of growth on interest, but he too was convinced that landlords are the ones who benefit the most from economic progress: “In a progressive economy, the price of labour (wages) remaining substantially unchanged, the price of land-services (rent) will rise appreciably and the price of capital-services (the interest charge) will fall appreciably.”

Both authors resolved that private property in land was a source of profound injustice. For George, unearned rents contribute to unacceptable inequalities. He categorically asserted that

Private property in land always has and always must, as development proceeds, lead to the enslavement of the laboring class; that land owners can make no just claim for compensation if society chooses to resume its right; that so far from private property in land being in accordance with the natural perception of men, the very reverse is true, and that in the United States we are already beginning to feel the effects of having admitted this erroneous and destructive principle (1935, xv-xvi).⁸

Thus, “Whatever may be said of the institution of private property in land, it is therefore plain that it cannot be defended on the score of justice” (ibid., 338). No natural right exists with respect to the ownership of land: “The equal right of all men to the use of land is as clear as the equal right to breathe the air—it is a right proclaimed by the fact of their existence” (ibid., 338). In a somewhat more subdued style, Walras (1896, cited in Foldvary 2008, 95) wrote that

“the fact of the appreciation of the land rent in a progressive society is a fact well proved by experience and well explained by reasoning, from which one concludes that to leave land to individuals, instead of reserving them for the state, implies allowing a parasitical class taking advantage of the enrichment that should instead satisfy the always growing demand for public services.”

As previously mentioned, George’s proposed solution to this problem was the full and complete taxation of ground rent—this could include resources found on the land, such as trees (which potentially add value to the land) but not improvements resulting from the investment of labour and capital, e.g., buildings, roads, etc. (George 1885, 1-14). Because the rate of the tax should ultimately, albeit not necessarily immediately, be set at 100% of the land value, George was in effect arguing to substitute “for the individual ownership of land a common ownership” (George 1935, 328).

Not only was this tax for George a fair means of reducing inequalities by, among other effects, putting an end to land speculation,⁹ but it would also *enhance* the efficiency of the economic engine as a whole, thereby contributing to the elimination of poverty (jobs would be abundant and housing affordable). It is economically efficient because it is neutral: it does not create the sort of disincentives that taxes on other production factors, such as labour or capital, tend to generate. Productive investments might be discouraged by high corporate taxes or economic agents may withdraw their labour if income taxes are felt to be punitive, but using land is not something that can be avoided; labour and capital are mobile, but land is not. (This last argument is most convincing when the *full* land tax is used by a *national* government so that moving operations from one locality to another results in no saving; however, in today’s global market, there is still the possibility of setting operations outside of a national jurisdiction to avoid a high land value tax.) Because there is no way to make taxes on labour or capital as efficient as the land value tax, George advocated their abolition—hence the description of the land value tax as “the single tax.” Precisely because it is so economically advantageous, George expected that the “single tax” would encourage economic development which, in turn, would increase land value and provide public authorities with enough revenues to provide more and more public goods:

The more that labor and capital produce, the greater grows the common wealth in which all may share. And in the value or rent of land this general gain is expressed in a definite and concrete form (George 1935, 436).

A perfectly virtuous distribution, in other words: the value of a community's property is used to fund the needs of the members of the community. Sceptics, however, retort that this might have been the case in the mid-19th century, when the public's expectations about what level of public goods they could hope to receive was quite low, but today the value of all the land in the United States or other advanced economies would not be sufficient to fund all the government programs that voters consider to be legitimate.

Walras' solution was comparable but different: he also advocated using land value as the *only* source of government revenues, but he proposed that the state should buy back the land from their owners at market value and then lease it to city residents, industrial producers, farmers, etc. This was not supposed to be achieved instantly but gradually over time, for the obvious reason that, as Walras recognized, it would be a very costly undertaking. George's solution appears less radical in that he maintained that the owners would retain "possession" of their land; thus, as he put it, "it is not necessary to confiscate land; it is only necessary to confiscate rent" (1935, 405). This semantic distinction between "ownership" and possession is confusing because, strictly speaking, George was merely placing severe restriction on private ownership (Pullen 2001, 551) Perhaps George wished to appeal to that fraction of public opinion that greatly distrusted landlords, however, that turned out to be a double-edged rhetorical weapon, since it also potentially offended middle-class voters. But Walras' plan was perhaps less threatening since he advocated full compensation for the disposed landlords (something that George categorically refused to contemplate [Pullen 2005, 695]), and more prudent considering that it would have taken many years to be fully implemented even by an enthusiastic government (or more likely a succession of governments if that is even believable), thus giving economic actors more time to adjust to the new reality. By contrast, George's plan could in principle be implemented much more rapidly since it would only, so to speak, require a modification of the tax code. George was well aware of the risks involved in pushing for a hasty transition but the opposition he encountered was not assuaged by this cautionary attitude.

ii) *Some Obstacles on the Way to the Georgist Ideal*

It would be hard to overestimate the influence of George's ideas on the intellectual climate of the United States and Britain during his life and for the two decades that followed his death in 1897. Within a few years after its publication, *Progress and Poverty* had become "the largest selling work in political economy in America" (Cord 1965, 34). After his death, the Georgist movement emerged as one of the main reformist currents in the pre-World War I Progressive era. The reception of George's ideas in Britain and Australia was also very positive. George's influence in continental Europe was more muted but his ideas were more often cited than those of Walras. For many reasons, including the fact that he was rather shy and lacked George's extraordinary rhetorical skills, Walras' plan fell on deaf ears—no political party anywhere in the world has ever declared its intention to follow Walras' advice; today, the confiscation of land rent is much more likely to be associated with George than with Walras in the general public and among economists.

And yet, very little concrete policy changes resulted from all these debates and propaganda, apart from adjustment of the way in which property taxes are assessed in some cities in Australia (e.g., Canberra), the US, Canada and a few other countries. But while such examples are not rare, the scope of these reforms is a far cry from what George had hoped for. One could also mention the famous "People's Budget" introduced in the British House of Commons by the Liberal government of Prime Minister Lloyd George in 1909 which created land values duties (to be collected at the time of the sale of a property at a rate of 20% of the increase in value).¹⁰ This budget is famous because it triggered a constitutional crisis in Britain when the House of Lords rejected it—a political battle that the Lords eventually lost. The land value tax was finally approved in 1911 but did not prove to be as productive as anticipated and was finally repealed in 1920. Indeed, so complete was the demise of the Georgist program in the second half of the twentieth century that for a long-

time proponents of some limited form of land value taxation were fearful to even mentioning his name (Cord 1965, 246)! This would have surprised George who died at a time when his ideas still appeared to be spreading, and who reportedly thought that “the transition to the optimum revenue system would be easy, as soon as enough people came to understand its importance” (Davies 2018, 7).

As I explain below on theoretical grounds, the journey toward the ideal is often disappointing. But Warren J. Samuels (2003) and Lindy Davies (2018) provide concrete reasons why George and his followers never reached their goals. I agree with Samuels that this failure is *prima facie* rather perplexing, considering that George’s analysis is far from being unsound from the standpoint of orthodox economic theory, and does not obviously contradict the fundamental principles of the dominant ideology in North America. But George made some tactical and strategic mistakes.

The obstacles faced by George were formidable, but they were rendered more daunting by his own rhetorical flourish. Popular culture in America rests on the idea that productivity ought to be rewarded. When it comes to the productivity of farmers or entrepreneurs, the common assumption is that it is their overall productivity that justifies their smaller or larger earnings and not just some aspect of it, no matter what clever typology of differential merits theorists might propose. In other words, taxing rent is an excellent idea in theory but not a very good one in political practice. As Samuels (2003, 584-585) wryly notes,

If one assumes that one’s legitimate income both belongs to one and is due to one’s own productivity, then the intensive taxation of unimproved land conflicts with the dominant ideology of property. Although that ideology stresses productivity, it is amenable to the *ipso facto* identification of income with productivity. Henry George was in most if not all respects conservative, advancing the single tax as a means of reinforcing incentives to productivity and limiting income to productivity. This fact clashed with and was overwhelmed by the identification of income as due to productivity, period.¹¹

George made things worse for his cause by explicitly attacking “property” when, in fact, he was merely proposing to place certain limits on property rights, but not eradicate them altogether, as I noted previously. This led him wide open to the charge that he was a “socialist,” even though a careful reading of his writings amply demonstrates that he was not.

This is something of a dilemma for ambitious and yet moderate, “third way” reformers: either they hype their message to attract attention, or they carefully craft a program that conveys the nuances of their views, but then at the risk of being ignored. A related dilemma is whether or not to seek alliances with the most moderate fringes of the camps one opposes. This would have been the case with the Fabian socialists in England. Sidney Webb was attracted to George’s ideas and corresponded with him, but George never sought to enlist the Fabians to his cause. I cannot say for sure that this was a tactical mistake but, in politics, compromises are sometimes inevitable.

George took aim at some powerful interests: owners of large estates, developers and the mortgage lenders who were intent on keeping the rents for themselves. They used their considerable influence to weaken George’s political project. But it can be argued that in the Progressive era these were not the interests against which Progressives were rallying; Progressives were keen on fighting *all* monopolists, especially industrial monopolists, and they did achieve some notable successes (e.g., the Anti-Trust Act of 1890). As Michael Hudson (2008, 4) notes, this was another opportunity missed.¹² Georgists today are divided about the question of whether and to what extent the critique of the monopolistic appropriation of land rents should be extended to other types of monopolistic arrangements. I suggest indeed in the last section of this article that they should do so if and when opportunities arise, but I now turn to what I see as the fundamental reasons why George’s vision has remained an unfulfilled dream.

THE “TYRANNY OF THE IDEAL”: WHAT GEORGE FAILED TO CONSIDER BUT WHAT CRITICS MUST

The circumstantial causes of George’s failure to profoundly reshape the entire taxation system in the United States or any of the other countries where his ideas found many supporters and advocates do not explain the inability of Georgists ever since to make much more progress toward the realization of George’s project, even if, as I mentioned above, it would seem at a superficial level that the concept of a land value tax is again receiving a fair amount of critical attention. To appreciate more fully the deeper causes of this lack of momentum, we must critically examine the very nature of the Georgist project. Its fate evokes that of other visions of an “ideal” society derived from an overly abstract but also typically uniformizing conception of justice. Such theories or political projects insufficiently account for the complexity of modern liberal democracies. This is not exactly a new problem—indeed it already was one for George even if he did not fully realize it—but it has become more acute in recent decades. Diversity is by now a defining characteristic of liberal democracies. Consequently, the hope of ever reaching agreement over how to re-write the metaphorical “social contract” upon which civil society is supposed to be grounded can only lead to disillusionment.

The notion of a social contract legitimized by “natural law” has long held a central place in American political thought, going back to the exemplary use of contractarian metaphors in the *Declaration of Independence* (Tate 1965; Hulliung 2007). Although George did not explicitly use the phrase “social contract” to describe his project, George’s political philosophy was firmly rooted in the natural law tradition. He firmly believed in natural rights and indeed used that language to make his case. As previously quoted, what he considered to be an “erroneous and destructive principle” was the idea that “private property in land” is truly “in accordance with the natural perceptions of men (George 1935, xv-xvi). However, there are clear Lockean overtones in the moral opprobrium George cast on idle land speculation contrasted with productive labour. George was probably indirectly influenced by Thomas Jefferson and Thomas Paine in his interpretation of Locke. As Mark Hulliung (2007, 77 cited in Lough 2013, 18) remarks, George’s interest in placing limits on ownership rights “was in reality a recapitulation of a century of American pronouncements on the inviolability of the social contract, the need to secure the rights of the next generation and the natural right to the land.” Although not all founders would have agreed, Jefferson and Paine

believed that prior to the creation of government, man possessed nothing but the uncultivated earth from which to provide for his sustenance. Upon entering into a social contract and forming a national government, individuals did not relinquish their natural right to the land, but instead, empowered government to protect and preserve that right for current and future generations (Lough 2013, 18).¹³

But by the time George was attempting to make his case for re-thinking the basis upon which property rights in land can—or cannot—be justified, the idea of natural law as a moral doctrine and as the origin of the social contract upon which liberal institutions are founded was beginning to sound outdated. It was displaced by a new Darwinian outlook which stripped the notion of “human nature” from its moral connotations.¹⁴ The very idea of a social contract as a framework for understanding politics faded away for much of the 20th century, losing ground to either social Darwinism, utilitarianism or Hegelian/Marxist historicism. These ideological currents, incidentally, provided a foil for George’s ideas about social reforms. But, of course, contractarianism re-emerged as an immensely influential paradigm in the last few decades of the 20th century in the wake of the publication in 1971 of John Rawls seminal *A Theory of Justice*. Some of the best-known philosophers and economists (Nozick 1974; Harsanyi 1977; Gauthier 1986; Dworkin 2000) have proposed their own contractarian theory. However, with the exception of Robert Nozick’s (1974) work, this new wave of contractarian theories does not signal a return to the Lockean outlook that inspired George. And it could be said of Nozick’s interpretation of the “Lockean proviso”—those who appropriate natural resources “should leave as much and as good for others (Locke’s *Second Treatise* § 27)—that it is incompatible

with George's willingness to abolish ownership of land as the only way to preserve the natural right to natural resources that he believed all members of society can invoke. Rawls used only a "minimalist" conception of natural law, to use Russell Hittinger's (1990, 136) definition, namely, one "that (1) posits one or more human goods or values as the condition(s) of practical reason, and (2) excludes teleological order from the foundations." As for John Harsanyi, his commitment to utilitarianism stands far apart from George's belief in natural law. Nevertheless, there could be an indirect connection between the extraordinary amount of energy devoted by contemporary theorists intent on articulating new (and, in a broad sense, liberal) contractarian theories of justice,¹⁵ and the relatively recent rediscovery of the works of Henry George.

But by now the twentieth century contractarian wave has crested.¹⁶ More recent works offer useful lenses through which, if not the broad concept of a social contract, at least the more inflexible and closed definitions used by the previously listed theorists as well as, I want to argue, by George himself, can be critically re-evaluated.

A running theme in these debates revolves around what Rawls (2001, 3) called "the fact of reasonable pluralism." Soon after he published the first edition of his *Theory of Justice*, Rawls abandoned the hope of being able to justify universally valid principles of justice. Contemporary western societies—indeed practically all societies by now—are much more socially and culturally diverse than they were a century ago. This is partly as a result of migration. Even the United States which, in George's times, already hosted immigrants from all over Europe and many also from China or Japan, has in recent years seen inflows of migrants from several other regions (Central America, the Middle East, etc.). Most European countries remained much more homogeneous until relatively recently, but even though cultural and ethnic diversity is a newer phenomenon in Europe, it has now become an inescapable "fact." In addition to these migratory flows, profound endogenous transformations have added new layers of cultural complexity centered on gender, sexual orientation, (non-conventional) religious beliefs, and so on. According to Rawls, the best that can be achieved is some sort of "overlapping consensus" allowing individuals with fundamentally different values to agree on the political merits of workable institutional rules. But ever since Rawls made this concession to diversity, many theorists have argued that the problem is more profound than Rawls admitted. And this for two reasons. The first is that there is no obvious reason why Rawls' "overlapping consensus," or anything resembling it, should still converge on the unique set of principles he defended and never conceded would have to be contextualized and perhaps even regarded as merely one among several relevant criteria for evaluating socio-economic reforms. *Mutatis mutandis*, there is no convincing reason to think that pluralistic and multicultural political communities would generate an "overlapping consensus" legitimizing the abolition of land ownership. That is, even if the idea itself could be agreed upon, there is no reason to think that in deeply diverse societies a workable consensus would emerge around this *particular* goal, as distinct from many competing ones (and the more diverse a society becomes, the more competing priorities it has to deal with). To his credit, George, whose moral outlook and cultural beliefs were typical of an Anglo-American protestant and who occasionally expressed commonly held prejudices about Asians and Blacks (Thomas 1983, 61-62), made an effort to show that his "solution" would also alleviate at least some of the problems that caused non-white Americans to experience poverty (see Book VII, chapter II in George 1935). But many ethnic communities then and now were/are probably more concerned with issues that are only remotely connected to land rents.

The second reason is more contingent and, one would hope, more transitory. It is that the deep pluralism I alluded to above has in recent years produced a virulent counter-reaction. In the United States, much of Europe and elsewhere (e.g., Brazil, India), powerful nationalist populist leaders have either come to power or could soon do so, wooing to put and end (if not altogether roll back) the trend toward pluralism, social complexity and the new regulatory environment designed to accommodate diversity. Even if in the long run this reaction may turn out to have salutary effects, such as a more balanced and prudent implementation of transformative change, something that indeed would be more likely to bring about a workable "overlapping consensus," in the immediate future, the polarized political climate this reaction has produced makes the prospect of achieving major taxation reform along Georgist lines quite unrealistic. I do not in-

tend to dwell on this issue here, however. I am more concerned with the problems posed by diversity even in the absence of this aggravating development. To restate my case, workable compromises can be achieved in complex, multicultural, pluralistic societies but such compromises are unlikely to be as encompassing, as far-reaching, as ambitious as the quasi-social contracts proposed by the likes of Rawls or George. Moreover, having to deal serially with more circumscribed issues as they emerge could open more promising avenues for remedying concrete examples of *injustice* than the pursuit of a formal ideal of justice. To make this point, I now draw mostly from reflections on this dilemma recently advanced by Amartya Sen (2009) and Gerald Gaus (2016), although the idea of addressing injustice directly has much longer antecedents, going back to Adam Smith.¹⁷

Building on sources as diverse as Indian jurisprudence, classical western political philosophy and the Social Choice literature in modern economics, Sen brilliantly draws a contrast between those who believe in an abstract conception of justice, for which the notion of social contract stands as an exemplar,¹⁸ and those for whom what matters are the lived experiences of people seeking a better existence. Of course, theorists in the first group do not share the same ideal, but Sen argues that the options that are open to those who are concerned with unfairness in the distribution of the essential attributes of a good life are not limited to a choice between Kantian deontology and utilitarianism. Even if Rawls conceded that his admixture of deontological rules and utilitarian criteria cannot be justified everywhere and for all times in the same manner and that different societies may find distinctive ways of making sense of them (and perhaps even failing to adopt them), he still was not prepared to admit that different problems call for different institutional rules and practical solutions, some of which may bear no resemblance to his principles of justice (or, in any event, to his “difference principle”). *Mutatis mutandis*, Georgists may concede that the question of natural resource rents may be posed differently in different contexts, but they would still want to argue that the most pressing and serious forms of injustices can always be traced back to this foundational problem. By contrast, Sen insists that forcing most socio-economic problems into such Procrustean beds, as it were, is unnecessary. Concrete individuals in specific circumstances will seek unique ways of remedying the inequalities and unfair practices that affect them.¹⁹ There is no “transcendental” frame of reference (Sen 2009, 10-12, 15-18) for identifying “redressable injustice” (Sen 2009, vii). In particular, Sen (2009, 102) categorically denies that having a clear picture of a perfect alternative to an unsatisfactory state of affairs is of any use in remedying the problem at hand. Critics have objected to this radical argument (for a summary of this debate, see Gaus [2016, 6-11]). However, even if Sen can be accused of using inflammatory rhetoric, his intuition is correct. That is to say, the only way to salvage the idea of a social contract as useful approximation of what reformers ought to be considering is to think of it as nothing more definitive than a *set* of parameters that are open to questioning and readjustments as circumstances change. This premise is explored in a much more detailed and rigorous way by Gerald Gaus (2011; 2016).

Contrary to Sen, Gaus does not completely turn away from contractarianism and indeed is indebted to Rawls for some of his core ideas, such as the concept of public reason, but this makes his critique of Rawls’ concept of a “well-ordered society” all the more powerful—a critique which I would argue is equally relevant to my assessment of George’s “solution” to the problem of poverty. This critique is supported by an extraordinarily fine-grained analysis of the contractarian tradition and of the problem of identifying workable rules for complex, pluralistic societies in which a market economy is allowed to function as freely as is compatible with achieving a fair allocation of societal resources and individual rights. To do justice to the subtleties of the arguments he deploys, using the tools of analytical philosophy, game theory and social choice, would take me too far away from my present purpose. But even a brief sketch of the central themes running through his works can yield valuable insights into the limitations of the Georgist ideal.

In complex societies one can always identify a plurality of views about which rules should govern the interactions of citizens in the marketplace and in the political sphere. Some of these views can be rejected. In a modern liberal culture, only those alternatives that treat all members of society as “free and equal persons” (2011, 2) can be included in the “eligible set” (2011, 327-332) of such potential institutional and moral rules. But that set can still be rather large. With respect to George’s vision, one can be impressed by his sin-

gularity of purpose but that also means that he failed to examine how his approach is more or less consistent with, or antithetical to, competing conceptions of desirable social reforms which were discussed in his times. The only alternative to which he paid much attention was egalitarian socialism. But this Manichean partition of the world into dangerous radicalism and his virtuous liberal democratic reform was, even in his days, a rather exaggerated simplification of the range of more or less reformist and more or less radical proposals that one would want at least to examine as potentially belonging to an “eligible set” of ideas about justice and a fair deal for all. Accordingly, he avoided engaging with the public in a manner that could have convinced a wider array of dissatisfied groups and individuals to find common cause with him, even if he did in fact attract a lot of favourable attention.

Gaus devotes much more effort to thinking about how workable rules can be selected from the eligible set. He conveys with great effectiveness the idea that this process is complex and cannot be boiled down to a simple formula. But for my purpose here, suffices to say that against a background of basic moral principles that evolved over the ages, which would include the concept of property rights, contending contractual arrangements are discussed and legitimized by appealing to “public reason.” Gaus (2011, chapter VII) suggests that an “equilibrium” can be reached, although the actual state of affair at any given time is bound to be only an approximation of that fully justifiable (albeit never perfect) contract. Such is the conclusion he reaches in his *The Order of Public Reason*. But in a sense, it is also the point of departure for his more questioning and unsettling *The Tyranny of the Ideal*. The status quo is rarely if ever satisfying for all; incremental adjustments or more substantive changes are regularly discussed in institutionalized political debates or social protests. At some point, those pushing for (or reacting to) these demands are confronted with what Gaus (2016, 82-84) calls “the Choice”: either they settle for less than ideal changes in institutional rules and the mechanisms impacting the situation they seek to improve, or they decide to forge ahead by seeking to bring about the full realization of their ideal of a just society. The choice is difficult because, while the former option can justifiably be selected on the ground that it produces fair and morally compelling effects, it typically does not match all the features of the ideal goal. Those who are intent on pursuing their ideals at all costs, may be tempted to settle for an outcome which, in the context of what Gaus calls a familiar “neighborhood,” is *less* desirable than a realistic one but can nevertheless be presented as a logical first step toward the ultimate realization of the ideal in a distant future. That is, the latter is less intrinsically just than the former, given present circumstances, but it includes more features of the ultimate goal. (Because the “ideal” is situated in a distant region, it is not immediately evident that what are deemed to constitute desirable features of that idealized goal are actually fair and just in terms of what is known here and now.) As Gaus (2016, 246) puts it,

The idea [of something like Rawls’ “well ordered society”] is ultimately a mirage, yet one that tyrannizes over our thinking and encourages us to turn our backs on pressing problems of justice in our own neighborhood. It is a mirage because even if we actually had full confidence and complete agreement about the principles of justice, we would disagree about what social states best satisfied them. And even within some perspective, as it approaches the social state in which the basic social institutions generally satisfy these principles, it will discover its estimates of its functioning were wrong, and their realizations are flawed.

George’s ultimate goal of eliminating poverty by doing away with land rents is a rather good illustration of the problem identified by Gaus. Does this mean that attempting to improve upon the existing state of affairs is a losing proposition? Of course not. But in line with other authors, Gaus suggests that solutions are more likely to be workable if they are local and understood as being experimental rather than systemic and definitive. Space lacks here to examine in detail his suggestions that such experimentations are more likely to succeed within some of the many “republican communities” that make up a complex open society, but I want to draw attention to the fact that there is another author who has devoted a great deal of energy to the problem of finding a more feasible method for re-negotiating a social contract than the one proposed by

Rawls, and that he has reached a rather similar conclusion. Relying almost exclusively on game theory—an epistemology that Gaus (2011, ch. II) regards as being too narrowly instrumentalist—Ken Binmore (2005, chapter 12) nevertheless reaches a comparable conclusion: only a decentralized process of bargaining has any chance of being successful. That is because the “games” that the members of society play even when they are motivated to be fair and cooperative—which is evidently not always the case²⁰—are so varied, and the equilibria that can be achieved so numerous, that any hope of hitting upon a once-and-for-all solution is an illusion. George in fact sensed that this would be the case; he was prepared to start his process of reform in New York City (by unsuccessfully running for mayor) rather than pretend that it could be achieved on a national scale all at once. And in the numerous speeches he delivered in Australia in 1890, he frequently argued in favour of a decentralized implementation of the single tax (Pullen 2005, 697-698). But it is clear that he would not have been content with only a few local victories. His goal was to end poverty, not to make the poor better off here or there.

Lowering my gaze from abstract philosophical perspectives, I want to draw a quick parallel between these theoretical reflections and a metaphorical model that is widely used in the policy studies literature, namely, John Kingdon’s ([1984] 1995; 2001) agenda-setting model. His “multiple streams approach” is inspired by a similar diagnosis: policy-making is a very complex process and it is rather futile to expect that one preconceived ideal of the just society can easily be implemented. Kingdon’s hypothesis is that three “streams” flow through large organizations such as a central government or maybe a subnational government or an international institution: a stream of problems; a stream of policies; and a stream of politics. The first consists of expressions of concern, protests or some form of “crisis” (e.g., the previously mentioned “housing crisis”). The second are a range of possible organizational responses to such problems. The third refers to more or less sudden shifts in the political context: a change of government, a new party leader, a growing trend in public opinion, and so on. These streams are distinct but when, for some contingent reason, they converge, a “window of opportunity” is created which renders a new policy initiative more feasible and probable. It would seem that either George was unable to take advantage of such a window or, more probably, that one never really opened insofar as the political stream did not flow in his direction with sufficient momentum. But Georgists have since then been able to seize more opportunities although, as I explain in the next section, they could more inventively move in new directions that would be more in tune with the challenges of the twenty-first century.

RESCUING GEORGISM: A PRAGMATIC APPROACH

Having lost hope of transforming the entire tax system of the United States or any other country, the Georgists focused their efforts on implementing a land value tax at the local level. They have had some, albeit limited, success in that regard. The tax was widely used in Western Canada in the early 1900s but property taxes in all Canadian cities are now assessed on both land and buildings (a recent proposal to implement a Land Value Tax in Vancouver has not yet been enacted). Several cities in the United States, notably in Pennsylvania, have experimented with land value taxes. As mentioned, the most stable example of the applications of this tax can be found in Australia, in many other places (e.g., the UK, Norway, Denmark, Sweden, Mexico, Taiwan) the LVT has been tried and sometimes abandoned. (Singapore is a rare case of a free-market society where most of the land is owned by the state and leased for 99-year terms, although this did not occur as a direct result of following Walras’ prescription.) According to the defenders of the single tax, the evidence shows that, on the whole, in jurisdictions where it has been in place the effects are:

- 1) *The economy prospers.* Construction and renovation spurt because they aren’t taxed and because all land-sites will be used more productively.
- 2) *Most voters get tax reductions* because they own little valuable taxable land.
- 3) *Government revenue remains constant* because the higher tax on land assessments exactly replaces a lower tax on produced things.²¹

Experimenting with resource rent taxation does not have to be limited to land rents. As Backhaus (1997) makes clear, it is consistent with the logic of the Georgist program to recommend taxing rents derived from the use of many other fixed resources; these include, for example, water, wind, minerals, radio waves, take-off and landing spots held by airlines, etc. Of course, some of these resources are already taxed in various ways in many jurisdictions but Georgists should invest more of their efforts in studying these opportunities insofar as there are less politically salient than urban land rent. All this is well and good but is a far cry from the sort of intelligent urban planning that could address “the big picture”: inequalities, sustainability and economic prosperity. The fact that a gradualist approach to the LVT comes short of the expected result is definitely not a condemnation of gradualism. What is required, however, is a more ambitious gradualism, bolder approaches to policy experimentation above and beyond resource rents.

My goal in this paper is not to be prescriptive but since I have so far outlined the drawbacks of either seeking a comprehensive utopian plan or of merely tinkering with the details of existing regulations and city plans, it is incumbent on me to sketch out at least in broad terms what a way out of this dilemma could look like. I suggest that it would consist in generating enough political will and capital for “nudging” spontaneously formed coalitions of like-minded interests and policy advocates to find some common ground with other coalitions around innovative ideas about how to redress injustices caused by the unfair allocation of revenues from rent in a broad, generic sense.

I see at least two such “windows of opportunity” opening up in the present context. One concerns rising questions about unequal access to education. A Georgist angle here suggests that the most socially deleterious source of rents nowadays, especially in the United States, can be traced to unfairly distributed educational opportunities and benefits. The indirect impacts of this problem on urban planning are significant.²² Classical liberals and libertarians will want to insist that simply spending more on public schools and centrally managed educational bureaucracies would be the wrong way to proceed. That is certainly true although, in my opinion, the point should be to enhance competition between the public and the private sectors rather than to gut the former to benefit the latter. Space lacks here, however, to explore all the dimensions of a problem that continues to vex policy-makers and the public even though there is a clear understanding in many countries that access to quality education is both the key to resolve worrisome inequalities and an essential condition for sustaining economic growth in a rapidly changing techno-social environment.

There is another mounting concern: the question of who controls the generation, transmission and analysis of the data that sustain the new digital economy, and for what purposes. If we are to move forward in the direction that George charted, namely, limiting the capacity of some powerful market players to abusively take advantage of rent opportunities in order to ensure the preservation of the creative and wealth-generating potential of free markets, and thereby promoting individual freedom, I would like to suggest that curbing the power of monopolistic digital platforms ought to be prioritized. It is a difficult challenge but also one which in the foreseeable future could attract sufficient attention and political involvement to bring about feasible and effective policy responses. My admittedly subjective reading of the political discourse on this topic is that this constitutes a “window of opportunity” to push ahead with Georgist strategies for limiting abusive and socially harmful forms of rent-capture.

Not very long ago, Jaron Lanier (2013, 108) wrote “Few people realize the degree to which they are being tracked and spied upon in order that this new form of currency can be created.” It would seem that there is a much higher level of awareness today, although probably still not quite as acute as it arguably should be. Rents from digital platforms have become a very topical and controversial issue; it is likely to become even more contentious in the foreseeable future. Corporations, such as Amazon, Facebook or Google (Alphabet), which did not even exist 20 years ago, now are ranked at the top of several business indices (e.g., by market value). Their reach is global and they have captured a dominant position in the markets in which they operate. While there still is competition in some sectors of the digital business world (e.g., travel/tourism), Google and Facebook are quasi-monopolies. They have achieved massive economies of scale which place them way ahead of any competitors but which, admittedly, also work to the advantage of their users. Their

services are free (albeit not for advertisers) and, therefore, users do not suffer from the welfare-reducing effects of monopoly pricing. Moreover, breaking up these monopolies (which may be complicated by the fact that anti-trust legislation in most jurisdictions was not drafted specifically to deal with digital platforms) could adversely affect consumers; it is because “everybody is on Facebook” that it is so easy to find someone there. It is also difficult to determine whether a firm that appears to hold a monopolistic advantage really poses a long-term threat considering how fast things change in the digital economy (iTunes was once dominant in the music industry but is now being phased out). Nevertheless, there are other very worrisome aspects of the activities of, not only these giant quasi-monopolies, but of most other digital platforms about which ordinary users ought to be concerned, both as consumers and as citizens of democratic political communities. And in fact they increasingly are. One such worrying practice is the non-transparent control that digital platforms exercise on the data that users (which by now is almost everyone!) generate—the electronic trail they leave by accessing various services. The second has to do with the potentially immense *political* influence that these corporations could exercise and already are exercising (Epstein 2018).

Big data is an essential component in the development of Artificial Intelligence and as such can have many valuable applications.²³ Digital platforms profit from the sale of data they gather when millions of individuals access the Internet on a daily basis. The Internet culture that took shape in the late 1990s produced the expectation that information needed to be free. The quid pro quo, however, was that digital platforms monetized these data without users being fully aware of this development (Posner and Weyl 2018, ch. 5). The question is, then, who does, or more appropriately, should own these data, and are not digital platforms capturing significant but untaxed rents? The answer to the latter is rather obvious but exactly how to redirect these large revenues toward the common good is technically very challenging. One issue in particular has received a lot of attention: the fact that it is difficult to locate the place where the digital transactions are taking place, which could lead to double taxation. Some experts (e.g. AICPA 2019) argue that these problems are intractable; others (e.g. Cui 2019) have proposed solutions to these problems. Indeed, the European Union is studying how to put in place a new tax regime. France has move ahead already by implementing a new levy on Google, Apple, Facebook and Amazon (GAFA) and Austria is considering doing the same. Are these uncoordinated initiatives premature? Aiming for a more balanced and well-thought approach resulting from wide-spread consultation (and not just among technocrats) would be preferable but the international architecture for this sort of debate does not exist. Therefore, a bottom-up process where some countries take the initiative could pave the way for more harmonious coordination in the future.

Taxing the transmission of data collected about users and generated from users’ activities on digital interfaces is not, however, the only way to approach the problem. A more radical solution, and one that would obviously be less state-centric, would consist in creating a property right that users of digital platforms could claim with respect to the data collected about them. I agree with Eric Posner and Glen Weyl (2018, 209) that “People’s role as data producers is not fairly compensated.” How exactly this can be achieved is not something I can discuss in detail here,²⁴ but I regard this eventuality as a very promising avenue that broad-minded Georgists should prioritize. (The citizens of the 28 member-countries of the European Union now have greater control over how their data are used thanks to the newly adopted *General Data Protection Regulation*.) This could lead ultimately to a rethinking of what “property” means in the twenty-first century.

Curbing the political influence of the new digital monopolies is also an important consideration. This political influence takes two forms. One is essentially not new: like the “robber barons” of the Gilded Age, Silicon Valley billionaires can potentially exercise undue and unfair political influence. But the digital platforms they somewhat lackadaisically control have also proved to have nefarious effects on the democratic process in a number of ways: they polarize political debates by confining voters to “echo chambers” and they provide opportunities for domestic or foreign malicious interveners to create suspicion and chaos. As I underlined above, breaking up monopolies is not an evidently beneficial move. But at least from the point of view of democratic fairness, it would be a reasonable reform.²⁵

So far, I have outlined the social costs attributable to the digital platforms. Before new regulations are put in place to mitigate these costs, however, careful attention should be paid to the positive aspects of the

new digital economy. One can expect that well-positioned socio-economic and political actors will use these facts to oppose radical reforms. For one thing, the problem of separating rent-seeking from rent-capture is a very thorny one. Firms that are evolving into monopolies, i.e., able to capture huge unearned rents, are also directly or indirectly spreading “disruptive” technologies that unsettle existing rentiers in a variety of sectors. (The examples of Uber vs the taxicab companies or Airbnb and the hospitality industry come to mind but, in the future, several other disruptions are likely to occur, e.g., in the banking sector.) Therefore, one can anticipate that those pushing for more competition will be faced with countervailing arguments from those who think that the beneficial impact of disruptive technologies more than compensate the welfare-reducing effects of monopolistic or oligopolistic market dominance. On balance, however, I suggest that the threat posed to individual liberty by digital platforms that are now in control of “Big Data” can cause more serious harm than what can be gained from the price-reducing effects of disruptive technologies. Indeed, it seems that politically the wind is turning in the direction of those who are more concerned about privacy and the long-term dangers posed by the emergence of digital Behemoths than about the short-term advantages associated with disruption, although I readily admit that this is a subjective estimation on my part.

CONCLUSION

To sum up, remedying injustices such as the lack of access to affordable housing or public amenities in many metropolitan areas, while also sustaining a vibrant cultural climate and continuing to provide the economic opportunities that these metropolitan cities offer is, and will remain for some time, an elusive goal. Rationalist plans that a priori look appealing, such as the Georgist program, have proven to be disappointing. The main reason is that they face multiple and reinforcing political obstacles. The political process is almost bound to derail radical reforms or, as the poet said, “The best plans of mice and men often go awry...” Among the many reasons for this tendency is the fact that, to appear coherent, these plans are typically rather too narrowly focused on specific goals that ignore aspirations and demands emanating from a variety of groups or organizations in increasingly complex societies. Moreover, the objectives and ideas that reformers advocate often mean very different things to different people who end up on opposite sides of the debate. These are only some of the weaknesses inherent in utopian ideals.

The Georgist program is a telling example of why focusing on a *single* problem and a quasi-miraculous solution leads to disappointment. Logically coherent but one-dimensional plans tend to close other avenues for making the required adjustments to the institutions and policy regimes that have failed citizens living in prosperous but increasingly polarized and fragile liberal democracies—democracies that are sometimes tilting toward authoritarianism and seem in danger of losing their liberal character. A more prudent strategy is to resist the temptation of solving all problems once-and-for all. Any non-utopian approach would have to closely match existing realities. We know, for instance, that experimentation is more easily conducted on a small scale. Pilot projects can be very useful in that respect. At some point, however, these experiments will feed into a broader agenda-setting process involving many more actors. This is, of course, what takes place, more or less successfully, during electoral campaigns. The results are admittedly often messy and social choice theory tells us that the belief that a party can receive a “mandate” to achieve some specific policy objective ought to be taken with a huge grain of salt.²⁶ But sometimes it is clear that public opinion endorses at least a fuzzy set of priorities, albeit not detailed objectives. The role of policy-entrepreneurs then is to mediate between the various jurisdictions (central or subnational government and cities) to find avenues for cooperation in achieving these priorities when circumstances render them more salient. The iterative process whereby issues move back and forth between the local to the subnational or national level can be blocked by “veto players” but sometimes the momentum built by a convergence of ideas and interests can prove decisive. The literature on rational choice institutionalism is an indispensable tool for understanding the limits within which institutional reforms can realistically be pursued. It has also become intellectually fashionable to claim that the most effective method for getting over obstacles is a gentle “nudge”: the resources of social psychology should be used to incentivize players to behave in ways that are more com-

patible with the goals of those who do the “nudging” (Thaler and Sunstein 2008; Abdulkadirov 2016).²⁷ If reformers learn to pay more attention to these institutional constraints and to the lessons of behavioural economics, they can help to bring about, not a “just society,” but workable responses to the unfair allocation of unearned benefits.²⁸ At the moment, housing affordability seems to have moved to the top of the agenda in many cities and maybe there is here a new window of opportunity for traditional Georgists. This is indeed the case in Vancouver.²⁹ But even if the political challenges are more manageable at the municipal level, it is unlikely that the land value tax will be adopted on a scale that will even begin to approximate what George had in mind. The problem of economic rents, however, will not go away.

I concede that I barely scratched the surface.³⁰ My intention was simply to draw to the attention of Georgists, left-libertarians and pragmatic classical liberals the importance of looking beyond land speculation which does not affect everyone to the same extent. whereas by now almost everyone has a presence in the digital world. The ephemeral nature of the “windows of opportunity” that political trends open and shut makes it difficult to estimate if or when such reforms will see the light of day. But I would suggest that the public is getting more and more concerned about these issues and that greater gains can be achieved by focusing on resources such as digital data which do not evoke ideological responses as visceral as those associated with owning land. (Or if they do, it would be in ways that would ease the way for potential Georgist reformers to empower ordinary users of digital technologies.) Ultimately, the promotion of liberty is best achieved by making a realistic appraisal of what is feasible but also of what constitute the most immediate threats to liberty rather than falling into the trap of committing to “solutions in search of a problem.” Since economic rents keep on being re-created in new guises, Georgists and their philosophically liberal allies need to learn to act more like foxes and less like hedgehogs!

NOTES

1. To give just one example, home prices in Vancouver have risen by 48% during the period 2010 to 2016 but only 16.23% of that variation is attributable to the increase of real personal disposable income (Canada Mortgage and Housing Corporation 2018, 66).
2. George himself was ambivalent about it but he justified it in a speech given in Australia in April 1890 on the following grounds: “(a) he could not think of a better [phrase], (b) it clearly expressed [his] methods, and (c) it dispelled the false notion that [he] proposed to divide up the land” (Pullen 2005, 699).
3. Although not formally trained in economics, George was a competent analyst and did not deserve the scorn that professional economists have often heaped upon him. As Joseph Schumpeter (1954, 865) noted: “he was a self-taught-economist, but he was an economist.”
4. As the Georgist businessman and author C. B. Fillerbrown (1917, vii) rather elegantly put it, “Students of Progress and Poverty are haunted by glimpses of worthies more or less ancient who, in the last century, have previsioned the doctrine of Henry George.”
5. As Mark Blaug (2000, 274) explains, “[Marshall had] sympathy for the Ricardian approach to rent but, increasingly in the twentieth century, mainstream economists followed John Bates Clark and Frank Fetter in abandoning the notion that land is a unique factor of production and hence that there is any need for a special theory of ground rent.”
6. George (1935, 455-456) even envisioned the “abolition of government,” although he conceded that government might still be needed to carry out a few minor tasks.
7. Whether these affinities, however, are sufficient to compensate for their profound divergence on the issue of the private property in land is questionable, as Oscar B. Johannsen (2001) points out.
8. George, (1935, 336), however, insisted that natural law fully entitles individuals to what “springs from labor.”

9. It is worth quoting George (1935, 436) who in his typical hyperbolic style wrote:
 under this system no one would care to hold land unless to use it, and land now withheld from use would everywhere be thrown open to improvement. The selling price of land would fall; land speculation would receive its death blow; land monopolization would no longer pay.
10. While, as I noted, neoclassical economists were typically not kind to George, Alfred Marshall was sympathetic to the idea of a land tax and indeed expressed his approval of the 1908 budget (Gafney2004, 447).
11. Today, this symbolic/ideological red flag is reinforced by the fact that a great many middle-class households see their homes as a potential source of liquidity, e.g., if they can get a “reverse mortgage” (Davies 2018, 8).
12. This was not because George was uncritical of monopolies; indeed, he wrote “all businesses that involve monopoly are within the necessary province of government regulation, and businesses that are in their nature complete monopolies become properly functions of the state” (George 1883, 241). But Hudson’s point is that George committed a tactical error by not practically acting on this intuition.
13. It may be useful to read this passage in the light of David G. Dick’s (2019, 531) admonition not to forget that Locke explicitly identified “the preservation of mankind” as “the fundamental law of nature.”
14. It must be noted, however, that natural law continued to be used as a legal doctrine. In the philosophy of law, the debate between legal positivism and its critics has never been decisively resolved.
15. While some extreme forms of utilitarianism are not necessarily compatible with liberalism, Harsanyi’s preference for “rule utilitarianism” leaves much room for a defence of individual rights (see Harsanyi 1980),
16. Which is not to say that contractarianism lacks defenders. The libertarian philosopher Jan Narveson (2016, 695) claims that “there is no other way to understand morals.”
17. The French philosopher Alfred Fouillée (1838-1912) made the idea of remedying injustices the corner stone of his moral and political philosophy (see Dobuzinskis [2010]).
18. G. A. Cohen (2008) argued that there are better strategies than contractarianism for building a theory of justice, but I agree with Sen (2009, 61) that what he proposed was an even more unrealistic conception of justice. Cohen criticized Rawls for having conceded that some inequalities may have to be tolerated if they can be shown to generate incentives that effectively enhance the general welfare; but Sen is right to suggest that doing away with incentives in the name of equality is untenable.
19. Without endorsing George’s end goal, Sen (1988) pays tribute to his analysis of poverty while also underlining its limitations. Sen contends that rights should be judged in terms of both their intrinsic value and their practical consequences. When even intrinsically valuable rights produce catastrophic consequences (e.g., famines), the moral obligation to uphold such rights is in doubt. George can be read as implying that property rights are intrinsically valuable, but property in land is not inviolable insofar as it is the root cause of poverty; by contrast, the ownership of the products of one’s labour (i.e., “giving the product to the producer”) ought to be respected. But Sen (1988, 60) takes issue with the latter point because its literal application could leave those who are incapable of producing anything with no claim on the resources they need to survive.
20. Binmore (2005, Preface) insists, however, that evolutionary psychology has established that fact that most people, most of the time, can be counted on to treat each other fairly.
21. This is based on an analysis of 238 studies compiled something like two decades ago by Dr. Steven Cord: <http://savingcommunities.org/docs/cord.steven/238.html>
22. To provide just one example, Edward L. Glaeser (2003) draws an interesting comparison between the paths followed by Boston and Detroit since the early 1980s; the comparative success of Boston on many levels is largely due to its much greater capacity to generate human capital, that is to say, the quality and effectiveness of its educational system, even if its admittedly not performing equally well at all levels.
23. A giant step was achieved in a relatively recent past when “machine learning” replaced algorithms designed to directly program computers to act “intelligently.” An enormous amount of data is needed for computers to “learn” on their own.
24. A good start for getting this discussion under way can be found in Lanier (2013, 369-380).
25. As mentioned previously (see note 10), George was not averse to regulating monopolies.

26. Arrow's (im)possibility theorem famously shows that collective choice runs into intransitive cycles (i.e., cannot yield an ordering that is rational) when voters have to decide among more than two options. Gerry Mackie (2003) has convincingly shown that not only can some of the conditions upon which Arrow's theorem rest be plausibly relaxed, but that in any event cycling does not appear to be empirically observable.
27. Social psychology is a double-edged sword: on the one hand it can help policy-makers and other participants in the policy process (think tanks, consultants, social scientists, etc.) to better appreciate the limits of a purely rationalist approach and to design procedures that are more likely to produce agreement or to facilitate the implementation of agreed upon changes; but it also opens the door to paternalism, strategic manipulations, etc.
28. Michael Pagano and Benoy Jacob (2010) argue that advocates of the land value tax have not paid sufficient attention to the "framing effect."
29. In 2018, city councillor Christine Boyle introduced motion B.5 proposing the adoption of a "Land Value Capture Tax" in Vancouver, mandating a review of the concept by the Council staff.
30. I have not touched on the subject of the implications of the new blockchain technology. This is still a very incipient development, but one can anticipate that the decentralizing logic of the blockchain architecture will provide a technological solution to the problem of excessive digital rents. According to Darcy W.E. Allen et al (2019) it could also profoundly transform the entire democratic process. But we are probably still a long way from all this. And, again, a priori ideal solutions can run into all sorts of practical roadblocks.

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Can a Village Be Run Like a Firm? The Case of Collective Villages in China

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Abstract: Post-1978 reforms in China implemented the Household Responsibility System to replace collective agriculture. Some villages resisted the new policy and remained collective. Interestingly, these villages achieved remarkable prosperity in the post-1978 era. I describe the organizational structure of these villages, and I attempt to explain their economic success. I argue that the prosperity of the collective villages is explained with self-selection and the introduction of market incentives. Specifically, only the villages which were able to exploit the economies of scale and mitigate moral hazard remained collective after the reforms. Market incentives provided additional motivation to address the moral hazard. This explanation is consistent with the fact that the Household Responsibility System led to higher productivity than the earlier system of People's Commune. Nevertheless, the case of collective villages illustrates the fact that the problem of the Household Responsibility System was its universal character. Just like the system of People's Commune, the new policy was an attempt to impose one organizational structure on all agricultural production while leaving little room for organizational diversity.

Keywords: collective villages, Household Responsibility System, Chinese reforms, Huaxi village, People's Commune

1. INTRODUCTION

In his *State and Revolution*, Lenin (2004) envisioned a society that would be managed as a single factory. Although Lenin considered this arrangement only as a transitory phase before the withering away of the state, theorists of socialism who came after Lenin elaborated on this vision of an administratively managed society (Taylor 1929; Lange 1936, 1937). One of the countries that attempted to put this vision into practice was China. Although significant elements of administrative management remain present in the Chinese system, Chinese leaders realized that markets are indispensable as a tool to attain prosperity. Indeed, the current view of the Chinese authorities acknowledges that the market should “play the decisive role in allocating resources” (Xi 2014, 128). By combining planning and markets, the Chinese system gave rise to specific forms of governance. The purpose of this paper is to explore one such a particular form—collective villages. These villages have socialist characteristics, yet, they operate in a market environment. To paraphrase Robertson (1923, 85), they represent “islands of socialism in the ocean of markets.”

Chinese collective villages attracted the attention of scholars who studied them from various perspectives (e.g., Hou 2011; Lin 1995; Nathan & Kelkar 1997a, 1997b; Peng 2001). While these works improve our understanding of how these villages operate, they do not satisfactorily explain their prosperity in the post-1978 era. Related literature on township and village enterprises (TVEs) focuses on explaining the cross-sectional differences in performance of TVEs on the one hand, and state and private enterprises on the other (e.g., Chang & Wang 1994; Li 2005). This literature highlights either socio-cultural variables (Weitzman & Xu 1994) or political considerations (Chang & Wang 1994) as the main factors of TVEs success. However, these factors do not seem to account for the performance of the collective villages before and after the 1978 reforms: Socio-cultural variables are relatively stable in time, and therefore, they cannot explain the change in performance over time. Political considerations, such as state support, also seem irrelevant, because collective villages dissented from the official policy of the Household Responsibility System, and therefore, did not have political support from the central government. The present paper thus attempts to provide an alternative explanation. Building on the theoretical framework of Allen & Lueck (1998), I show that the prosperity of these villages depends on exploiting economies of scale and mitigating moral hazard. In particular, I argue that only villages with favorable characteristics chose to remain collective. Additionally, opening the markets during the reforms created a profit motive for local authorities that addressed incentive problems in their village organizations.

More generally, I argue that collective villages, although initially created from the top-down, may represent a local response to the question of an optimal organizational form in a given institutional and physical environment. By contrast, the official Household Responsibility System adopted during the reforms, although it possibly initially emerged at the local level, was a top-down attempt to impose an allegedly optimal organizational form for all agricultural production (Coase & Wang 2012; Chen 2016; Eisenman 2018). Although the Household Responsibility System fixed incentives in production teams, the case of collective villages indicates that family farming may not have been the optimal organizational form in all cases. From this perspective, my argument is similar to Ostrom's (1990) insight that although top-down designs of incentive structures may work well in theory, they may be inferior to alternative designs that emerge spontaneously from the bottom up.

From a broad perspective, this paper illustrates the knowledge problem identified by Hayek (1945). Even if policy-makers were benevolent, they lack the knowledge necessary to design the details of the optimal economic order. In the present context, while we may be able to understand the main tradeoffs between family and collective farming, we may not be able to choose the "right" organizational structure without specific knowledge of local conditions. Therefore, the optimal policy consists primarily in introducing incentives, such as property rights and the price system, and letting economic subjects resolve the tradeoffs regarding the size and internal structure of organizations. Chinese reforms introduced market incentives, which allowed farms to respond to these incentives with the size and type of their output. However, these reforms did not allow the farms to respond by choosing their organizational structure.

In discussing the organization of collective villages, I use as the primary example Huaxi village in Jiangsu province. Arguably, Huaxi, sometimes dubbed the "richest village in the world," is the most famous and prosperous of the Chinese collective villages (Hou 2011). Since Huaxi has been used as a model example of a collective village in prior literature, it seems to be a suitable case for the purpose of this paper, although its prosperity comes mainly from manufacturing rather than farming. The information about the organizational structure of collective villages in general, and Huaxi in particular, is based on both previous studies (especially Nathan & Kelkar 1997a, 1997b) and my visit to Huaxi in 2018.

The paper is organized as follows. In Section 2, I describe the post-1978 reforms in China to set the context under which the collective villages operated. The organization of collective villages is then discussed in Section 3. In Section 4, I introduce a theoretical framework to identify the main tradeoffs in choosing the size and organizational structure of a farm. Section 5 then uses this framework in an attempt to explain why collective villages prospered after 1978, although they failed to prosper before 1978. Section 6 concludes the paper.

2. POST-1978 REFORMS

Before 1978, Chinese agriculture was dominated by the People's Commune system, which was characterized by collective production of output that was then administratively distributed at fixed prices. The commune system, especially in its early stage, was hugely inefficient, and China's grain output per capita stagnated (Zweig 1987; Coase and Wang 2012; however, see Eisenman 2018, for a dissenting view). There were at least three main problems with the commune system. First, the effort in production teams was difficult to monitor, which gave rise to moral hazard. Second, markets were absent, which resulted in an inefficient allocation of output. Third, the commune system gave strong political and economic power to local cadres who, in many cases, abused their power at the expense of ordinary villagers (Chen 2016). This problem was further exacerbated by a minimal possibility for the oppressed villagers to exercise the "voice" and "exit" options.

In 1978, China started reforms that aimed at improving the performance in agriculture. In particular, these reforms included opening interregional markets and the introduction of the Household Responsibility System, which became an official policy in 1982. These reforms attempted to address the problems of the commune system. Opening the markets improved the inter-regional allocation of output, while the Household Responsibility System mitigated the moral hazard by allocating a share of land to a household. The households then made production decisions and were entitled to receive income from their land after meeting procurement obligations to the state. The Household Responsibility System also shifted the power from local cadres to ordinary villagers.

Interestingly, some villages resisted the official Household Responsibility System and remained collective. A possible explanation of this resistance was that the local leaders attempted to keep their power to exploit the villagers. Indeed, this explanation was also advanced by the central government. While this explanation might have played a role in some cases, in other cases, it is contradicted by at least two facts. First, the leaders in the rebellious villages were supported by the villagers (Nathan & Kelkar 1997a). The villagers' support indicates that the leaders of these villages were benevolent rather than exploitative. This conjecture is also in line with the fact that at the time of the reforms, some of these rebellious villages were poor, even by Chinese standards. Therefore, they were relatively unattractive for exploitative leaders. Second, collective villages experienced remarkable increases in prosperity in the post-1978 period and even outperformed those villages which followed the official policy. For instance, in one of the most successful of these collective villages, Huaxi in Jiangsu province, the value of production arguably increased about three thousand times in less than twenty years (Nathan & Kelkar 1997a). This increase in prosperity is inconsistent with the view that these villages were governed by exploitative leaders.

Another possible reason why some villages resisted the post-1978 reforms was that they viewed these reforms as compromising the socialist ideals. This hypothesis is in line with evidence from several villages (Nathan & Kelkar 1997a). However, while this hypothesis explains why collective villages remained collective, it does not explain why they prospered in the post-1978 era, even though the system of collective agriculture failed to prosper in the pre-1978 era. This improvement in economic performance calls for an explanation. I suggest a possible explanation in Section 5. Before that, in the following section, I describe the characteristics of these villages in more detail.

3. WHAT ARE COLLECTIVE VILLAGES?

Collective villages are villages run as firms. Villagers are nominal owners of firms, but the firm is managed by party cadres. From this perspective, collective villages differ from both collective firms and state enterprises. Collective firms, unlike collective villages, are not managed by cadres of the local government. State enterprises are managed by political cadres, but, unlike collective villages, they are not owned by employees. Moreover, unlike collective villages, state enterprises are subject to soft budget constraints (Kornai 1979).

Therefore, their losses can be covered from public budgets. Collective villages face hard budget constraints and are not able to draw funds from public budgets. In fact, collective villages make payments to public budgets (Nathan & Kelkar 1997a). Another characteristic of these villages is that they represent not only economic but also political and social units (Hou 2011). From this perspective, they may resemble organizations such as the Israeli Kibbutz (Keren et al. 2006), Mondragon in Spain (Thomas & Logan 1982; diZerega 2014), or Cistercian houses in the twelfth century (Baumol 1990; Berman 1986).

Based on these characteristics, a number of authors pointed out that the collective villages exemplify a hybrid system between a capitalist and a socialist firm. Oi (1999) uses the term “local state corporatism” to highlight the relationship between enterprises and the local governments. Building on this perspective, Lin (1995) talks about “local market socialism,” emphasizing the embeddedness of market and collective forces in the local networks. Yet another approach is offered by Hou (2011), who argues that collective villages represent an example of “community capitalism,” emphasizing the fact that socialist organizations operate in a capitalist environment. All these perspectives are useful in understanding the character of collective villages. However, terms such as “capitalism,” “socialism,” and “corporatism” may be too vague and value-laden for analytical purposes (diZerega 2019). Therefore, I merely focus on the organizational structure of the collective villages, and I leave it up to the reader to what extent these villages are socialist or capitalist.

Collective villages are not concentrated in one region in China. Well-known examples of these villages include Huaxi in Jiangsu province, Daqiu in Tianjin, Nanjie in Henan province, Liuminying in Beijing, or Shangyuan in Wenzhou. The population of these villages is typically less than 5,000 individuals. However, Huaxi merged 16 adjacent villages in the early 2000s, which dramatically increased its population (Hou 2011). Moreover, the number of migrant workers employed in the collective villages can reach tens of thousands of people. Chen (2016) reports that in 2013 there were 28,000 (4.77%) villages in China that can be classified as collective, although these villages differ in their organizational structures.

As in other communities with collective ownership (Ostrom 1990), there are rules for entering and exiting the village. Regarding the rules of entry, other than being born into a collective village, one may become a villager by marrying into the village. Individuals with special skills may become part of the village through the introduction-of-talents program. These individuals often enjoy extra privileges, including higher wages. Alternatively, one can be hired as a migrant worker for a low-skilled job, but in this case, he or she has fewer privileges than ordinary villagers. Leaving the village is possible (and it has happened in the past), but the villager who leaves loses rights to the collective assets. Therefore, leaving a collective village is more costly than leaving a village that does not rely on collective ownership.

The governance of a collective village is shown in Figure 1, which is primarily based on Nathan & Kelkar (1997a). The village has two committees: the party committee and the village committee. The village committee only has a small number of functions, such as the provision of municipal services. The dominant role in the village is played by the party committee. Indeed, the members of the party committee are often also members of the village committee. More importantly, the secretary of the party committee is also a general manager of the village enterprise (general company). The village enterprise is a “holding company” for various enterprises in the village. The committee of this “holding company” is appointed by the party committee, sometimes together with the village committee. The village company committee appoints managers of the village enterprises. These managers should meet production targets and manage work teams. They do not make strategic decisions about product mix, quality standards, or investment—these are made by the village enterprise. The village enterprise also sets wages and monitors the performance of managers.

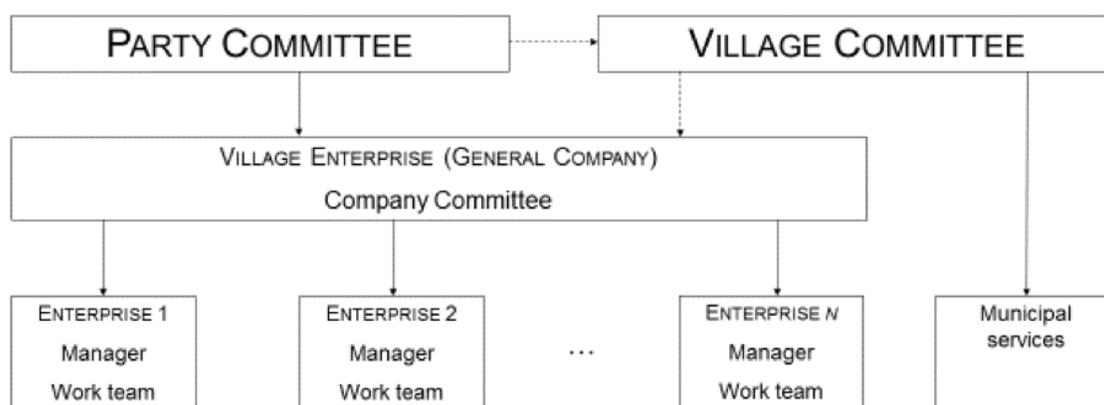


Figure 1: The structure of a collective village

The types of enterprises differ from village to village. At first, villages focused predominantly on agriculture. Over time, most of them expanded into various industries. Huaxi is one of those industrialized villages with very diverse production, ranging from food to the steel industry. According to Huang (2008), the value of Huaxi's fixed assets in 1978 was one million yuan, while the value of the agricultural output was only 240,000 yuan. In fact, the presence of manufacturing at the time of the reforms may be one of the reasons why Huaxi remained collective (Nathan & Kelkar 1997a). Nevertheless, this does not explain why some of the non-industrialized villages also remained collective.

How exactly do the Chinese collective villages differ from other organizations? If we consider their various characteristics separately, then these villages may not be unique. Regarding the organization of production, they do not differ significantly from other multidivisional firms. One possible difference from "capitalist" firms is the political involvement in the management of these firms. However, as stated earlier, the fact that the collective villages are subject to the hard budget constraints make them more similar to "capitalist" firms rather than to state enterprises that enjoy soft budget constraints (Kornai 1979). One unusual aspect of collective villages is that they offer job security to villagers, although this job security is denied to migrant workers (Nathan & Kelkar 1997a). Yet, we find examples of "capitalist" firms, such as Lincoln Electric, who have a similar policy (Sharplin 1982). Another unusual aspect of collective villages are various welfare benefits that are provided to villagers on the village level. These benefits include "free" or subsidized housing, cars, education, and health care. For example, Huaxi provided identical houses and cars (Volkswagen Santana) to villagers (Peng 2001). This type of arrangement may be unusual but not unique. For example, besides Lincoln Electric, Bata company towns also offered various social benefits (Ševeček & Jemelka 2013; Zeleny 1988).

One important characteristic that distinguishes collective villages from the villages that followed the official Household Responsibility System are rules that limit the choices of the villagers. The Household Responsibility System gave more economic freedom to households (Coase & Wang 2012). In collective villages, household decisions are constrained by rules set at the village level. First, decisions about savings and working hours are made at the village level rather than at the household level. Indeed, in People's Communes before 1978, the goal was to extract maximum savings from households to support investments in capital and technology (Eisenman 2018). This strategy of low consumption and high savings resembles the strategy of Cistercian houses in the later Middle Ages or early Protestant entrepreneurs (Baumol 1990). The village-level decisions about savings are typically set to maximize economic outcomes, but they may fail to maximize the welfare of the villagers. Indeed, at some point, there was pressure in the villages towards higher wages and more generous welfare benefits (Nathan & Kelkar 1997a). Second, Nathan & Kelkar (1997b) report that collective villages also regulated the private life of individuals. In some villages, these regulations involved

a minimum age for having a boyfriend or girlfriend or fertility regulations. Therefore, while collective villages were able to accumulate substantial wealth, they may not have maximized the welfare of villagers. Arguably, the discrepancy between wealth and welfare becomes even more important when individuals develop substantial differences in their tastes. These considerations notwithstanding, the economic success of the collective villages calls for an explanation. I attempt to provide a possible explanation in the following two sections. First, I introduce a theoretical framework, and then I will apply it to the Chinese collective villages.

4. THEORETICAL FRAMEWORK

I follow Allen and Lueck (1998) in identifying the main tradeoffs in choosing the size and the ownership structure of the farm. A crucial difference between farms and other firms is the influence of nature on production. Nature causes random shocks to the production process. These random shocks create opportunities for moral hazard. Therefore, if the variance of these shocks is large, farms tend to be small. Nature also affects production through seasonal forces. The seasonal character of production implies that there are limited gains from specialization: if a certain task can be performed only during a given period, labor specialized in this task would be idle during other periods. Therefore, if the length of the periods during which a specific task is performed is short, farms tend to be small. These two effects of nature on production helps to explain family farms as the dominant form of organization in agriculture.

There are two other reasons for the prevalence of family farms. First, families are residual claimants, which mitigates the moral hazard. Second, as argued by Laird & Laird (1970), farming depends on the local knowledge of farmers, which may be difficult to communicate in large organizations. Nevertheless, if the importance of specialization is high, farms may sacrifice moral hazard mitigation and the low cost of communicating knowledge in favor of gains from specialization. Consequently, the organization of a farm may shift from family farms to partnerships or corporate farms.

So far, we have assumed that the farms adjust their size and organizational structure. However, in China, both of these variables were determined by government policy. Therefore farms could not adapt their size and structure to their specific conditions. Consider People's Communes in the pre-1978 era. They were large, consisting of about 5,000 households that contributed to the collective output. However, this output was not owned by the collective that produced it. The model predicts that the Communes could exploit potential economies of scale, but they also enabled moral hazard. The opportunities to moral hazard were due to the commune size, its ownership structure, and the randomness caused by the dependence of the production processes on nature.

The Household Responsibility System, introduced in the post-1978 era, reduced the size of the farms and allocated limited property rights to households. The Household Responsibility System sacrificed economies of scale but significantly mitigated moral hazard. Moral hazard was reduced not only through the reduction of farm size and the allocation of property rights but also through the introduction of market incentives. However, households had only limited possibilities to use capital, and the reform possibly forced them into using technologically inferior production processes. Overall, the success of the Household Responsibility System in increasing productivity in the rural areas (Lin 1992; Putterman 1993) is consistent with the historical observation that the dominant form of farming is family farming, which implies that economies of scale in agriculture are usually low (Allen and Lueck 1998; Dahlman 1980; Laird & Laird 1970). However, the question of what explains the prosperity of collective villages in the post-1978 era remains. Another unanswered question concerns why some villages re-collectivized after experimenting with the Household Responsibility System (Chen 2016; Nathan & Kelkar 1997a). In the following section, I attempt to answer these questions.

5. WHAT EXPLAINS THE PROSPERITY OF COLLECTIVE VILLAGES?

The theoretical framework introduced in the previous section yields the following predictions: Collective villages prosper if 1) their production is characterized by economies of scale, and 2) if they succeed in mitigating moral hazard. Therefore, to explain the success of the collective villages, I focus on these two aspects.

The problem with explaining the prosperity of the collective villages only through economies of scale is that economies of scale do not seem to explain differences in performance before and after the reforms. A possible answer to this problem is that the performance of the collective villages was underestimated in the pre-1978 era. For instance, local cadres could underreport their output to reduce the procurement obligations to the government (Eisenman 2018). While this scenario is conceivable, it cannot be the full answer because, as argued earlier, economies of scale in farming are generally low. More plausibly, the prosperity of collective villages is explained through self-selection. That is, only those villages that could exploit substantial economies of scale remained collective. That these economies indeed existed is demonstrated by the fact that the post-1978 collective villages employed large numbers of migrant workers. An important source of the economies of scale was an expansion of the activities of the collective villages in industrial production. As was mentioned earlier, in Huaxi village, industrial production became much more important than agriculture. This argument suggests that the villages that remained collective after 1978 would have been relatively prosperous also before 1978. It is unclear whether this prediction holds in general, but it does not hold for Huaxi, which was poor in the pre-1978 era.

Even if the collective villages could exploit economies of scale, they still had to address the moral hazard problem. It may be tempting to argue that the identification with the village, as well as the presence of other social norms, may mitigate moral hazard (Kandel & Lazear 1992). However, it is implausible that the identification with the village increased in the post-1978 era. Therefore, this explanation does not explain the low productivity of collective farming before the 1978 reforms because a change cannot be explained with a constant. In fact, the identification with the village may even have decreased because, arguably, Maoism no longer served as a uniting ideology among the villagers after 1978 (Eisenman 2018). Moreover, the majority of workers in the collective villages are migrant workers who arguably do not identify with the village to such an extent that it would solve moral hazard problems.

Nathan and Kelkar (1997) argue that collective villages use monitoring and punishment to mitigate moral hazard. Why were not these mechanisms effective in communes before the reforms? There are three possible explanations. First, in the post-1978 era, villages were able to employ not only moral but also more effective material incentives to reduce moral hazard (however, see Eisenman, 2018, for the argument that moral hazard was effectively reduced by a commune's "work-point system"). Second, self-selection again played a decisive role: those villages which were able to mitigate moral hazard more effectively remained collective. Third, local authorities in the pre-1978 were not incentivized to address moral hazard. It was only after the markets opened that the leaders had a profit motive to address the issue. Therefore, opening the markets seems to be the crucial aspect of the post-1978 reforms. Indeed, it matters whether "islands of socialism" are surrounded by an "ocean of socialism" or an "ocean of markets." This argument suggests that villages that remained collective became successful only after 1978. This is true for Huaxi village, but it is unclear whether it is true in general.

One important source of moral hazard is related to the ownership structure of the village. After the 1978 reforms, villagers became the owners of the village output. However, the village is managed by the party committee that is nominally an agent representing the villagers. How do they ensure that the interests of the villagers are aligned? Standard mechanisms, such as the market for corporate control (Manne 1965; Shleifer & Vishny 1997), are not available. However, the introduction of the Household Responsibility System offered villagers a choice between village-level management and household-level management. The fact that collective villages did not join the Household Responsibility System not only signals something about the technological conditions under which these villages operated but also something about the personal

characteristics of their leaders. Arguably, leaders with undesirable characteristics would not gain support from villagers to dissent from the official policy. Besides their personal characteristics, these leaders were possibly better equipped with human and political capital than other villagers, which could partly compensate for the moral hazard problem. It appears that these leaders, although committed to a socialist ideology, understood the main sources of the economic prosperity of an organization, and possessed sufficient entrepreneurial talent to achieve this prosperity. More importantly, they resisted the temptation to abuse their power. Nevertheless, the dependence of the economic performance of the village on the characteristics of the leaders exposes collective villages to a single point of failure risk. Indeed, without the management of Wu Renbao, who was the leader of Huaxi village during its successful years, the village might have failed to prosper to the extent that it did in the 1980s and 1990s.¹ This suggests that the personal characteristics of the leader played an important role, at least in the case of Huaxi.

In sum, I argue that the success of the collective villages can be explained by two factors. First is self-selection: Villages that could exploit economies of scale while at the same time mitigate the moral hazard problem remained collective. The second factor is market incentives, which were arguably reflected on the organizational level of these villages. Although the proposed hypotheses behind the economic success of collective villages need to be tested empirically, they at least show that it is possible to reconcile the view that collective farming was productive in some cases with the view that family farming introduced through the Household Responsibility System significantly improved productivity in other cases. According to this account, the main problem with the Household Responsibility System was its universality, which left little room for organizational diversity. Arguably, a policy that would allow the choice of the organization form of production would achieve better results. However, the question remains whether such a possibility was politically feasible during the reform era.

CONCLUSION

The post-1978 reforms in China represent an important chapter in both Chinese and global history. These reforms resulted in unprecedented economic growth² because they successfully addressed the problems of incentives and allocation. However, due to their top-down character, these reforms failed to reflect the Hayekian point that a rational economic order should let individuals use their knowledge for their purposes (Hayek 1945; 1973). Only in such a system can knowledge be effectively used to address problems at the local level, including the problem of optimal organization design. I have illustrated this point using the example of collective villages. I attempted to explain why the Chinese collective villages prospered in the post-1978 era, while at the same time, the system of collective agriculture was less productive than the Household Responsibility System. Future research can empirically test the relevance of the arguments advanced in this paper.³

NOTES

1. Wu Renbao passed away in 2013. The village is now managed by his son. For recent reports about the economic problems of Huaxi, see, e.g., Zheng (2018) and Zhang (2019).
2. The specific numbers about Chinese economic growth should not be taken too literally (see, e.g., Chen et al. 2019). However, even if we account for the fact that the Chinese growth figures have been overestimated, there still remains a tremendous increase in prosperity that calls for an explanation.
3. I would like to thank Nicole Yi Yang and Lingling Feng for their invaluable help with the translation of Chinese sources. I also greatly benefited from comments by Per Bylund, Geoff Hodgson, Xiong Yue, and Martin Komrská. Any mistakes are, of course, mine alone.

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The Cryptoeconomics of Cities, Data and Space

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Abstract: We explore the connection between new decentralised data infrastructure and the spatial organisation of cities. Recent advances in digital technologies for data generation, storage and coordination (e.g. blockchain-based supply chains and proof-of-location services) enables more granulated, decentralised and tradeable data about city life. We propose that this new digital infrastructure for information in cities shifts the organisation and planning of city life downwards and opens new opportunities for entrepreneurial discovery. Compared to centralised governance of smart cities, crypto-cities can be understood as more emergent orderings. This paper introduces this research agenda on the boundaries of spatial economics, the economics of cities, information economics, institutional economics and technological change.

Keywords: Blockchain, Distributed Governance, Smart City, Spontaneous Order, Blockchain Supply Chain, Data Markets, Proof-of-location

1. INTRODUCTION

The concept of a smart city is built around the insight that many of the physical aspects of a city—including the movement of people and things, or the measure of variables such as air quality or congestion, or the state of various infrastructures and utilities—can benefit from continuous flows of digital information that can be analysed and used as an input into city operations and planning. Smart city agendas emphasise the importance of data in the coordination of city operation and life, and offer the prospect of better governed, higher functioning, and more liveable cities as a result of investment in smart city technologies (Manville et al., 2014; Öberg and Graham 2016).

Smart city agendas, however, generally involve centralised collection and governance of city data. This centralised data is subsequently used as inputs into centralised planning decisions (e.g. optimising traffic flows). In this paper we examine how new decentralised digital technologies for recording and coordinating information open possibilities for more spontaneously ordered cities. Our focus is on two technologies—blockchains and other distributed ledger technologies, and proof-of-location networks—as the foundation for more decentralised data markets that are inputs into entrepreneurial solutions to problems. We argue that cities will become more spontaneously ordered through comparatively decentralised data production about city life.

While our focus is on two frontier technologies, our contributions also apply more broadly to how digital infrastructure changes the ordering of cities, including the impacts that these technologies have on the conception and implementation of smart city agendas.

We proceed as follows. Section 2 introduces blockchain technology as economic infrastructure. Section 3 introduces cities as emergent orderings, as spaces where individuals and entrepreneurs coordinate and discover information and opportunities near others. Section 4 examines the smart city agendas in this context. Section 5 explores how blockchain technology and new locational technologies facilitate better information about movement in city life. Section 6 concludes.

2. BLOCKCHAIN AS ECONOMIC INFRASTRUCTURE

First invented to create the digital currency bitcoin (see Nakamoto 2008), blockchain technology sits within a broader category of distributed ledger technologies. The innovation in blockchain technology is that it uses a unique combination of cryptography, peer-to-peer networking and economic incentives to enable networks of computers to create distributed ledgers. Blockchains industrialise trust, converting economically valuable energy into trust in the contents of a distributed decentralised ledger (Berg et al. 2020). This contrasts with the conventional centralised mechanisms of maintaining ledgers, including nation states (e.g. property titles) and hierarchical firms (e.g. banks).

In the decade since blockchains first emerged there has been a surge in innovation around how blockchains operate, including their governance (e.g. permission to update the ledger), consensus mechanisms (i.e. how the network comes to consensus) and other characteristics (e.g. privacy). While debates continue around the precise definition of a blockchain—including the boundaries of where blockchains meet other distributed ledger technologies or distributed databases—for the purposes of this paper we generically refer to these innovations as blockchains. Generally blockchains are more decentralised, robust and censorship-resistant governance structures compared to centrally maintained ledgers. Through the lens of comparative institutional economics, the entrepreneurial experimentation around blockchain today is a discovery process over which governance problems are best solved by blockchains compared to more centralised mechanisms. Current experimentations include the recording of democratic votes (see Allen, Berg, Lane, Potts 2018; Allen, Berg, Lane 2019) and new legal systems (e.g. see Werbach and Cornell 2017).

Given the importance of trade—and the movement of people more broadly—for city planning and the identification of market opportunities, in this paper we focus on the application of blockchain to supply chains. Blockchains can act as new economic infrastructure for information about goods as they move through supply chains (Allen, Berg, Davidson et al 2018; Allen, Berg, Markey-Towler 2019). Rather than information about goods (e.g. provenance, characteristics, stewardship) being recorded in ledgers maintained in siloed hierarchies—for instance, by updating internal databases—that information can be recorded in decentralised blockchain ledgers.

Blockchains do not validate that information the information that is in the ledger is true. Rather, blockchains provide the infrastructure for data to be stored in a decentralised way that is difficult to tamper with after the fact. For this reason, blockchains—particularly in the application to supply chains where information about physical goods must align with information in the ledger—have been complemented with other technologies for information inputs, such as Internet of Things (IoT) sensors. Proof-of-location networks (discussed in Section 5 below) produce location data (e.g. an alternative to centralised GPS) that relies on decentralised physical infrastructure (“beacons”) that are economically incentivised to provide geospatial data of objects with corresponding sensors nearby. More detailed, trusted and tradable data about things as they move can then be recorded in blockchain ledgers, creating a new architecture for data in cities.

In this paper we ask what the implications of this deeper and decentralised information are for cities. We draw on institutional cryptoeconomics as an analytic framework (Berg et al. 2019; Allen et al. 2020), that itself draws on institutional economics. Application of institutional cryptoeconomics to this problem has several implications: (1) that new decentralised technologies including blockchains and proof-of-loc-

tion networks will shift the governance of data from centralised siloed to decentralised networks; and (2) that by opening up data markets, we expect further bottom-up entrepreneurial coordination and value creation in cities, making them more emergent. This suggests a new vision for smart city agendas in which citizens and businesses can engage more fully in data markets and searching for entrepreneurial opportunities.

3. CITY AS EMERGENT ORDER

Economists have long sought to understand the economics of space, and the spatial organisation of cities as an outcome of economic forces. Cities are a complex mix of top-down and bottom-up planning. Here we examine the emergent orderings underpinning cities where people coordinate information and make plans about entrepreneurial opportunities. This understanding of cities as emergent orderings reliant on information foreshadows our predictions about how new decentralised information technologies open potential for more emergent ordering in cities.

Alfred Marshall drew a relation between agglomeration tendencies and industrial productivity, suggesting that workers became more efficient in urban centres that provide a denser, more specialised labour market, access to more specialised services and facilities, as well as access to non-excludable knowledge bases (Florida et al. 2017). The Marshallian insights were extended by Arrow (1962) and Romer (1990), who have suggested that economic actors operating within the city environment benefit from knowledge spillovers arising from firm proximity. When firms are close, workers may share ideas, which bring about product innovations that significantly contribute to economic growth. These innovations, however, may not be easily appropriated by individual firms in terms of additional profitability. A key question following from this is to what extent spillovers are observable between a concentrated set of firms within a given industry, or between firms across industries as the benefits of diversity take effect (Jacobs 1969). The extent to which “Marshallian” or “Jacobsian” externalities have taken effect in practice remains the subject of intense debate within the urban economics and innovation literatures (e.g. Glaeser et al. 1992; Beaudry and Schiffauerova 2009; Caragliu et al. 2016).

The neoclassical identification of externalities from agglomeration in cities provides a basis for the design of public policy to internalise them. Policies to address the strains and stresses of urbanisation not only take the form of generic Pigouvian taxes and subsidies in response to externalities effects, though proponents of policy intervention would suggest circumstances may not necessarily preclude such initiatives. Other policy positions include regulations to recalibrate land use and development standards, and urban planning procedures, in often prescriptive ways (Pennington 2002; Staley 2004).

The claim that the economic externalities of cities need public management has been criticised from a variety of economic vantage points. The critiques relate to whether bureaucrats and other political actors can successfully harness all the diverse economic knowledge generated within metropolises in the implementation of policy. Challenges to policy efficacy also rest upon the idea that urban areas are open and dynamic systems, and that the diverse individuals participating in city life are not presumed to maintain similar correspondences between their particularised means and ends (Cox and Gordon 2017; Kichanova 2018). Because of these complexities, urban activity cannot be reasonably compressed, or reduced, into simplified sets of production and/or utility functions that lend themselves to manipulation by city managers and other relevant policymakers.

The perennial economic problem, then and now, concerns the effective coordination of production, distribution and exchange activities. As Friedrich Hayek (1945, 521) famously conceptualised, the task of coordination in the economic context intrinsically involves the distillation of “the knowledge of the particular circumstances of time and place.” He continued,

practically every individual has some advantage over all others in that he possesses unique information of which beneficial use might be made, but which use can be made only if the decisions depending on it are left to him or are made with his active cooperation. *We need to remember only ...*

how valuable an asset in all walks of life is knowledge of people, of local conditions, and special circumstances (ibid., 521-522; emphasis added).

His argument also applies to cities and to the processes of urban development as the basis of, and responses to, the need for better economic coordination, as has been explored by Andersson (2005), Desrochers (1998; 2001), Gordon (2012), Ikeda (2004), and Stam and Lambooy (2012), among others. These studies have emphasised the core Hayekian insights on “the role of social institutions, the prevalence of inefficiency and discoordination, the relative importance of processes over endstates, the centrality of entrepreneurial discovery in the market process, and the nature and significance of spontaneous orders” (Ikeda 2007, 215). Whereas most, if not all, of these conceptual features are directly related to the research work of contemporary Austrian economists they are also explicated by the likes of complexity, evolutionary and network economic theorists, as well as by specialists in other disciplines such as geography (Allen 1996; Glücker 2007; Boschma and Martin 2010).

A spatially-aware Austrian school is closely associated with the dictum of creative entrepreneurship as a cornerstone for coordinative economic activity in the urban environment. “The diversity of knowledge, skills, and tastes that one finds disproportionately in the living city are potent enablers of entrepreneurial discovery. The density and resulting proximity among individuals within such places narrow the gap between the potential opportunity and its actual discovery” (Ikeda 2007, 215). According to Andersson (2005) the identification of profitable market opportunities by an entrepreneur is indelibly shaped by locational choice which, in itself, serves as an entrepreneurial act. Specifically, entrepreneurial actors may perform a mental calculus that arbitrages between choice of locations (including remaining in the present location) in the hope of attaining future profits. It is recognised, however, that the conduct of locational entrepreneurship is not conducted perfectly (Banczyk et al. 2018) and nor are locational decisions necessarily dominated by economic considerations under all circumstances (for example, cultural concerns may be important; see Palmberg 2013).

The growth potential associated with agglomeration economies, at a micro- or meso-economic level, are shaped by network relations established by heterogeneous individuals working and residing in relatively close proximity to one another. Face-to-face meetings enable people to share perspectives, establish trustful relations and coordinate to launch new economic ventures (Cox and Gordon 2017), and new communications technologies facilitate connections to absorb information and knowledge. Palmberg (2013) also refers to the role of clubs and associations in facilitating knowledge diffusion. These mechanisms of inter-personal connection are, more or less, subject to “network effects,” which become more apparent in relatively densely populated environments such as metropolitan centres and large regional towns. Although such activities are not costless, it appears that the costs of exclusion from entrepreneurially-related network opportunities by virtue of residing outside of cities are significant (e.g. Saxenian 1990).

Several property, relative prices, contracting and a monetary system are fundamental coordinative institutions. According to Ikeda (2007) these institutions should arise, largely in spontaneous fashion, within city environments that necessitated the ability of numerous traders to strike mutually agreeable exchanges of goods and services at reasonable prices. Given the bountiful opportunities to shirk effort, renege on bargains and to exercise opportunism more broadly, the development of abstract and generic institutions serving as “rules of the market game” are seen as necessary to harness inter-subjective comprehension, forge shared expectations and, importantly, develop a sense of trust between strangers in complex economic contexts. Indeed, we can compare different institutions on how they coordinate information—taking the perspective of “epistemic institutionalism” (see Hayek 1945, Boettke 2018). The phenomenon of the “fundamental institutions for market-tested betterments” may even more clearly coincide with the historical emergence of certain localities as regional and global trading hubs, as described by Clark (2016). This is not to suggest that economic institutions did not emerge in rural and other non-urban localities, but that the potential for developing such institutions would be most pressing in the city.

The physical and functional forms of a city reflect a spontaneous order which is “the result of human action but not of human design” rather than the product of singular or overarching planning and design by any given individual economic, social or political actor. The notion of spontaneous order, or at least ordering which assume a largely emergent character, has a long tradition in political economy. Jane Jacobs (1961; 1969) remains arguably the leading exponent of the “emergent urbanism” view that metropolitan locations do not arise as the consequence of the imposition of the grand schemes of architecture and land planning upon countless numbers of people. Indeed, the excitement and life given to the city by its diverse, even in parts eccentric, inhabitants release the immense economic energies of urbanisation, even if no one person in particular intended for agglomeration-related growth and living standards improvements to materialise. The variable, multiple-ended strivings from the street-level up makes up the observed dynamic episodes of growth and development in the aggregate, even if non-intentional on the part of any given individuals, is at the heart of the city as a spontaneous or emergent order.

The emergent ordering of the metropolitan environment contains many elements of decentralised planning. Individual entrepreneurs make plans supported by urban knowledge spillovers and network logics. There are also evident examples of urban landscapes and functions that result from deliberate planning associated with collective action. A local governmental authority may construct a park in the centre of town, however the patronage of the park and the uses to which the park are put are not consciously designed and implemented by any single person. As mentioned by Ikeda (2007, 215),

[t]he layout of public transport, utilities, and other aspects of the physical infrastructure of a city is the result of careful, conscious planning, but the entrepreneurially driven competition that emerges from it, that which gives life to the living city, is not.

Thus, the multidimensional uses of urban assets and considerations of amenity reflect the “multifaceted spontaneous networks that consist of individuals who cover many different fields of knowledge, interests, and activities” (Palmberg 2013, 21). From this perspective we can see that cities are complex mixes of bottom-up and top-down plans. In the following section we turn to how frontier technologies shift smart city agendas. We describe the evolution from “smart cities”—central planning based on centralised data—to “crypto cities”—bottom-up entrepreneurial search based on decentralised data markets.

4. FROM SMART CITIES TO CRYPTO CITIES

The functionality and even liveability of cities and large towns are threatened by an array of economic, social, technological and other challenges, including easing transport congestion, maintaining personal and economic security, preserving environmental amenity, and improving access to local public services. How can we best coordinate resources, and maintain and even enhance their value, in highly contingent and uncertain environments?

Smart cities grew out of the 1990s concept of New Urbanism, which sought to redesign the built environment to capture environmental, social and similar values. The concept of smart city also has roots in the notion of “intelligent cities” as physical environments in which information and communication technology and sensor systems are embedded into physical objects and urban settings (Stevenson and Wright 2010; Caragliu et al. 2009; Hollands 2008). In intelligent cities, information and communication technologies substitute many of the coordination and control roles of hierarchy, motivating new organization forms that focus on process instead of function (Setia and Patel 2013).

Proponents of infusing smart city thinking into organisational practices and public policies refer to a gap between the availability of data and the capacity of firms and governments to apply the data to bring about more efficient deployment of resources that, in turn, resolve city-wide problems. As Goldenfein et al. (2017, 1) argue:

The key insight of the smart city movement was that a city generates terabytes of data in the course of ordinary interactions among people, among things, and between people and things, but that very little of it is captured and used. The smart city is an approach to public infrastructure and urban governance that seeks to capture and use that data in real time to improve the effectiveness of the city's operations. The implication is that by developing 'smart infrastructure' that can sense the activities around it, better and more efficient use of urban resources becomes possible.

The application of technological innovation to make cities work more efficiently by harvesting and interpreting mountains of city-generated data is at the crux of the smart city agenda. Remote sensing and similar technologies used to track location, such as "radio-frequency identification" (RFID) scanners and bar-coded objects, are coupled with the web-connected sensing devices (so-called Internet of Things) to allow objects to connect, interact and exchange data.

Blockchain is a further potential addition to this technology stack to maintain real-time data intelligence to support infrastructure connectivity (Scott 2016). Given that further quantification of urban economic activities will be accompanied by growth in data collected and exploited, the attributes of blockchain in promoting the integrity and provenance of data and digital assets is complementary to the smart city agenda (Wellers et al. 2017). Demand for digital privacy by consumers or citizens, or demand to conserve the integrity and security of their information into the future, can be supplied by blockchain protocols that enable individuals to manage their own data flows as they see fit (see Berg 2018).

The smart city agenda also seeks to apply big data analytics including machine learning to capture and organise large amounts of disparate and unstructured data to uncover correlations, patterns and other useful information (Rouse 2012). In particular, the big data that interests firms are what is called "found data"—that is, the digital exhaust of Web searches, credit-card payments and cell phones (Harford 2014). Part of the perceived improvements that big data could bring forth is to break down the lack of interoperability, and the concomitant duplications and incompatibilities, associated with proprietary data silos managed by individual firms, government agencies and other organisations based in cities (Pettit et al. 2018).

Whilst the big data analytical project has attracted significant attention in academic, business, media and political circles, its merits as an underlying driver for refashioning economic and other interactions within cities have been questioned in some circles. Large quantities of data does not, in itself, necessarily provide meaning for those tasked with interpreting the information received, and that data could yield spurious correlations and other problems that could lead to potentially disastrous outcomes for urban functionality if carried through automatically to policy. In essence, the emergence of big data capabilities does not obviate from the requirement that "data ... needs to be robust, accessible and interpretable if it is to provide cities and companies with meaningful opportunities and solutions" (Öberg and Graham 2016, 531).

The smart city agenda is built on a centralised vision of city information architecture. This agenda may well be rationalised as a means to drive substantial improvement, but implicitly it holds the governance surrounding decision-making in the city invariant: "the comparative economic organization of the city remains unchanged. The same things are still done by the same people with the same division of task; it just gets done more efficiently" (Goldenfein et al. 2017, 3). The critique of the smart city as a model of large scale but *centralized* and *closed* computation closely relates to the Hayekian critique that large-scale ventures, such as reframing the dynamic life of cities on "smart" principles, often lack appropriate knowledge (that is, information in its rightful context) for successful implementation. The centralised (re)planning of the city, in this view, cannot overcome the knowledge problems accompanying the planners' distance from those "persons on the spot" maintaining partial but, still, economically valuable knowledge that all combine to create the know-how that makes the large, modern city into economic powerhouses.

The smart city agenda in theory represents an attempt to forge greater partnerships between disparate actors within the urban economy through the mass integration of data and information generated by city-based activities. However, it is predicated that "on a city level the traditional monocentric governance is still a dominant approach, with most people taking for granted that services like building urban infra-

structure, maintaining public spaces, enforcing land use regulations, and managing externalities are better delivered by state agencies” (Kichanova 2018, 3). Stated differently, what is often overlooked is the fact that the “kludgeocracy” (see Teles 2013) of existing organisational forms within the city itself presents a barrier to the full release of creative and dynamic forces which are central to an appreciation of the city as an *emergent, not constructivist*, order.

The high-modernist construct of large corporations and government agencies, each dominating the city econo-scape, has been intimately associated in an historical context with the evolution trend of data management toward highly centralised, siloed ledgers. There is no doubting the immense economies of scale and production values that modern economic organisations have already generated, courtesy of their authoritative roles of recording, storing and validating data (MacDonald et al. 2016), but the onset of blockchain technology has only recently kindled an awareness of the foregone economic opportunities associated with the past lack of distributed yet secure ledger technologies. As Posner and Weyl (2018) observe, the emergence of data as lucratively valuable assets in their own right has given new meaning to the sense of self-preservation pressingly felt by those entities already presiding over large, but centralised and non-interoperable, datasets. The additional downsides of acting on such motives of self-preservation by already-existing data hoarders are the continuation of rents, inequalities, and power concentrations which create non-trivial harms for many city residents.

A smart city may therefore require *different* institutions, more decentralised institutions, in order to harness and make better use of decentralised data. Blockchain and associated technological innovations may be the institutional infrastructure that is necessary to “significantly shift the optimal arrangement of economic organizations and institutions in modern cities” (Goldenfein et al. 2017, 2). Integrating blockchain and related technologies with an appreciation of the urban environment as an emergent order moves us from the smart city to the crypto-city.

Crypto-cities are enabled through new decentralised technologies. Blockchains can act as the foundational infrastructure for the decentralised storage and coordination of data and associated transactions and contracting. This decentralised data enables governance of economic relations in a decentralised manner. The decentralised nature of data stored on blockchains—including that information about supply chains—suggests that a crypto-city may possess distinguishing features compared to more centralised smart city agendas. As opposed to the top-down smart city agenda, a proposed crypto city agenda enables the coordinative and governance opportunities wrought by technology to be appropriated by entrepreneurs seeking to discover new avenues for gain (in a mutually beneficial way with others) in city-spatial locations.

5. DECENTRALISED INFORMATION AND THE CRYPTO-CITY

Better visibility along supply chains could create publicly accessible pools of data about human interactions within urban areas, leading to further scope for entrepreneurial discovery. Given the impacts of trade upon the growth and change of urban spatial environments— including logistics networks, planning, transportation, environmental amenity, provenance, and so on—our understanding of blockchain-enabled trade infrastructure provides a fruitful avenue for research. For instance, what are the implications of blockchain-based supply chain infrastructure for existing modes of urban planning and development? Does this understanding have any consequences for smart city agendas? How, and to what extent, could high-trust supply chains improve the possibility of developing “free trade zones”? How can the information that is collected—for instance, about where and how goods move through a city—be used to discover entrepreneurial opportunities solving urban problems? Can artificial intelligence be used to mine these pools of city information?

We can distinguish between two main types of supply chain management flow: material or information. Smart cities will impact differently on each type of flow. Given the needs for storage capacity and processing power about city data, there will be opportunities for companies that are located in the middle of

large amounts of data flows (e.g. information about products, buyers, suppliers, consumers, etc) and are capable of aggregating and analyzing them (Manyika et al. 2011). Firms can therefore use that data to centralize decisions more efficiently. Smart cities and big data may stimulate more centralization of information flows.

Supply network complexity may positively impact the ability to access and share information across the supply chain because more actors are involved in exchanges within the network (Caridi et al. 2010). Thus, big data applications (e.g. open data) can benefit from the input generated by a higher diversity of actors in a structurally complex network. However, Skilton and Robinson (2009) argue that tight coupling among firms is more difficult to achieve in complex supply networks, so failures in information exchange may be a problem. The implementation of big data in supply chain management activities does not necessarily imply more efficiency (Miller and Mork 2013). Indeed, smart cities and big data tend to increase structural complexity because they amplify the amount of information necessary to monitor the state of the system. Unless firms completely redesign their distribution networks, an increased structural complexity could increase costs and decrease flexibility. In addition, the complexity of interactions between so many heterogeneous automated systems may generate more mobility problems than solutions. The conventional focus of Smart City agenda is upon top-down rearrangements to urban forms: congestion taxes; banning vehicle traffic; rezoning. The issue is whether existing fiscal and regulatory models to improve supply chain functionality in cities will elicit additional creative discoveries and innovation.

Trade platforms and supply chains are shaping up as the major use case for blockchain technology. Blockchain technology can solve a major and growing problem with the global trading order—namely the problem of coordinating trusted information between supply chain participants. Every time a good or service moves, information moves with it. The quantity of information associated with each product continues to grow, and the costs of dealing with this information, from compliance, auditing, verification—trust, in a word—is becoming a greater and greater share of the costs of the global trading system. Blockchain and other information technologies are now being applied to economise on the information costs underpinning supply chains. For instance, in 2017 IBM and Danish shipping company Maersk announced their TradeLens blockchain solution to facilitate “the real time exchange of original supply chain events and documents” (IBM 2017). Walmart has since announced their intention to use the IBM Food Trust platform to facilitate the sharing of provenance information by their leafy green suppliers in the wake of an E. coli outbreak (Walmart 2018). Relevant information could include ownership data, time stamping, location data and other product specific data (e.g. see Abeyratne and Monfared 2016). This information helps establish provenance and thereby potentially identifies counterfeit goods (Hackius and Petersen 2017; Kim and Laskowski 2018).

New digital supply chain infrastructure must satisfy the demands for trusted information about the provenance of goods by stakeholders including consumers, producers and governments. As transportation costs and political costs fall, the portion of total trade costs that are information costs rise (see Allen, Berg, Davidson et al. 2019). Further, given that information costs also increase with the complexity, length and volume of trade on supply chains, it is unsurprising that information costs of global trade are likely rising as a proportion of total trade costs. The information flows of international trade are still often organised as transfers between separate organisations, despite efforts to digitise supply chain information. Each firm in a global supply chain passes off information until it can be passed to the next actor on the supply chain, and adding to that information as the nature of the good changes. Moving goods and their information along a supply chain can be remarkably complex, requiring hundreds of different actors, including exporters, importers, logistics companies, shippers, retailers and governments.

As supply chains become longer and more complex, information changes hands more often and across more relationships, potentially leading information loss or fraud. The production and maintenance of trusted information about goods, however, is not costless. Individuals create organisational structures—including hierarchial integration within firms—as mechanisms to produce supply chain information, ensure its integrity, and communicate that information between relevant parties. For instance, some supply chain information is produced through brand reputation, “repeat transactions ... and social norms that are em-

bedded in particular geographic locations or social groups” (Gereffi et al. 2005, 81). Siloed hierarchies along a supply chain communicate information—for example through paper-based bills of lading—between each other to maintain and update ledgers of information. Estimates to the administrative cost of this paperwork varies from 15 per cent of the value of goods shipped (Groenfeldt 2017) to being equal to the cost of physically moving those goods (Popper and Lohr 2017).

While the internet has enabled greater efficiency in some housing related processes—such as online real estate and mortgage advertising and online transactions—it has not fundamentally changed the ledger of transactions or its management. The internet protocol is not equipped to transfer value in a trusted fashion. As a result, bureaucracies, banks, lawyers and estate agents are still required to perform the institutional arrangements that make property ownership possible, including the enforcement of transactions, the granting of exclusive use, as well as transferability and inheritability. Data is managed in central repositories and protected against security breaches at significant public expense.

The blockchain economy is fundamentally different from the digital economy we have known to date. While the Web 2.0 economy has been characterised by centralising forces, resulting in large companies that handle transactions on our behalf, the cryptoeconomy theoretically does not require the same market or government mechanisms for trusted transactions to be achieved, potentially doing away with current processes of licensing, self-regulation and branding. Instead, peer-to-peer transactions, as well as direct, transparent incentives for participation, are the foundations of the blockchain economy. In economic theory, complex evolving systems typically move from centralised to decentralised systems (Coase 1960); centralisation enables enforcement and creates knowledge system rules but can also come with costs (corruption, inflation, security costs).

There are various degrees of decentralisation across blockchains and other distributed ledger protocols. Many blockchain-enabled supply chain projects are based on ‘permissioned’ architecture (e.g. HyperLedger Fabric) where the ability for participants to read and write to the ledger is controlled. These applications contrast with more open ‘permissionless’ protocols where anyone can read and write to the ledger. While permissioned ledgers are more centralised than permissionless blockchains (although more decentralised than conventional hierarchical data management), they have been adopted partly because they provide greater data privacy and bespoke data access rights and do not require a cryptocurrency to align economic incentives. Data rights, in particular, are major considerations for supply chain participants (see UCL CBT 2019).

Blockchain-based supply chain infrastructure means consumers might not only be able to access cheaper and more trustworthy information about the goods that they buy, but also more granulated and detailed information on previously unobservable characteristics (Allen, Berg and Markey-Towler 2019). That is, information about the vectors of goods that were either not previously produced or not previously observable due to transaction costs might become possible. There are several implications of blockchain-based supply chain infrastructure on the operation of market prices. First, we anticipate a *de-commoditization of goods*. Two products previously considered identical because of a lack of information about their differing vectors of characteristics might now be reliably differentiated into two different markets. The second order effect of this is more granulated prices. That is, a *disaggregation of prices*, perhaps splitting existing markets into new markets of premium and non-premium segments. The precise margins at which additional trustworthy information will shift the price of goods will emerge over time, and will be directly related both to the subjective perceptions of consumers buying those goods, and the entrepreneurial efforts of people seeking to create the blockchain-based infrastructure that will produce and govern that information. Finally, to the extent that market prices represent the aggregation of distributed and contextual information of market participants (Hayek 1945), we would expect over the longer-term *more effective market coordination*. That is, market participants will be better able to observe and put to use Hayekian information to achieve their objectives.

Blockchains are unable to autonomously interact with real-world individuals or events and hence rely on ‘oracles’ to transmit data about temperature, contractual performance and so on (De Filippi and Wright

2018). These oracles can also enable dynamic adjustment of shipping routes and prioritisation based on the attributes of the goods shipped, a products ‘health’ for instance. Smart contracts in supply chain could perform many functions, including transferring the ownership of goods as they move between actors, and executing payments when items are delivered.

Blockchain-based supply chains may also leverage more complex technologies to input information via sensors (Kim and Laskowski 2018). One example of this is the development of ‘smart containers’ based on the Internet of Things (IoT) where a number of sensors record information—such as temperature and GPS data—that is then uploaded to a blockchain-based distributed ledger. Such technologies are important to deal with the ‘garbage-in-garbage-forever’ problem facing blockchains—that blockchains themselves do not validate whether the information in a blockchain is true, rather they provide confidence that data has not been altered once it was digitally signed. The adoption of IoT and related technologies are a shift away from human-centred data input towards technology-centred data input, reducing some of the challenges of fraudulent blockchain data.

Another potential technology that inputs information into blockchain ledgers are “proof-of-location” protocols. Proof-of-location protocols provide for robust geographic information about users or things without relying on a central authority to verify that information (Brambilla et al. 2016). This includes protocols such as FOAM, where a physical infrastructure is built that detects and uploads information about location to a blockchain-based system (Kohut 2018). That information may also be leveraged to execute smart contracts between supply chain parties.

Trusted location data is an economically valuable product and service. Proof of location provides an input into economic production across supply chains and logistics, energy systems, transport systems and mobility, real estate, finance, and many other sectors, by verifying that some event or process has occurred at a particular location. This can trigger a payment, a privilege (i.e. being able to view sensitive documents only within a specific location), layers of privilege, or a further phase in a contract. In turn, the ability to spoof location can be used for opportunistic or even fraudulent purposes. Location spoofing is in this sense the same as the double spending problem with digital money. The goal of proof-of-location using blockchain technology is to provide consensus about whether an event or agent is verifiably at a certain point in space and time.

Trusted location information allows digital systems to connect to the real world. The problem with current centralised location ecosystem, mostly built around satellites, is that it is siloed, unreliable, and insecure. Blockchains enable decentralised rather than centralised (satellite-based) proof-of-location. The way in which a proof-of-location process works on a permissionless blockchain can be summarised as follows:

- 1) Demand for Witnessing as a service. Alice wants Bob to witness location. Bob uses protocol and witnessing tool. Alice pays Bob in crypto.
- 2) Witnessing tool (owned by Bob) writes encrypted information about Alice’s location to (permissionless) blockchain. Bob is the miner of Alice’s information.
- 3) Alice can then share her proof of location with Carol, by pointing Carol to the blockchain.
- 4) As more “Bob’s” (a.k.a. miners) join as witnesses, the strength of Alice’s claim of proof of location becomes stronger.

Proof-of-location protocols provide data (or oracle) services to prove in a digital world where things (such as people, commodities, assets, tags, chips, contracts, etc) are in the physical world. Proof-of-location are therefore a type of *data market*. Alice needs to prove that something is at a location. Alice pays a miner to validate that information by witnessing her presence claim. Proof-of-location protocols enable individuals to own their own data about location, and create that information by paying others to witness their location. Alice can then control her information, retaining privacy. This facilitates a new architecture of property rights in data, facilitating private ownership (and possibility of trade) of personal location information. This further affords privacy control over sharing one’s personal spatial information. This also creates a new way to earn income by witnessing events. These are gateway owners, and miners (Bob). Proof-of-location services and infrastructure therefore inverts current geospatial data markets, by decentralising them, rather

than having data centralised through a satellite. Together with blockchain technology for the recording of information, proof-of-location protocols are a fundamental infrastructure in a decentralised crypto-city.

6. CONCLUSION

Modern spatial economics uses planning models of optimal organisation of activities in space. It mostly fails to account, however, for the economics of distributed data and information as inputs into economic value creation and spatial coordination. A new wave of decentralised digital technologies—including blockchains and proof-of-location networks—promise decentralised production and data. This suggests new more open, granulated and trusted data about city life, with broad implications for the governance of cities. Better data for decentralised decision making has the potential to solve many of the problems that spatial planning is trying to solve by creating data economies using blockchain as new data infrastructures for coordinating activity in space.

While smart city agendas introduced data, that data was managed and acted upon through centralised planning by authorities. In this paper we have described the shift from the centralised smart city to the decentralised crypto-city, enabled through new decentralised technologies. This insight has important implications for spontaneous urban planning. Blockchain technology coupled with proof-of-location infrastructure facilitates the rise of spatial data markets to facilitate self-organising economic activity in a digital urban economy. This insight suggests the need necessary to centrally plan the city, but rather to plan and design the protocols that facilitate data generation and markets. Blockchain technology provides new economic infrastructure for a property rights based and institutional rule governed economy.

This consideration of the consequences of blockchain for urban development and governance, coupled with the implications for the emergence of location service-based data markets, represents an advance on the available literatures on trade and urban economics. In this way we can see blockchain as not only inducing greater efficiencies in supply chains, but also soliciting emergence of data markets and reinforcing the city as an arena for entrepreneurial discoveries and the orderings that emerge from them.

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Errata

ISSUE 8:4+5/6+7

From There to Here: Fifty-Plus Years of Philosophy with Susan Haack

Mark Migotti

https://cosmosandtaxi.files.wordpress.com/2020/07/ct_vol8_iss_4_5_migotti_article.pdf

p. 30, end of last line, footnote:

I would like to thank Jonathan Payton for valuable comments on the first two sections of this piece, and Susan Haack for invaluable help all the way through, especially in the intense final stages.

*p. 31, note 1: should read: Lambert Strether in *The Ambassadors*, 215., 215.*

Editorial Information

AIMS AND SCOPE

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